

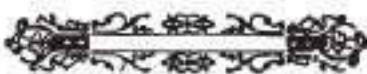
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Fundada el 13 de marzo de 1893

por el

DR. LUIS RAZETTI

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y del Congreso Venezolano de Ciencias Médicas



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Lorena Cudris-Torres, Nidia-Johana Bonilla-Cruz, Manuel E Riaño-Garzón

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La revista Gaceta Médica de Caracas (GMC) es una publicación periódica, órgano oficial de la Academia Nacional de Medicina y del Congreso Venezolano de Ciencias Médicas. Se publica cuatro veces al año y recibe manuscritos inéditos que de ser aceptados por el Comité Redactor, no podrán ser publicados parcial o totalmente en otra parte, sin el consentimiento del Comité Redactor de la GMC.

La GMC sigue las Recomendaciones para la realización, informe, edición y publicación de trabajos académicos en revistas médicas, del Comité Internacional de Editores de Revistas Médicas conocidas como Recomendaciones ICMJE [www.ICMJE.org, Gac Méd Caracas. 2020;128(1):77-111]. Las unidades deben presentarse de acuerdo con el Sistema Internacional de Unidades (SI) [Gac Méd Caracas. 2015;123(1):46-71].

En la GMC se dará cabida a los trabajos realizados por profesionales de la medicina o especialidades conexas, presentados en la Academia, en los Congresos de Ciencias Médicas y los que sugiera la Corporación a través del Comité Científico, y aceptación final por la Dirección-Redacción. Los manuscritos enviados a la GMC —escritos en español o en inglés—, serán revisados por el Comité Editorial y—si reunen la calidad científica y cumplen con las normas de presentación necesarias— serán sometidos a un proceso de arbitraje externo por personas con competencias similares a las de los productores del trabajo (pares) para su debida evaluación. Queda entendido que el Comité Editorial puede rechazar un manuscrito, sin necesidad de acudir al proceso de arbitraje, si se incumple con lo mencionado.

La opinión, crítica y recomendaciones de los revisores son recibidas en forma escrita y anónima y se enviarán a los autores, cuando así lo decida la Dirección-Redacción.

Todos los trabajos deberán ser enviados por Internet y en papel escrito en computadora a doble espacio, letra Times New Roman tamaño 12, por el anverso del papel, tamaño carta, con amplio margen libre en todo el contorno.

La GMC considerará contribuciones para las siguientes secciones:

- Artículos de revisión
- Artículos originales
- Artículos especiales
- Casos clínicos
- Historia y filosofía de la medicina
- Información epidemiológica
- Bioética

Comunicaciones breves
Perlas de observación
Noticias y cartas al editor
Varios

Los trabajos enviados deberán cumplir con los requisitos que se describen a continuación.

EDITORIALES

Esta sección estará dedicada al análisis y la reflexión sobre los problemas de salud de la población, los distintos enfoques preventivos y terapéuticos, así como los avances logrados en el campo de la investigación biomédica y otros que considere la Dirección-Redacción.

ARTÍCULOS ORIGINALES

Deberán contener en la página frontal, el título conciso e informativo del trabajo; nombre(s) y apellido(s) de cada autor; grados académicos de los autores e institución en la cual se realizó el trabajo; nombre y dirección actual del autor responsable de la correspondencia; un título corto de no más de 40 caracteres (contando espacios y letras) y las palabras clave.

Los trabajos originales, revisiones sistemáticas y metanálisis deben tener un resumen estructurado, como se indica a continuación:

Debe contener un máximo de 250 palabras, y los siguientes segmentos:

- Introducción: ¿Cuál es el problema principal que motivó el estudio?
- Objetivo: ¿Cuál es el propósito del estudio?
- Métodos: ¿Cómo se realizó el estudio? (selección de la muestra, métodos analíticos y observacionales).
- Resultados: ¿Cuáles son los aspectos más importantes? (datos concretos y en lo posible su significancia estadística)
- Conclusión: ¿Cuál es la más importante que responde al objetivo?

Al final se anotarán 3 a 6 palabras clave.

Resumen en inglés

Debe corresponderse con el resumen en español. Se sugiere que este sea revisado por un traductor experimentado, a fin de garantizar la calidad del mismo.

Introducción

Incluir los antecedentes, el planteamiento del problema y el objetivo del estudio en una redacción libre y continua debidamente sustentada por la bibliografía.

Método

Señalar claramente las características de la muestra, el o los métodos empleados con las referencias pertinentes, de forma que se permita a otros investigadores, realizar estudios similares.

Resultados

Incluir los hallazgos importantes del estudio, comparándolos con las figuras estrictamente necesarias y que amplíen la información vertida en el texto.

Discusión

Relacionar los resultados con lo reportado en la literatura y con los objetivos e hipótesis planteados en el trabajo.

Conclusión

Describir lo más relevante que responda al objetivo del estudio.

Agradecimientos

En esta sección se describirán los agradecimientos a personas e instituciones así como los financiamientos.

Referencias

Se presentarán de acuerdo con las Recomendaciones ICMJE.

Indicarlas con números arábigos entre paréntesis en forma correlativa y en el orden en que aparecen por primera vez en el texto, cuadros y pie de las figuras. En las citas de revistas con múltiples autores (más de seis autores), se deberá incluir únicamente los 6 primeros autores del trabajo, seguido de et al.,

- a. Artículos en revistas o publicaciones periódicas: apellido(s) del autor(es), inicial del nombre(s). Título del artículo. Abreviatura internacional de la revista: año; volumen: páginas, inicial y final. Ejemplo: Puffer R. Los diez primeros años del Centro Latinoamericano de la Clasificación de Enfermedades. *Bol. Of San Pam.* 1964;57:218-229.
- b. Libros: apellido(s) del autor(es), inicial(es) del nombre(s). Título del libro. Edición. Lugar de publicación (ciudad): casa editora; año. Ejemplo: Plaza Izquierdo F. Doctores venezolanos de la Academia Nacional ade Medicina. Caracas: Fundación Editorial Universitaria, 1996. (No lleva "Edición" por tratarse de la primera).
- c. Capítulo de un libro: apellido(s) del autor(es), inicial(es) del nombre. Título del capítulo. En: apellido(s) e inicial(es) del editor(es) del libro. Título del libro. Edición. Lugar de publicación (ciudad): casa editora; año.p. página inicial y final. Ejemplo: Aoün-Soulie C. Estado actual de la salud en Venezuela. En: Aoün-Soulie C, Briceño-Iragorry L, editores. Colección Razetti Volumen X. Caracas: Editorial Ateproca; 2010.p.87-124- (No lleva "Edición por tratarse de la primera).

Fotografías

Las fotografías de objetos incluirán una regla para calibrar las medidas de referencia.

En las microfotografías deberá aparecer la ampliación microscópica o una barra de micras de referencia.

CONGRESO DE CIENCIAS MÉDICAS

Se publicarán únicamente trabajos originales de presentaciones en Congresos de Ciencias Médicas. Serán enviados a la Gaceta por los coordinadores, quienes se responsabilizarán de la calidad, presentación de los manuscritos, secuencia y estructura, incluyendo un resumen general en español y en inglés, en formato libre y que no excedan de 250 palabras. Cada contribución no excederá de 10 cuartillas y deberá apegarse a lo señalado en estas instrucciones a los autores.

ARTÍCULOS DE REVISIÓN

Versarán sobre un tema de actualidad y de relevancia médica. El autor principal o el correspondiente deberá ser una autoridad en el área o tema que se revisa y anexará una lista bibliográfica de sus contribuciones que avale su experiencia en el tema.

Las secciones y subtítulos serán de acuerdo con el criterio del autor. Incluir un resumen general en español y en inglés que no exceda de 150 palabras. La extensión máxima del trabajo será de 20 cuartillas. Las ilustraciones deberán ser las estrictamente necesarias, no siendo más de seis, la bibliografía suficiente y adecuada y en la forma antes descrita.

ARTÍCULOS ESPECIALES

Son aquellas contribuciones que por su importancia el Comité Redactor considere su inclusión en esta categoría.

CASOS CLÍNICOS

Deberán constar de resumen en español e inglés (máximo 100 palabras) en formato libre. Constará de introducción, presentación del caso, discusión, ilustraciones y referencias, con una extensión máxima de 10 cuartillas y apegadas a las instrucciones a los autores.

HISTORIA Y FILOSOFÍA DE LA MEDICINA

En esta sección se incluirán los artículos relacionados con aspectos históricos, filosóficos, bases conceptuales y éticas de la medicina. Aunque su estructura se dejará a criterio del autor, deberá incluir resúmenes en español e inglés (máximo 100 palabras) en formato libre, referencias bibliográficas citadas en el texto y en listadas al final del manuscrito, siguiendo los lineamientos citados para los manuscritos de GMC.

ACTUALIDADES TERAPÉUTICAS

Se informará sobre los avances y descubrimientos terapéuticos más recientes aparecidos en la literatura nacional e internacional y su aplicación en nuestro ámbito médico. La extensión máxima será de cuatro cuartillas y con un máximo de cinco referencias bibliográficas. Deberá incluir resúmenes en español en inglés, en formato libre (máximo 100 palabras).

INFORMACIÓN EPIDEMIOLÓGICA

Será una sección de información periódica sobre los registros epidemiológicos nacionales e internacionales, destacando su importancia, su comparación con estudios previos y sus tendencias proyectivas. La extensión máxima será de cuatro cuartillas y deberá incluir resúmenes en español en inglés (máximo 100 palabras), en formato libre.

COMUNICACIONES BREVES

Serán considerados en esta sección, los informes preliminares de estudios médicos y tendrán la estructura formal de un resumen como se describió previamente (máximo 150 palabras). Se deberán incluir 10 citas bibliográficas como máximo.

BIOÉTICA

Se plantearán los aspectos éticos del ejercicio profesional y aquellos relacionados con los avances de la investigación biomédica y sus aplicaciones preventivas y terapéuticas. Su extensión máxima será de cuatro cuartillas y cuatro referencias bibliográficas, deberá incluir resúmenes en español e inglés (máximo 100 palabras) en formato libre.

EL MÉDICO Y LA LEY

Esta sección estará dedicada a contribuciones tendientes a informar al médico acerca de las disposiciones legales, riesgos y omisiones de la práctica profesional que puedan conducir a enfrentar problemas legales. Su máxima extensión será de cuatro cuartillas y no más de cinco referencias bibliográficas. Deberá incluir resúmenes en español e inglés (máximo 100 palabras).

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Cartas al editor son breves informes de observaciones clínicas o de laboratorio, justificadas por los datos controlados pero limitado en su alcance, y sin suficiente profundidad de investigación para calificar como artículos originales. Al igual que los artículos originales, estos manuscritos están sujetos a arbitraje. Las cartas al editor son accesible para búsquedas bibliográficas, y citadas como artículos originales, reuniendo lo siguiente:

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2. Título breve y relevante en una página.
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7. Un máximo de nueve referencias.
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Innovative Research in Clinical and Health Psychology II

Introduction to the Supplement

Lorena Cudris-Torres¹, Nidia-Johana Bonilla-Cruz², Manuel E Riaño-Garzón³

When analyzing Health Psychology and Clinical Psychology from their coincidences, differences, and meeting points, it is important to establish distinctions at a conceptual and pragmatic level. Therefore, Health Psychology is oriented toward cognitive, emotional, and behavioral processes related to physical health/illnesses, worrying about their care, and recognizing that physical and mental health are related; On the other hand, Clinical Psychology emphasizes the evaluation, prediction, and relief of psychological affectations of a cognitive, emotional and behavioral nature. Given that both fields interact and complement each other, generating synergies, the dissipation of differences could be proposed to consider a common area that ends up being called “Clinical and Health Psychology”, which contributes to the sum of the fields, generating pragmatic and considerable methodological.

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This is how Health Psychology is based on a specialized clinical model that uses psychotherapy and research, which allows for improving people's well-being. The latest advances and reforms observed in both the conceptual and practical fields of health have generated demands for inter and transdisciplinary work. For its part, Clinical Psychology has had to mediate intervention through ICTs, with greater emphasis since the COVID-19 pandemic, developing programs that detect and treat online in the management of significant clinical symptoms; This service extends care coverage, and the efficacy is the same and, in some cases, better than the usual treatment.

The National Academy of Medicine of Venezuela, interested in studying in-depth phenomena that affect the mental health of human beings from a biopsychosocial model, took the initiative to publish this second supplement of the Gaceta Medics de Caracas dedicated to innovative research in Clinical Psychology and health. We are especially grateful for the invitation of the Board of Directors of the Academy and the Editor-in-Chief, Dr. Enrique López-Loyo, to prepare this supplement, as well as the great support, received from the Senior Editor, Dr. Anita Stern Israel.

This supplement has 29 works of which 15 are original and 14 systematic reviews, all written in English and developed in countries such as Mexico, Colombia, and Ecuador, with a total of 120 Latin American authors specializing in multiple areas of knowledge, especially

Psychology. The National Academy of Medicine of Venezuela and the Gaceta Medica de Caracas, deeply thank the authors who participated in this call, highlighting the dedication and quality in the generation of new knowledge that allows the dissemination of scientific contributions in the international academic community.

Among the works related to Health Psychology, the following stand out: the relationship between the development of feeding and alterations in orofacial motility by Balceiro et al., brain training with neurofeedback in patients with mild cognitive impairment by Arroyo-Alvis et al., hypertension, emotions and happiness by Bautista-Sandoval et al., knowledge about sexually transmitted infections and sexual practices among university students from Rincón et al., effects of COVID-19 on the mental health of the women of Ramírez Vera et al., obesity and depression: a molecular and epidemiological view of two comorbid disorders by Vizhñay Guzmán et al., Pharmacological treatment of obesity by García Pacheco.

The manuscripts related to Clinical Psychology focus on topics such as: aggression and violence in adolescents; differences in the levels of adaptation, social support and family functionality according to sex, age and school grade in children and adolescents; mental health intervention program during COVID-19 for adults; psychological discomfort and economic

consumerism in emerging adults; anxiety and depression in university students; Association of depression and healthy behaviors in early adulthood; psychometric properties of the Educational Inclusion Questionnaire (CIE) for university contexts; typological characterization of child sexual abusers from court records; resilience and mediation: mechanisms to resolve family conflicts in times of the SARS-CoV-2 pandemic; psychological effects associated with preventive isolation by COVID-19 in early childhood in Colombia; mental health promotion in organizations during the COVID-19 pandemic; perspectives and assessment of psychosocial risk in Latin America; psychological well-being and daily activities in rural and urban teachers; anxiety, sleep quality and stress in university students during confinement by COVID-19; Psychological factors of gender dysphoria in adolescents.

The Gaceta Medica de Caracas and the National Academy of Medicine hope that the understanding and dissemination of these manuscripts, which are a generation of new knowledge, will emphasize the innovations that have emerged in recent years related to the fields of Clinical and Health Psychology, in such a way that so that more interventions can be developed that minimize the impact on mental health that multiple phenomena and social scourges cause to human beings.

Investigaciones innovadoras en Psicología Clínica y de la Salud II

Introducción al Suplemento

Lorena Cudris-Torres¹, Nidia-Johana Bonilla-Cruz², Manuel E. Riaño-Garzón³

Al analizar la Psicología de la Salud y la Psicología Clínica desde sus coincidencias, diferencias y puntos de encuentro, es importante establecer distinciones a nivel conceptual y pragmático. Por tanto, la Psicología de la Salud se orienta hacia procesos cognitivos, emocionales y comportamentales relacionados con la salud/enfermedades físicas, preocupándose por el cuidado de estas, reconociendo que la salud física y mental se relacionan; por otro lado, la Psicología Clínica hace énfasis en la evaluación, predicción y alivio de afectaciones psicológicas de tipo cognitivas, emocionales y comportamentales. Dado que ambos campos interactúan y se complementan generando sinergias, se podría proponer la disipación de diferencias para considerar un área común que se termina denominando “Psicología Clínica y de la Salud”, lo que contribuye a la sumatoria de los campos, generando beneficios pragmáticos y metodológicos considerables.

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Es así como la Psicología de la Salud, está basada en un modelo clínico, especializado que utiliza la psicoterapia e investigación, como tal, lo que permite mejorar el bienestar de las personas. Los últimos avances y reformas observados en el campo tanto conceptual como práctico de la salud han generado demandas para el trabajo inter y transdisciplinar. Por su parte la Psicología Clínica ha tenido que mediar la intervención a través de las TICS, con mayor énfasis a partir de la pandemia por COVID-19, desarrollando programas que hacen detección y tratamiento por internet en el manejo de sintomatologías clínicas significativas; este servicio amplía la cobertura en atención y la eficacia es igual y en algunos casos mejor que el tratamiento habitual.

La Academia Nacional de Medicina de Venezuela, interesada en estudiar a profundidad fenómenos que afectan la salud mental del ser humano desde un modelo biopsicosocial, asumió la iniciativa de publicar este segundo suplemento de la Gaceta Médica de Caracas dedicado a investigaciones innovadoras en Psicología Clínica y de la Salud. Agradecemos de manera especial la invitación de la Junta Directiva de la Academia y del Editor en Jefe, Dr. Enrique López-Loyo, para preparar este suplemento, así como el gran apoyo recibido de parte de la Editora Senior, Dra. Anita Stern Israel.

Este suplemento cuenta con 29 trabajos de los cuales 15 son originales y 14 revisiones sistemáticas, todos escritos en inglés y desarrollados en países como: México, Colombia y Ecuador,

con un total de 120 autores latinoamericanos especialistas en múltiples áreas de conocimientos especialmente de la Psicología. La Academia Nacional de Medicina de Venezuela y la Gaceta Médica de Caracas, agradecen profundamente a los autores que participaron de esta convocatoria, destacando la dedicación y calidad en la generación de nuevo conocimiento que permite difundir aportes científicos en la comunidad académica internacional.

Dentro de los trabajos relacionados con Psicología de la Salud se destacan los siguientes: relación entre el desarrollo de la alimentación y alteraciones en la motricidad orofacial de Balceiro y col., entrenamiento cerebral con neurofeedback en pacientes con deterioro cognitivo leve de Arroyo-Alvis y col., hipertensión, emociones y felicidad de Bautista-Sandoval y col., conocimientos sobre infecciones de transmisión sexual y prácticas sexuales entre jóvenes universitarios de Rincón y col., efectos del COVID-19 en la salud mental de las mujeres de Ramírez Vera y col., obesidad y depresión: una visión molecular y epidemiológica de dos trastornos comórbidos de Vizhñay Guzmán y col., el tratamiento farmacológico de la obesidad de García Pacheco.

Los manuscritos relacionados con Psicología Clínica se orientan en temas como: agresión y violencia en adolescentes; diferencias en los niveles de adaptación, apoyo social y funcionalidad familiar según el sexo, la edad y grado escolar en niños y adolescentes; programa de intervención en salud mental durante el COVID-19 para adultos;

malestar psicológico y consumismo económico en adulto emergentes; ansiedad y depresión en estudiantes universitarios; asociación de la depresión y las conductas saludables en la adultez temprana; propiedades psicométricas del Cuestionario de Inclusión Educativa (CIE) para contextos universitarios; caracterización tipológica de abusadores sexuales infantiles a partir de expedientes judiciales; resiliencia y mediación: mecanismos para resolver los conflictos familiares en tiempos de la pandemia de SARS-CoV-2; efectos psicológicos asociados al aislamiento preventivo por COVID-19 en la primera infancia en Colombia; promoción de la salud mental en las organizaciones durante la pandemia por COVID-19; perspectivas y evaluación del riesgo psicosocial en América Latina; bienestar psicológico y actividades cotidianas en docentes rurales y urbanos; ansiedad, calidad del sueño y estrés en estudiantes universitarios durante el confinamiento por COVID-19; factores psicológicos de la disforia de género en adolescentes.

La Gaceta Médica de Caracas y la Academia Nacional de Medicina esperan que la comprensión y difusión de estos manuscritos que son generación de nuevo conocimiento enfaticen las innovaciones que han surgido en los últimos años relacionados con los campos de Psicología Clínica y de la Salud, de tal forma que se puedan desarrollar más intervenciones que minimicen el impacto en la salud mental que múltiples fenómenos y flagelos sociales ocasionan al ser humano.

Aggression and violence in adolescents in the iberoamerican context, a systematic review

Agresión y violencia en adolescentes en el contexto iberoamericano, una revisión sistemática

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SUMMARY

This research is a systematic review that uses the Prism method, searching different databases to systematically analyze studies related to aggression and violence in adolescents in Iberoamerica.

Objective: *The present study aims to systematically analyze studies related to aggression and violence in adolescents in Iberoamerica.*

Method: *Research works were collected from a total of 5 databases. For the selection of the articles, keywords or search terms were entered, and inclusion and exclusion criteria were applied. After the complete reading, a total of 47 research studies were selected.*

Results: *The country retrieved with the largest number of articles was Brazil with a total of 11 documents, followed by Spain with ten, and the United States with a total of eight documents. It was also found that the*

database with the largest number of articles retrieved was Scopus, with 21 papers equivalent to 44.7 % of the total documents retrieved, followed by Science Direct and SciELO, each with a percentage of 19.1 %, equivalent to 9 documents.

Keywords: *Aggression, violence, adolescents, Iberoamerica.*

RESUMEN

Esta investigación es una revisión sistemática que utiliza el método Prism, buscando en diferentes bases de datos para analizar sistemáticamente los estudios relacionados con la agresión y la violencia en adolescentes en Iberoamérica.

Objetivo: *El presente estudio tiene como objetivo analizar sistemáticamente los estudios relacionados con la agresión y la violencia en adolescentes en Iberoamérica.*

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Método: Se recopilaron trabajos de investigación de un total de 5 bases de datos. Para la selección de los artículos se introdujeron palabras clave o términos de búsqueda y se aplicaron criterios de inclusión y exclusión. Tras la lectura completa, se seleccionaron un total de 47 investigaciones.

Resultados: El país recuperado con mayor número de artículos fue Brasil con un total de 11 documentos, seguido de España con diez y Estados Unidos con un total de ocho documentos. También se encontró que la base de datos con mayor número de artículos recuperados fue Scopus, con 21 trabajos equivalentes al 44,7% del total de documentos recuperados, seguida de Science Direct y SciELO, cada una con un porcentaje del 19,1 %, equivalente a 9 documentos.

Palabras clave: Agresión, violencia, adolescentes, Iberoamérica.

INTRODUCTION

Ibero-America is a region with ample cultural, political, social, and economic variety. Among the countries it encompasses are Colombia, Argentina, Brazil, Peru, Spain, and Portugal. Each of these countries has its own historical identity, different languages, behaviors, and development contexts. However, they share a context permeated by aggression and violence that has been framing their socio-political situation in recent years. This context is more evident in regions with middle and low income (1). In this sense, it would be appropriate to make a brief differentiation between what is aggression and violence. Aggression is related to the survival of the individual and the species, while violence refers to a form of aggression in which the adaptive value has been lost, and the objective is extreme harm (2,3). Thus, violence is influenced by socio-cultural factors (4,5) while aggression by biological ones.

Violence is then defined as those acts that involve the exercise of verbal or physical force on another person, resulting in harm to the victim voluntarily (6). The context highly influences its content, and in fact, it is considered that it can be influenced by the culture or society in which an individual is, thus generating an intentional and harmful behavior by the downstream factors from their context and setting (7).

Aggression is considered a multifactorial and multi-determined phenomenon, present in different social, work, and family contexts (8). Likewise, it has been defined as an attack or violent act that is intended to cause harm (9), which is manifested since childhood and often decreases with age (10). It has been associated with an innate behavior that responds to different biological stimuli of the person depending on the situation in which they find themselves (7).

According to some authors, there are different types of aggression which are classified into proactive, reactive, and mixed. Proactive aggression is understood as a purpose that is held in the mind that goes beyond hurting the victim and tends to be seen as a goal-led behavior as in the case of robbing someone (11). On the other hand, reactive aggression aims to cause harm directly to the other person, which is impulsive and generated by emotional aspects such as fear or anger (12). Finally, in mixed aggression, a subject is perceived as having both proactive and reactive aggression (11).

Aggression has been considered a severe problem for the subject due to its consequences, which have a negative impact on a social and personal level due to possible physical injuries (12,13). Based on the above, it is necessary to consider that one of the stages of life with the highest propensity to aggression in adolescence. It is regarded as a formative period in the individual's life, including children and adolescents between 10 and 18 years of age, in which determinant biopsychosocial changes are generated (14). At this stage, emotional exacerbation and the difficulty or scarcity of psychological resources to manage their emotions make young people prone to aggressive behavior, a critical negative factor in developing their emotional competencies (15).

During adolescence, young people are exposed to multiple scenarios of violence and aggression (16,17), an issue evinced in several studies that have analyzed the conditions of this age group in relation to other variables: use and abuse of psychoactive substances and generation of violence (18-20); violent video games (21), bullying (22); child maltreatment and psychopathy (23-25), violence control, parenting

states and pedagogy in violence (26,27) and dating characterized by aggressive behaviors (28-30) with findings that demonstrate the bidirectionality of the aggression (31).

Another line of research has focused on adolescents with specific conditions exposed to violence concerning aggression and sensory processing in autism spectrum disorder (32) (psychiatric patients with psychotic disorders (33), and genetic polymorphisms in the corticotropin-releasing hormone (34) among others.

In light of the foregoing, the present research conducted a systematic review of aggression and violence in adolescents in Latin American countries.

METHOD

A review of the studies of aggression and violence in adolescents carried out in Latin America in recent years was conducted using the PRISMA methodology, which is used to analyze this study. The methodology incorporates 27 items defined by its evaluation focusing on the quality and content of the research question, the quality of the data, the extraction process, and the reduction of bias (35,36).

Collecting information in databases

The following databases were used to obtain the information based on the quality of the documents for analysis: *ScienceDirect*, *Scielo*, *Scopus*, *Sage Journals*, and *Web of Science*. Searches were carried out with the following descriptors or keywords: Adolescent OR Teenager AND aggression and violence in English and Spanish. The search time interval was five years (5) from 2016 to 2021.

Inclusion and exclusion criteria

As inclusion criteria, the present study determined: original articles in English, Spanish or Portuguese, studies in humans, and published in the established time range. Articles that were

outside the proposed dates, studies that were not in humans, and that were not related to the terms proposed for the present study were not taken into account.

Procedure

After the selection by keywords in the databases, two experts in the field proceeded to make the election by reading the title and abstract. Some works were eliminated by duplicates in Mendeley through BibTex format. After this procedure, the complete reading was carried out, and the information was entered into the matrix for analysis, which was based on the criteria of the Prisma method (Figure 1).

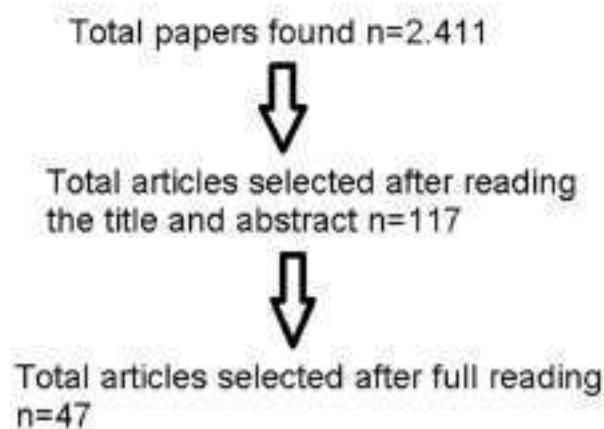


Figure 1. Document selection process. Source: own elaboration.

RESULTS

Unit of analysis

Starting from the search criteria established by the keywords, a total of 2 411 articles were initially found, which respectively belonged to *Science Direct* (294), *SciElo* (5), *Scopus* (155), *SAGE Journals* (492), *Web of Science* (1,465); Then the Mendeley platform was used to make the analysis of duplicate documents and exclude those documents not corresponding to what

was needed. Consequently, after conducting the reading by title and abstract, 117 papers were obtained. Later on, 70 articles whose

subject matter was not related to the research were excluded, thus bringing a final total of 47 articles (Figure 2).

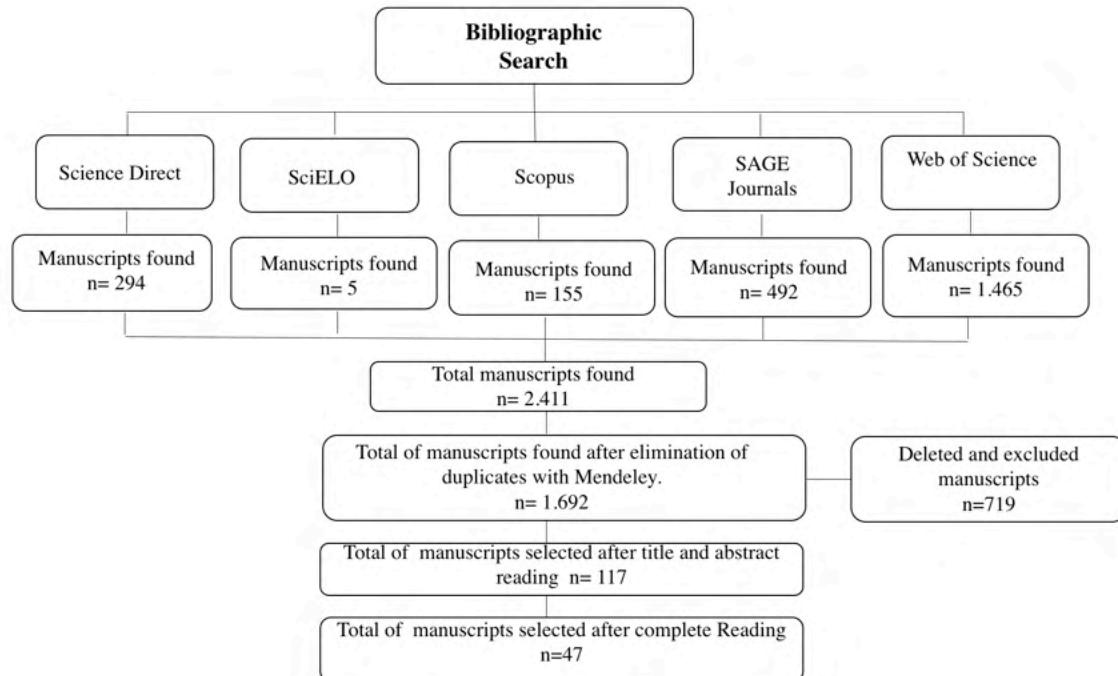


Figure 2. Bibliographic search and selection of articles in the databases. Source: own elaboration.

Results by country

Within the 47 documents reviewed, it was identified that the country with the largest number of results obtained was Brazil with a total of 11 documents (23.4 %), followed by Spain with 10 (21.3 %) and the United States with a total of 8 documents (17.0 %) recovered. Subsequently, an equal number of documents were retrieved from countries such as Argentina, Colombia, Peru, and Portugal, 2 for each one which is equivalent to 4.3 %. Likewise, it is worth mentioning the total retrieved from Mexico, as 4 results were obtained (8.5 %) and 2 more participations with countries such as Guatemala and Spain. Finally, it is worth mentioning that the document by (37) since Spain occupied a substantial percentage of the population sample (Figure 3-A).

Results by database

Now then, it was also decided to identify the total results obtained in each database. *Scopus* was found to be the database from which the largest number of references was retrieved, with 21 documents equivalent to 44.7 % of the total number of documents retrieved, followed by *Science Direct* and *SciELO*, each with a percentage of 19.1 % equivalent to 9 documents. It is worth mentioning that out of the total number of references retrieved (47), no paper was identified from the *Web of Science* database (Figure 3-B).

Results of aggression and violence in the Ibero-American Context

Considering the search results in the present review, studies have been found from cyber

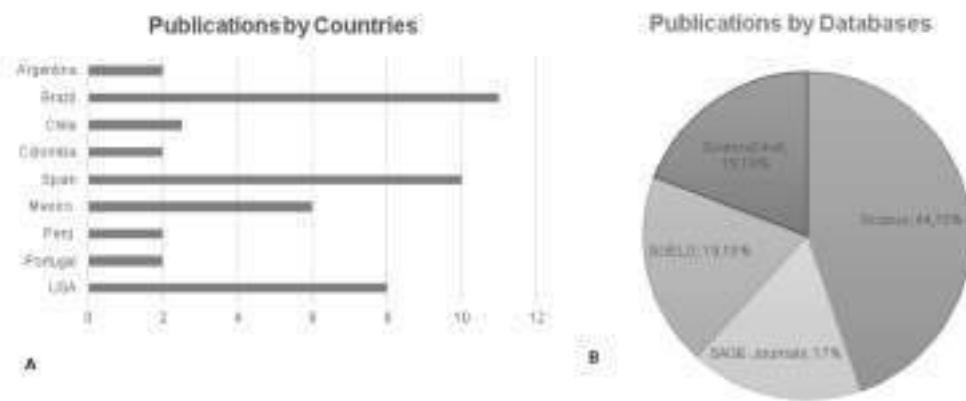


Figure 3. A-Publications by country. B- Publications by database. Source: own elaboration.

victimization and cyber aggression (38,39) aggression, family and adolescents (40,41) there are no studies that quantify this co-occurrence among adolescent victims of family violence. Our objective was, therefore, to investigate the co-occurrence of health risk behaviors in these adolescent victims. Data from the National School Health Survey, collected in 2015, were used. Co-occurrence of risk behaviors—involved in fights, substance use (alcohol, drugs, and tobacco; types of aggression towards adolescents: cyber abuse and aggression in dating (42,43) civil conflict and domestic violence (44,45) exposure to violence and violence profiles (8,46) as well as to analyze the extent to which such adolescents show impulsivity traits. The participants were selected by cluster random sampling. There were a total of 822 high school students in the sample, aged 13 to 18 years with a mean age of 14.84 (SD = 0.87; dating and partner (47,48) extant self-report measurement tools of DV do not adequately consider age-, generation-, and culture-specific issues, which are essential for its accurate conceptualization. To address these gaps, we developed the Violence in Adolescents' Dating Relationships Inventory (VADRI and violence prevention and reduction studies (49) among others.

Due to this, a series of typologies were developed in the present work. In the first one, relational categories, the majority of the articles retrieved are included (20), belonging to 46 % of the total articles, in which topics such as Dating, Family, and schooling relationship of

partners are grouped. In the second typology, Personal categories (12), with a percentage of 25 % topics such as behavior and the use of substances by adolescents. Thirdly, in the Psychosocial categories (15), with a percentage of 29 %, articles are grouped related to Legal framework, bullying, and socio-economic and social issues (Figure 4-A).

In this sense, it was also possible to identify that 12.8 % belong to qualitative articles and the remaining 87.2 % to quantitative articles (Figure 4-B), 72.3 % of the total articles recovered have an experimental design, 6.4 % have a longitudinal design, 12.8 % are quasi-experimental, 4.3 % are non-experimental correlational-cross-sectional, and the remaining 4.3 % have a cross-sectional design (Figure 4-C).

Regarding the instruments used by the articles recovered, 83.0 % (39 articles) used tests, questionnaires, and/or scales for the collection of information. In total, 57 instruments applied were identified in which the Aggression Questionnaire (50) was found, which was also used twice. In the Cyberbullying Questionnaire (51); 2.1 % (1) used a self-developed telephone survey, 4.3 % (2) used interviews, and 10.6 % (5) did not specify the instrument used.

48.9 % (23 documents) use a population sample that falls within the age range for the inclusion criteria within the review (between 10 and 18 years of age). Still, it is worth mentioning that not all of the population sample is specifically

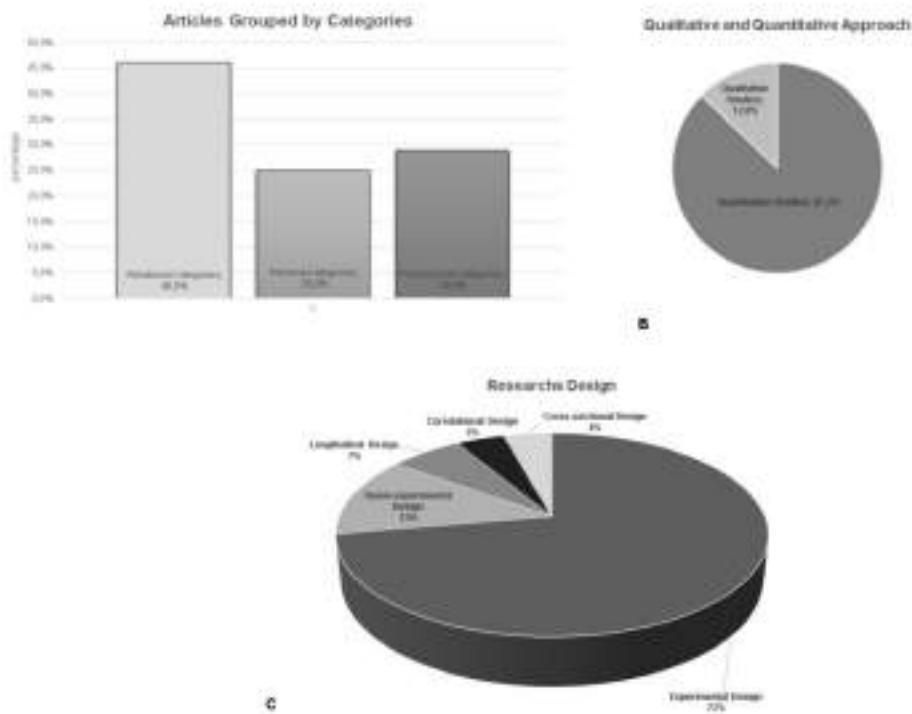


Figure 4. A. Articles Grouped by categories. B. Qualitative and Quantitative Approach. C. Research Design. Source: own elaboration.

in the requested age range, given that many papers took into account the guardians and/or parents of the adolescents. The remaining 51.1 % do not specifically indicate the age range but make it clear that the participants were adolescents.

DISCUSSION

Violence and aggression in Ibero-American adolescents have been a topic of interest over the years (11). This is an issue reflected in the variety of studies found in the literature review on the different factors relating adolescents to the issue of violence and aggression. As the systematic review was developed, three main categories were found accounting for the different circumstances in which violence and aggression can be perceived in the adolescent population.

Firstly, there is the relational category, which refers to the couple's relationship, whereas affective relationships include any abuse, whether

physical, emotional, or sexual, that may affect the life of the victim and is produced by their emotional partner (52). Family relationships are affected by the physical punishment of parents to adolescents, including blows, and emotional irritation, among other conditions affecting the life of the adolescent by the abuse of authority at home (53). Schooling relationship, where the issue of aggression and violence is taken into account between the partners and considers the promotion and prevention of any negative effect on the life of the child and adolescent who may suffer from this problem (26).

Secondly, the personal category encompasses the behavior of adolescents in the face of violence and aggression, which arise due to different social, emotional, family, and other contexts. These conditions can develop patterns of defiant behavior toward others (54), and there is the consumption of substances that generates erratic behaviors, mood change, and loss of interest, among other variables that strengthen criminal, aggressive, and violent behaviors (46).

Finally, the psychosocial category involves bullying of children and adolescents in their school by their peers, either by jokes, or physical aggression, affecting academic performance, social life, and interest in school activities (55). Socio-economic problems have an essential point which is the stratum in which an adolescent grows. Criminal, violent, and aggressive behaviors in the vulnerable population are usually of more significant impact given the low economic stratum in which they live (44).

The results obtained in the present study confirm these data. Most research on violence and aggression was recovered from Brazil due to the tremendous impact it has in different urban areas because of the differences at the economic level. This violence experienced over the years resulted from political upheavals and overpopulation with low resources leading to intense instability in Brazil for the scant provision of services to vulnerable populations affected mainly by aggression and family, social, and economic violence (56).

In the systematic review, it could be observed that the different studies emphasized: dating relationships with a general objective of the realization of tests for the study of violent relationships in adolescents in different cultural contexts (47); in behavioral research, the objective was to study the variables leading a young person to act violently and aggressively through instruments in the different environments in which they interacted (57); in family relationships, the purpose was to evaluate domestic relationships and how these affect the adolescent's life (20); in legal aspects, although there was very little research retrieved, this consisted of examining mental health in adolescents who were going through detention for some legal conflict (58); in peer schooling relationship, the primary emphasis was to detect school violence involving the parents in preventing further violent abuse (59).

Regarding school bullying, the purpose was to conduct a study on the different forms of school aggression among students, such as bullying and school victimization for the prevention of bullying (55). It was also found that articles related to socio-economic aspects were aimed at determining whether income inequality was associated with victimization (9). In social relations, the goal was to analyze social

support in terms of different social and cultural issues (60). In gender vulnerability, gender violence is analyzed in terms of how it affects women's lives (61). Finally, the substance use category aimed to study and identify the profiles and relationships between violence and the consumption of alcohol and substances (19).

In the detailed review of the subject of violence and aggression in Latin American adolescents, a deficiency in the Colombian population can be seen. There is little research related to the country and its population, which makes it distant from the problems that have been experienced over the years with issues such as massacres, violence against adolescents, and the low resources the Colombian population has to make a living with (62). Cultural diversity has a significant impact on research on aggression and violence since it is a topic taken from countries with more socio-economic implications. In the Hispanic population, this issue, as is the case of Colombia, has not taken into account the other cultures or Latin American countries (63).

Now, multiculturalism is understood as "recognizing the coexistence of different cultural groups within the same national state" (62). However, this type of research generates a limitation regarding the development of aggression and violence in the Colombian population. There are simply insufficient theoretical bases that can affect the population due to the discrimination held in different countries that have left aside the research and importance of other countries to understand the culture (64,65). It is essential to note that it is evident in the Ibero-American context the need for studies with qualitative methodologies and research to design which prevention programs and interventions of aggressive behavior are developed would be to prevent, build and validate instruments of aggression since the existing ones are primarily self-reports. Finally, research is endlessly beneficial.

Conflict of interest

The present investigation was financed by the Católica de Pereira University through an internal call, with internal code CI-020-01 respectively. Likewise, the authors of this article indicate

that they do not present any type of conflict of interest that would prevent the publication of this research article.

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Relationship between feeding development and alterations in orofacial motor skills

Relación entre el desarrollo de la alimentación y alteraciones en la motricidad orofacial

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SUMMARY

Introduction: The orofacial system is an anatomical-functional unit that enables the human being to perform various functions essential for life. It consists of oral structures, static and dynamic structures, and its harmonious functioning is based on the balanced relationship between its parts.

Method: A systematic review was carried out to find out the relationship between feeding development and orofacial motor disturbances. As a search strategy, equations were formulated with selected descriptors MESH and DECS ("feeding, infancy", "orofacial motricity", "phonoaudiology", "pediatrics"), the databases consulted were Pubmed, Science Direct, Scopus, Redalyc, Dialnet, Scielo, Proquest, World wide science, Biomed Central, Red Iberoamericana de Innovación y Conocimiento Científico, Semantic

Scholar, Revista Javeriana. The PRISMA methodology was used to locate, collect, analyze and synthesize the information. The criteria for inclusion in the sample were publications that addressed the study interest, in children from 0 months to 12 years of age suffering from brain alterations or pathologies; articles published in the last 10 years in Spanish, English, and Portuguese. Publications not related to mode and type of feeding, orofacial motor skills, and those whose population was contrary to the required characteristics were excluded.

Results: A total of 1 058 667 studies were found, after screening, eligibility, and full-text review, 53 documents were selected corresponding to studies published from 2011 to 2021, related to the alterations of the orofacial structures and the factor associated with intervention type and feeding mode.

Analysis and Discussion: Exclusive breastfeeding and suckling favor the swallowing process and strengthen

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all orofacial muscles, the difficulties that may occur in the different orofacial functions are rooted in a mechanical process that should be consolidated in the first days of life. Significant alterations of the facial structures are closely linked to orofacial myofunctional alterations, emphasizing the presence of craniofacial complexes.

Conclusions: Possible alterations in the orofacial complex may originate from bad oral habits that affect anatomy and physiology. Since feeding is a process that unquestionably involves the functional exercise of the orofacial system, several risk factors are evidenced in relation to the functioning that implies multidisciplinary intervention directed to parents and caregivers.

Keywords: Nutrition, childhood, orofacial motor skills, speech therapy, pediatrics.

RESUMEN

Introducción: El sistema orofacial es una unidad anatómico-funcional que permite al ser humano realizar diversas funciones esenciales para la vida. Está formado por estructuras orales, estáticas y dinámicas, y su funcionamiento armónico se basa en la relación equilibrada entre sus partes.

Método: Se realizó una revisión sistemática con el objetivo de conocer la relación entre el desarrollo de la alimentación y las alteraciones motoras orofaciales. Como estrategia de búsqueda se formularon ecuaciones con descriptores seleccionados MESH y DECS (“feeding, infancy”, “orofacial motricity”, “phonoaudiology”, “pediatrics”), las bases de datos consultadas fueron Pubmed, Science Direct, Scopus, Redalyc, Dialnet, Scielo, Proquest, World wide science, Biomed Central, Red Iberoamericana de Innovación y Conocimiento Científico, Semantic Scholar, Revista Javeriana. Se utilizó la metodología PRISMA para localizar, recopilar, analizar y sintetizar la información. Los criterios de inclusión en la muestra fueron publicaciones que abordaran el interés del estudio, en niños de 0 meses a 12 años que sufrieran alteraciones o patologías cerebrales; artículos publicados en los últimos 10 años en español, inglés y portugués. Se excluyeron las publicaciones que no estuvieran relacionadas con el modo y tipo de alimentación, la motricidad orofacial y aquellas cuya población fuera contraria a las características requeridas. **Resultados:** Se encontraron 1 058 667 estudios, tras el cribado, la elegibilidad y la revisión del texto completo, se seleccionaron 53 documentos correspondientes a estudios publicados entre 2011 y 2021, relacionados con las alteraciones de las estructuras orofaciales y el factor asociado al tipo de intervención y al modo de alimentación.

Análisis y Discusión: La lactancia materna exclusiva y el amamantamiento favorecen el proceso de deglución y fortalecen toda la musculatura orofacial, las dificultades que pueden presentarse en las diferentes funciones orofaciales tienen su origen en un proceso mecánico que debe consolidarse en los primeros días de vida. Las alteraciones significativas de las estructuras faciales están estrechamente relacionadas con las alteraciones miofuncionales orofaciales, destacando la presencia de complejos craneofaciales.

Conclusiones: Las posibles alteraciones del complejo orofacial pueden tener su origen en malos hábitos orales que afectan a la anatomía y fisiología. Siendo la alimentación un proceso que involucra indiscutiblemente el ejercicio funcional del sistema orofacial, se evidencian varios factores de riesgo en relación con el funcionamiento que implica una intervención multidisciplinaria dirigida a los padres y cuidadores.

Palabras clave: Nutrición, infancia, motricidad orofacial, logopedia, pediatría.

INTRODUCTION

The orofacial system is composed of static and dynamic structures, and its harmonious functioning is based on the balanced relationship between them (1). It is believed that the functions involving the orofacial apparatus (sucking, breathing, speaking, chewing, swallowing) are the most influential factors in the pattern of maxillofacial development and the position of teeth in the child's arch (2).

These structures are related to vital and social functions directly intertwined with survival. In this sense, changes in any of them can cause a general imbalance in this system, leading to difficulties in daily living and consequently in the quality of life (3).

Nutrition is one of the main determinants of human health, it has an impact on the different contexts that surround it and is related to a healthy and active life (4). The child requires special attention from birth in their diet because it is the basis for growth, development, and maintenance of the vital state of the human being (5). During the first months, a baby faces a phase of rapid growth, which is largely determined by early childhood practices and complementary feeding (6).

For such reason, the World Health Organization (WHO) and the American Academy of Pediatrics (AAP) recommend exclusive breastfeeding for the first 6 months after birth with a continuation of this while gradually introducing solid foods into the infant's diet for 1 year or longer as mutually desired by mother and infant. In 2016, the United Nations (UN) Office of the High Commissioner for Human Rights stated that breastfeeding is a human rights issue for both mothers and children, therefore, it should be protected and promoted for the benefit of both. Infant feeding categories, often referred to as breastfeeding definitions, form the basis for describing infant feeding patterns, especially the duration of breastfeeding and the degree of exclusivity of breastfeeding, after which breastfeeding is recommended (7), after which the introduction of local nutrient-rich complementary foods is recommended (8).

During natural lactation, some masticatory muscles begin their maturation and positioning, such as the temporalis (activated in mandibular retrusion) (9), the lateral pterygoid (necessary during propulsion), the mylohyoid (mainly responsible for swallowing), and the masseters (activated in sucking mechanics) (10), the mylohyoid (mainly responsible for swallowing) and the masseters (activated in sucking mechanics) (10), while the orbicularis oris of the upper and lower lips guide the growth and development of the anterior region of the stomatognathic system (11), being responsible for the maturation of the masticatory muscles (12). The upper and lower orbicular orbicularis oculi are responsible for stimulating the development of the jaws and differentiating the temporomandibular joints, which helps to prevent the development of parafunctional oral habits and malocclusions (13). That is to say, breastfeeding has a decisive role in the structure and functional conformation of the orofacial system; being the first function that provides information on paratypic growth, as well as transverse growth actions (14). Likewise, actions of transversal growth of the skull and face (15).

The sucking reflex is the first coordinated muscular activity performed by the newborn (16). There are two forms of sucking: the first is nutritive sucking, which occurs through natural feeding

and provides the infant with essential nutrients for optimal growth and development (17). It also constitutes the most important exchange with the outside world, in addition to feeding, the child receives a sense of well-being, satisfying those requirements of security and love by establishing physical contact with its mother. The second is non-nutritive sucking, with which the child seeks to generate this feeling of calm, warmth, and security through substitutes (7). The early transition from breastfeeding and non-nutritive sucking habits may be related to occlusal-facial problems (18).

Despite the benefits of breastfeeding, worldwide it has been estimated that only 34.8% of infants are exclusively breastfed during the first six months of life, while the majority receive some other type of food or liquid during this period (19).

In Colombia, public policies have been formulated in favor of breastfeeding, including the Ten-Year Breastfeeding Plan 2010-2020, which establishes as imperative "the protection of the nutrition of children under two years of age, within the framework of the development of the National Food and Nutritional Security Policy" (20).

Thus, the mother's choice of the type and duration of feeding has a direct influence on the timing of oral habits (21). Because feeding is a complex process that requires a coordinated interaction between the nervous, cardiopulmonary, gastrointestinal, and oropharyngeal systems (22). Hence, in the first months of life, children prepare their organism and orofacial structures for the chewing process to be carried out later on. For this purpose, their diet includes foods that are easy to chew such as liquids, semi-solids, and finally solids (23), which will allow the strengthening and development of the facial bone-muscular musculature, which is of great importance for the development of speech (24).

In view of the above, it is pertinent to know how feeding stimulation intervenes in the development of orofacial motor skills in infants to contribute to the clinical intervention processes of swallowing in childhood.

MATERIAL AND METHODS

A systematic review on feeding stimulation and its intervention in the development of orofacial motor skills in infants was carried out from September to December 2021. The PRISMA methodology was used to locate, collect, analyze and synthesize the information. Search equations were performed using selected descriptors MESH and DeCS ("feeding, infancy", "orofacial motricity", "phonoaudiology", "pediatrics"). Databases consulted: Pubmed, Science direct, Scopus, Redalyc, Dialnet, Scielo, Proquest, World wide science, Biomed central, Red Iberoamericana de Innovación y Conocimiento Científico, Semantic Scholar, Revista Javeriana.

The criteria for inclusion in the sample were publications that addressed information on the relationship between feeding and orofacial motor skills in children from 0 months to 12 years of age, children with brain disorders or pathologies, and articles published in the last 10 years in Spanish, English, and Portuguese. Publications not related to mode and type of feeding and orofacial motor skills were excluded, as well as those whose population was contrary to the required characteristics.

The organization and selection of articles were broken down by applying the selection criteria proposed in the PRISMA methodology (25) methodology, as shown in Figure 1.

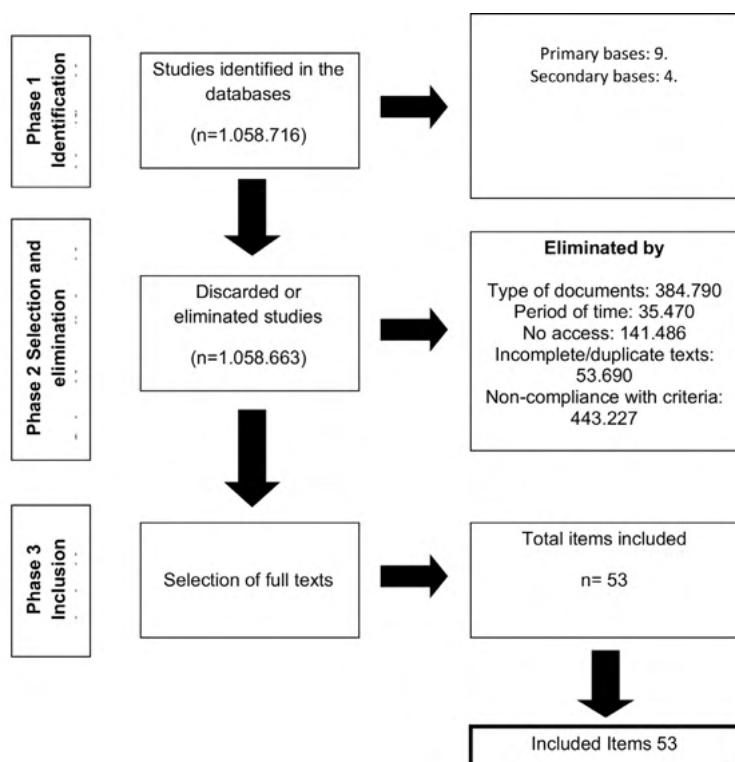


Figure 1. Phases of the review.

a. Identification phase: This comprises the total number of records identified according to the search in the 13 databases. For the search strategy, descriptors were selected in DeCS and MeSH from which equations were constructed and implemented in the aforementioned databases.

b. Screening Phase: In this phase, duplicate articles and those that did not meet eligibility criteria or proposed inclusion criteria were removed.

c. Eligibility Phase: After reading the title and abstract of the articles, we proceeded with the selection, applying the proposed exclusion

guidelines. Differences in the criteria of the articles were resolved by discussion among the authors.

- d. Inclusion phase: The complete texts were read, extracting relevant aspects that answered the PICO question.

RESULTS

The results of the described process are presented below:

A total of 1 058 667 studies were found, after screening, eligibility, and full-text review, 49 documents corresponding to primary bases and 4 articles from secondary bases were selected for a total of 53 selected studies published from 2011 to 2021. In Table 1 are the 53 selected studies (pages S490 to S497).

The contributions of the 53 selected studies were considered, highlighting the evidence and results concerning the intervention of food stimulation in the development of orofacial motor skills. Among them, the study of complementary feeding in premature infants concluded that optimal nutrition in the first 1 000 days, from conception to the second year of life, has the potential to shape individual health status during childhood and adulthood (17,18).

The clinical processes of care for the development of orofacial motor skills and swallowing in childhood could begin with prenatal care consultations (ANC) so that health professionals can orient and prepare pregnant mothers to initiate breastfeeding one hour after delivery and promote exclusive breastfeeding for 6 months (36,41).

Feeding stimulation is part of the multidisciplinary treatments for difficulties in sucking, swallowing, malocclusion, and tongue and lip posture related to breathing, posture, and tonicity of the phonoarticulatory organs necessary for communication and chewing (3).

The development of alterations of the orofacial system and functional oral habits is related to eating habits. Parents are fundamental actors in the intake of nutritious and varied food, structuring schedules and meal times, as well as generating environments that facilitate feeding, especially in the first years of life (53).

DISCUSSION

In this sense, after identifying the relationship between the health problem (alteration of the orofacial structures) and the factor associated with the intervention (type and mode of feeding) described above, it is incontrovertible within an explanatory scheme to pose the corresponding information in a solid way. In the first place, it is understood that the orofacial system is a physiological, integrated, and coordinated anatomofunctional unit, constituted by a set of craniofacial and cervical structures (54) that in some way allows the human being to perform several indispensable functions for life, within these, it is possible to mention functions such as respiration, suction, swallowing, speech, phonation (35).

In addition, the orofacial system is composed of bony structures such as the skull, facial bones, hyoid bone, larynx, maxilla, mandible, and bony palate. It also consists of muscles such as masticatory, facial expression, tongue, soft palate, pharynx, and neck muscles (49). Thus, it would be considered a morpho-functional biological unit integrated by the combined structures of the mouth and jaws, which are organized according to their activity, and work perfectly.

The combined bony structures of the mouth and jaws-structures such as the skull, facial bones, hyoid bone, larynx, maxilla, mandible and bony palate, muscles such as those of mastication, facial expression, tongue, soft palate, pharynx, and neck (49) form an integrated morpho-functional biological unit that is organized according to their activity, working in perfect harmony (55).

Feeding in early childhood is a process that involves the participation of two or more actors (the child and the accompanying adults), based on the interaction between those who receive the food and those who offer it (56). The ingestion of the different nutrients contained in the foods that make up the diet is subordinated to this process. Therefore, nutrition depends on the feeding process and this, in turn, depends on the interaction appropriate to the situation. Parents are responsible for providing their children with nutritious and varied food, structuring meal times and schedules, as well as creating an environment that facilitates feeding, especially in the first years

FEEDING DEVELOPMENT AND ALTERATIONS IN OROFACIAL MOTOR SKILLS

Table 1. Selected studies: feeding stimulation is involved in the development of orofacial motor skills in infants.

Nº	CROSSING	DATABASE	ORIGINAL TITLE	URL	AUTHOR	YEAR	CONTRIBUTION
Problem feeding after neonatal discharge involves the infant being unable or unwilling to eat and/or drink enough safely to obtain adequate nutrition and hydration, despite the availability of food. The specific symptoms of problem feeding change during the first few years of life as infants move from a liquid diet (i.e., breast milk or infant formula) to early complementary foods and then to more complex foods. As the skills needed for successful eating change, so do the symptoms of problems. Symptoms of problem feeding may include behaviors such as refusing to eat appropriate volumes or developmentally appropriate varieties of foods; symptoms of dysphagia or aspiration, such as coughing, choking, gagging, or respiratory compromise; or problem feeding behaviors, such as increased stress, crying, irritability, or strict requirements for success at mealtime; or delayed eating skills, such as difficulty chewing. (26).							
1	("Food" + "Childhood")	PUBMED	Prevalence of problematic feeding in young children born prematurely: a meta-analysis.	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC936467/	Britt Frisk Pados, Rebecca R. Hill, Joy T. Yamasaki, Jonathan S. Litt, and Christopher S. Lee	2021	
2	("Food" + "Childhood")	SCIENCE DIRECT	Validation of the Childhood Dysphagia Management Scale (CDMS): an impact scale to determine the medical home for dysphagia.	https://www.sciencedirect.com/science/article/abs/pii/S0165587621001099?via%3Dihub	Jennifer Maybee, Arwen Wanner, Kristine Wolpert-Wanner, Francis Hickey, Jeremy Prager, Emily DeBoer.	2021	
3	("Food" + "Childhood")	DIALNET	Feeding difficulties in early childhood and their relationship to parental feeding practices.	https://dialnet.unirioja.es/servlet/articulo107codigo=6625838	Laura Andrea Castaño Tobón, Mariana Molano Vargas, María Teresa Varela Arevalo, Mariana Molano Vargas, María Teresa Varela Arevalo	2018	
4	("Food" + "Childhood")	SCIELO	Avoidance and Restrictive Food Intake Disorder (ARFID): What the Pediatrician Should Know	https://www.scielo.cl/scielo.php?script=sci_arttext&pid=S2452-60532021000200298&lang=es	Valeria De Tora, Karina Aedob, Pascuala Urieljolic	2021	
5	("Food" + "Childhood")	SCIELO	The expectation of parental control and maintenance of bottle feeding in infancy	https://www.scielo.br/j/ped/a/mWWdWzR6Dx7xwfHWBG8C7hang-en	Adriana Dantas Costa, Elaine Pereira da Silva Tagliaterro, Eliana Dantas Costa, Gláucia Maria Bovi Ambrosano, Rosana de Fátima Possobon.	2021	

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Table 1. Selected studies: feeding stimulation is involved in the development of orofacial motor skills in infants (continue from page S490).

Nº	CROSSING	DATABASE	ORIGINAL TITLE	URL	AUTHOR	YEAR	CONTRIBUTION
6	("Food" + "Childhood")	SCIELO	Oral motor dysfunction and feeding difficulties during complementary feeding in preterm infants.	https://www.scielo.br/j/codas/a/Hn7vT9n6MnhvJQxn36vhG7?lang=pt	Carla Steinberg Larissa Menezes Ana Caline Nóbrega	2021	Exclusive breastfeeding should take place until six months of life, when the introduction of complementary feeding should begin, which comprises the period in which the infant is offered any nutritious food (solid or liquid) in addition to breast milk or infant formula. Despite the paucity of evidence on the best time to initiate it in preterm infants, it is recommended that it should be done from six months of corrected age. (29).
7	("Food" + "Childhood")	WORLDWIDE SCIENCE	Formula feeding practice and associated factors among mothers with infants 0-6 months of age in Addis Ababa, Ethiopia: a community-based cross-sectional study.	https://ijponline.biomedcentral.com/articles/10.1186/s13052-021-01010-x	Alemneh Abebe Taye, Wondwosen Asegidew, Miku Manno Taderew, Yonas Gimma Bizawork, Bettegoris Zegye	2021	The World Health Organization (WHO) and the American Academy of Pediatrics (AAP) recommend exclusive breastfeeding for the first 6 months of life, with a continuation of breastfeeding while gradually introducing solid foods into the infant's diet for 1 year or longer as mutually desired by mother and infant. In 2016, the United Nations (UN) Office of the High Commissioner for Human Rights stated that breastfeeding is a human rights issue for both mothers and children and should be protected and promoted for the benefit of both. The introduction of local nutrient-rich complementary foods is recommended thereafter with continued breastfeeding for 2 years of age and beyond. (9).
8	("Food" + "Childhood")	SCIELO	Skin to skin contact and the early initiation of breastfeeding: a cross-sectional study.	https://www.scielo.br/j/teca/a/y8ZxSdn8zwq3WXTpQfmRtSt/?lang=en	Kadja Elvira dos Anjos dos Anjos Silva Aratijo, Camila Carvalho dos Santos, Maria de Fátima Costa Caminha, Suzana Lins da Silva, Juliana De Castro Nunes Pereira, Malaquias Faixa	2021	The first 60 minutes of life represent a time of critical changes in which the newborn (NB) must rapidly adapt to physiological changes in important systems such as the cardiovascular, respiratory, immune, and metabolic systems. This first hour, also called the golden hour, is important because of its relevance to the growth and development of the child, providing immediate and long-term health benefits. (5).
9	("Feeding" + "orofacial motricity")	SCIENCE DIRECT	Speech pathology telepractice intervention during the COVID-19 pandemic for Spanish-speaking children with cleft palate: A systematic review.	https://www.sciencedirect.com/science/article/pii/S0165587621000938	Mirta Palomares, Aguilera Felipe Inostroza Allende Loreley Riquelme Solar	2021	Approximately 400 children are born each year with cleft lip and palate, one of the most common congenital malformations in our country. Depending on the type of cleft, several vital functions may be affected, such as diet, social and psychological aspects, hearing, speech, language, and voice. During the early years, children with cleft palate have difficulties with oral expression, speech, and voice. The literature describes these difficulties due to the negative impact on the communicative, linguistic, cognitive, school, and social development of children. (30).
10	("Feeding" + "orofacial motricity")	PUBMED	Relationship between Breastfeeding and Malocclusion: A Systematic Review of the Literature.	https://pubmed.ncbi.nlm.nih.gov/33265907/	Andrea Abate , Davide Cavagnetto, Andrea Fama, Cinzia Maseri, Giampietro Faronato	2020	The stomatognathic system is composed of static and dynamic structures and its harmonious functioning is based on the balanced relationship between them. It is believed that the functions involving the stomatognathic apparatus (sucking, breathing, speaking, chewing, swallowing) are the factors that most influence the pattern of maxillofacial development and the position of the teeth in the child's arch. (2).
11	("Feeding" + "orofacial motricity")	SCIENCE DIRECT	Feeding swallowing difficulties in the first three years of life: A preterm and full-term infant comparison.	https://www-sciencedirect-com.unipamplona-basesdedatosproxy-com.unipamplona-S1355184118300486	Emily Zimmerman, Austin Rosner	2018	Eating and swallowing difficulties significantly impact nutritional status and the development of speech, language, social behavior, emotions, and cognition. Because coordination of oral structures is necessary for both feeding and language skills, it has been suggested that a relationship exists between these complex oral motor tasks. In fact, early feeding behaviors may be useful in predicting later speech and language development. (31).

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FEEDING DEVELOPMENT AND ALTERATIONS IN OROFACIAL MOTOR SKILLS

Table 1. Selected studies: feeding stimulation is involved in the development of orofacial motor skills in infants (continue from page S491).

Nº	CROSSING	DATABASE	ORIGINAL TITLE	URL	AUTHOR	YEAR	CONTRIBUTION
12	("Feeding" + "orofacial motoricity")	SCIENCE DIRECT	Ankyloglossia and sucking problems, multidisciplinary treatment: orofacial myofunctional therapy, breastfeeding sessions, and frenotomy.	https://amanantarasturi-as.org/wp-content/uploads/2020/03/Anquilloglosia-y-problemas-de-suc-cio%CC%81n.pdf	Tomas Pastor-Vera, Paula Rodríguez-Alessi, Elvira Ferrés-Amad, Eduard Ferrés-Padró	2016	Limited lingual mobility in neonates can also lead to difficulties in sucking and latching on to the breast. (13).
13	("Feeding" + "orofacial motoricity")	SCIENCE DIRECT	Swallowing problems in children with a tracheostomy	https://www.sciencedirect.com.unipamplona.basesdedatosproxy.com/science/article/pii/S105585862100041X	Bas Pulens Marloes Strepel	2021	Adequate swallowing function is essential for feeding, growing, and thriving. Children with swallowing problems are at risk for malnutrition, behavioral delay, and stressful caregiver interaction (16).
14	("Feeding" + "orofacial motoricity")	SCIENCE DIRECT	Breastfeeding and language outcomes: A review of the literature.	https://www.sciencedirect.com.unipamplona.basesdedatosproxy.com/science/article/pii/S0021992415000258#sec0065	Jamie Mahurin Smith	2015	For most children, speech and language development proceeds smoothly without parental concern or outside assistance. (32).
15	("Feeding" + "orofacial motoricity")	SCIENCE DIRECT	Birth prevalence of orofacial cleft in a tertiary hospital in Riyadh, Saudi Arabia: A retrospective audit.	https://www.sciencedirect.com.unipamplona.basesdedatosproxy.com/science/article/pii/S1013905221000869#s0005	Wasmiya A. AlHayyan a,Samar A. Hayek b,Sarah S. AlOtaibi c,Shahad A. AlGhanim	2021	Orofacial clefts, particularly cleft lip and cleft palate, are the most common congenital deformities among newborn infants. (14).
16	("Feeding" + "orofacial motoricity")	SEMANTIC SCHOLAR	Breastfeeding and its relationship with psychomotor development in children aged 2 to 5 years living in the Villa El Libertador neighborhood of the city of Crotoba, the year 2017.	http://pa.bibdigital.uc.edu.ar/1474/1/TF_Cheble_Fernandez.pdf	CHEBLE, Camila Anastasia, FERNANDEZ, Daniela María	2018	Breast milk is the optimal food in this first stage. It ensures that the union existing during pregnancy is maintained, contributing to the emotional balance of the mother and child. It ensures the best development since it is a specific product with a composition different from any other animal milk, which changes according to the needs of the infant. It also protects their health through the transfer of cells, growth factors, enzymes, and immunoglobulins, which results in fewer infections (respiratory, intestinal, meningitis, urinary), which are less frequent not only because of the benefits of breast milk but also because it avoids exposure to contaminated water, food and bottles. (10).
17	("Feeding" + "orofacial motoricity")	JAVERIANA MAGAZINE	Influence of breastfeeding on the development of parafunctional habits and malocclusions. Cross- sectional study	https://revistas.javeriana.edu.co/index.php/revUnivOdontologica/article/view/14240	Mariana Carolina Morales- Chávez, Rosa M. Stabile- Del Vecchio	2014	The sucking reflex is the first coordinated muscular activity performed by the newborn. There are two forms of sucking: the first is nutritive sucking, which occurs through natural feeding and provides the infant with essential nutrients for optimal growth and development. It is also the most important exchange with the outside world since, in addition to feeding, the infant receives a sense of wellbeing by satisfying those requirements of security and love and by establishing physical contact with its mother. The second is non-nutritive sucking, with which the child seeks to generate this feeling of calm, warmth, and security through substitutes. Breastfeeding promotes adequate growth and development of the orofacial structures since it produces excitation of the orofacial musculature and stimulates the functional and harmonious development of the stomatognathic system. It is responsible for maturing the muscles of mastication, as well as stimulating the development of the jaws and differentiating the temporomandibular joints, which helps to prevent the appearance of parafunctional oral habits and malocclusions. (17).

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Table 1. Selected studies: feeding stimulation is involved in the development of orofacial motor skills in infants (continue from page S492).

Nº	CROSSING	DATABASE	ORIGINAL TITLE	URL	AUTHOR	YEAR	CONTRIBUTION
18	("Feeding" + "orofacial motoricity")	DIALNET	Persistence of soft diet in children attending a pediatric dentistry service in Cali.	https://dialnet-unirioja-es.unipamplona.basesdedatosproxy.com/servlet/articulo?codi-go=5560676	Martha Inés Torres Arango	2015	During the first months of life, children are preparing their orofacial and orofacial structures for the chewing process to take place later on. For this purpose, their diet includes foods that are easy to chew such as liquids, semisolids, and finally solids, which will allow the strengthening and development of the facial bone-muscle musculature, of great importance for the development of speech. (33).
19	("Feeding" + "orofacial motoricity")	DIALNET	Prolonged breastfeeding and language development: a review of the literature.	https://dialnet-unirioja-es.unipamplona.basesdedatosproxy.com/servlet/articulo?codi-go=5774432	Katty Gittens Dixon	2017	Breastfeeding is one of the main characteristics that identify mammals, to which group human beings belong, and which can mean the difference between life and death of the offspring. According to data from the World Health Organization and the United Nations Children's Fund (UNICEF), optimal breastfeeding of infants up to two years of age is more beneficial than any other type of intervention. (34).
20	("Feeding" + "orofacial motoricity")	DIALNET	Speech production in two occlusal classes	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6338460/	Luis M. T. Jesus; André Araújo; Isabel M. Costa	2014	Speech is the most widely used mode of communication in all human cultures (except, of course, the deaf culture) and is composed of an inventory of sounds produced by actions of the articulatory and phonatory systems. (35).
21	("Feeding" + "orofacial motoricity")	SCOPUS	Relationship between breastfeeding and malocclusion: a systematic review of the literature.	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC664312/12/123688	Andrea Abate, Davide Cavagnetto, Andrea Fama, Cinzia Maspero, Giampiero Farronato	2020	The stomatognathic system is composed of static and dynamic relationships and its harmonious functioning is based on the balanced relationship between them. The functions included in it (sucking, breathing, speaking, chewing, swallowing) are the factors that most influence the pattern of maxillofacial development and the position of the teeth in the child's arch. (2).
22	("Feeding" + "orofacial motoricity")	REDALYC	Breastfeeding, metabolic programming and its relationship with chronic diseases	https://repositorio.uninorte.edu.co/index.php/salud/article/view/8923/214421443163	Carlos Román Collazo, Yenina Hernández Rodríguez, Diego Andrade Campoverde	2018	Adequate neonatal and infant nutrition is essential to ensure that the development of the organism reaches its full potential for growth and health. Several studies report deficient practices in neonatal nutrition in terms of early replacement of breastfeeding with complementary feeding. Worldwide, it has been estimated that only 34.8% of infants are exclusively breastfed for the first six months of life, while the majority receive some other type of food or liquid during this period. (36).
23	("Feeding" + "orofacial motoricity")	REDALYC	Application of key practices: breastfeeding, complementary feeding, micronutrients, mental and social development of children under 5 years of age.	https://www.redalyc.org/journal/2738/273865670009273865670009.pdf	Madero-Zambrano, Kendy; Marsiglia-López, Diana; Ruidíaz-Gómez, Keydís; Rivera-Gómez, Julieth	2021	Childhood health is fundamental for the development of human beings since it has an impact on the rest of their lives. However, because of their young age, they depend to a great extent on the decisions of their parents for their health care; that is why Comprehensive Management of Childhood Illnesses (IMCI) in Colombia seeks to involve the family, community, and health institutions to reduce infant morbidity and mortality, through the education of health personnel, community mothers, teachers, parents and/or caregivers on the prevention of diseases prevalent in childhood, as well as promoting and reinforcing protective factors such as breastfeeding, nutrition, immunization, and affection. (37).
24	("Feeding" + "orofacial motoricity")	SCIELO	Relationship between sensory processing and the stomatognathic system of oral breathing in infants.	https://www.scielo.br/j/codas/yyRRKqpn5x59xCXxFyT6hCg/7lang=pt	Dantas, Ana Carollyne; de Lima Raquel; Albuquerque, Daniele; Andrade da Cunha, Camilla; Dantas de Lima, Albertha; Lima, Sandro; da Silva, Hilton	2022	The altered mode of breathing leads to increased exposure of the upperairway, causing inadequate development of the craniofacial complex, associated with abnormal functions of chewing, swallowing, tongue, and lip posture. In addition to problems with breathing, chewing, swallowing, posture, and tonicity of the phonoarticulatory organs. (3).

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FEEDING DEVELOPMENT AND ALTERATIONS IN OROFACIAL MOTOR SKILLS

Table 1. Selected studies: feeding stimulation is involved in the development of orofacial motor skills in infants (continue from page S493).

Nº	CROSSING	DATABASE	ORIGINAL TITLE	URL	AUTHOR	YEAR	CONTRIBUTION
25	("Feeding" + "orofacial motricity")	SCIELO	Deforming oral habits and dental malocclusions in children 5-11 years old.	http://scielo.sld.cu/scielo.php?script=sci_antext&pid=S1684-18242014000400024&lang=es	Maria Carmen Álvarez González, Aleida Pérez Lauzurique, Isabel Martínez Brito, Mayelin García Nodar, Roberto Suárez Objeda,	2014	Oral habits can alter the normal development of the stomatognathic system, cause an imbalance between muscular forces and lead to the appearance of deformity. These habits modify the position of the teeth, and the relationship and shape of the dental arches to each other, interfering with the normal growth and function of the oral and facial musculature. (38).
26	("Feeding" + "orofacial motricity")	SCOPUS	Relationship between type of breastfeeding and atypical swallowing in patients attending a pediatric dentistry clinic.	https://revistas.uem.es/index.php/RLOG/article/view/68420	Miguel Vargas Garcia, Paola Euse Solano, Jimmy Alvarado Meza	2021	From the speech-language pathologist's point of view, breastfeeding has a decisive role in the structure and functional conformation of the stomatognathic system; being the first function that provides parafunctional growth information. Some authors mention that the movements of mandibular equilibrium, typical of breastfeeding, generate excitation on the temporomandibular joint, providing the structure with parafunctional stimuli of longitudinal growth, generating actions of transversal growth of the skull and face. (39).
27	("Feeding" + "orofacial motricity")	SCIELO	Long-term growth patterns in children born with cleft lip and/or cleft palate. A systematic review	https://scielo.isciii.es/scielo.php?script=sci_antext&pid=S0212-16112021000200410&lang=es	Rocío Gallego, Iris Iglesia-Altaba, Luis A Moreno, Gerardo Rodríguez	2021	Patients with unilateral or bilateral complete cleft lip as well as cleft palate will have difficulty feeding because the cleft lip may compromise sucking during breast-feeding and the cleft palate may cause milk to pass into the nasal cavity. Therefore, a number of recommendations for feeding these children should be taken into account, such as assessment of sucking ability, teaching proper breastfeeding position, adaptive feeding equipment (specific bottles and nipples), and family education on infant nutrition. (40).
28	("Food" + "Speech")	PUBMED	Complementary Feeding in Preterm Infants: A Systematic Review.	https://pubmed.ncbi.nlm.nih.gov/32575713/	Nadia Liotto, Francesco Cresi, Isadora Beghetti, Paola Roggero, Camilla Menis, Luigi Corvaglia, Fabio Mosca, Arianna Aceti	2020	Optimal nutrition in the first 1000 days from conception through the second year of life, has the potential to shape individual health status throughout childhood and adulthood. The relationship between nutrition in early life and long-term outcomes is particularly relevant for preterm infants, whose intrinsic immaturity makes nutritional management a daily challenge for neonatologists (18).
29	("Food" + "Speech")	WORLDWIDE SCIENCE	The quality of maternal nutrition and infant feeding counselling during antenatal care in South Asia	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8189234/?tool=pmcentrez&report=abstract	Harriet Torlesse, Rukundo K. Benedict, Hope C. Craig, and Rebecca J. Stoltzfus	2021	Prenatal care (ANC) enables health professionals to prevent, identify, and treat conditions that may threaten the health of a pregnant woman and her fetus or newborn. Maternal underweight, obesity, and micronutrient deficiencies can jeopardize the survival, health, and wellbeing of pregnant women, as well as the growth, development, and survival of their infants. For this reason, the World Health Organization's 2016 ANC guidelines include recommendations to counsel pregnant women on healthy eating and staying physically active, educate pregnant women in malnourished populations on how to increase energy and protein intake, and encourage women at risk of micronutrient deficiency to take micronutrient supplements (WHO, 2016). In addition, the recommendations highlight the importance of quality of care for a positive pregnancy experience (41).
30	("Food" + "Development and growth")	SCIENCE DIRECT	Domestic violence and breastfeeding practices: a systematic review of observational studies.	https://www.sciencedirect.com/science/article/pii/S22555361730143X	Raquel de Souza Mezavilla, Marina de Figueiredo Ferreira, Cintia Chaves Cunoni, Ana Cristina Lindsay, Maria Helena Hassermann	2018	Breast milk is the ideal food for the healthy growth and development of children. The World Health Organization (WHO), the United Nations Children's Fund (Unicef), and the Ministry of Health recommend early initiation of breastfeeding within one hour after birth so that children receive only breast milk for the first six months and that breastfeeding is supplemented with other foods up to two years of age or beyond. (42).

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Table 1. Selected studies: feeding stimulation is involved in the development of orofacial motor skills in infants (continue from page S494).

Nº	CROSSING	DATABASE	ORIGINAL TITLE	URL	AUTHOR	YEAR	CONTRIBUTION
31	DIAL-NET		Characterization of crano-facial alterations in special needs population: autism and mental retardation. A systematic review of the literature	https://diadnet.unirioja.es/unipamp/long-basededatos-proxy.com/servlet/article?codigo=5236639	Erazo Cerón, Carol Renata; Carrillo Estrada, Gloria; Ángela; Velosa Portas, Juliana	2014	Harmony in facial morphology and balance between its components are necessary for proper esthetics and function. (43).
32	("Food" + "Development and growth")	DIAL-NET	The phonotaudiologist in eating disorders: Beyond swallowing	https://arete.ibero.edu.co/article/view/art.21109	Gonzalez Moreira, Dalmia Judith; Maris Granatto, Stella; Vazquez Fernandez, Patricia	2021	In recent years there has been an increase of concern for these reasons in medical consultation, which has promoted the interest of many professionals in the subject, so it is of utmost importance that professional speech therapists are trained in feeding on an integral point of view to accompany children, their families and the whole team involved. (44).
33	("Food" + "Development and growth")	DIAL-NET	Breastfeeding and swallowing in newborns	https://journals.co.za/doi/abs/10.4102/sajcd.v6a1.209	Esedra Krüger; Alta Kritzinger; Lida Pottas	2017	Breastfeeding challenges that may arise from infants with neurologic compromise may include sucking and swallowing difficulties, poor weight gain, separation from the mother in the first week of life, as well as maternal pain, and shock from having an infant with a disorder. (45).
34	("Food" + "Development and growth")	SCHÉLO	Oral motor control and orofacial function in people with dentofacial deformity	https://www.scielo.br/jacr/a/8i8RBjTNPcCTY/Mz3rfpb8Q9y/?format=unimarcxml	Daniela Galvão de Almeida Prado; Silvana Regina Pavani Sovinski; Hugo Nary Filho; Alcione Ghedini Brásolotto; Giedré Berettin-Felix	2015	Orofacial functions are realized from the interaction of soft and hard tissues, the vascular system, and also the neural control, and in this process function and morphology are intimately linked, since not only the harmonic condition of the structures directly interferes with muscle balance behavior, since functions also directly interfere with craniofacial growth and development. (1).
35	("Food" + "Development and growth")	PROQUEST	The Percep-tions and Needs of French Parents and Pediatricians Concerning Information on Complementary Feeding	https://www.scielo.br/jrcefacia/docview/2554781451/81B1A36CEDDC4E77PQ/5	De Rosso, Sofia; Schwartz, Camille; Ducrot, Pauline; Nicklaus, Sophie.	2021	During the first few months of life, an infant faces a phase of rapid growth, which is largely determined by early childhood practices and complementary feeding (CoF). CoF is defined as the period when solid foods begin to be introduced into an infant's diet. Inadequate CoF can have serious implications for a child's healthy growth and the development of healthy eating habits. Adequate infant feeding gives the right footprint to a healthy developmental process for the child, which reduces the risks of chronic noncommunicable diseases in the future. (8).
36	("Food" + "Development and growth")	SCHÉLO	Speech development and infant feeding: possible implications	https://www.scielo.br/qyWMS9GyfZbotSbZC/?lang=pt	Victor Costa Alves Medeiros; Vieira, Cláudia Marina; Tavares de Araújo, Silvia; Regina Janelli	2016	Infant feeding requires special attention from birth since it is the basis for growth, development, and maintenance of the vital state of the human being. In this context, the World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life. After this age, other foods and liquids are gradually introduced into the child's diet, and this transition should be carefully supervised by a professional assistant. (7).
37	("Feeding" + "Physiology")	REDALYC	Reasons for breastfeeding abandonment in mothers of children in kindergartens. Manizales, Colombia, 2015; a descriptive study.	https://revistasum.umanizales.edu.co/ojs/index.php/archivosmedici-na/article/view/19223037	García Cardona, Aníbal Augusto; Castaño, José Jaime; Vallejo Corrales, Santiago; Vargas, Vargas, García Cardona, Aníbal Augusto; Castaño Castrillón, José Jaime; Vallejo Corrales, Santiago.	2017	Breastfeeding is a natural process that every woman in normal health can perform. The World Health Organization (WHO) recommends exclusive breastfeeding for the first 6 months of a child's life and continuing with complementary feeding and breastfeeding until the child is at least 1 year old. (11). Breast milk is a food that has all the macronutrients and micronutrients that a newborn needs, and it also has immunological components. (11).

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FEEDING DEVELOPMENT AND ALTERATIONS IN OROFACIAL MOTOR SKILLS

Table 1. Selected studies: feeding stimulation is involved in the development of orofacial motor skills in infants (continue from page S495).

Nº	CROSSING	DATABASE	ORIGINAL TITLE	URL	AUTHOR	YEAR	CONTRIBUTION
38	("Orofacial motricity" + "development")	SCIELO	Protocol for surgical planning in cleft lip and palate clinics in the northwestern area of Mexico.	http://www.scielo.isciii.es/scielo.php?script=sci_arttext&pid=S0376-78922017000400313&lang=es	Alicia Sigler	2017	In general, it is established that the treatment of cleft lip and palate should be carried out by a multidisciplinary team. It is not only a matter of correcting the anatomical deformity with surgical procedures, but also of promoting adequate language and a favorable psychological development for the integration of the patient in the school environment as well as in society. (46).
39	("Orofacial motricity" + "development")	SCIELO	Orofacial myofunctional evaluation in cleft lip and palate: an integrative literature review	https://www.scielo.br/j/orefac/a/ZvBFnp3T2czVLMTschyDfRL?lang=en	Andréia Fernandes GranzienGiedre BeneditoFelixKaihla Flores Genaro	2019	The stomatognathic system consists of oral structures and performs several essential functions that are interrelated with its anatomy. Therefore, any influence on this system will result in an adaptation. Cleft lip and cleft palate affect the stomatognathic system and, consequently, the performance of orofacial functions. (4).
40	("Orofacial motricity" + "development")	SCIELO	Association between deleterious oral habits and the structures and functions of the stomatognathic system: perceptions of the responsible persons	https://www.scielo.br/j/codas/a/kN5CMCcxSZLlnG6fprSYd?lang=pt	Thayse Steffen PereiraFabiana de OliveiraMaria Cristina de Almeida FreitasCardoso	2017	Phonation, the articulation of sounds depends on the position and mobility of the tongue, the presence and position of the teeth (occlusion), the mobility of the lips and cheeks, and the position of the mandible, which will promote adequate introral space for phonemic articulation and resonance. (47).
41	("Physiology" + "development" + "orofacial motricity")	SCIELO	Relation of sensory processing and stomatognathic system of oral respiratory children	https://www.scielo.br/j/codas/a/yRRKanSx59jCdxXFyT6fjCg?lang=en#	Ana Carollyne Dantas de LimaRaquel Costa Albuquerque Daniele Andrade da Cunha Camilla Albertina Dantas de LimaSandro Junior Henrique LimaHilton Justino da Silva	2020	The stomatognathic system is composed of structures related to vital (breathing, sucking, chewing, and swallowing) and social (phonation and articulation) functions directly intertwined and related to survival. In this sense, changes in any of them can cause a general imbalance in this system, leading to difficulties in daily life and consequently in the quality of life. (3)
42	("Physiology" + "development" + "orofacial motricity")	REDALYC	Implementation of orofacial myofunctional therapy in a postgraduate orthodontic clinic.	https://www.redalyc.org/articulo.oa?id=378668256003	Patricia Arguello Vélez, Noel Antonio Bedoya Rodríguez, Martha Torres Arango, Isabel Sanchez Rodríguez, Claudia Téllez Méndez, Julián Tamayo Cardona, Patricia Arguello Vélez, Noel Antonio Bedoya Rodríguez, Martha Torres Arango, Isabel Sanchez Rodríguez, Claudia Téllez Méndez, Julián Tamayo Cardona	2018	It is applied to all users taking into account age as a diagnostic parameter, it is supported by observation, palpation, exercise, praxias, counter-resistance techniques, and subjective tests that account for aspects such as tone, strength, functional competence, anatomical sufficiency, and sensitivity. (49).
43	("Physiology" + "development" + "orofacial motricity")	REDALYC	Early treatment of orofacial alterations with palatal plate in children with Down syndrome.	https://www.redalyc.org/articulo.oa?id=479661310006	Paula Vivar Vergara, Fernanda Riveros Figueroa, German Sepulveda Hidalgo, María Antonieta Pérez Flores, Claudia Fierro Monti	2019	They have multiple genetically determined orofacial disorders, as well as varying degrees of dysfunction of the stomatognathic system. Some of these characteristics are a small skull, midface and nasal facies, bony depression, flat malar processes, and upward-slanting eyes. (49).
44	("Physiology" + "development" + "orofacial motricity")	REDALYC	Effect of masticatory muscle training on facial vertical pattern development in children: a narrative review.	https://www.redalyc.org/articulo.oa?id=610064353009	Catalina Vial, Víctor Rojas, María Ignacia Zarsiedel, Constanza Camash, Catalina Machereone, Arturo Manns	2020	The facial growth pattern is established before the appearance of the first permanent molar. An excess of facial vertical growth corresponds to long-faced individuals with open gonal angles, increased lower facial heights, and masticatory muscles of smaller cross-sectional areas. (50).

(continue on page S497).

Table 1. Selected studies: feeding stimulation is involved in the development of orofacial motor skills in infants (continue from page S496).

Nº	CROSSING	DATABASE	ORIGINAL TITLE	URL	AUTHOR	YEAR	CONTRIBUTION
45	("Physiology" + "development" + "orofacial motricity")	BIOMED	Ethnic inequalities in child stunting and feeding practices: results from surveys in thirteen countries in Latin America.	https://equityhealth.biomedcentral.com/articles/10.1186/s12939-020-01165-9	Giovanna Gatica Dominguez, Marilia Andrit Mesenbug, Aluisio J. D. Barros and Cesar G. Victor	2020	Stunting can lead to irreversible long-term reductions in human capital, including adult height, intelligence, school attainment, and economic productivity, among other things. (51).
46	("Physiology" + "development" + "orofacial motricity" + "city")	BIOMED	Oral health-related quality of life of children and adolescents affected by rare orofacial diseases: a questionnaire-based cohort study.	https://ojs.biomedcentral.com/articles/10.1186/s13023-019-1109-2	Lisa Friedlander, Ariane Béral, Priscilla Boizeau, Brigitte Alliot Licht, Marie-Cécile Manière, Arnaud Picard, Olivier Azzis, Marie-Paule Vazquez, Corinne Alberti and Muriel De La Dure Molla	2019	According to WHO, oral health affects people physically and psychologically, and not only influences how they grow, enjoy life, look, talk, chew, taste food, and socialize, but also impacts their feelings of social wellbeing (20).
47	("Physiology" + "development" + "orofacial motricity")	BIOMED	Breastfeeding and lactation research: exploring a tool to measure infant feeding patterns.	https://internationalbreastfeedingjournal.biomedcentral.com/articles/10.1186/s1746-4358-9-5	Joy Noel-Weiss, Monica Taljard and Sonya Kujawa-Myles	2014	Infant feeding categories, often referred to as breast-feeding definitions, form the basis for describing infant feeding patterns, especially, the duration of breastfeeding and the degree of breastfeeding exclusivity. Researchers use a variety of algorithms and there is no validated tool to measure feeding patterns for research purposes. The objective of this research project was to develop and test a tool for measuring infant feeding patterns for breastfeeding and lactation research (12).
48	("Physiology" + "development" + "orofacial motricity")	REDALYC	The influence of ankylo-glossia on the growth and development of the stomatognathic system.	https://www.redalyc.org/articulo.ca?id=406051664016	Lívia Eisler Pompéia, Roberta Simoni Ilinsky, Cristina Lúcia Feijó Ortolani, Kurt Faltin Junior	2017	During natural lactation, some masticatory muscles begin their maturation and positioning, such as the temporalis (activated in mandibular reposition), the lateral pterygoïd (necessary during propulsion), the mylohyoid (mainly responsible for swallowing), and the masseters (activated in sucking mechanics), while the orbicularis oris of the upper and lower lips guide the growth and development of the anterior region of the stomatognathic system, which must function in full neuromotor balance for efficient chewing and swallowing mechanics. According to Van der Laan, the muscular effort involved in sucking is a physical preparation for future function. Chewing (15).
49	("Physiology" + "development" + "orofacial motricity")	BIOMED	Effects of breastfeeding duration, bottlefeeding sucking habits on the occlusal characteristics of primary dentition.	https://bmcpediatr.biomedcentral.com/articles/10.1186/s12887-015-0364-1	Xiaoxian Chen, Bin Xia, and Lihong Ge	2015	The early transition from breastfeeding and non-nutritive sucking habits may be related to orofacial problems. (19).
50	("Physiology" + "development" + "orofacial motricity")	BIOMED	The relationship of bottle feeding and other sucking behaviors with speech disorder in Patagonian preschoolers	https://bmcpediatr.biomedcentral.com/articles/10.1186/1471-2431-9-66	Clarita Barbosa, Sandra Vasquez, Mary A. Parada, Juan Carlos Vélez González, Chanayé Jackson, N. David Yanez, Bizu Gelaye and Annette L. Fitzpatrick	2019	Previous studies have shown that children's non-nutritive sucking habits may result in delayed development of oral anatomy and function. However, these findings were inconsistent. We investigated associations between the use of bottles, pacifiers, and other sucking behaviors with speech disorders in children attending three preschools in Punta Arenas (Patagonia), Chile. (21).
51	("Phonoaudiology" + "Pediatrics")	DIALNET	Speech therapy in pediatrics	https://dialnet.unirioja.es/unipampulona.basesdedatosproxys.com/servlet/article?codigo=6486073	Mª Macarena Álvarez Hernández	2018	The function of speech therapist is to evaluate, diagnose and intervene in disorders of communication, language (oral and written), speech, and voice, therefore, can work both in the educational and health area. (52).
52	("Phonoaudiology" + "Pediatrics")	SCIELO	Phonoaudiology and human lactation	http://www.scielo.org.co/pdf/rfimun-65-02-297.pdf	Karen Eliana Ramírez-Gómez, Rosa Mercedes Sampallo-Pedroza	2017	The American Academy of Pediatrics (AAP) states that exclusive breastfeeding is the ideal and sufficient nutrition to support the growth and development of the baby during the first 6 months and should continue until at least 12 months of age; thereafter, it can be extended for as long as mother and infant desire. (53).
53	("Feeding" + "orofacial motricity")	SCIENCE DIRECT	Swallowing problems in children with a tracheostomy	https://www.sciencedirect.com/science/article/pii/S105585862100041X	Bas Pultens Marloes Strepel	2021	Adequate swallowing function is essential for feeding, growing, and thriving. Children with swallowing problems are at risk for malnutrition, behavioral delay, and stressful caregiver interaction (16).

of life, considering that the family is the primary context for socialization (26). However, this responsibility can generate emotional discomfort in parents and difficulties in the bond with their children, when the feeding situation is not achieved or is tense.

Within infant feeding, it cannot be ignored that there is an important factor related to this process which integrates in a global way the terms mentioned above, it is understood that breastfeeding is the mechanism by which various benefits are achieved that contribute to the development of the human being.

Lactation is one of the main characteristics that identify mammals, to which group human beings belong, and which can mean the difference between life and death of the offspring (34). According to data from the World Health Organization and the United Nations Children's Fund, optimal breastfeeding of infants up to two years of age is more beneficial than any other type of intervention (30).

Thus, exclusive breastfeeding, which includes feeding during the period between 0 and 6 months, is recommended by the World Health Organization (WHO) as a public health policy after this estimated time is when the introduction of complementary feeding should begin, which includes the period in which the child is offered any nutritious food (solid or liquid) in addition to breast milk or infant formula (2). Despite the scarcity of evidence on the best time to initiate it in premature infants, it is recommended that it be done from six months of corrected age, since it is somehow admitted that it provides to some extent the nutrients needed for the current stage of consumption of the same, however, beyond the importance that imminently provides breastfeeding, not providing adequate nutrition from the beginning of life indisputably greatly affects the vital and indispensable functions for the growth of an entire system.

Breast milk is the ideal food for the healthy growth and development of children. WHO, Unicef, and the Ministry of Health (41) recommend early initiation of breastfeeding within one hour after birth so that children receive only breast milk for the first six months and that breastfeeding is supplemented with other foods up to two years of age or older (42).

That is why breastfeeding would be recognized as the ideal food for the healthy growth and development of infants, it is also an important part of the reproductive process with important repercussions on the mother's health.

On the other hand, if the term breastfeeding is defined from a physiological perspective, it is valid to correlate breastfeeding, since this process promotes adequate growth and development of the craniofacial structures since it produces excitation of the orofacial musculature and stimulates a functional and harmonious development of the orofacial system (43). The orofacial musculature is excited and the functional and harmonious development of the orofacial system is stimulated.

It is responsible for maturing the muscles of mastication, as well as stimulating the development of the jaws and differentiating the temporomandibular joints, which helps prevent the development of parafunctional oral habits and malocclusions (46).

In this sense, it is important to emphasize that the child performs the process of swallowing breast milk through breastfeeding, which will allow him/her to reach a feeling of fullness when sucking, and also directly strengthens all the muscles involved in this process. However, it has been evidenced that children who have not been breastfed or have had a short period of breastfeeding and have been bottle-fed will satisfy their sucking instinct through substitutes.

Examples of these are pacifier, digital sucking, tongue sucking, and onychophagia, among other parafunctional oral habits. With the above, it is affirmed that the orofacial muscular development and functioning will be different from that of a child who has accommodated his physiology during the breastfeeding process, bringing with it alterations at the orofacial level, these alterations will be reflected in the process of mobility and functioning of the structures involved in the development of feeding. For example, weakness in the musculature, due to the hypotonia it can cause, weak latch-on and poor nipple suction during breastfeeding, which gives rise to analyze, identify and support that the implementation of different inadequate oral habits allows the appearance and development of alterations in the orofacial system.

There is a close relationship in the conditions evidenced in a solid way on the possible changes

in the orofacial level since it involves an important process that must be done in a conscious and very timely manner from the beginning of the life cycle of the human being. Therefore, it is emphasized that during the first months of life man is in a process of preparation and consolidation of the body in general and especially the orofacial structures for the chewing process to be performed. For this purpose, the diet should include foods that strengthen the feeding, making this an easy process without alteration, that is why you can start with food consistency such as liquid, semi-solid, and finally solid.

Thus, the aforementioned process allows the development and strengthens to a great extent the correct functionality of the muscles and bones that make up the orofacial complex, which implicitly contributes to the development of speech.

Regarding the link of the different amendments anchored to the proper development of orofacial functions, such as speech, chewing, swallowing and phonation, it is valid to establish a firm reason where a punctual perspective on the subject is organized, since it has been shown that significant alterations of facial structures are closely linked to orofacial myofunctional alterations, emphasizing that the presence of craniofacial complexes results from the pathophysiological adjustments at the time of performing the functions executed by this system.

Likewise, and considering the importance of professional experts in the area, it is necessary to argue the management of the speech therapist in the whole feeding process and its relation with the orofacial functions, since speech therapy is the health area in charge of the evaluation, diagnosis, and intervention not only of aspects of speech, language, hearing, voice, swallowing and learning but also of the processes related to the stomatognathic system. All the above to improve or preserve all aspects related to communication, promoting rehabilitation as a fundamental axis, and minimizing situations or circumstances that hinder this purpose.

In context, the different orofacial functions mentioned above, are performed from the interaction of soft and hard tissues, the vascular system, and also the neural control, and in this process function and morphology are intimately

linked, since not only the harmonic condition of the structures interferes directly with the muscle balance, since the functions also interfere directly with the craniofacial growth and development (1).

Thus, the difficulties that may occur in the different orofacial functions are rooted in a mechanical process that should be consolidated in the first days of life, since according to the appearance and the need of the functions where the possible alterations are evidenced, which undoubtedly are related to the development process at a general level (38). If phonation is observed, the articulation of sounds depends on the position and mobility of the tongue, the presence and position of the teeth (occlusion), the mobility of the lips and cheeks, and the position of the jaw, which will promote an intraoral space between the tongue and the mouth (47). The phonemic articulation and resonance will promote an adequate intraoral space for phonemic articulation and resonance and in that order, all the functional and physiological processes of the system form a cycle or a chain where all need each other to consolidate efficiently.

Therefore, multidisciplinary treatments related to the process of education, rehabilitation, and treatment of the alterations that may occur in neonates and infants, as in the case of orofacial alterations, resulting from poor feeding practices, are relevant and beneficial in the development of children. However, it is important not to deviate from the guidelines evaluated in the professional context, respecting the quality and provision of the specific medical services of each sector and the competencies of the specialties involved in the interventions.

CONCLUSIONS

Given the review of the relationship between the feeding process and the functional exercise of the entire orofacial system, it is evident that effectively according to different conceptualization criteria it is important to establish perspectives that support the morphofunctional harmony of the organism, where its wide connection and the need for stimulation from the first months of life are understood, intertwining the part of feeding as a fundamental piece for the growth

and development of the structures of the orofacial system.

Homogeneity is observed in the different articles that contribute to the construction of this review, since it is affirmed that the possible alterations in the orofacial complex may originate from bad habits that gradually affect the anatomy and physiology of the orofacial system, hindering to a great extent the execution of functions that undoubtedly require and involve this system, especially to consolidate the feeding process both in the first months of life and in the harmonious development of the individual.

Since feeding is a process that unquestionably involves the functional exercise of the orofacial system, several risk factors are evidenced in relation to the inadequate functioning of the orofacial structures, bringing with them alterations in the whole system that will cause a general imbalance of this, which leads to difficulties that will have repercussions in the daily life of the infant and consequently in its quality of life.

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Differences in the levels of adaptation, social support and family functionality according to the sex, age and school grade of children and adolescents affected by winter in Sucre, Colombia

Diferencias en los niveles de adaptación, apoyo social y funcionalidad familiar según el sexo, la edad y grado escolar de niños y adolescentes afectados por el invierno en Sucre, Colombia

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SUMMARY

Objective: The study aimed to establish the differences in the levels of adaptation, social support, and perceived family functionality according to sex, age, and school grade of a sample of 160 children and adolescents affected by floods in the Mojana sub-region of the Department of Sucre, Colombia.

Method: Using a quantitative descriptive-comparative methodology, the Multifactorial Self-Evaluation Test of Child Adaptation - TAMAI, the MOS perceived social support questionnaire, and the family APGAR questionnaire was applied, analyzing the data obtained through variance analysis.

Results: The results indicated statistically significant differences in social maladjustment according to sex and school grade. As for perceived social support, the

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differences are statistically significant for age groups in all dimensions of social support: positive social interaction, affective support, informational emotional support, instrumental support, and the overall social support index. Finally, in terms of family functionality, female subjects perceived greater functionality than male subjects.

Conclusion: *Demographic characteristics such as gender, age, and level of schooling condition the adaptation of children and adolescents in vulnerable contexts; there are differences in the levels of social adaptation and family functionality according to gender, and in the levels of family functionality, personal and social adaptation according to age.*

Keywords: *Misadaptation, family functionality, social support, childhood, adolescence, floods.*

RESUMEN

Objetivo: *El estudio tuvo como objetivo establecer las diferencias en los niveles de adaptación, apoyo social y funcionalidad familiar percibida según el sexo, la edad y el grado escolar de una muestra de 160 niños y adolescentes afectados por las inundaciones en la subregión de la Mojana del departamento de Sucre, Colombia.*

Método: *Mediante una metodología cuantitativa descriptiva-comparativa, se aplicaron el Test Multifactorial de Autoevaluación de la Adaptación Infantil - TAMAI, el cuestionario de apoyo social percibido MOS y el cuestionario APGAR familiar, analizando los datos obtenidos mediante análisis de varianza.*

Resultados: *Los resultados indicaron diferencias estadísticamente significativas en la inadaptación social según el sexo y el grado escolar. En cuanto al apoyo social percibido, las diferencias son estadísticamente significativas para los grupos de edad en todas las dimensiones del apoyo social: interacción social positiva, apoyo afectivo, apoyo emocional informativo, apoyo instrumental y el índice global de apoyo social.*

Conclusión: *Existen características demográficas como el sexo, la edad y el nivel escolaridad que condicionan la adaptación de niños y adolescentes en contextos vulnerables; existen diferencias en los niveles de adaptación social y funcionalidad familiar según el sexo, y en los niveles de funcionalidad familiar, adaptación personal y social según la edad.*

Palabras clave: *Inadaptación, funcionalidad familiar, apoyo social, infancia, adolescencia, inundaciones.*

INTRODUCTION

Extreme weather events generate unpredictable impacts and repercussions, affecting large areas and a large number of people in a non-quantifiable way (1). Its impact is evident in both the environmental and economic, as well as social and personal aspects (2). Although they occur around the world, they have a greater impact on poor countries, with vulnerable populations, where technology and resources are not enough for the prevention and reconstruction of the damage caused (3).

In Colombia, the most frequent natural phenomena that cause the greatest number of material and human are floods (4,5). One of the subregions most affected by this phenomenon is Mojana, located in the department of Sucre, where its inhabitants faced the phenomenon of the girl child between 2011 and 2012. It is known that 41 % of the affected population in the department were children and adolescents, who are the most vulnerable because they are in full psychosocial development, and according to the age at which they are, their understanding of the event varies but is reflected in a greater number of behavioral problems, distress, sadness, and depression (6,7). Although behavioral problems and emotional instability are addressed with adaptive strategies (8), as long as they are implemented by the respective organisms, the increased risk of suffering difficulties in their mental health, as well as academic and social effects is inevitable (9).

According to research carried out in Colombia, from the phenomenon of the girl child during the winter season of 2010 and 2011, in the population of Mojana and San Jorge of the Department of Sucre, it was established that children and adolescents do not have enough defenses to adapt to the environment. Their health, their emotions, and in general their integral development are greatly affected, so prompt intervention is necessary to obtain improvements in their psychological well-being (10).

However, a previous study shows that the majority of children and adolescents affected by winter in the Mojana subregion are adapted in the personal, social, and school context, as

well as perceive great social support and high family functionality, which could be explained by factors intrinsic to the subjects that allowed their adaptation over time (11), as well as being treated psychosocially in the face of the emergency. This could confirm that all policies that provide protection allow the reduction of the conditions of the vulnerability of children against disaster situations (12). From this perspective, children exposed to disasters are particularly vulnerable to psychological problems, such as anxiety symptoms, post-traumatic stress disorders, panic, phobias, depression, and adaptation problems, all because at this stage they are less prepared to face unexpected situations such as natural disasters, although, they also mention that children exposed to natural phenomena are usually more resilient (13).

In some studies, the difference in the impact of these catastrophes is pointed out according to certain personal and context variables, for example, between sex and age (14), and in relation to the socioeconomic condition. Vulnerability is not equitable because children whose families have financial capital, cover their basic needs, restore their safety and resume their daily activities more quickly compared to those children in a marginalized situation who remain in the problem situation for a longer period of time (6). This situation of socio-economic differences is caused by conditions external to individuals (15), such as income level, quality of housing, social networks, and access to basic services (16). “More than 270 million children currently live in areas extremely prone to flooding in countries where less than half of the population has access to improved sanitation facilities” (17). In accordance with the above, the variables of sex, age, and school grade will be taken into account for this research.

In 2017 Peru faced a natural situation called “El niño Costero”, in which both rains and floods affected more than 800 000 people. It was indicated that 30.7 % of poor victims are children and adolescents between 0 - 17 years old and it is assured that in the face of such an event, where there is damage to infrastructure, relocation of housing, shortage of food and basic services, constant loss of classes or physical and psychological effects, the psychosocial well-being, physical integrity, and school achievements

of children is compromised. Children and their families could face the impact on their health and nutrition, loss of forms of coping, less education, and therefore lower productivity, risk situations that if not addressed could generate profound consequences that go beyond the disaster itself (18).

Various studies (19-21) indicate that family support, taking into account the parenting method, is extremely important to overcome and achieve adaptability and a positive self-concept in any circumstance. That is, family support also influences emergencies due to natural disasters; although it is determined that this factor is more important for girls than for boys. Otherwise, having support networks made up of friends is a factor given more importance to boys than girls (22).

As for age, it is assumed that the level of importance given to things varies; a child between 0-6 years old may not deeply understand a situation, so he could adapt faster, this has variability due to his degree of self-perception. Social acceptance and behavior play a fundamental role for him in his stage of development (23); the appropriate or inappropriate response to adaptability to changes in the environment depends on how emotions are handled (24).

Regarding social support and the variable sex, previous studies have shown that while in adolescent men self-efficacy predominates due to self-confidence and independence, in women there is a greater tendency to perceive and value instrumental support (25) Similar findings were presented in another study (26), which indicates the existence of differences in the perception of social support according to sex, finding that “the relationships of global psychological well-being with self-esteem and perceived social support are of greater magnitude in women than in men”.

Regarding the functional dimensions of social support and the crossing with the age variable, depending on the place of residence, a study carried out (27) found that the age variable does seem to be more related to social support. Other research has found that “the older, the lower the social support received from the family, residential and school contexts, all correlations being negative, although there are cases in which it does not become significant”(28). Other findings

about children and the social support they perceive given the context of vulnerability in which they are immersed show that the family is the primary support network in these conditions since support among family members allows joint help to the individual to face traumatic and stressful moments more effectively (29,30).

Additionally, the research found a negative correlation between family functionality with age and sex (31); likewise, when studying a sample of high school students, sex has been found to influence the perception of the family process of individuation ($p = 0.05$) (32). A study found that “the distribution of the perception of normal family function is similar, regardless of the adolescent's sex. However, there is a change in the results of the Apgar test according to age: the 16-17 age group has the lowest prevalence of familial norm-function” (33).

Considering the elements proposed, this study sought to verify whether the psychosocial adaptation of children and adolescents, their perception of social support, and family functioning after floods, vary according to their sociodemographic characteristics. To do this, as a research question, are there significant differences in the levels of adaptation, social support, and perceived family functionality according to sex, age, and school grade of children and adolescents affected by winter in the Mojana subregion of the department of Sucre, Colombia?

METHOD

Participants

Descriptive-comparative research was carried out, with a non-experimental cross-sectional design. The sample consisted of 160 children and adolescents residing in the Mojana subregion of the Department of Sucre, Colombia, specifically in the municipalities of Buenos Aires, Calzón Blanco, Isla Grande, and El Sedro in the municipality of Sucre - Sucre (53 subjects), Palmaritico and Tierra Santa in the municipality of Guaranda (38 subjects), and Palomar and Pueblo Nuevo in the municipality of Majagual (69 subjects). This sample was selected based on the Single Registry of Damned by the Winter Emergency (2010-2011) and the report of the Risk Management Office of each municipality for the

identification of the areas with the greatest effects in relation to the urban and rural area.

Of the total sample, 71 subjects were male and 89 females between the ages of 8 and 18 and were in between the 2nd and 11th grades of school. As for the age range, 67 subjects were 6 to 12 years old, and 93 were from 12 to 18 years old. Their ages can be adjusted according to the stages of development, corresponding to the Childhood period (0 to 3 years), second childhood (3 to 6 years), intermediate childhood (6 to 9 years), puberty (9 to 12 years old) and adolescence (12 to 18 years old).

Instruments

The Multifactorial Self-Evaluation Test for Child Adaptation, TAMAI

This test measures levels of adaptation of children and adolescents in the social, family, school, and personal spheres, and their respective changes. The instrument is divided into two parts; the first evaluates personal, school, and social maladjustment, and the second evaluates parental educational styles. In this research, only the first part was used, which consists of 105 statements that the subject responds to in a dichotomous way (yes or no). In this research, Cronbach's alpha was 0.86. The scales of this instrument were standardized for the Colombian population through a comparative descriptive study carried out in the city of Barranquilla (34).

Family APGAR Questionnaire

This instrument made it possible to estimate the satisfaction of the family functionality of the subjects through five components: adaptability, cooperation, development, affectivity, and resolution capacity. The five components are evaluated with five questions that are scored from 0 to 2 (0 “almost never”; 1 “sometimes”; 2 “almost always”). This is a valid questionnaire, according to studies carried out (35) where the correlation coefficients were greater than 0.55, thus demonstrating their reliability, and has been used in previous studies on the Colombian population (36,37). The Cronbach alpha was 0.75.

MOS received social support questionnaire

The instrument consists of 21 items and evaluates 4 dimensions of social support: instrumental, emotional/informational, positive social interaction, and affective support. It is answered on a 5-point scale (1=never, 2=rarely, 3=sometimes, 4=most of the time, and 5=always). Cronbach's alpha in this study was 0.90. In Colombia, this instrument is validated and had a Cronbach alpha reliability index of 0.941; for components, alpha was reported between 0.921 and 0.736 (38).

Procedure

First, working meetings were held with the risk management office of the three municipalities that make up the Mojana subregion of the department of Sucre: Sucre-Sucre, Majagual, and Guaranda, to identify the areas with the greatest impact. Once the areas with the greatest effects were identified, the children and adolescents who would be part of the study in the schools of each municipality were selected. Parental consent was obtained, and a pilot test was carried out with

30 students to determine their understanding of the instruments; subsequently, the general application was carried out. Once the information was collected, the answers were typed into a database. For the analysis of the data, the SPSS 20 Statistical Program was used, first performing descriptive statistics and then a multivariate analysis - ANOVA, for comparison of means.

RESULTS

Differences in maladjustment dimensions

In the results shown in Table 1, statistically significant differences were found between sex and social maladjustment ($F=5.601$, $p=0.019$), with male subjects having a higher level of maladjustment. Regarding the age variable, there are no significant differences between age groups and maladjustment dimensions.

On the other hand, Table 2 shows statistically significant differences between school grades and social maladjustment ($F=5.457$, $p=0.005$), where students in grades 2 to 5 of primary school have higher levels of social maladjustment than

Table 1

Analysis of variance

		N	Mean	Standard deviation	F	Sig.
Personal maladjustment	Male	71	6.07	3.885	1.147	0.286
	Female	89	6.70	3.498		
	Total	160	6.42	3.676		
School Maladjustment	Male	71	3.99	3.232	1.323	0.252
	Female	89	3.44	2.788		
	Total	160	3.68	2.996		
Social maladjustment	Male	71	4.27	3.363	5.601	0.019
	Female	89	3.11	2.810		
	Total	160	3.63	3.112		

students in grades 6 to 7 and 8th to 11. In addition, significant differences are found between school grade and personal maladjustment ($F=3.390$, $p=$

0.036), indicating that grades 2-5° of primary basic have high levels of personal maladjustment compared to the other grades.

DIFFERENCES IN THE LEVELS OF ADAPTATION, SOCIAL SUPPORT AND FAMILY FUNCTIONALITY

Table 2
Analysis of variance between school grade and maladjustment dimensions

		N	Mean	Standard Deviation	F	Sig.
Personal maladjustment	2 a 5	60	7.02	4.061	3.390	0.036
	6 – 7	58	5.43	3.245		
	8 a 11	42	6.93	3.446		
	Total	160	6.42	3.676		
School maladjustment	2 a 5	60	3.75	3.160	0.617	0.541
	6 - 7	58	3.36	3.088		
	8 a 11	42	4.02	2.627		
	Total	160	3.68	2.996		
Social maladjustment	2 a 5	60	4.62	3.906	5.457	0.005
	6 - 7	58	2.83	2.422		
	8 a 11	42	3.31	2.236		
	Total	160	3.63	3.112		

Differences between the dimensions of social support

As shown in Table 3, the differences in the dimensions of social support perceived between age groups are statistically significant for all dimensions of perceived social support. That is, there are statistically significant differences between age groups in terms of positive social interaction ($F=6.293$, $p=0.013$), affective support ($F=6.293$, $P=0.013$), informational emotional support ($F=9.995$, $p=0.002$), instrumental sup-

port ($F=14.691$, $p=0.0001$) and the overall social support index (13.691 , $p=0.0001$).

The results indicate that boys and girls, compared to adolescents, perceive greater positive social interaction, greater effective support, greater informational emotional support, and greater instrumental support; hence the overall rate of social support perceived is higher for the child population than for the adolescent population. No differences were found according to the sex of the subjects.

Table 3
Analysis of variance between age and perceived social support dimensions

		N	Mean	Standard Deviation	F	Sig.
Positive social interaction	≤ 12	67	16.34	3.918	6.293	0.013
	13 – 18	93	14.88	3.419		
	Total	160	15.49	3.696		
Affective support	≤ 12	67	13.28	2.533	6.293	0.013
	13 - 18	93	11.68	2.938		
	Total	160	12.35	2.880		
Informative emotional support	≤ 12	67	31.94	7.544	9.995	0.002
	13 - 18	93	28.18	7.325		
	Total	160	29.76	7.624		
Instrumental support	≤ 12	67	16.01	3.637	14.691	0.0001
	13 - 18	93	13.67	3.952		
	Total	160	14.65	3.985		
Overall social support index	≤ 12	67	73.00	15.126	13.691	0.0001
	13 - 18	93	64.45	13.887		
	Total	160	68.03	14.982		

Differences in family functionality

As indicated in table 4, there are significant differences according to sex with respect to family functionality ($F=3.800$, $p=0.053$), with female subjects being the ones who perceive greater functionality in their family. After comparing age groups regarding their family functionality, it was found that there are no significant differences between children and adolescents. There are also no differences between school grades and the level of family functioning.

Table 4
Analysis of variance between sex and family functionality

	N	Mean	Standard deviation	F	Sig
Male	71	6.90	2.445	3.800	0.053
Female	89	7.64	2.332		
Total	160	7.31	2.403		

DISCUSSION

Efforts were made to differentiate in levels of maladjustment, social support, and family functionality according to sex, age, and school grade, in a sample of 160 children and adolescents residing in the Mojana subregion, Colombia. Regarding the maladjustment dimension and its differences according to sex, it was found that there are statistically significant differences, given that female subjects have better levels of adaptation than male subjects. This is corroborated by previous studies in which differences in adaptation levels according to sex were found, finding that women are better adapted than men (39,40), which goes in the same direction as the results obtained in this study where significant differences were evident specifically for the social maladjustment dimension. Similarly, previous research (41) found that there are significant differences in adaptation levels according to sex, where men are better adapted to the family environment and women to the school environment.

In another sense, no significant differences were found in maladjustment levels according to the age of the subjects, which goes in the opposite

direction to other studies which, when evaluating the level of psychosocial adaptation in the middle childhood of children at risk by adoption, adaptive differences were found within normal according to the current age of the children (39). This difference could be understood by the context in which the subjects of this study live, and the similar conditions in which both population groups (children and adolescents) develop; it is common to observe a large proportion of adolescents whose behaviors and attitudes are similar to those they had in their childhood so that it is not discriminated with certainty when they move from childhood to adolescence. This can be associated with the way they live and organize socially; the few spaces available to them to develop and advance at each stage of their life cycle, as well as dissatisfaction with their basic needs, can also permeate their physical development. However, this must be studied in depth in future studies.

Regarding the school grade, it was found that boys and girls in grades 2 to 5 have higher scores on the Social maladjustment scale than subjects in grades 6 - 7 and 8-11 of secondary school, which goes in the opposite direction than expected in the hypothesis raised. This could be explained from the theoretical perspective that explains that some minors during middle childhood may experience increased vulnerability to crucial events, which can slow down the schooling process (42). The same is true of the results of the personal maladjustment dimension, in which both children from 2nd to 5th grade and adolescents from 8th to 11th-grade show higher scores of school maladjustment compared to students in grades 6 to 7.

Consistent with the above, studies mention that this type of population could present difficulties with itself and mismatch, characteristics that can cause the subject not to achieve an adequate level of adjustment or balance that allows him to meet his expectations, that is, adapt and therefore respond coherently to the demands that the external environment demands (43).

However, the results found with respect to the school grade, go in the opposite direction to previous results in which primary school students were found to be better adapted to their family and school while high school students present higher levels of personal and social

maladjustment, manifesting common neurotic and psychopathological traits (40). It is striking that in the case of personal maladjustment both grades 2° to 5° and 8°- 11° show high scores of personal maladjustments differing from grades 6° to 7° which obtained notoriously lower scores. This suggests, in a way, that personal adaptation can be complex with the conflicts inherent in the development phase, in which risk situations that may arise at this stage of the life cycle must be faced (25).

In consideration of the dimensions of perceived social support and overall support index, according to the age of the subjects, it was possible to identify statistically significant differences between age groups for all dimensions of perceived social support and the overall social support index. In particular, boys and girls, compared to adolescents, perceive higher levels of positive social interaction, affective support, informational emotional support, and instrumental support, and, therefore, the overall rate of social support perceived is higher for the child population than for the adolescent population. These findings are consistent with other studies (27) that found negative correlations with respect to the functional dimensions of social support and the crossing with the age variable, depending on residential care, indicating that the age variable does seem to be more related to social support. It is confirmed that the older, the lower the social support received (28), therefore, for children the social support received in contexts of socioeconomic vulnerability is represented by the family, which remains the primary support network (29). In the same vein, when comparing the results obtained for men and women, controlling the effect of age, they found with 99 % confidence, that older students reported less perception of support from friends (44).

The same is not true of the dimensions of social support and overall index and variations according to sex, since no statistically significant differences were found between men and women regarding these dimensions. This fact is contrary to what was found in previous studies in adolescent men, self-efficacy predominates due to self-confidence and autonomy, while in women there is a greater tendency to perceive and value instrumental support since they are more

dependent and tend to seek help (25). Similar findings were presented in another study that indicates differences according to sex, stating that “the relationships of global psychological well-being with self-esteem and perceived social support are of greater magnitude in women than in men” (26).

An explanation for the non-existence of differences in this study could be the particular context of the subjects; if you observe the poverty conditions in which these families live, which are mostly single-parent, children and adolescents must assume domestic work from an early age for the support of the home, which causes both men and women to generate some independence from their social nucleus, there being a greater concern that would become in the first instance the satisfaction of their immediate needs. However, this must be studied in depth.

Regarding the levels of family functionality and sex, significant differences were found between men and women regarding their family functionality, with women who perceive greater functionality in their family. This finding goes in the same sense of research carried out (32) where sex was found to be decisive in the family process of individuation, in addition to the results of other research in which they found significant differences in family functionality by sex, indicating that male subjects score lower in system maintenance and system change, while female subjects obtained less score in coherence and individuation (31). However, the findings go in the opposite direction to what was found in other research (33); as can be seen, there is no consensus in the findings of these studies regarding the differences raised, suggesting a broader and deeper approach in subsequent studies (45,46).

On the other hand, the results obtained by establishing the differences between age groups with respect to their family functionality are consistent with the findings of other research in which it was obtained that age did not determine differences in the perception of family functionality (31,32), however, they differ from other studies carried out in which differences were found between the two variables (33-47). It is assumed that the variety of research results against this is due to the context in which the

studies were carried out and their particular characteristics, which could be reviewed more accurately and carefully in future studies.

Finally, it was found that there are no significant differences between school grades regarding their level of family functioning, as in other studies (33), indicating that the initial hypothesis of this study is confirmed and is consistent with research carried out.

CONCLUSION

Preliminary investigations carried out in the department of Sucre and in other contexts, have resulted in an impact on the adaptation of children and adolescents who have been exposed to disaster situations, in this case, floods (6,9,10,12,13). Other studies have concluded the opposite, that is, in this population, there are no low levels of adaptation, nor correlations between it and variables such as family functioning and perceived social support (11,19-21). This was the starting point of this research since it was presumed that there could be variations in the level of adaptation of children and their perception of family functioning and social support according to sex, age, and school grade.

The findings of this study allow us to conclude that for these subjects there are demographic characteristics such as sex, age, and schooling level that condition their adaptation in vulnerable contexts. At first, it is observed that male subjects have more difficulties in their social adaptation and perceive less family functionality. Older subjects receive less social support and have more difficulties in their personal and social adaptation. These results allow us to talk about psychological tension (48), given the probability that conflicts typical of the evolutionary phase of the subjects may be occurring, even though younger children (under 12 years old) receive more social support. However, no significant differences were found between the dimensions of social support and the overall social support index by sex. There are also no variations in the levels of family functionality according to age and school grade.

These results allow us to theorize that the levels of psychosocial affection in relation to

school, personal, and social adaptation, as well as the social support and family functionality that children and adolescents perceive after being exposed to recurrent floods, could have variations, in some cases, according to their individual and sociodemographic characteristics. Therefore, based on this finding, intervention plans could be proposed during the emergency or in later phases, aimed at meeting particular psychosocial needs of population groups under a differential approach. Likewise, the need to continue investigating these differences in more representative populations is highlighted and considering variables that could be related such as personality, socioeconomic level, time of exposure to floods, and if they have received some type of psychosocial intervention.

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Brain training with neurofeedback in patients with mild cognitive impairment: a review study

Entrenamiento cerebral con neurofeedback en pacientes con deterioro cognitivo leve: un estudio de revisión

Katy Estela Arroyo-Alvis¹, Ricardo Francisco Allegri², Ernesto Alejandro Barcelo Martinez³

SUMMARY

Objective: The study aimed to review the efficacy of Neurofeedback training in patients with Mild Cognitive Impairment (MCI).

Method: Review in scientific databases Science Direct, Web of Science (WoS)-ISI of Thompson Reuters-, Scopus, and PubMed. Taking as reference key terms in the English language: “mild cognitive impairment”, “mild cognitive decline”, “Neurofeedback”, “Brain ware” and “EEG feedback”.

Results: Most studies were published between 2019 and 2020. No homogeneity was found in the protocols used in terms of training time, EEG frequency band stimulation, age groups, sample size, and gender. Unanimity was found in the efficacy of Neurofeedback training on physiological and cognitive performance in patients with MCI.

Conclusions: Neurofeedback stimulation has proven to be an effective tool for the rehabilitation of cognitive functions and physiological activity in patients with MCI.

Keywords: *Neurofeedback, mild cognitive impairment, cognitive processes, functional connectivity.*

RESUMEN

Objetivo: El objetivo del estudio fue la revisión sobre la eficacia del entrenamiento con Neurofeedback en pacientes con Deterioro Cognitivo Leve (DCL).

Método: Revisión en bases de datos científicas Science Direct, Web of Science (WoS)-ISI-de la Thompson Reuters-, Scopus, y PubMed. Tomando como referencia términos claves en el idioma inglés: “mild cognitive impairment”, “mild cognitive decline”, “Neurofeedback”, “Brain ware” y “EEG feedback”.

Resultados: La mayoría de los estudios fueron publicados entre los años 2019 y 2020. No se encontró homogeneidad en los protocolos utilizados en términos de tiempo de entrenamiento, estimulación de banda de frecuencia de EEG, grupos etarios, tamaño de la muestra y género. Se encontró unanimidad en la eficacia del entrenamiento con Neurofeedback sobre el rendimiento fisiológico y cognitivo en pacientes con DCL.

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Conclusiones: *La estimulación a través de Neurofeedback, ha demostrado ser una herramienta eficaz para la rehabilitación de funciones cognitivas y actividad fisiológica en pacientes con DCL.*

Palabras clave: *Neurofeedback, deterioro cognitivo leve, procesos cognitivos, conectividad funcional.*

INTRODUCTION

Use of neurofeedback as an intervention method

The first studies related to the stimulation of non-invasive brain activity were carried out in animals, at the University of California (USA), by exploring the brain waves of the Alpha (α) rhythm, linked to the stages of relaxation (1). Since the late 1960s and early 1970s, human trials were conducted, mainly in individuals with pharmacologically resistant epilepsy, suggesting that it was possible to recondition brain wave patterns for a specific purpose (2).

The use of Neurofeedback (NF) is based on neurofeedback principles and is a neurobehavioral technique that makes it a non-invasive and non-pharmacological treatment option. It has gained interest and clinical relevance in multiple pathologies (3). It monitors electrical activity through a computer-brain interface, which allows the subject to control and modify their own brain activity, based on feedback and conditioning principles (4), which allows the subject, based on their capacity for learning and conditioning, voluntarily change their dynamic rhythms (5).

Neurofeedback is usually established from measurements of frequency, location, amplitude, and/or duration of brain electrical activity and is carried out through specific stimuli, these being the direct correlate of the biological signal to be regulated (6). Therefore, these fluctuations are not random but depend on the specific task and the determined cognitive configuration (7). If adequate feedback is generated with repeated training, changes in brain activity and, in turn, its projection in human cognition would occur (8).

To adequately achieve this feedback, first the parameter to be modified is chosen: amplitude of the oscillations and/or frequency band, and a specific task and the stimulus to be used are assigned. Thus, when the parameter exceeds the

predefined threshold, the subjects are provided with a sensory reward that permeates the transformation, based on operant conditioning and biofeedback (9,11,12).

Training of Cognitive Functions through Neurofeedback

The recording and processing of neural activity, through EEG, is one of the first objective measures used to study brain functionality (13); specifically, the so-called “mental states” (14). This is achieved by trying to correlate these cognitive domains with the different frequency bands identified through Fourier analysis and precisely defined (10).

Each representation of brain activity is associated with a distribution of EEG band values (5), which are produced by ionic flow from large groups of dendrites that are recorded in cerebral cortex currents in certain groups of neurons, due to synaptic transmission and the alternation between excitatory and inhibitory postsynaptic potentials (15).

This activity translates into what we call “brain rhythms”, which integrate time/frequency variations and “brain waves” that depend on the voltage fluctuations of the spectral content; which are the objective of the study to explore the behavior of the brain (16).

In this order of ideas, the EEG signal can be analyzed in the frequency domain, and five main bands of presentation are commonly distinguished —delta, theta, alpha, beta, and gamma (10)—, determined by the speed or slowness of presentation of each one, measured in cycles per second or Hertz (Hz); Gamma waves being the fastest (more than 30 Hz); and the Delta, the slowest (less than 4 Hz) (13); and, logically, the amplitude is inversely proportional to the frequency.

Each of these rhythms has been associated with specific cognitive states, as can be seen in Table 1.

In this line, several studies venture into the neurophysiological, cognitive, and even neuroanatomical identification of the so-called brain waves and their modification through NF training. For example, Wang et al. (17) showed

that training through NF of a specific wave, such as Theta (θ), in the 4-8 Hz frequency band, in the anatomical part of the mid-frontal line, could improve the performance of attention and working memory in healthy adults. Likewise, benefits were also verified in the executive function in the younger population.

Non-Invasive Brain Stimulation with NF in Patients with MCI

Based on the previous route (Table 1), brain patterns that fluctuate together with certain reciprocity between the cognitive and behavioral domains have been verified (7). This is how, these non-invasive brain stimulation techniques such as NF, it has been extrapolated and applied to all types of clinical and non-clinical populations, ranging from psychiatric diseases, and neurodevelopmental disorders, to recent studies in elderly people with and without cognitive impairment, this population being a focus of great clinical and research interest, in an attempt to prevent progression to stages of major cognitive impairment (18).

In line with the above, studies have indicated that NF can be a favorable tool in research on neuronal functioning and synchrony with cognitive processes in patients with MCI (19, 20). This is because the NF could generate tools that incite to increase/recover activity in affected brain regions and help them learn to mediate the activation of specific brain regions (21).

MCI has been described, according to multiple investigations, as an intermediate stage between normal aging and what would be the subsequent development of the initial phases of dementia. This includes patients with problems in higher mental functions of a variable degree, depending on the type of dementia. MCI, but without functional impact on activities of daily living (22). This is the differentiating criterion between a minor and a major neurocognitive disorder, according to the latest conceptualization issued by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (23).

The effectiveness of this technique in MCI has been reported in recent clinical studies, which describe that training protocols with NF show a

significant increase in brain activity within each training session used in this group of patients. This suggests that the aging brain can still be trained (24). This would indicate, in turn, that NF stimulation could improve the neurocognitive functions of patients with MCI and dementia (25), as in Alzheimer's disease (AD) (26), providing a novel tool to examine the degree, the progression, and improvement of these neurodegenerative pathologies (27). However, the recommendations suggest strengthening the experiments, to generate greater causal relationships or more conclusive results (28).

However, despite the research with results on the efficacy of Neurofeedback in MCI, there is also a gap in the sustainability of rehabilitation, since they work for short periods, non-randomized times. In addition, there are few studies regarding feedback transfer beyond training (24). Not to mention, studies evaluating the efficacy of NF training in this population are still relatively few (3).

For all the above, this review tries to delve into studies on the national and international scene, on the research of training with NF in the performance of physiological notions, combined with effects in the cognitive sphere in patients with MCI.

METHOD

A bibliographic review of scientific articles published in different databases (Science Direct, Web of Science (WoS), Scopus, PubMed/MedLine) was carried out, taking into account publications from 2010 to 2020, using the keywords in English "mild cognitive impairment", "mild cognitive decline", "cognitive disorder", "Neurofeedback", "biofeedback", "brain ware", "EEG feedback" and "Neurofeedback training", and limiting your search to only studies in that language. With the use of Boolean intercession operators (AND and AND) and logical addition (OR and OR), arriving at the following search algorithm: Neurofeedback OR brainwaves OR EEG feedback OR biofeedback AND "mild cognitive impairment" OR cognitive disorder OR MCI.

Criteria for Inclusion and Selection of Articles

To be included, the studies had the following selection parameters: 1. Works derived from a research process; 2. Research variables related to brainwave training with Neurofeedback; 3.

That the research studies be with MCI patients; 4. In free access. Once the criteria were applied, 6 articles were finally identified and reviewed that related to the research variables treated in this study (Figure 1).

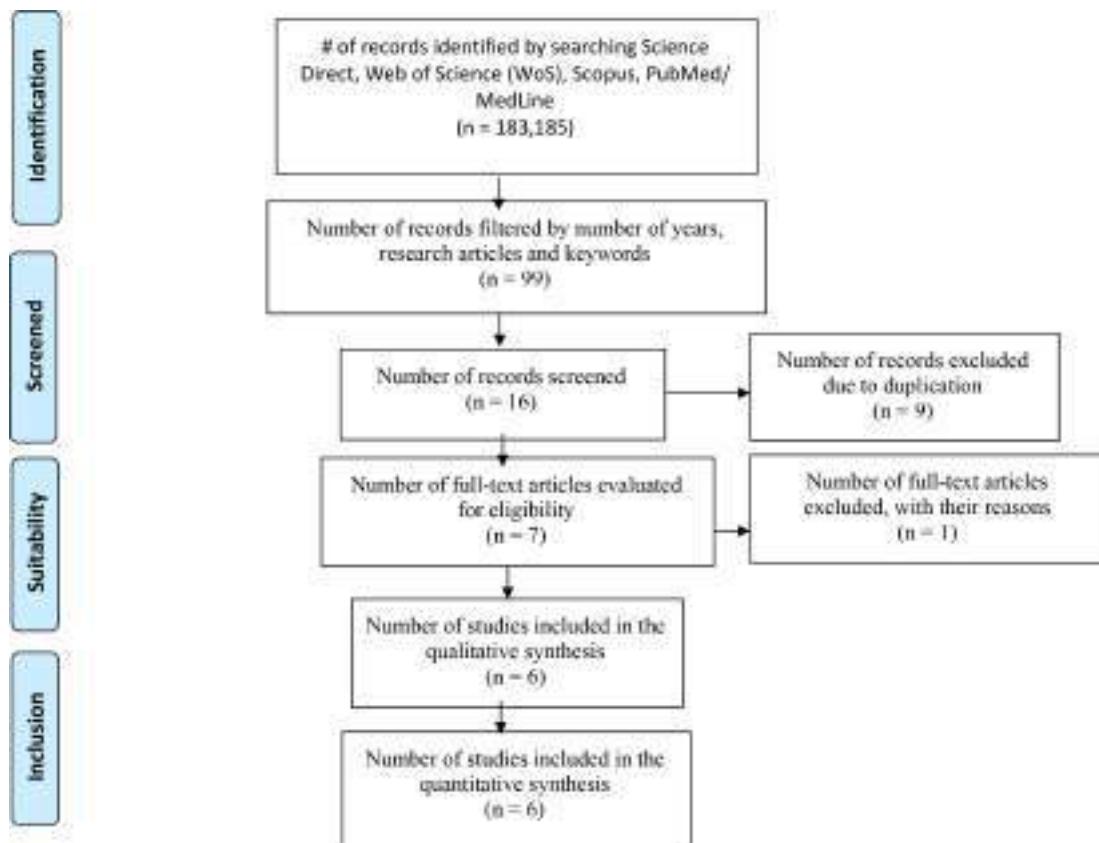


Figure 1. The PRISMA17 statement was followed to report the items in this review.

Results (Table 1) Scientific Articles by Year of Publication (Table 2)

During the review, studies are denoted that start with intensity in 2011 with experimentation in rehabilitation with NF in MCI, associated with neoplasms or other pathologies that compromise the central nervous system (29). After that year, most studies focused on

rehabilitation with NF in young adults, trying to enhance cognitive functions through brain wave modification (11,21,30,31). Starting in 2018, research began to appear—mostly clinical trials—aimed at the use of NF and its efficacy in MCI. And, in that sequence, in 2019 and 2020, this type of research registered in the PubMed and Scopus databases increased significantly (Figure 2).

BRAIN TRAINING WITH NEUROFEEDBACK

Table 1. EEG Frequency Bands and relationship with Cognitive Status

Brain Rhythm	Frequency	Cognitive Function	Brain Area
Gama	Above 30 Hz (13,44).	They are associated with the condition of consciousness processing, perceptual integration tasks, working memory, and visual and auditory memorization (45-46), and are also involved in visuomotor exercise tasks and sensory-motor attention (47).	Medial frontal parietal cortex (45), and sensorimotor (47-48).
Beta	15-30 Hz (49).	In addition to the sensorimotor area, beta oscillations play other important roles in pure sensory domains such as the modulation of somatosensory input (50) and participation in autonomic nervous system (ANS) functions (49). Beta oscillation can thus be seen as a dynamic biomarker involving somatomotor control and regulation of SNA signals (49).	Motor cortex networks (50). It further serves as a functional link between different brain regions such as the premotor motor and somatosensory cortex, the supplementary motor area, and the cerebellum (49).
Alfa	8-12 Hz (52).	They call the spontaneous activity of the brain in the relaxed state of closed eyes, it is the dominant rhythm in the EEG and is generally associated with a state of relaxation and self-awareness (10), or as a kind of relaxed attention (1). High alpha activity can be observed in regions that are not involved in the current task (7). Subsequently, their training has been found to show positive implications for working memory (53). These oscillations can be considered as a marker of cortical inactivity or an index of active inhibition of sensory information (51).	Thalamic and cortical generators and later the deep layers of the sensory cortices, meaning that the large amplitude of the alpha rhythm would be the result of a coherent cortical input from the thalamus that coincides with the lack of other sensory input, although the mechanisms of the interaction remain unclear(54).
Theta	de 4-8 Hz (55).	Depending on where in the brain the Theta oscillations are observed, they may be associated with internal orientation, intuition, sleepy states, or memory function (10). Regularly these oscillations can be divided into two groups of hippocampal and cortical theta rhythms. The latter have been related to the encoding, retention, and retrieval of items in working memory (55). On the other hand, depending on its source, it is implicit in variations of functions such as temporary sites for encoding, maintenance, and recovery functions, at the frontal level in task demands, and with more intensity in the same area with memory tasks of work (7), and at the medial frontal level care (17).	It is modulated by different regions of the brainstem, including the nucleus incertus (NI), located in the dorsal tegmentum (49). In addition to showing a clear intracranial peak of the hippocampus (55). Cortical Theta manifests in temporal and frontal sites, the increase or decrease of which is beneficial for successful memory retrieval (7).
Delta	2-4 Hz(14).	It is implicated in response optimization for task-relevant events and shorter reaction times and attentional selection (56). Next, in Gamma band coupling, they form significant predictors of the multiple unit activity (MUA) response (14).	Primary visual cortex (14, 56-57).

Note: This table shows the frequency bands and their role against a cognitive process and production brain region.

Table 2. Systematization of the Search for Scientific Articles.

Nº	Authors	Year	Research Name	Target	Intervention Protocol	Brain Wave	Cognitive Process	Neurofeedback Equipment	Data Base
1	Jirayucharoenasak, Israsena, Panngum, Hemmungroj, & Maes	2019	A game-based Neurofeedback training system to enhance cognitive performance in healthy elderly subjects and patients with amnestic impairment (amn) and healthy elderly subjects.	Examines the clinical efficacy of a Neurofeedback training system to improve cognitive performance in patients with amnestic mild cognitive impairment (amn) and healthy elderly subjects.	20 sessions of 30 minutes each, 2-3 sessions per week	Beta and al-pha at the level of AF3, AF4, O1, and O2	Cognitive Performance - Working Memory - Sustained Attention	"Emotiv EPOC"	Scopus- WOS- PubMed
2	Marlats, Djabelkhir-Jemmi, Azabou, Bouabaya, Pownell & Rigaud	2019	Comparison of effects between SMR/delta ratio and beta/theta-ratio Neurofeedback- back Training for older adults with Mild Cognitive Impairment: a protocol for a Randomized controlled trial	To examine whether NF training decreases cognitive impairments such as memory, attention, and brain electrical activity in elderly people with MCI	30 sessions of 45 minutes each, 2-3 sessions per week	SMR Delta/ at Cz level and Beta-tetra at the Fz level	Cognitive Performance- Attention	EEG Digitrak Biofeedback plus, Elmiko Inc	SScopus WOS- PubMed
3	Lavy, Dwolatzk Kaplan, Guez & Toddor.	2019	Neurofeedback Improves Memory and Peak Alpha Frequency in Individuals with Mild Cognitive Impairment	I explore the benefits of Neurofeedback for subjects with MCI	10 sessions of 30 minutes each, 5 sessions per week	Upper Alpha to Pz level	Memory, FE, and visuospatial abilities.	Deymed Truscan Acquisition Device, wineeg software	Scopus- WOS- PubMed
4	Jang, Kim, Park, Kim, Jung, Cha, Kim, Kim, Lee, & Yoo.	2019	Beta wave enhancement Neurofeedback improves cognitive functions in patients with mild cognitive impairment: A preliminary pilot study	Investigate cognitive enhancement and hemodynamic changes in the prefrontal cortex (PFC) after NF Training in MCI patients.	16 sessions of 45 minutes each, 2 sessions per week	Beta in dorsolateral prefrontal cortex	Composite memory, cognitive flexibility, attention, reaction time, and executive function	Procomp Infiniti System, Thought Technology	Scopus-PubMed
5	Marlats, Bao, Chevallie, Bouabaya, Djabelkhir-Jemmi, Wu, Lenoir, Rigaud & Azabou.	2020	SMR/Theta Neu-rofeedback Train-ing Improves Cognitive Performance and EEG Activity in Elderly With Mild Cognitive Impairment: A Pilot Study	I examine whether Sensorimotor Training (SMR)/ Theta Neurofeedback improves cognitive performance and brain electrical activity in elderly patients with MCI.	20 sessions of 45 minutes each, 2 sessions per week	SMR/Tetra at CZ level	Cognitive Performance - Working Memory and Consolidation	EEG Digitrak Biofeedback plus, Elmiko Inc	Scopus- WOS- PubMed
6	Li, Zhang, Li, Cui & Su.	2020	Neurofeedback Training for Brain Functional Connectivity Improvement in Mild Cognitive Impairment	I explore the effectiveness of Neurofeedback to improve functional brain connectivity in patients with mild cognitive impairment	10 sessions, 5 sessions per week, duration until the end of the session (no limit)	Delta, theta, alpha, and beta at connection points Fp1-F3, F3-C3, C3-P3, P3-O1, and Fp2-F4.	Cognitive Performance and Functional Connectivity	NT9200, Beijing Zhongke Xinuo Instrument	Scopus- WOS

Note: The table illustrates the distribution of results by articles.

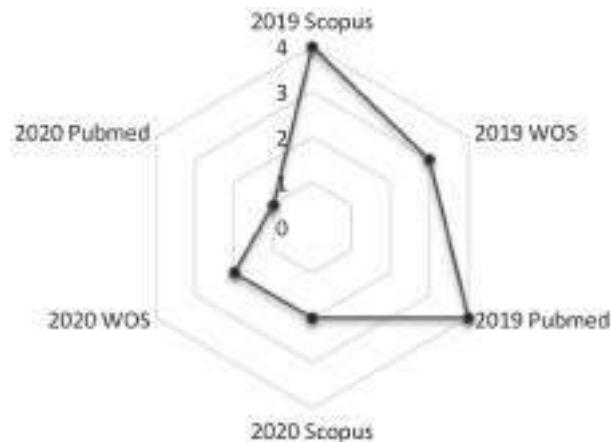


Figure 2. Characterization by Year and Database.

Note: The radial graph shows the proportion of articles in relation to the years and database.

Scientific Articles by Schooling/Years/Sample

A description of the general sociodemographic aspect of the selected articles is presented. In this way, in the first place, it is detailed that the population of these studies had a disparity in the number of subjects that made up their sample,

finding from 119 subjects to the incorporation of 5 subjects as the total sample. Next, the vast majority of the studies included a range of 66 years and 6 years of schooling as a mean age. However, no homogeneity was found in demographic characteristics when comparing each article, as shown in Figure 3.

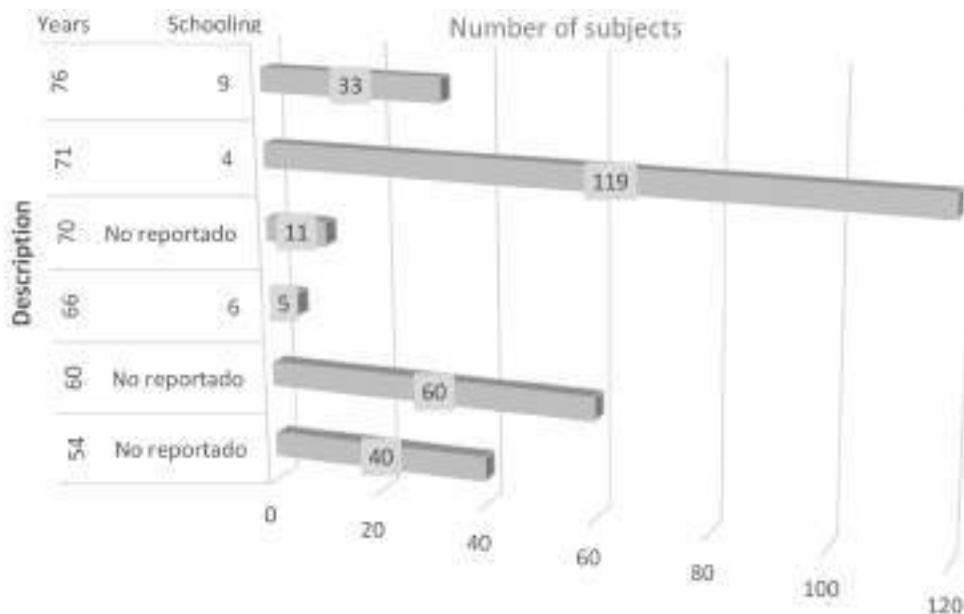


Figure 3. Description by years, schooling, and sample number of articles.

Note: The bar graph shows the description of the articles in relation to the sample, their age, and education.

Distribution by Gender

In the description by gender, it was found in particular that 66 % of the investigations included both genders in their sample. However, it is detailed that 33 % of this percentage included a greater number of women in relation to men. Likewise, 50 % of the studies carried out specify the female gender as the greatest denominator when carrying out studies on individuals with MCI.

Next, a small percentage (17 %) was found that did not specify gender in the selected sample, and in an equal percentage (17 %) studies were found that included only one gender: female.

Neurofeedback Training Protocol

In the review of the intervention protocol, it was found that 60 % of the investigations incorporated an intensity of 45 minutes per session, followed by 30 minutes with 40 %, finding only one article that did not include a training limit within its protocol.

Similarly, the sessions included a number of 2 to 5 sessions per week, where the highest percentage was located with the realization of 2 and 3 sessions during the week with 90 %,

finding only a single antecedent represented in 10 %, which included intensity of 5 weekly sessions, one per day.

Regarding the number of total sessions, these studies varied with a total intensity of 10 sessions (40 %), 20 sessions (40 %), and, to a lesser extent, studies with 30 and 16 total sessions, V with a percentage of 10 % for each (Figure 4).

Characterization of Wave, Connection, and Cognitive Process

When analyzing the distribution, it is found that there is no similarity in the protocol used by these studies, observing that in the different articles there is no evidence of a standard pattern of experimentation, in terms of location of brain activity recording, stimulation time, and frequency. All of the studies examine the frontal, central, parietal, and occipital cortex. No studies on the temporal cortex were found.

In agreement, at the level of stimulation of processes or cognitive domains, we evidence different processes anchored to each intervention protocol, highlighting memory as the most evaluated, in its different clinical and neuropsychological dimensions, followed by attention and executive functions (Table 3).

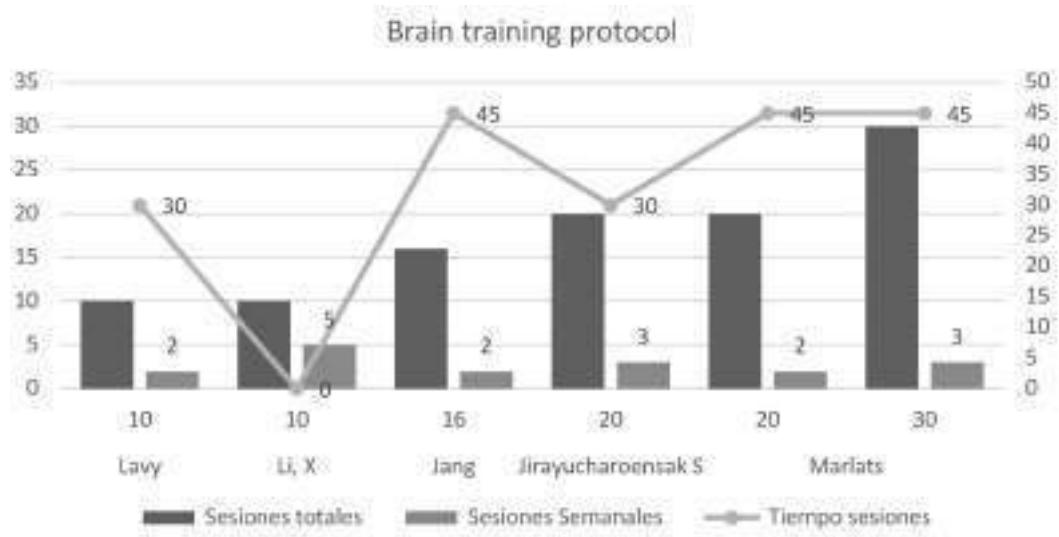


Figure 4. Description of the training protocol by author

Note: The bar graph illustrates the variety of training protocols by the author.

Table 3. Description of Connection Protocol, Brain Wave, and Cognitive Process

Connection	Brain Wave	Proceso Cognitivo
CZ	SMR / Theta	Cognitive Performance - Working Memory
F3, F4, O1 y O2	Beta-Alfa	Cognitive Performance - Working Memory - Sustained Attention
CZ /FZ	SMR-Delta/ Beta-Theta	Cognitive Performance- Attention
Fp1-F3, F3-C3, C3-P3, P3-O1, y Fp2-F4	Delta, Theta, Alfa Y Beta	Functional Connectivity
Pz	Alfa Superior	Memory, FE, and Visuospatial Abilities.
PF	Beta	Composite Memory, Cognitive Flexibility, Attention, Reaction Time, and Executive Function

Note: The table details the variety of connection protocols, brain waves, and cognitive processes that were found as a result of the review.

DISCUSSION

Regarding the discussion variables, it was found —based on the research review— the growing interest in MCI as a prodromal stage of a dementing process and, more linearly, with AD (2). It is for this reason that some authors (32) describe the level of incidence and the high associative risk of patients with this pathological condition against the development of this disease. In addition to reporting a rapid rate of decline in cognitive function, compared to people who do not have any clinical signs of MCI.

In this way, just as the importance of MCI has been reported as a focus of interest for the scientific community, the need for prevention is also contiguous with the development of AD. However, it is prudent to mention that, although MCI is usually evoked as a transitional stage to a dementing process, there are authors who highlight in their studies that the condition and the conversion rates remain controversial (33). This is how we find annual conversion rates of 10 to 30 % and 20 to 66 % (34), as well as others that highlight approximately 15 % (35). And, if we add to this the scarce pharmacological evidence that contributes to this conversion rate, the need to continue delving into studies with non-invasive

stimulation techniques is highlighted, for their use as a treatment option.

In recent years, emphasis has been placed on different intervention models for MCI: pharmacological, genetic, epigenetic, and neurophysiological. In any case, studies on this pathology —mainly in the line of intervention through Neurofeedback— go back with greater intensity in recent years (36-39), positioning it as an important technique for self-regulation of brain activity and cognitive potential in these patients (40,41).

This is how, through the review of the effectiveness as an intervention technique, all the antecedents coincide in expressing the clinical employability that it has in patients with MCI (3,37-40), especially in potential therapeutic applications to prevent the progression of MCI to major cognitive impairment (25).

Therefore, when referring to brainwave training in MCI through NF neurofeedback, the review showed differences in the implementation of specific activation/inhibition protocols in different frequency bands, as well as the cognitive process that is desired to impact.

This finding, in the variety of intervention protocols, is parallel to various investigations that

through their experimentation have contributed to the field of connectivity and functional intensity in MCI. For example, one study showed a correlation between cognitive decline and decreased gamma activity (24). Likewise, it has been found that patients with MCI show an increase in Theta power and a decrease in Beta power, while patients with advanced dementia show a decrease in Alpha power and an increase in Delta power (20). On the other hand, other authors show discrepancies in these results, finding, for their part, that both MCI and EA share the same pattern of EEG activation related to working memory characterized by an increase in P200-N200 latencies and a decrease of Beta power (42). Finally, other authors report theta wave overactivity in dementia studies, compared to normal older people (26). Consequently, other authors suggest low functional connectivity in patients with MCI, mainly in the Beta rhythm (3,29).

This demonstrates the need for further research in this field. Above all, in order to standardize intervention protocols (frequency, intensity, recording location, among others), which allow demonstrating the probable efficacy of these non-invasive models and intervention for prevention, early intervention and timely rehabilitation for individuals with this pathology.

Finally, it is worth highlighting the importance of gender when defining intervention models with Neurofeedback in MCI, considering the difference in functional connectivity between male and female genders, especially in the sensory-motor network (SMN), the dorsal attention network, and the relationship with the white matter, which in women tend to be more affected in this population (43). For this reason, taking into account the findings of this review, where the studies showed a greater population inclination towards the female sex, it should be considered a relevant factor when establishing differences in MCI progress.

Based on all of the above, the present investigation sought to carry out a characterization through a review of Neurofeedback training and how, through it, some physiological and cognitive notions can be improved in patients with MCI, in addition to its most notorious generalities. That

is why some of the conclusions and reflections that stand out from this study are:

- o Intervention with NF as an intervention tool, which shows probable efficacy in both the research and clinical fields: promising results.
- o The brain—even in normal aging or in MCI—shows learning and a good training response through neurofeedback by NF, being able to increase the modeling of frequency bands and increase functional connectivity, potentially impacting cognitive function in people with MCI, allowing them to benefit brain reserve.
- o To date, various training protocols, connections, and training times can be seen, not be possible to single or similar reference when conducting research in the line of rehabilitation with NF in patients with MCI.
- o The importance of establishing a homogeneous distribution in terms of gender is made clear when consolidating the sample.
- o Finally, more neurophysiological rehabilitation studies are encouraged with the use of non-invasive techniques such as NF, which feed knowledge on EEG frequency band waves, brain connections, and cognitive function.

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Hypertension, emotions and happiness: A brief view from the biology to the positive psychology

Hipertensión, emociones y felicidad: una breve mirada desde la biología a la Psicología Positiva

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SUMMARY

High blood pressure (HBP) is a silent disease with an extremely high prevalence worldwide. It is considered the leading risk factor for cardiovascular (CVD) and neurovascular disorders. The etiology of hypertension is based on various genetic, environmental, and social factors. Currently, compelling evidence points to the link between HBP and certain psycho-emotional factors, such as mental stability, happiness, general well-being, and fulfillment, all consistently associated with better physical and psychological health. Clinical

and epidemiological evidence supports their value as a novel target in HBP management despite the lack of clarity concerning how psycho-emotional and affective states affect cardiovascular health. Among the main psycho-emotional strategies implemented to treat HBP and other CVD patients, emphasis should be placed on psychosocial interventions and positive psychology, which have shown promising results in this regard thus far. Therefore, this review aims to comprehensively determine whether an individual's psychosocial and emotional state can be an HBP risk factor.

Keywords: Hypertension, cardiovascular disease, happiness, psychosocial, health.

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RESUMEN

La hipertensión arterial (HTA) es una enfermedad silenciosa con una prevalencia extremadamente alta a nivel mundial. Es considerada el principal factor de riesgo de enfermedades cardiovasculares (ECV) y neurovasculares. La etiología de la HTA se basa en diferentes factores genéticos, ambientales y sociales. Actualmente, la evidencia apunta al vínculo entre la HTA y ciertos factores psicoemocionales, como la estabilidad mental, la felicidad, el bienestar general y la realización, todos asociados consistentemente con una mejor salud física y psicológica. La evidencia clínica y epidemiológica respalda su valor como un objetivo novedoso en el manejo de la HTA a pesar de la falta de claridad sobre cómo los estados psicoemocionales y afectivos afectan la salud cardiovascular. Entre las principales estrategias psicoemocionales implementadas para el tratamiento de la HTA y otros pacientes con ECV, se encuentran las intervenciones psicosociales y la psicología positiva, que hasta el momento han mostrado resultados prometedores. Así, esta revisión tiene como objetivo determinar de manera integral si el estado psicosocial y emocional de un individuo puede ser un factor de riesgo de HTA.

Palabras clave: Hipertensión, enfermedad cardiovascular, felicidad, psicosocial, salud.

INTRODUCTION

High blood pressure (HBP) is the most common risk factor associated with cardiovascular disease (CVD), affecting approximately 1.39 billion people worldwide every year (1). Furthermore, HBP is considered the most influencing risk factor for the premature cardiovascular and neurovascular disease since 47 % of all acute coronary syndromes and 54 % of all strokes globally are a direct consequence of this clinical entity. Moreover, the latest data predicts that by 2025 about 1.5 billion adults will suffer from this condition, which is equivalent to 30 % of the world's population (2-5).

HBP is often a silent disease causing long-lasting neurovascular and cardiovascular damage such as coronary heart disease, congestive heart failure, retinopathy, stroke, intracerebral hemorrhage, and chronic kidney disease. In

addition, the leading causes of morbidity after HBP onset are coronary artery disease in men and stroke in women (6-10).

The development and natural progression of HBP are determined by the complex interaction between certain non-modifiable and modifiable factors, ranging from polygenic determinants influenced by environmental and behavioral factors (11,12). In the last decades, high, middle, and low-income countries have experienced the so-called HBP epidemic, mainly attributable to various lifestyle changes and behavior, such as low energy expenditure due to physical inactivity and a high-calorie diet (3).

On the other hand, the possible role of emotional and subjective mental states as triggers or adjuvants in HBP perpetuation has been discussed. Consequently, the scientific community has shown some interest in the psychological and behavioral aspects of HBP management, which promotes well-being and mental wholeness characterized by the encouragement of positive emotions, such as happiness (4,13). Furthermore, it should be noted that an optimal psychosocial and emotional state could be directly related to physical health (14). For this reason, the objective of this review is to determine whether the psychosocial and emotional state can be considered an HBP risk factor.

Classic Risk Factors for Essential Hypertension

Cardiovascular risk factors can be classified into modifiable and non-modifiable factors. Modifiable risk factors are those that can be corrected or minimized with intervention. These include smoking, dyslipidemias, diabetes mellitus, obesity, physical inactivity, and excessive alcohol and high sodium consumption. On the other hand, non-modifiable risk factors cannot be subject to any intervention, as they involve an unchangeable personal and family history of CVD, namely, genetic and/or hereditary factors (15-19). In this sense, some authors claim that an individual's blood pressure (BP) is determined by the interaction between environmental and genetic factors, which generally refer to modifiable and non-modifiable factors, respectively (7,10).

a) Genetic factors

Regarding hereditary factors, studies carried out in the pre-molecular *era* have shown that these are responsible for 20 %-50 % of BP variations in humans (20). Multiple genes are potentially involved in BP control and regulation (21). However, it has been demonstrated that people with similar BP do not necessarily share the same genotype, just as people with the same genotype do not necessarily have the same BP (2,22).

Nevertheless, numerous studies point to genetic polymorphisms and their roles in HBP development. In this regard, Nunes et al. studied the associations between genetic polymorphisms of bradykinin B2 receptor (BDKRB2), alpha-adrenergic receptors (ADRA), and endothelial nitric oxide synthetase (eNOS) in the modulation of BP and left ventricular mass. Their findings suggest that the rs5810761 (DD genotype) BDKRB2 polymorphism is associated with higher systolic and diastolic BP, whereas the eNOS rs1799983 (T alleles) polymorphism is associated with a lower diastolic BP (22).

Similarly, the polymorphisms of some genes involved in reactive oxygen species (ROS) production regulation have been shown to modulate BP. Various mechanisms have been proposed to describe how ROS modulates BP, such as endothelial dysfunction, arterial stiffness, glomerular damage, NaCl retention, and inflammation (23). In summary, HBP is considered a hereditary disease, passed on from generation to generation, making individuals with a family history of HBP much more likely to suffer from HBP than other healthy individuals (24).

b) Environmental factors

Many environmental factors have been linked to BP regulation, including cold weather, higher altitude, noise, and air pollutants (25). In addition, some studies have shown that one or more of these factors can permanently change physiological cardiovascular functioning, predisposing individuals to a higher risk of developing CVD in the future (26,27).

Likewise, numerous researchers have studied the link between long-term exposure to noise and HBP over the years. This connection has been seen mainly in those individuals exposed

to nocturnal noise, which can increase cortisol levels and vascular oxidative stress, leading to endothelial dysfunction and hypertension (28,29).

The specific mechanisms affecting BP have not been fully elucidated yet regarding factors like air pollution. However, it is suspected to cause endothelial dysfunction through increased oxidative stress and promoting systemic inflammation. In the same manner, air pollution can trigger an autonomic nervous system imbalance, with a subsequent dysregulation of the vasomodulatory mechanisms involved in BP regulation (30). Moreover, Wu et al. point out that certain metals such as V, Fe, Zn, Se, and Hg, could raise BP or increase the risk of developing HBP (31).

Furthermore, various environmental pollutants have been recently described as possible endocrine disruptors; that is, environmental substances with biological activity targeting endocrine system function, thus interfering in the physiological regulation of BP (32). One of the main endocrine disruptors is bisphenol A (BPA). Although the mechanisms involved in cardiovascular system dysregulation are still unknown, experimental studies suggest that BPA can induce liver cell damage and increase oxidative stress. Additionally, BPA can disrupt pancreatic β -cell function, promoting insulin resistance, one of the main risk factors for hypertension (33-35).

In this context, the possible toxic role of heavy metals like lead (Pb) in HBP development has been explored (36). While the cardiovascular system is not its primary target, researchers suggest that at high concentrations, Pb can alter the functioning of cardiac muscle cells and vascular smooth muscle through a rise in ROS production, resulting in an oxidative stress increase (37). On the other hand, high lead levels negatively correlate with nitric oxide synthesis (36,38).

c) Physical activity

Various studies have evidenced that physical activity is inversely correlated with HBP incidence (39). This fact could be explained by the positive effects of physical activity on health, commonly associated with beneficial effects resulting in hemodynamic and metabolic changes

that enhance endothelial function and decrease oxidative stress in general (40,41). In contrast, physical inactivity is strongly associated with the development of obesity and overweight, which can lead to hypertension, therefore posing a higher risk of morbidity and mortality in sedentary individuals (42,43).

Similarly, substantial evidence reveals that moderate or vigorous physical activity reduces BP by approximately 5-7 mmHg, whereas performing dynamic resistance training is associated with a decrease of only 2-3 mmHg (44,45). In regards to the HBP-related cardiovascular complications, it has been found that resistance exercise is associated with a general cardiovascular risk reduction, lowering the risk of stroke by 8%-14%, cardiac morbidity by 5%, and all-cause mortality by 4% in the average population (45,46). Although these types of physical activity are related to a lower incidence of hypertension, it is worthy to emphasize that they are contraindicated in those with unstable heart conditions, including severe uncontrolled hypertension (44,47-49).

d) Tobacco and alcohol consumption

Smoking is known to be one of the main CVD risk factors (50). Acute cigarette consumption is capable of raising BP, as its components stimulate the sympathetic nervous system, subsequently leading to peripheral vasoconstriction and increased heart rate (51). Additionally, smoking also induces mitochondrial dysfunction in cardiovascular system cells due to a decrease in mitochondrial deacetylase sirtuin-3 and hyperacetylation of superoxide dismutase 2, which contributes to the development of endothelial dysfunction, and later to HBP (52).

Andriani et al. conducted a 15-year population-based cohort study to evaluate the relationship between smoking status and BP. The authors concluded that there is a strong association between smoking and the incidence of HBP since smokers have been consistently shown to have a higher prevalence than non-smokers or those who quit smoking (53). Paradoxically, in studies assessing the effect of chronic smoking on BP, there has been no evidence of a direct causal link between smoking and HBP. However, it is necessary to bear in mind that chronic and hypertensive smokers could develop severe forms

of HBP, including malignant and renovascular HBP (50,54).

Conversely, alcohol has a biphasic effect on BP regulation, as it lowers BP in the first 12 hours after consumption but increases it after this period ends. In addition, heart rate also increases in the following 24 hours after alcohol intake (55). In this sense, a study by Stranges et al. in a sample of 2 609 individuals from New York, aged 35 to 80 years, stated that alcohol consumption (regardless of the amount of alcohol consumed) outside of meals increases the risk of HBP (56).

e) Obesity and Diabetes Mellitus

Obesity and diabetes are both metabolic disorders that directly influence CVD incidence. Multiple epidemiological studies have found a significant positive correlation between obesity and the risk of diabetes and HBP, suggesting that diabetic patients have a higher risk of suffering from hypertension (57-60). The underlying mechanisms of this phenomenon are possibly based on the functionality, distribution, and quantity of the adipose tissue, together with the cell population within it (61,62). Indeed, the endocrine secretion profile of healthy adipose tissue is well known and is characterized by the secretion of vasoactive adipokines and anti-inflammatory cytokines. However, during the adipose tissue expansion seen in obesity, mature adipocytes undergo dramatic functional and morphological changes characterized by a proinflammatory metabolomic profile promoting the pathogenesis of BPH and other CVD.

The rise in adipose tissue increases systemic vascular resistance, increasing cardiac effort in compensation to work against said resistance. Similarly, the metabolic changes heralded by obesity can cause sympathetic hyperactivity resulting in kidney damage. Ultimately, all these events will lead to cardiovascular functioning changes that will promote BP alterations (63).

Additionally, perivascular adipose tissue (PVAT) surrounding most blood vessels has certain endocrine qualities that regulate their functioning. When the PVAT is healthy, it serves as an anti-contractile, anti-inflammatory, and antioxidant tissue. However, in obese and diabetic patients, PVAT becomes unhealthy, and so its secretory profile is altered, resulting in

increased vascular inflammation, oxidative stress, and arterial remodeling instead (64).

Moreover, obesity is related to developing cardiometabolic diseases at an early age. Obesity is of great clinical relevance during childhood, given its strong link to hypertension and diabetes mellitus (65,66). Likewise, studies have proven that being overweight or obese increases the likelihood of developing HBP by five-fold compared to healthy individuals (67,68).

f) Dietary factors

Proteins, fats, and carbohydrates are among the main macronutrients in any diet. A balanced diet typically entails a specific macronutrient composition range; that is, 45 %-65 % carbohydrates, 20 %-35 % fats, and 15 %-25 % proteins. Dietary imbalance stems from changes in these percentages and their proportions. It should be noted that processed foods are the key source of the said imbalance, as their main components include fats, simple carbohydrates, and excessive salt. This dietary imbalance can lead to metabolic diseases and HBP (69).

Incidentally, it has been established that a healthy diet lowers BP. As a result, diet plans such as the Dietary Approaches to Stop Hypertension (DASH) have been created, proving effective in reducing BP. The DASH diet is rich in fruits, vegetables, whole grains, nuts, legumes, lean proteins, and low-fat dairy products and has scarce to no refined sugar, saturated fats, and cholesterol (70).

Regarding sodium consumption, there is a well-documented connection between sodium intake and HBP, which is why it is considered one of the main direct and indirect risk factors for HBP development (71). Some studies have also shown that sodium consumption leads to a rapid increase in BP when accompanied by certain genetic factors (2). However, high sodium intake alone is not nearly enough for HBP to appear, considering how not all individuals with high-sodium diets suffer from HBP. This phenomenon has been termed sodium sensitivity and is more evident in obese, elderly patients with severe HBP, of African descent, with a family history of HBP, and/or with hyperaldosteronism (72,73).

Similarly, various authors suggest that low potassium intake may influence the pathogenesis

of HBP. In this sense, Poorolaja et al. determined that adequate potassium supplementation can significantly reduce BP in hypertensive elderly adults, those of African descent, and those with a high-sodium diet (74). Furthermore, Vinceti et al. conducted a meta-analysis that included 16 cohort studies assessing the relationship between potassium supplementation and the risk of stroke. This study suggests that 3.5 grams of potassium per day can reduce the risk of stroke by 13 %. As such, the authors concluded that these results could be owed to the therapeutic properties of potassium concerning BP regulation (75). Of interest, patients affected by renal diseases must reduce potassium intake since there are at risk of fatal arrhythmias and other cardiovascular conditions.

HBP: Psychosocial and Emotional Factors

Thus, the risk factors leading to hypertension have been addressed from a medical/clinical perspective. Nevertheless, there are other biopsychosocial factors to be taken into consideration, such as stress, anxiety, depression, and other emotional problems that can also contribute to the development of HBP (14). In this sense, Redondo-Sedina et al. carried out a study that sought to describe the effect of a social support network on HBP in 3483 Spanish subjects over 60 years old. The findings suggest that married individuals who live with other people have a lower HBP risk; whereas those who were not married or lived alone exhibited opposite results (76). These results point to social isolation as a possible risk factor for the appearance and development of HBP (77).

On the other hand, depression and sleep disorders are psychobiological factors known to trigger and exacerbate CVD (78). On the subject of sleep disorders, Lavie et al. conducted a prospective study to assess HBP incidence in 2 677 adults aged 20-85 with possible obstructive sleep apnea (OSA). Multiple regression analysis verified that OSA is a significant independent predictor of HBP in this study. In addition, it was reported that for each apnea event per hour, the risk for HBP increased by 1 % (79).

Concerning depression, Maatouk et al. conducted an 8-year prospective study to

evaluate the possible association between depressive symptoms, generalized anxiety, and HBP in 3 124 individuals. HBP prevalence was 53.1 % (1 659 individuals), whereas depressive symptoms were found in 5.2 % of the population (163 individuals) and anxiety in 13.9 % (434 individuals). Subsequent statistical analysis employing logistic regressions revealed that individuals with depressive symptoms were more susceptible to developing HBP; in contrast, no significant results were found in those with generalized anxiety symptoms. The authors concluded that due to the connection between HBP and depression, it could be considered a possible risk factor for CVD (80). Similarly, one study reported that cardiac rehabilitation programs significantly improved anxiety and depression levels in patients with CVD (81).

Stress has proven to be a critical element among the better-known psycho-emotional factors related to hypertension. Various mechanisms involving stress have been described, such as 1) cardiovascular reactivity, 2) sympathetic responses to acute stress resulting in an increased heart rate, cardiac output, and BP, and 3) sustained sympathetic system hyperactivation that fails to return to a resting state after a stressful event (82). Therefore, the usual physiological responses that allow the body to maintain homeostasis during a stressful event can become noxious when they persist well after the initial sympathetic activation. For example, Ming et al. carried out a 20-year follow-up study on air traffic controllers focusing on their cardiovascular health status, revealing that those under great stress at work had consistently higher BP and an increased risk of developing HBP in the long term (83).

Additionally, stressful events can lead to a negative mood, resulting in depression, anxiety, and anger. These affective states can precede intrusive and negative thoughts about future and past stressful events, which could, in turn, prolong a persistent sympathetic physiological arousal, thus increasing BP (84,85). A study seeking to determine the effect of anxiety and depression as manifestations of chronic stress (CS) on patients with resistant HBP, reported a higher percentage of depression in the group of patients with CS + resistant HBP, as well as a positive correlation between the degree of anxiety and BP. These

results suggest that CS influences the origin and persistence of HBP (86).

It is essential to highlight that stress, in addition, to contributing to the pathogenesis of depression and anxiety, can also be a crucial risk factor for certain CVDs other than HBP (87,88). Two of these cardiovascular entities are stress cardiomyopathy (or Takotsubo syndrome), and transient cardiomyopathy, both associated with an increase in sympathetic tone caused by acute emotional stress (89).

Furthermore, emotions have been associated with coronary heart disease in recent years. The central hypothesis states that an area of the cerebral cortex linked to emotions is activated in stressful conditions and generates cardiovascular responses such as HBP and acute myocardial infarction (87). Regarding this issue, Vaccarino et al. reported that myocardial ischemia due to emotional stress is more common in young women after a myocardial infarction than in age-matched men. Therefore, they conclude that medical interventions specifically designed to address stressors and treat risk factors in women could help in reducing cardiovascular mortality risk. In addition, some studies have explored anxiolytic drug effects in patients with resistant BPH and frequent hypertensive crises, showing blood pressure restoration after anxiolytic administration, suggesting that the emotional component could be an essential factor in this group of patients (90).

Emotions and HBP: the role of happiness in health

Scientific research concerning health and cardiovascular risk factors has focused mainly on physiological, biological, and genetic factors and their relationship with psychosocial factors related to an individual's lifestyle (diet and physical activity), but less attention has been paid to the impact of emotional and subjective aspects such as happiness as an integral part of the whole health construct.

It is clear for medical and social sciences to understand how emotions interplay with the health-disease process. In fact, there is bulk evidence supporting those negative emotions are intimately related to CVD, cancer,

HIV, autoimmune disorders appearance, and progression (91-95). Conversely, happy people tend to have better physical and mental health and lead healthier lifestyles (96).

In this context, happy people are generally young, healthy, well-mannered, outgoing, optimistic, free of worries, religious, married, with high self-esteem, strong work morale, modest aspirations, stable economic situations, and a wide range of intelligence (97). For this reason, happiness can be identified as a psycho-emotional component that brings a series of positive life implications with it, not only from a personal, social or work-related angle but also from a biological point of view.

Moreover, altruistic emotions and behaviors (including happiness) have been positively correlated with mental and physical health, along with greater longevity (91). In turn, the personal perception of health is an essential element that promotes well-being and life satisfaction. Some studies suggest that the better a patient perceives their health, the happier they will be (94). In this sense, three factors are frequently included when asked to list the characteristics of a 'good life': happiness, health, and longevity (98). Although the latter has not been recognized to yield significant gains for individuals, it can be considered a psychologically positive experience. This fact is congruent to the fact that longevity would imply a person has almost entirely achieved the goals set in each of the spheres of their life, resulting in psychological well-being and fulfillment, and consequently, good health (99-101).

The link between happiness and hypertension has been thoroughly studied. Trudel-Fitzgerald et al. conducted a prospective study focused on the association between happiness, psychological well-being, and the incidence of HBP in 6 384 individuals. During the follow-up period, there was an incidence of 2 024 cases of HBP. Additionally, the authors also reported that the levels of high emotional vitality were significantly related to a 9 %-11 % reduction in HBP risk (102).

On the other hand, Steptoe et al. conducted a study revealing how positive affective states are associated with a decrease in inflammatory, endocrine, and cardiovascular activity patterns.

Higher happiness levels were inversely correlated with heart rate and cortisol production during the day, regardless of psychological distress levels and other variables. Similarly, a lower response to stress led by plasma fibrinogen was reported in those individuals with higher happiness levels. The authors concluded that mental well-being is directly related to critical psychobiological processes involved in the physical health of individuals by reducing plasma levels of cardiovascular risk biomarkers related to HBP (103).

Furthermore, Waldstein et al. assessed the electro-cortical and cardiovascular reactivity when experiencing positive and negative emotions in 30 university students. Greater left frontal lobe activity was observed irrespective of emotional state. However, the frontal cortical response to anger was significantly related to higher heart rate reactivity and BP, whereas happiness only changed BP. These findings illustrate how emotions can play a fundamental role in cardiovascular physiological processes (104).

Psychosocial Approach to Hypertension: Beyond Antihypertensive Medication

Given the solid link between HBP and certain psycho-emotional factors, psychological, psychiatric, and/or psychosocial intervention could be considered promising strategies to be studied in hypertension management. Therefore, therapies aimed at emotional and mental disorders control in patients with high blood pressure should be further explored to consider their inclusion in Primary Care guidelines (87,105).

a) Psychosocial intervention

Implementing psychosocial intervention as a complement to medical treatment is one of the main psychological strategies used in hypertensive patients (6). Thus, Flynn et al. proposed a comprehensive approach based on precision medicine, which includes the appraisal of a patient's risk factors, particular characteristics, and expectations, along with assessing various psychiatric symptoms that contribute to CVD risk. On the other hand, it is crucial to encourage patients to be actively involved in the decision-making aspect of the psychosocial approach

while also carrying out continuous monitoring of results to gauge treatment adherence and effectiveness (7). These have been shown to reinforce medication adherence and compliance in hypertensive patients concerning social support networks. It should be noted that the beneficial effect of this strategy rises together with the increase in perceived social support by said individuals (17).

b) Positive Psychology

Positive psychology is a recently emerged branch of psychology focusing on the study of psychological and subjective well-being, conscious human life experiences, and happiness cultivation. In the medical field, positive psychology aims to a paradigm shift to further consider the importance of positive emotions, such as happiness, in healing and disease management. However, positive psychology does not disregard or undermine the weight of medical practice on this issue. Instead, it emphasizes unearthing, highlighting, and putting human potentialities into motion resulting in daily-life wellness and happiness (106,107).

Consequently, positive psychology has been associated with physical health since happiness and positive mood influence health, and vice versa (108). In this sense, happiness and positive mood are an essential part of the causal chain that results in an individual's physical health, working together with particular social and personality factors to achieve wellness. Additionally, an intrinsic connection has been found between happiness, life satisfaction, and positive mental health (109).

Positive psychology interventions have shown promising results regarding CVD, claiming to deepen the understanding of a patient's well-being after a cardiovascular event (110). In addition, perceived well-being and its implications (including positive affect) are associated with a lower incidence of cardiovascular events and rehospitalizations (107), proving how psychological resources significantly improve physical health while underlining their various benefits over other strategies. Similarly, positive psychology interventions have been systematically linked to enhanced well-being and

a significant decrease in depressive symptoms in individuals with HBP (106).

In this sense, Nikrahan et al. conducted a randomized clinical study to analyze the effects of positive psychology on the hypothalamic-pituitary-adrenal axis functioning and specific cardiovascular risk markers in 69 coronary patients. The authors reported that after seven weeks of positive psychology intervention, the patients had lower C-reactive protein (CRP) and a lower cortisol awakening response, both biomarkers related to acute coronary events and the development of HBP (111).

Conversely, Mohammadi et al. described the effect of optimism-promoting psychological therapy in 64 patients with heart disease aged 35 to 60 years old. After 8-16 weeks of treatment, patients showed a more optimistic approach to their condition, in addition to a marked improvement in other psychological spheres, such as hope, life satisfaction, and anxiety. These results could lead to greater psychological well-being and promote adherence to treatment (112).

Likewise, Ostir et al. conducted a cross-sectional study to demonstrate the influence of positive emotions on the BP of 2 564 individuals over 65 years of age. In those who were not undergoing antihypertensive treatment, positive emotions were associated with lower systolic and diastolic BP. In contrast, in hypertensive patients, positive emotions were only associated with lower diastolic BP. In conclusion, implementing positive psychology interventions as part of multimodal treatment in patients with CVD could promote the development of positive emotions (e.g. happiness), which have been consistently associated with lower BP in both healthy and hypertensive individuals (13).

c) Hypertension and happiness: a take on positive prevention

Happiness is a personal and collective construct involving an individual's immediate environment, marking individual well-being as a particular subject to collective well-being. For this reason, an individual's living situation and environment must be taken into consideration when faced with a disease such as HBP. Given the ever-rising prevalence of HBP, active prevention

is the logical path to follow. This goal can be achieved by taking positive measures to tackle medical illness or simply implementing a healthy lifestyle (113).

Consequently, the personal perception of suffering from a disease negatively impacts and worsens an individual's health and well-being. However, some studies stated that the concern surrounding disorders generally leads patients to implement healthier behaviors in their daily lives (114). Thus, the proposal and execution of public policies concerning prevention and awareness of the growing HBP phenomenon have become a necessity. In fact, Europeans hailing from Ireland, Sweden, Denmark, and the Netherlands have reported better mental stability, well-being, and happiness, all of which have been linked to lower BP levels and lower hypertension prevalence. Furthermore, it should be noted that the countries with better BP levels exhibit better social, political, and economic stability for their inhabitants, factors intricately involved in the psycho-emotional and behavioral state of individuals (115).

Therefore, the design and implementation of HBP prevention and control programs from a psychosocial and emotional standpoint are imperative and indeed necessary (116). As a result, awareness of prevention and possible complications related to hypertension management would become common knowledge. Likewise, this approach added to all current strategies to either avoid or manage the disease at a pharmacological level and regarding patients as biopsychosocial entities (117). In this context, the prevention of hypertension must involve healthy lifestyle habits such as a balanced diet, exercise, sensible consumption of alcohol and tobacco, and playing sports (117). A healthy lifestyle is directly related to an optimal mental state, seeing as good eating habits and physical activity improve health and happiness levels (118). Likewise, Roche determined that practicing yoga has some effect on the origin of the physiological imbalances that lead to HBP and improves individuals' emotional state, perception of happiness, and life satisfaction. Similarly, the study reported that practicing yoga results in decreased cardiovascular reactivity, coupled with

a positive effect on cardiovascular parameters related to HBP (119).

Finally, prevention as a concept must contemplate and involve the community in general, since being aware of the causes and consequences of this phenomenon would affect the actions taken by the individual and society as a whole. For that reason, a culture of happiness and mental well-being must be born from prevention to uncover a path towards the best form of health in the various spheres that make an individual (120).

CONCLUSION

BP is influenced by multiple environmental, biological, and genetic factors interacting with others. In recent years, the scientific community has taken an interest in studying the role of psychosocial and emotional factors in individuals' physical and mental health. In this sense, scientific evidence has determined that psychopathologies and negative emotions are intimately involved in the development and/or progression of CVDs such as hypertension. Although their underlying mechanisms are not fully elucidated yet, they cause cardiovascular hyperactivity, endothelial dysfunction, and repeated activation of a sympathetic system that fails to return to its resting state. On the contrary, studies show how happy people are prone to have better physical and mental health. Additionally, they tend to lead healthier lifestyles from personal, social, work-related, and biological perspectives.

Various psycho-emotional strategies such as psychosocial intervention and positive psychology have been implemented as HBP therapy, decreasing plasma levels of cardiovascular risk-related biomarkers. Therefore, it is necessary to promote research on this topic to understand better the mechanisms by which positive emotions affect HBP. In this vein, psychological intervention in primary care should be enabled alongside prevention programs to allow individuals to be aware of the impact of psycho-emotional elements during life, encouraging a positive affective state hand-in-hand with physical and mental well-being.

LIST OF ABBREVIATIONS

HBP: High Blood Pressure
 CVD: Cardiovascular Disease
 BP: Blood Pressure
 CS: Chronic Stress
 CRP: C Reactive Protein
 HIV: Human Immunodeficiency Virus
 OSA: Obstructive Sleep Apnea
 DASH: Dietary Approaches to Stop Hypertension
 PVAT: Perivascular Adipose Tissue
 BDKRB2: bradykinin receptor B2
 ADRA: alpha-adrenergic receptors
 eNOS: endothelial nitric oxide synthetase
 ROS: Reactive Oxygen Species

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Mental health intervention program during the COVID-19 for mexican adults

Programa de intervención en salud mental durante el COVID-19 para adultos mexicanos

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SUMMARY

Introduction: The current pandemic caused by COVID-19 is a public health emergency with serious economic, educational, and social consequences. Its consequences are not only manifested in physical aspects, it is increasingly evident that this crisis is producing alterations in the mental health of the population, which is why it is of utmost importance to analyze the repercussions that COVID-19 could cause on mental health and the measures for its prevention and control, as well as the strategies to favor it.

Objective: To evaluate an intervention program in times of COVID-19 and the positive impact on mental health through strategies, to reduce sequelae caused by the pandemic.

Methods: The study participants were 34 people from the city of Léon, Guanajuato, the Kessler Scale (K-10) $\alpha = 0.901$ was applied, with an experimental design, with an explanatory scope, and the Students T-test for related samples was used.

Results: There is a significant difference in the results obtained before and after the application of the intervention carried out ($p=0.0001$), the COVID-19 begins to be identified as a problem of major difficulty when observing the havoc caused, as the new normality is installed, and people begin to identify the prevalence of anxiety, fear, insecurity, own before the unknown, therefore, it is necessary to take measures aimed at favoring mental health.

Conclusions: It is recommended the creation and dissemination of intervention strategies to reduce psychological distress in people impacted by COVID-19, as well as the prevention and diagnosis of mental disorders. Brief psychotherapy is a tool currently in vogue because it focuses on solving and providing solutions to complex problems through simple, planned, and intentional tools.

Keywords: Mental health, psychological distress, COVID-19, clinical psychology, online intervention, Mexico.

RESUMEN

Introducción: La actual pandemia ocasionada por el COVID-19 es una emergencia de salud pública con graves consecuencias a escala económica, educativa y social. Sus consecuencias no sólo se manifiestan en aspectos físicos, cada vez es más evidente que esta crisis está produciendo alteraciones en la salud mental de la población, razón por la cual es de suma

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importancia analizar las repercusiones que sobre la salud mental pudiera provocar el COVID-19 y las medidas para su prevención y control, así como las estrategias para favorecerla.

Objetivo: *Evaluuar un programa de intervención en tiempos de COVID-19 y la incidencia positiva en la salud mental a través de estrategias, con la finalidad de reducir secuelas originadas por la pandemia.*

Método: *Los participantes del estudio fueron 34 personas de la ciudad de León, Guanajuato, se aplicó el instrumento Escala de Kessler (K-10) $\alpha = 0,901$, con un diseño no experimental, transversal, exploratorio-descriptivo, se utilizó la prueba T de Students para muestras relacionadas.*

Resultados: *Existe una diferencia significativa en los resultados obtenidos antes y después de la aplicación de la intervención realizada, el COVID-19 empieza a identificarse como un problema de dificultad mayor al observar los estragos causados, a medida que se instala la nueva normalidad, las personas empiezan a identificar la prevalencia de ansiedad, miedo, inseguridad, propio ante lo desconocido, por lo tanto, es necesario tomar medidas destinadas para favorecer la salud mental.*

Conclusiones: *Se recomienda la creación y difusión de estrategias de intervención para reducir el malestar psicológico en las personas impactadas por el COVID-19, así como la prevención y el diagnóstico de trastornos mentales. La psicoterapia breve es una herramienta en boga actualmente debido a que se centra en resolver y dar soluciones a problemas complejos mediante herramientas simples, planificadas e intencionadas.*

Palabras clave: *Salud mental, malestar psicológico, COVID-19, psicología clínica, intervención en línea, México.*

INTRODUCTION

At the global level there is an exceptional situation due to the advance of the pandemic produced by the SARS-CoV-2 coronavirus, which brings with it a series of consequences at the physical level, including severe acute respiratory syndrome, and at the social level due to the unprecedented measure of preventive and obligatory social isolation used by the great majority of countries. This situation generates a psychosocial impact that has been insufficiently addressed due to its unique and transcendental character, which is why it is of utmost importance to analyze the repercussions that COVID-19 could cause on mental health and the measures for its

prevention and control, as well as the strategies to promote it (1-14).

The current pandemic caused by COVID-19 is a public health emergency with serious social, economic, educational, and health consequences. Its consequences are not only manifested in physical aspects; it is increasingly evident that this crisis is producing alterations in the mental health of the population. However, many published studies evaluate the effects of confinement on the general population or the consequences on health personnel, there is little evidence on the psychological and cerebral effects on individuals suffering from or recovering from COVID-19, currently, research continues. Once the patient knows their diagnosis, i.e., positive for COVID-19, they begin to experience high emotional impact, and stressful and traumatic situations, which induce anxiety and increase the risk of post-traumatic stress disorder (15-26).

The negative effects of the pandemic according to a recognized researcher in Mexico are as follows: The prevalence of negative mental health effects related to COVID-19 in the sphere: of psychological, general health, and social evidence the proliferation of effects that have impacted the lives of diverse people. Undoubtedly, COVID-19 has wreaked havoc in various areas of the life of each person, this does not spare the different social classes, because the emotional stability of each person is being tested to its maximum limits, the author places on the table the relief of all that so far is considered impacted by the pandemic, there are elements difficult to examine by its subjective nature, the repercussion experienced today in terms of mental health coupled with the adaptability that every human being must develop on the eve of survival as a human (27).

For this purpose, we propose to evaluate an intervention program in times of COVID-19 and the positive incidence on mental health through strategies, to reduce sequels originated by the pandemic, to describe and make visible the diverse elements that are immersed in mental health and how it has impacted such effects, To describe and make visible the different elements involved in mental health and how it has impacted such effects, a mental health intervention program “Psychology for all” is presented, which consisted in the application of a pretest, followed by the

seven intervention sessions and the application of a post-test to plan a strategy to reinforce and enhance behaviors that contribute to mental health in the current context.

METHODS

The participants were 34 people from the city of León, Guanajuato. Random sampling was considered, it is a non-probabilistic sample (28). Inclusion criteria: 1) voluntary participation. 2) male or female. 3) 18 to 70 years old. 4) Aware of no financial remuneration during the sessions. 5) Availability of time. 6) Availability of an electronic device with camera and audio capabilities.

Measures

Kessler Scale (K-10) is a questionnaire developed by Ronald Kessler and Dan Mroczek to measure psychological distress in people, it evaluates the presence of symptoms of depression and anxiety presented in the last month. The (K-10) is made up of 6 Likert scale items ranging from always, almost always, sometimes, almost never, and never. It has a content validity and reliability of Cronbach's alpha 0.901 (28). The results are indicated according to their order in a single dimension: Anxiety and depression (1-6).

Processes

Before the application of the instrument, for ethical and professional reasons, the acceptance of the informed consent is requested, making known the purposes of the research, as well as its importance for the researcher in his professional training. The data collection of the survey application was through two links: <https://pretestk10.questionpro.com> and <https://postestk10.questionpro.com>, directed to 34 participants from Leon, Guanajuato, it was applied individually through laptop and cell phone. This research used a non-experimental, cross-sectional, exploratory-descriptive design (28).

Data analysis

For the processing of the information collected, the following techniques were used, such as Student's t frequencies, and ANOVA to observe the sample in the significance in age, sex, marital status, and level of study with psychological distress. Weighted proportions for the distribution of the sample (mean, standard deviation, sum, and percentages), to know the frequencies of intensity in the psychological distress suffered by the item. Frequencies, proportions, and p, among others, to detect differences between the results obtained in the Pretest and Posttest. The use of the t-test for related samples, using SPSS 25 software for statistical analysis.

Ethical aspects

Within the research, the company committed to safeguarding, maintaining confidentiality, and not misusing what was shared in the various sessions, statistics, or any other record or information related to the aforementioned study, with which the research was carried out. Likewise, the commitment not to disseminate or commercialize the personal data contained in the information systems developed in the execution of the present study.

Informed consent was used towards the participants to safeguard the confidentiality of the data, such as accepting freely and voluntarily to be participants, there will be no unfavorable consequence in case of not accepting the invitation, there will be no expenses during the study, information about the general results of the survey will be given, the individual results of the electronic surveys will be kept with strict confidentiality by the researcher. The present research for the health area operated under the principles of the Declaration of Helsinki of the World Medical Association, such ethical considerations are based on principles of autonomy, anonymity, and confidentiality guaranteeing that the present research on human beings was carried out only by persons with the appropriate scientific and ethical education, training, and qualifications (30).

RESULTS

The most representative group of the study corresponds to males with 65.7 % and females

with 35.3 %, it is observed that the age is heterogeneous and is between 20 and 66 years, with an average of 41 years. It was noted that 54 % are married. Finally, it was found that 44 % have completed higher technical education (Table 1).

Table 1
Sociodemographic data of the participants

	N	%	40.29	De
Average Age				
Age range				
20-30	12	35.3		2.9
31-40	7	55.9		
41-50	3	64.7		
51-66	12	100.0		
Sex				
Woman	12	35.3		0.485
Male	22	64.7		
Marital status				
Single	11	31.4		0.716
Married	19	54.3		
Unmarried	3	8.6		
Divorced	1	2.9		
Educational level				
Elementary	2	5.9		1.297
Secondary	11	32.4		
High School	3	8.8		
Technical High School	15	44.1		
Bachelor's Degree/Engineering	3	8.8		

Table 2 shows the correlations between the psychological distress perceived in the participants before and after the intervention program. The result of the psychological distress dimension is shown in the scores obtained for the pretest application, with a result of 47.9 % and 43.3 % in the scores obtained for the posttest application, which shows a statistically significant difference.

Table 2
Psychological distress

	n	%	sd
Pretest	16	47.9	6.076
Posttest	16	43.3	3.881

Table 3 shows the parametric Student's t-test for related samples, a test for comparing two related samples, which has the following characteristics: the random assignment of the groups, homoscedasticity (homogeneity of the variances of the dependent variable of the groups), normal distribution of the dependent variable in the two groups, interval or ratio level of the dependent variable. Its function is to compare two measurements of scores (arithmetic means) and to determine that the difference is not due to chance, i.e. that the difference is statistically significant. According to the result $p=0.141$, h_0 is accepted and h_1 is rejected, therefore, the test is parametric, observing in the present table a t value of -5.978, $gl = 33$ degrees of freedom, and $Sig. (p)=0.0001$, less than 0.05 because it affirms

that the level of psychological distress is different between the first and second measurements. Regarding the effectiveness of the intervention program in modifying psychological distress in

a group of people, there was a decrease in the level of psychological distress ($t(33) = -5.978$, $p < 0.05$ between measurements taken before and after attending the intervention program (Table 3).

Table 3
Paired samples test

Par 1				lower	top	t	Gl	p
Sum	-3.79412	3.72363	0.63860	-5.09335	-2.49488	-5.941	33	0.0001***
Pretest								
sum								
Psychological								
discomfort -								
Sum								
Posttest								
sum								
Psychological								
discomfort								

*** $P \leq 0.001$

Table 4 shows an ANOVA of the educational level, showing a significant difference in the educational level completed, being statistically

significant, i.e., there are differences in the psychological distress of the sample evaluated with respect to their level of study.

Table 4
Educational level and psychological distress

		Sum of squares	gl	Quadratic mean	F	P
	Between groups	122.677	4	30.669	0.812	0.528
Sum of Psychological	Within groups	1 095.794	29	37.786		
Distress Pretest	Total	1 218.471	33			
Sum of Psychological	Between groups	142.979	4	35.745	3.199	0.028*
Distress Posttest	Within groups	312.900	28		11.175	
	Total	455.879	32			

* $P \leq 0.05$

DISCUSSION

The present research shows a series of conjectures because of the analysis to evaluate the intervention program in times of COVID-19

and the positive incidence in mental health through strategies, to reduce sequels originated by the pandemic. The above allowed responding to the general objective of the research, for this, it is essential to observe the effectiveness of the intervention program to modify the

psychological discomfort in a group of people, showing a significant decrease in the level of psychological discomfort captured by the participants. The hypothesis was based on the design and implementation of the intervention program, responding to the following: In what way does a mental health intervention program favor well-being in the population that was infected by COVID-19, being H0: The mental health intervention program does not influence and H1: The intervention program positively influences the mental health of the population that was impacted by COVID-19.

It has been demonstrated over time that brief psychotherapy programs have had a significant impact on the problem behavior to be addressed. A Mexican doctor created a brief intervention program for adolescents based on cognitive-behavioral treatment for young people who use addictive substances such as alcohol, marijuana, cocaine, and inhalants. This program is based on the Social Learning Theory and its objective is to promote a change in the pattern of substance use and to maintain this change, to avoid health and personal problems associated with alcohol and drug use (31), the sessions created for the mental health intervention program "Psychology for all" were based on brief psychotherapy, cognitive-behavioral treatment adding valuable content under the humanistic-existential approach, the brief humanistic interventions allow the person to be aware of the here and now appropriate to overcome the various demands that COVID-19 has brought.

Under the modality of a preventive intervention program regarding the various forms in which violence is presented, a study was applied to 32 young people, a plain language was used with scenarios, such as schools, parks, and streets, for approximately less than 4 months, greater impact was evidenced among the different young people, in the activities carried out finding the use of techniques of expression, analysis of situations, discussion, modeling, skills development programs, under a thematic structure, for example, What is violence? Definition of violence, elements, and types, among others. It should be noted that a pretest and post-test were carried out after the intervention with an evaluation instrument to assess competencies pre- and post-intervention, and the objectives

of the course were found to be met (32). The present research measured through a scale the psychological discomfort in people before and after the intervention program, significant differences were found in pre-and post-test with a solid tendency for its establishment, this may perhaps be due to events experienced and/or seen that allowed adding value to this study so that the change is permanent in time.

A study conducted on people with severe mental disorders (SMD) who are doubly affected as a result of their mental health (MH) and the effects of internalized stigma (IS) was considered conducive. Defined as a subjective process characterized by the acceptance and application of stereotypical beliefs associated with the disorder, negative feelings resulting from adherence to stereotypes, and self-discriminatory behaviors (33). Although it has been demonstrated that IE produces greater social anxiety and depressive symptomatology, as well as less help-seeking, difficulty in functioning, and lower quality of life, there are currently no intervention programs capable of reducing it in all its dimensions; therefore, the general objective was based on taking advantage of the accumulated knowledge to design and evaluate the effectiveness of a new intervention program that combines different strategies to achieve a global reduction of self-stigma and improve recovery variables associated with it. It seems that the accumulated knowledge adds an important value to the reduction of EI, valuable information that could give reference to the present research because the knowledge of the person, that is, the educational level completed, contributes to the reduction of psychological distress.

In addition to the aforementioned study, there is the Psicofight Project, in which twelve video cases were presented whose content is singular and focused on a conflict or frequent incident in private homes, as indicated by different surveys, reports, and testimonies published in different media. In each of these cases, an emotion (unconscious psychophysical reaction) and its corresponding feeling (conscious interpretation of the emotion) are presented, based on a situation dramatized by a character, who turns to a professional for advice and guidance (34). In the present research, there was the role of a facilitator, who was present in case the person

wanted to address him at any time to give support and be channeled to the corresponding area, it should be noted that the fact of watching videos contributed to the sensitization of the participants regarding their own emotions.

Another study showed that the development of web-based interventions for substance abuse in Latin America is a new field of interest with great potential for expansion to other Spanish-speaking countries. This study deals with a project aimed at developing and evaluating the usability of the web-based Drug Abuse and Depression Assistance Program (PAADD) and also at building a systematic frame of reference for the development of future web-based programs. PAADD aims to reduce substance use and depressive symptoms with cognitive-behavioral techniques translated into Web applications, with the involvement of a counselor to provide support and guidance (35). The web-based program may have advantages over traditional face-to-face therapies due to its low cost, wide accessibility, anonymity, and independence from time and distance factors, users reported as enjoyable the fact that they could take the sessions from anywhere and at any time, this study adds value to the virtual interventions that stand out today due to the pandemic.

Another valuable study to observe is the prenatal predictors of postpartum depression and postpartum depressive symptoms in Mexican mothers. This longitudinal study was based on being able to predict symptoms related to depression at 6 weeks and 6 months of pregnancy, together with the respective diagnostic interview, to facilitate strategies that add value to the quality of life of the mother and her child, and therefore, to the environment in which she lives (36,37). The correct elaboration of grief in time facilitates the resolution of this, it is important to highlight the preventive work, today the various platforms allow access to tools and resources of value to mental health.

Based on the evaluation of the intervention program in times of COVID-19 and the positive impact on mental health through strategies, the contribution of the present research consists of the design and implementation of an intervention program based on 7 sessions of approximately fifty-three minutes each, where the various people

had the opportunity to participate and express themselves voluntarily, through the completion of the Kessler Test before and after the intervention program, the final result being the statistically significant decrease in psychological distress. In addition to the finding regarding the level of education completed by the participants, it seems that the level of education completed contributes to the reduction of psychological distress in people, i.e., the accumulated knowledge that each person has regarding a variety of topics could add value significantly to the reduction of psychological distress.

Programs based on brief psychotherapy can contribute substantially to clinical psychology because they can play a fundamental role in the quality of life of individuals, families, and communities, among others since their field of action includes the prevention and diagnosis of mental disorders. Thus, research from the qualitative approach involves disciplines such as clinical, social, community, and medical anthropological psychology and has had relevant contributions to the understanding and resolution of the problem by considering the context in which it makes sense.

A remarkable point is the increase of interventions at the virtual level that brought with it the new normality before COVID-19, perhaps in the beginning the virtual options were chosen by a certain population due to various influential elements, for example, the time factor, reasons that permeated this choice, before the pandemic, many people, institutions or other organizations have needed virtual interventions, In the face of the pandemic, many people, institutions or other organizations have seen the growing need to adapt to the new demands, this favored the mental health intervention program because people in one way or another have had to put into practice or learn what is related to the virtual field, including platforms such as Google meet, Microsoft Team, among others, regardless of age, a reason that invites to follow up the population participating in the program.

The intervention program revealed several important elements to consider in future replications, among them, the possibility of expanding it to other cities and perhaps other countries, considering the language, since

COVID-19 has had an impact on everyone at some point in their lives. It is important to update the content of the program in a way similar to a living guide where it is possible to innovate and generate valuable content taking into account the main topic. One of the weaknesses could be the population evaluated, a population of thirty-four people were used, in future interventions the increase of the population would be an important issue to consider because the larger the sample, the greater the probability of finding significant results.

A key point and perhaps it may sound paradoxical to the reader is the pandemic is seen as a threat to the design, development, and implementation of the program, because the pandemic came to make changes and new adjustments, to mention an example, ideally the program could have been done in person and an adjustment made was the virtual adaptation, bringing with it elements that were difficult to control, such as the availability of time, the right environment, computer equipment, interruptions, various commitments of the participants, among others. Among the strengths found are the willingness and participation of people, together with the easy and fast application instrument, the Zoom platform free to the general public, the Question Pro platform of easy and enjoyable access, the final product created by each participant, and the link sent with various materials for people who completed the program.

Brief psychotherapy adds value because the patient can see how fear works, observing which resources are used and which are not, to visualize exactly the source of the fear and thus be able to dismantle it. Thus, this therapy focuses on finding the solution and, besides holding on to these tools, it offers durability over time. In the work of the clinical psychologist, several proposals can be considered, among them, the updating in COVID-19, for example, there are workshops or free and virtual courses that allow enriching the practice, also to exercise sensitivity and professionalism at the moment that the option of making a correct referral could be presented, because the intervention program should not under any circumstances lend itself to individual consultations unless these are raised outside the program. Protect one's integrity and provide support to others. Helping others in need can

be beneficial, not only to the person receiving it but also to the giver and working together as one community can help create solidarity in addressing COVID-19.

Viewing opportunities to amplify the positive and encouraging stories and images of local people who have had COVID-19, for example, stories about people who recovered or cared for a loved one during recovery and who are willing to talk about this experience. Recognize the importance of caregivers and health care workers who are caring for people with COVID-19 in one's own community. Also, recognize the role they play in saving lives and keeping their loved ones safe. Using appropriate ways to exchange messages with people who have intellectual, cognitive, or psychosocial disabilities and are infected or have been infected with COVID-19 and using ways to communicate that do not rely exclusively on written information will encourage responsibility for self-care.

Last but not least, maintaining good mental health and coping with the stresses of everyday life and new normalcy will help them to be better prepared to perform their duties. Keep in mind that this situation will not go away overnight and that the focus should be on long-term occupational capacity rather than repeated responses to short-term crises.

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Psychological distress and economic consumerism among emerging adults in Mexico

Malestar psicológico y consumismo económico en adulto emergentes de México

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SUMMARY

Introduction: *The emerging adult has a high prevalence to psychological distress as this encompasses clinical manifestations of anxiety and depression disorders. They are also more prone to economic consumerism, which involves social and psychological issues.*

Purpose: *To determine to what extent the level of psychological distress is related to the level of consumerism in emerging adults in Salamanca Guanajuato, in order to find a possible new risk factor in the mental health of this population, to generate new lines of action.*

Method: *The participants of this study were 190 emerging adults from the municipality of Salamanca,*

Guanajuato, Mexico, three instruments were applied, Kessler Scale (K10): reliability and validity, $\alpha=0.90$. The Consumption Habits and Behavior Scale: reliability and validity, 0.87 and the Impulsivity in Purchasing Scale: reliability and validity, 0.83. The design was non-experimental, cross-sectional with correlational scope, and Pearson's statistical test was used.

Results: *A relationship was found with the level of consumerism and psychological distress ($p=0.032$). Likewise, a relationship was found between anxiety and impulsivity in shopping ($p=0.002$).*

Conclusions: *It suggests new prevention proposals in mental health for emerging adults who present psychological distress and new lines of research in mental health and economic consumerism are proposed.*

Keywords: *Psychological distress, consumerism, emerging adult, depression, anxiety, Mexico.*

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RESUMEN

Introducción: *El adulto emergente tiene una alta prevalencia al malestar psicológico ya que este abarca manifestaciones clínicas de los trastornos ansiedad y depresión. Así como también es más propenso al consumismo económico, el cual implica cuestiones sociales y psicológicas.*

Objetivo: *Determinar en qué medida se relaciona el nivel de malestar psicológico con el nivel de consumismo en adultos emergentes de Salamanca Guanajuato, con el fin de encontrar un posible nuevo factor de riesgo en la salud mental de esta población, para generar nuevas líneas de acción.*

Método: Los participantes de este estudio fueron 190 adultos emergentes del municipio de Salamanca, Guanajuato, México, se aplicaron tres instrumentos, Escala Kessler (K10): fiabilidad y validez, $\alpha=0,90$. La Escala de Hábitos y Conductas de Consumo: fiabilidad y validez, 0,87 y la Escala de Impulsividad en la Compra: fiabilidad y validez, 0,83. El diseño fue no experimental, transversal de alcance correlacional, se utilizó la prueba estadística de Pearson.

Resultados: Se encontró una relación con el nivel de consumismo y malestar psicológico ($P=0.032$). Asimismo se encontró una relación entre la ansiedad y la impulsividad en las compras ($P=0.002$).

Conclusiones: Se sugieren nuevas propuestas de prevención en la salud mental para los adultos emergentes que presentan malestar psicológico y se proponen nuevas líneas de investigación en la salud mental y el consumismo económico.

Palabras clave: Malestar psicológico, consumismo, adulto emergente, depresión, ansiedad, México.

INTRODUCTION

Globally, the mental health of society has been significantly affected, since according to the World Health Organization (WHO) more than 300 million people in the world suffer from depression and more than 260 million have anxiety disorders (1). Depressive disorder is the most frequent and one of the main causes of disability worldwide (2), in addition to its impact on mental and physical health, it also affects family, social and work performance (3). Mosqueda-Díaz et al. (4) argue that psychological distress is one of the most frequent mental health problems worldwide. Psychological distress encompasses different clinical manifestations related to mental disorders such as depression and anxiety (5). Because of this, it is estimated that psychosocial and mental health support needs will have increased greatly in recent years (6).

In Mexico, according to the National Mental Health Survey, 18 % of the urban population of productive age (15-64 years of age) suffers from some mood disorder such as anxiety, depression or phobia (9) and only one in five of these people receives treatment, and the time it takes to receive this care in a health center ranges from 4 to 20 years depending on the type of condition (10).

During the pandemic in 2020 in the state of Guanajuato, 23 833 Guanajuato's with different mental disorders have been treated in the mental health system, reaching a figure of 190 503 psychological and psychiatric care in 2021, where the state health secretary reported that 42 % of these were for anxiety and 19 % for depression (11,12).

Research in the field of mental health has focused its attention on university students since several studies have shown that depression and anxiety disorders are more prevalent in them than in other populations (7). Barrera-Herrera et al. (8) refer that college-age coincides with the emerging adulthood that goes from 18 to 29 years old, where the most characteristic is that young people of this age do not see themselves as adolescents and most of them do not feel that they have reached adulthood, also in a study by the same authors, it is found that they identify this stage as a period to build an identity as they reach greater independence and autonomy in the emotional and economic areas. The Pan American Health Organization (PAHO) analyzes that there are various risk factors to which emerging adults are exposed, such as socioeconomic problems at home, family relationships, violence, and excessive technology, and that some emerging adults are more vulnerable than others due to their living conditions and lack of access to health services (13). On the other hand, the WHO points out that mental health is related to the quality of life, a term that varies according to socioeconomic, cultural, geographical, and historical perspectives (14), while Herrera and Rivera, in their study, found a relationship between psychological distress and socioeconomic, family and academic factors (15). In addition, during the period of confinement due to the COVID-19 pandemic, the quality of life of people whose finances were affected was adversely affected (16), thus, mental health is determined by environmental components and influences the individual's behavior (17).

In relation to socio-economic factors, today's society faces another phenomenon, namely consumerism, which involves psychosocial issues and is therefore studied as a problem with social and psychological manifestations that occur not only at the individual but also the collective level (18). Lara (19) indicates consumerism

as an artificial act that generates a problem in the population. Other authors analyze that the reasons for the need to consume have to do with an affective deficit that is caused precisely by this need to consume (20), the contemporary subject moves from image to image that he builds after searching and obtaining products (21). It is then that people with sufficient income to achieve their consumption goals will be able to achieve positive effects when buying, however, those who have economic limitations are likely to experience frustration, sadness, and even depression (22). Salas (23) mentions that consumption has an important psychological component and relates consumerism to status, which generates great anxiety in people since society is composed of a bond of acceptance. Thus, buying can produce an escape from anguish but at the same time developmental disorders (2). Moreover, different studies agree that emerging adults are more prone to consumerism because of their hedonistic culture, and this is rooted in the culture (25, 26) and this psycho-social phenomenon has to do with consumption for significance, which defines roles and generates behaviors in emerging adults (27). Thus, studies conducted in other countries have found a relationship between consumerism and mental health in emerging adults. However, in the Bajío region, there is no research on the relationship between these variables, so the present study will investigate whether consumerism has an impact on the mental health of emerging adults. The main objective of this research is to determine to what extent the level of psychological distress is related to the level of consumerism in emerging adults in Salamanca Guanajuato, through the evaluation of these two variables, to find a possible new risk factor in the mental health of this population, to generate new lines of action.

METHOD

The sample was non-random with a total of 190 participants, the inclusion criteria carried out were the following: to have an age range between 18 and 29 years, to be undergraduate, graduate, or post-graduate students, and to be residents of the municipality of Salamanca Guanajuato and

that their participation was voluntary. With a confidence level of 95 % and a margin of error of 7.1 % according to an estimate of the emerging adult population with these characteristics of the municipality of Salamanca, Guanajuato, México.

For data collection, three evaluation instruments were used: the Kessler K10 psychological distress scale instrument, whose objective is to measure the psychological distress of people, has a content validity and reliability of Cronbach's alpha 0.90, and the instrument has a number of 10 items and the type of response is a Likert scale (28). To measure consumerism, 2 instruments were used to measure 3 of the psychosocial factors that according to Torres Acosta et al. (29) determine consumerism, which are: purchase planning, impulsivity, and tendency to indebtedness. The first was the adapted version of the Consumer Habits and Behavior Scale, whose objective is to measure planning and purchasing behavior; it has a Cronbach's alpha of 0.87 and the instrument has a Likert-type response, with 19 items (30); however, in the present study only 11 items will be used to provide the number of items in each of the three dimensions it contains (consumer habits and planning, purchasing habits and indebtedness habits). The second instrument used was the Impulsive Buying Scale, with a Cronbach's alpha of .83, which is composed of 7 Likert-type items that fully evaluate impulsive buying (31).

Procedure

The administration of the instruments was carried out online through the Question-Pro application, where the links were shared through social networks. At the beginning of the survey, a brief explanation was given about what the research consisted of, who could participate, as well as the informed consent, and the confidentiality of the data. The instruments were disseminated for one week in October 2021.

Data analysis

A non-experimental cross-sectional design with a descriptive correlational scope was used. A frequency analysis, Pearson's bilateral

correlation, and Mann-Whitney U were used. The software used for statistical analysis was SPSS 25.

Ethical Considerations

The ethical considerations of the research are based on the Helsinki code (32) since the main interest of this research had to do with the contribution of discoveries to health science; likewise, respect for all participants was promoted, protecting their individual rights by protecting their anonymity and confidentiality of their data.

RESULTS

The sample of 190 participants corresponds to 50 % women and 50 % men. The age range is heterogeneous and goes from 18 to 29 years, with an average age of 23.9 years. 88.9 % are single and 91 % do not have children. On the other hand, 64.2 % work, and of the total number of participants, slightly more than half (56 %) have received psychological care at some time.

A relationship was found between the level of consumerism and psychological distress, i.e., as consumerism increases, psychological

Table 1
Sociodemographic data of the participants

Data		n	%	sd
Age	18-21	46	24.0	3.17
	22-25	80	42.0	
	26-29	64	34.0	
Sex	Woman	94	49.5	0.50
	Male	96	50.5	
Marital status	Single	169	88.9	0.31
	Married	21	11.1	
Do you have any children?	1	11	5.8	0.77
	2	6	3.2	
Education Level	Degree	91	47.9	1.0
	Postgraduate	13	6.8	
	Degree course	74	38.9	
	Postgraduate course	12	6.3	
Trabajo	Yes	122	64.2	0.48
	Not	68	35.8	
Financial income	De \$200 - \$479	28	14.7	1.5
	De \$480 - \$717	35	18.4	
	De \$718 - \$957	20	10.5	
	De \$958 or more	21	11.1	
Psychological care at some time	Yes	108	56.8	0.49
	Not	82	43.2	

distress increases, and vice versa. Participants who reported having a job showed a higher level of depression compared to those who did not. A correlation was found between impulsivity in shopping and anxiety, i.e. as anxiety increases, impulsivity in shopping increases and vice versa. Participants who reported not having children showed less planning of their consumption

compared to the group that reported having children. It was found that participants who reported rarely spending more than they should, have a higher level of psychological distress compared to those who reported always doing so. Finally, a significant correlation was found between the level of anxiety and the level of depression.

Table 2
Correlation between psychological distress and economic consumerism

	Pearson	P
Psychological distress	Economic consumerism 0.225*	0.032
	Spends more than it should 0.209**	0.004
Depression	Job 0.177*	0.015
	Anxiety 0.647**	0.0001
	Impulsivity in purchases 0.226**	0.002
Planning purchasing habits	Number of Children -0.278**	0.0001

Regarding the variable psychological care, it was shown that there was no significant relationship between those participants who reported having ever had psychological care compared to those who had not had it in terms of their level of consumerism or psychological distress.

DISCUSSION

The research question of the present study is the following: To what extent is the level of psychological distress related to the level of consumerism in emerging adults in the municipality of Salamanca Guanajuato? Therefore, the research hypothesis, that the

level of psychological distress is related to the level of consumerism, is accepted, since it is evident that as the value of psychological distress increases, so does the value of consumerism ($r=0.270$, $p= 0.010$ a $p<0.01$), thus fulfilling the main and general objective of the study, which implies: To determine the relationship between the level of psychological distress and the level of consumerism in emerging adults in Salamanca Guanajuato, thorough evaluations of these two variables, to find a possible risk factor for consumerism in the mental health of this population.

The specific objective was to determine whether consumerism and psychological distress are related to ever seeking psychological care. This being so, this hypothesis is rejected, and the null hypothesis is accepted: There is no

relationship between people who have attended psychological care and the level of consumerism and psychological distress (Sig. 0.640).

In addition, other important findings were found, since it was evidenced that people with a completed bachelor's degree have greater symptoms of depression ($r=0.145^*$, $p= 0.045$, at <0.05) in comparison with those who are still studying a bachelor's degree, postgraduate degree, or graduating from the latter, likewise, there is greater depression in people who work than in the rest of the group ($r= 0.177^*$, $p= 0.015$ at <0.01).

It was found that adults aged 18 and 20 years manifest a higher level of psychological distress and those aged 25 and 28 years have a lower level of distress ($r= -0.213$ $p=0.003$ to <0.001), in agreement with this, a study conducted by Utz (33) on the relationship of consumerism with mental health in early adults of the National University of Itapúa, where it was found that the average age of students at risk of psychopathological problems is 80 % in adults aged 18 to 25 years. In this same study it was found that 15 % to 20 % of the sample shop for anxiety, and in the present study there is a correlation between impulsive shopping and anxiety ($r= 0.226^{**}$, $p= 0.002$ a $p<0.001$), i.e. as impulsive shopping increases, anxiety increases, and vice versa. Similarly, another research by Secchi, Vieira, and Ramos (34) carried out in Brazil, showed that regarding the feeling after the purchase, 5.55 % of the participants have negative feelings such as regret, guilt, and worry. On the other hand, Barros Denegrí and Salazar (35) in their study on consumerism, attitudes towards indebtedness, materialism, and peer influence, with participants between 14 and 20 years of age, showed that the emotions associated with the purchase result are mainly satisfaction and happiness, although emotions before frustrated purchases such as anger, regret, and frustration were also discovered.

The same study by Utz (33) shows significant differences between the sexes in relation to consumerism, as it identifies a higher rate of pathological consumption in women compared to men. Similarly, another study carried out by Jurado and Uribe-Rodríguez (36) found that women have a greater tendency to make impulse purchases than men; however, the results obtained

here do not show a significant relationship in consumerism between sexes (Sig = 0.997).

On the other hand, a study conducted by López (31) on impulsive buying in Psychology students at the UJI and its relationship with financial literacy, finds that the perceived economic situation of each subject influences impulsive buying, with significant differences in the means of these variables, the Pearson correlation is significant at the 0.05 level, positively, which indicates that the higher the perceived economic situation, the higher the level of impulsive buying, compared to this sample, no relationship is found between impulsive buying and income (Sig = 0.176), nor with consumerism in general (Sig=0.729), however, in the participants who do not have a fixed income, the purchase on credit ($r= -0.255^{**}$, $p= 0.0001$ to <0.001) and the feeling of spending more than they should ($r= 0.250^{**}$, $p= 0.0001$ to <0.001) decrease in comparison with the rest of the group that does receive a fixed income.

Finally, Müller (37) makes an ethnographic analysis of the economic representations and practices and affirms that in decision making, people are guided by the norms and obligations to the family, this analysis is related to the results obtained in this study since the participants who report having children manifest better planning habits in the purchase compared to the people who report not having children. ($r= -0.278^{**}$, $p= 0.0001$ a $p<0.001$).

CONCLUSIONS

The literature used for this research is mostly from Spanish-speaking countries, which could shorten the theoretical support, likewise, the sample of the population may be limited, which increases the percentage of margin of error. Regarding the specific objective, to determine the relationship between psychological care and the two variables, the question to the participants referred to whether they had ever taken psychological care, being so, it would be important to make the relationship with those who are currently undergoing some psychological process, to know if this changes the determination of the relationship with the two variables studied.

However, this research yielded results that fulfilled the general objective of this research, achieving the research hypothesis. In addition, the reliability analysis of the application of the instruments was favorable, since the K-10 instrument obtained a Cronbach's alpha of 0.88, the Habits and Consumption Behavior Scale obtained a Cronbach's alpha of 0.98 and the Impulsivity in Shopping Scale reached a Cronbach's alpha of 0.99, therefore, these analyses demonstrate that it is a reliable study.

This study generates new lines of research, since it demonstrates that the phenomenon of consumerism has a significant impact on the mental health of emerging adults, it would be relevant to identify which consumption has the greatest impact on their mental health, as well as to identify the relationship in other populations such as adolescence.

This is the first study in the Bajío region that investigates and finds a relationship between these two variables, therefore, it is suggested to create new guidelines for the work of clinical psychology in the prevention of psychological distress, taking into account the social phenomenon of consumerism as a risk factor in the mental health of emerging adults, The greater the consumerism, the greater the psychological discomfort, and if the correlation is analyzed inversely, it will be necessary to investigate and investigate whether the emerging adult is inclined to consumerism as a substitute for professional mental health treatment, because of the clinical manifestations of depression and anxiety that psychological discomfort entails.

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Anxiety and depression in psychology students: A study of the Bajío region of Mexico

Ansiedad y depresión en estudiantes de Psicología: un estudio de la región Bajío de México

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SUMMARY

Introduction: The mental health of university students is important because they are those who in the future will represent a professional population and in this case those who will take care of the mental health of the population. For this reason, it is relevant to know the symptoms and prevalence that they have throughout the academic training process.

Objective: To know the prevalence of depressive and anxious symptoms that generate psychological discomfort in psychology students, to make a diagnosis through the identification of the prevalence in the different degrees of study and the most common age in terms of the condition.

Method: The participants of this study were 199 psychology students from different universities in the municipality of Irapuato, Guanajuato. For the collection of the data obtained, the implementation of the Beck Depression Scale ($\alpha = 0.95$) and Hamilton Anxiety Scale ($\alpha = 0.90$) instruments were used, which are intended to be used in the SPSS 25 program. The study used a non-experimental, cross-sectional, and correlational design. Kruskal Wallis analysis and Spearman correlations were used.

Results: It was found that there is a relationship between the most representative group of women and that they correspond to (77.4 %) of the total population studied, it is observed that the majority age ranges between 18-23 years, whose average is 21.5 years old. There is a significant difference in anxiety ($p = 0.49$) and depression ($p = 0.247$). Therefore, women have a higher prevalence of anxiety symptoms.

Conclusions: It is suggested that there is a collection of information on the results of the students to identify the degree and symptoms with higher prevalence. New research is proposed with more sociodemographic data that delves into the social and psychological factors.

Keywords: Anxiety, depression, psychology undergraduates Mexico.

RESUMEN

Introducción: La salud mental de los estudiantes universitarios, es importante debido a que son aquellos que en un futuro representara a una población profesional y en este caso aquellos que atenderán la salud mental de la población. Por esa razón es relevante conocer los síntomas y prevalencia que estos tienen a lo largo del proceso de formación académica.

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Objetivo: Conocer la prevalencia de síntomas depresivos y ansiosos que generan malestar psicológico en estudiantes de psicología, con el fin de realizar un diagnóstico a través de la identificación de la prevalencia en las diferentes carreras de estudio y la edad más frecuente en función del padecimiento.

Método: Los participantes de este estudio fueron 199 estudiantes de psicología de diferentes universidades del municipio de Irapuato, Guanajuato. Para la recolección de los datos obtenidos se utilizó la implementación de los instrumentos Escala de Depresión de Beck ($\alpha = 0,95$) y Escala de Ansiedad de Hamilton ($\alpha = 0,90$), los cuales están destinados a ser utilizados en el programa SPSS 25. El estudio utilizó un diseño no experimental, transversal y correlacional. Se utilizaron el análisis de Kruskal Wallis y las correlaciones de Spearman.

Resultados: Se encontró que existe una relación entre el grupo más representativo que son las mujeres y que corresponden al (77,4 %) del total de la población estudiada, se observa que la edad mayoritaria oscila entre los 18-23 años, cuyo promedio es de 21,5 años. viejo. Hay una diferencia significativa en Ansiedad ($p= 0,49$) y Depresión ($p= 0,247$). Por lo tanto, las mujeres tienen una mayor prevalencia de síntomas de ansiedad.

Conclusiones: Se sugiere que existe una recopilación de información sobre los resultados de los estudiantes a fin de identificar el grado y el síntoma con mayor prevalencia. Se propone una nueva investigación con más datos sociodemográficos que ahonden en los factores sociales y psicológicos.

Palabras clave: Ansiedad, depresión, universitarios de psicología, México.

INTRODUCTION

According to the World Health Organization (WHO), it is estimated that 1 in 5 people are affected by depression and anxiety, affecting 260 million people worldwide (1). Depression in 2020 was the second leading cause of premature mortality and disability in the world, becoming the first cause in developing countries such as Mexico (2). In Mexico, depression and anxiety are also the leading psychiatric conditions, with a ratio of about one man for every two women (3). Mexicans between the ages of 18-65 years suffer from some mental disorders, with men presenting more than one disorder compared to women, but the latter have a higher prevalence (4). In 2019, 39 thousand 479 cases of people facing mental health problems were detected in the state of

Guanajuato and are attended by the Ministry of Health (SSG), the previous figure may increase to 40 thousand (5). In addition to this, there are studies where different instruments are applied to measure depression and anxiety with ascending results towards the prevalence of symptoms in women (6).

The mental health of university students is diminished throughout their stay as students. Therefore, it is common for them to suffer from some psychological condition, since they go through different situations that affect them in the following ways: emotional, cognitive, and behavioral (7). Starting to study for a professional career can be a source of stress that threatens psychological well-being, which can be compromised academic performance, physical health, or mental health (8). Because they are at an age when depressive symptoms are more prominent, they may increase the development of suicidal ideation due to the severity of the symptoms (9). According to the General Council of Official Colleges of Psychologists, not all universities have a space for psychological support and consultation, in addition to the stigma that this can generate if students make use of it (10). As well as the lack of staff training. Due to the culture, it takes up to 10 years to react and admit that psychological care is needed, and in the meantime, other remedies are chosen as a solution to the condition, and as a consequence, the symptoms end up worsening, where the main disorders to be treated are anxiety and depression (11).

In the first quarter of the confinement due to the pandemic, the suspension of classroom activity had a generalized impact on the physical, psychological and emotional levels of the Mexican student sector (12). In this sense, the consumption of tobacco, alcohol, drugs, and casual sex are considered coping strategies, which are usually used to reduce the negative emotions experienced under stressful situations, therefore avoidance or escape strategies are negatively related (13). The municipality of Irapuato does not yet have a study that works on the identification of symptoms that can generate psychological distress in students at different universities. The university institution must honor its fundamental purpose: to train competent professionals who possess, at the same time, authentic human quality,

full emotional stability, and an integral vision of their future (14); therefore, the objective of this work was to know the factors of psychological distress and prevalence based on the results of the Beck Depression and Hamilton Anxiety scales, to establish a diagnosis of the students and to create tools for the timely identification of the distress. Specific objectives: To identify the school grade in which there is a higher prevalence of psychological distress, to explore the risk factors, and which symptom is the most prevalent and present in the population.

METHOD

Participants

The participants in this study were 199 young adult psychology students from various universities in the municipality of Irapuato, Guanajuato. It was a probabilistic sample, with a total population of 175 683 university students. The study had a confidence level of 85 % and a margin of error of 15 % (15).

Inclusion Criteria. Both men and women, from the different groups that make up the Psychology degree program, participated voluntarily in the study, ranging in age from 18 to 45 years old.

Instruments

Before the application of the instruments, a content validity by experts was made, and for ethical and professional reasons, the authorization of the authorities of the institution was requested, making known the purposes of the research, as well as the importance of the research for the researcher in his undergraduate professional training.

Two evaluation instruments were used for data collection: The Beck Depression Inventory, whose objective is to evaluate depressive symptoms in adolescents and adults during the last two weeks before application and with a Cronbach's Alpha reliability of 0.87, having a total of 21 Likert-type items (16).

The second instrument is the Hamilton Anxiety Scale, which aims to evaluate the intensity with which the symptom is presented, consisting of 14 items with a Cronbach's Alpha reliability of

0.82 (17). The two instruments were applied at a single time to young adults from different universities.

Procedure

For the application of the instrument, the Question Pro platform will be used, since, due to the situation caused by the pandemic, it is safer to do it online. Then a link corresponding to the tests (Beck's Depression and Hamilton's Anxiety) will be provided, where participants can choose the academic degree in which they are currently studying so that they can have control over the completion, completion, and results. Facilitating the creation of a database on school grade, gender, age, and most prevalent symptom. The data obtained will be integrated into the SSPS program in version 25.

A Kruskal Wallis analysis, Spearman correlations, and the test were nonparametric. The purpose is to find the significant correlation factors between the data of the respondents from the different universities.

Once the tests were carried out, we proceeded to the statistical analysis of the data to identify the significance between the study variables and thus indicate the conclusions, evaluating the viability of the hypotheses. Without forgetting to thank all the collaborators and participants for their contribution to the development of the research.

Analysis

The study was disseminated to the various universities in the municipality of Irapuato, first contacting the career coordinators and then the directors for their approval. The study had three ways of reaching the population:

1. It was disseminated with the creation of a poster in Canva and the corresponding tests to be performed this same poster contained information about the conditions to be studied (Anxiety and Depression) so that the population was aware of the importance of the same and was encouraged to participate. The poster contained the links and QR codes of the tests to be applied (Hamilton Anxiety Scale and Beck Depression Inventory) so that students could enter in a simpler way, and it

was adapted to the conditions issued by the schools in terms of health.

2. Once the knowledge and objective of the research were made known to the career coordinators, they made it known to the students to obtain the appropriate response, so they were provided with the corresponding links, due to the limitations to entering and providing the corresponding information.
3. Support was provided to students and alumni of the institutions for the dissemination of the poster with the elements that integrate it so that it could reach a larger population, without forgetting that it is exclusively for psychology students.
4. All results were treated confidentially through the directors.

Ethical considerations

Four main aspects were considered: confidentiality of the data, the students were informed that their participation is voluntary, anonymous and that the results will not be exposed in allusive posters; on the contrary, the objective of the same is to identify the discomfort so that due attention can be given. The protocol of this study was signed by the Ethics and Steering Committee of the university.

1. The objective of the study is to know the symptoms present in the university population that produce psychological distress, for which the university agrees to carry out such a study with the application of two instruments formed by the Beck Depression Inventory and the Hamilton Anxiety Inventory.
2. Given the current conditions, it could not be carried out in person except for those that have small groups and that allows to carry out the personal instruction, in the other cases the participants were present online and were given the corresponding links to the tests, the person assigned to the group must maintain a safe and reliable environment for the participants, where their confidentiality and anonymity is not violated concerning personal data such as sex, age, telephone, academic grade and assigned group.
3. The times assigned by the university were respected in terms of application of the same, to avoid altering the results of the exams.

I have read the information provided, I have had the opportunity to ask about it and the questions I have asked to have been answered, I agree to the conditions and everything mentioned above.

World Medical Association Declaration of Helsinki

We based ourselves on the Helsinki code because research implies that it must be carried out with respect by qualified health care professionals and be under the supervision of a clinically competent physician. The right of the participants to anonymity was respected and the greatest possible measures should be taken to preserve their privacy, thus reducing the impact on the physical and mental integrity of the participants. The publication of the results obliges to present and preserve the accuracy of the results and those that are not in accordance with the principles outlined in the Declaration should not be accepted for publication (18).

RESULTS

It is shown that the most representative group of the study corresponds to women (77.4 %), it is observed that the age is heterogeneous ranging from 18-23 years, whose mean is 21.5 years. This was identified as the majority age group (92 %).

Table 1
Sociodemographic data of the participants

Data	Mean	sd
Mean age	21.58	4.21
Age range	n	%
18-23	167	83.9
24-29	20	10.1
30-35	9	4.5
35-40	1	0.5
41-47	2	1.0
Gender		4.19
Female	154	77.4
Male	45	22.6

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The test to be used is Nonparametric. The result with a bilateral sig. value or p-value is

< 0.05, which means that the null hypothesis is rejected, and the research hypothesis is accepted.

Table 2
Normality Test of Hamilton Anxiety Scale and Beck Depression Scale

Hamilton	Kolmogorov-Smirnov	p	Gl
Beck	Kolmogorov-Smirnov	0.0001***	0.199
			0.199
		0.0001***	

***P≤ 0.001

There is a significant difference in anxiety with (p=0.49). Therefore, there is a difference between the levels of depression and anxiety according to gender because the total number of females is 154, therefore, in chi-square, they are more representative in terms of anxiety symptoms (Table 3).

According to the correlation results, there is a relationship between anxiety and depression symptoms, only when they are correlated and not when they are compared, therefore, the greater the depression, the greater the anxiety.

Table 3
Mann-Whitney U test. Gender and psychological distress as anxiety and depression

Psychological distress	Anxiety		Depression	
	Mann-Whitney U test	p	Mann-Whitney U test	P
		3 093.500		
	2 797.500	0.49		0.247
Gender	59.704	Psychological Distress Hamilton Anxiety Scale 110.116	Psychological Distress Beck Depression Scale 92.905	
p	0.0001***	0.0001***	0.0001***	

***P≤ 0.001

Table 4
Correlations Hamilton and Beck

Rho Spearman	Correlation coefficient	p
Hamilton	770**	0.0001
Beck	700**	0.0001

* P ≤ 0.05 **P≤ 0.01***P≤ 0.001

DISCUSSION AND CONCLUSIONS

Upon entering university, students face new challenges that they must meet according to their self-efficacy, and they begin to acquire jobs that even exceed the needs that they can cover in a given time. Stress, anxiety, and depression come to originate in the student in a kind of cycle, since they become predictive symptoms of the same

(19). There are psychological consequences produced by emotional demands, which produce anxiety, fear, excitement, fear, anger, and depression (20). These can increase depending on the curricular development, affecting mainly academic, psychosocial, and economic aspects (21).

According to the results obtained, it was possible to identify and analyze using Spearman's correlation. That the female gender is related to item number 3 of Beck's depression (correlational coefficient 259**, and $p=0.0001$). Therefore, fear of the dark is related and significantly associated with fear of the unknown and crowds. Consequently, the greater the number of women, the greater the fear of being alone.

Similarly, it can be seen that there is a significant relationship between general somatic symptoms (correlational coefficient 291**, $p=0.0001$), breathing difficulties (correlational coefficient 224**, $p=0.0001$) and loss of interest in sex (correlational coefficient 211**, $p=0.0001$), in the majority female population.

According to the results, the university with the highest prevalence is the Irapuato Institute University (UII), because they answered more than one group, presenting significant values in self-criticism, suicidal thoughts and ideation, and self-devaluation. And in the relationship with the school grade, it is evidenced that those students who belong to the first university grade are those who present greater symptoms of insomnia (correlation coefficient 243**, $p=0.0001$) as well as somatic symptoms (correlation coefficient 273**, $p=0.0001$), proving the relationship between school and the school grade that presents greater incidences. In an epistemological study of anxiety and depression, it stands out that the symptoms are related to different organs such as the nervous, cardiovascular, and digestive systems (22).

The above highlights the possible habits and symptoms of psychology students from the beginning of their university stay, being able to reach a possible diagnosis regarding their behavior, in which it is revealed that women are the most vulnerable population in terms of depressive and anxious symptoms. The above has the purpose of knowing the ailments that occur before starting a university stage and

how these worsen and prevail. This is because they enter without having resolved the conflicts that originated in previous stages, being more avoidant, having difficulty in decision making, and creating a conflict in their social, emotional, and psychological development. Due to the lack of detection and attention in the first contact (23).

An example of this is shown in the study Association and impact between moral development by depression and anxiety in university students in Mexico, where the majority population is female and ranges between 18-21 years. The study shows that while the students have greater professional development, they also do so in conceiving a constrained morality and worried about punishment, however, this also leads to increased symptoms of anxiety and depression, for which it can be deduced that when they enter the university, these symptoms are present and there is a prevalence, which affects the personal and school spheres and is the cause of school dropout (24).

In relation to the study entitled "Depression, anxiety and suicidal behavior in medical training at a university in Mexico. The results show that women present higher prevalence for anxiety and depression in 61.5 %, but lower for suicidal behavior (25). The data from this study detonate the relevance of providing personal resources to university students, the results are similar to the study conducted with psychology students, where the female gender represents 77.4 % of the population with anxiety symptoms. Advancing in the university career implies greater exposure to the different symptoms of various disorders.

Therefore, it has been documented that the prevalence of mental disorders in Mexican students is 20.3 %, but 16 % have presented a mental disorder in the 12 months before the initiation of treatment. In most cases, the prevalence was present before starting university (26). It is important to know the prevalence and the symptoms presented in students in general, because of the emotional affectation and the importance of early detection. In another study, it was found that young people in semesters from the third semester onwards show more moderate symptoms and according to the K-10 83 % present discomfort 30 days before requesting psychological attention (27). Students between 17 and 24 years old, out of every 100

presented a symptom of suicidal ideation at least one day of the week, as for depressive symptoms 28 out of every 100 students report having these symptoms once a week or more, highlighting again women, who have more frequently: feeling sad, crying at times, and feeling lonely (28). In a study entitled "Influence of sociodemographic variables on anxiety and adolescent academic performance". In terms of anxiety, a comparative analysis by age reveals that the highest levels of anxiety are recorded precisely in students aged 14 to 18 years, followed by those aged 25 to 39 and 18 to 25 years (29). According to Pulido and Herrera, it was found that higher averages between mild and moderate stress, anxiety, and depression were found in university students between 23 and 32 years of age (30).

These studies are consistent with the average age of the prevalence of distress in psychology students, as well as the predominant gender with symptoms, the prevalence of distress in the different grades, and the time that must pass for the request of psychological care. However, with respect to the grades, the increase in symptoms differs according to the grade, because the first grade is the one that shows the greatest presence in the study.

On the other hand, in the study "Prevalence of the binomial anxiety and depression in male and female psychology students", it is found that the majority population was female, where the levels of anxiety and depression in men located severe level of depression 51.2 %. While anxiety in both genders presented similar percentages of 28.7 % (31). These results show that there is an exponential growth in the symptoms and the risks that this implies in the comparisons that can be made with other grades. In our study, the results differ since the first grade represents 96.42 % of the population with symptoms. However, it is difficult to make a real comparison because the results in the participants of the last grades, participation decrease considerably or there is no interest. This may be directly related to the symptoms of psychological distress, as they present a devaluation and self-criticism, which are part of the severity of the prevalence of the same since they lose interest in activities. It may be believed that this is the population with the highest symptomatological risks, but it could not be identified in this study. Similarly, it is

highlighted that psychological well-being, with the variables sex and academic semester, does not show any significant influence between them (32).

The type of career to be studied should also be considered; Health Sciences students present more mental alterations than other careers, which affects the emotional well-being of professionals because the career demands more study time and ethics (33). Since studies reveal that medical residents show depression (11.7 %) and high rates of anxiety (39.2 %) and stress (22.5 %) in comparison with Mexico which shows a higher prevalence of depression (30.8 %) (34). This means that the Mexican population has a greater predisposition to the exposed symptoms together with race. As shown in a comparative study of different careers where nursing students showed a high incidence of signs of anxiety/depression representing 33.7 % of them, reached a medium degree and 1 % reached a high degree compared to the other careers that participated (law, languages, sustainable development, forestry engineering, and tourism), where women show the highest incidence of symptoms (35).

The above compares with the results of the study in university students, specifically in the symptoms presented by the female population: fear of the dark, respiratory difficulties, somatic symptoms, loss of interest in sex, and anxiety. The pressures of social, work, economic, and family life should be considered as an incident part of the affectation. Even the context of the area of residence or the facts of violence that are lived in the vicinity of their schools or homes. This could be a factor that makes them more prone to the condition, making it difficult for them to acquire the tools to face those thoughts about the situation due to the lack of attention and knowledge of it.

The strengths that were present in the study on psychological distress were that there is no similar study or at least a beginning that talked about depression and anxiety in psychology students in the municipality because this sector of the population has not had enough prominence in the municipality. When it should be the opposite since they are those who are linked to the mental health of the population where they live, and they are the ones who will provide in the future the required attention to the different ailments. However, this study gives the preamble for a

continuity where more young people, teachers, and mental health specialists can be involved and that this research can serve as a reference for continuous studies of psychological distress.

The research has a wide field to continue with the deepening of the study, from expanding the sociodemographic data such as marital status, if they have children, if they are working people, the type of working day if they have a family if they live with their parents. It is also possible to consider that the levels of anxiety and depression will increase due to the long period of confinement (36). The important thing would be to inquire about the psychological care they have received or if they have ignored it.

This is because as mental health professionals we must be in a continuous process with the objective of not bringing problems to the consultation and that the patients' problems do not fall into our own. This also refers to the inquiry of the same professional ethics, since when trying to give a consultation with an identification of the symptoms with the patient speaks of the little preparation that the teachers have provided, it can even be said that it is a replica of the actions that are instilled in them as something correct towards the omission of supervision and consultation.

Another point of opportunity is to know more about the availability of the different universities in terms of knowing: Does the university have a psychology department, how does the psychology department work, what type of attention is provided to the students, what is the dynamics of inclusion with the students, what type of accompaniment or practice process is provided, and what is the result of the most frequent suffering in the psychological exams before entering the university? What type of accompaniment or practice process do they provide? What is the result of the most frequent psychological exams before entering the university, has there been an attempt to address it, and have there been constant awareness programs regarding the conditions? In this way, it is possible to verify the previous results of the investigation as well as in the future and to be able to know the evolution of a prevalence. In the same way, it is necessary to involve people even more in having an ethical and professional profile for the consultation and that this can be a reference of the profession in the university. Finally, to be able to have the participation of

more schools so that the study can have a greater depth with an expanded percentage of psychology students, involving those branches that are not directly related to mental health, in this way and in the long term to be able to generate a study in a general way with the students and teachers of the career.

On the other hand, the study also had certain weaknesses regarding the recruitment of the population, because some universities refused to participate, arguing that they were not interested in the research and its results. In addition, some did not trust that joint work could be carried out, and others needed more proof that the studies were coming from a reliable institution. Some institutions were left out of the study because the institution was not yet consolidated with sufficient credentials to hold the degree in psychology validly before educational organizations, in others the dissemination was not carried out because there was no communication between their coordinators, teachers, and directors, so it was decided not to count them.

Another weakness that was found in the implementation and application of the tests separately in different links and QR codes, was that part of the population did not understand the instructions or they were not clear and it was believed that answering a single test was enough to conclude the participation. Consequently, the number of the original target population was reduced to the current number of study participants. Regarding this same point, the schools that allowed the instruction to be given in person were able to have decent recruitment, but on some occasions, the interest, attention, and even the purpose of the research did not generate an impact or interest in some students, teachers, and directors, so that the involvement was forced.

The proposal and suggestions in the field of psychology with respect to the above research are developed as follows.

It is proposed to create a database with the information and results of the students already enrolled and those who are about to enter. In this way, it would be possible to monitor the results and changes in the psychological aspect of the students. In this same base, relevant data would be added to help the understanding and identification of those external and internal factors that promote

psychological discomfort. This with the purpose that the person or persons in charge of the analysis and interpretation of the results can have a greater panorama of the situation and be able to explain it to the academic authorities, for this task it is propitious that it is carried out by people internal to the institution, in this way it will be possible to understand in a real way the problems that the students go through, the profile of this person should be merely clinical psychologist with some specialty in the most recurrent disorder obtained in the study, the reason for which the attention and interpretation are of greater depth and validity avoiding an Iatrogenic. A fundamental aspect of this proposal for the creation of a database is that a periodic comparison between grades, months, and years is made to identify variables so they can be properly addressed.

It is important that after obtaining the results at the end of the period, workshops or talks are developed regarding the relevant symptom so that the students can acquire the necessary tools to identify them so that they can be involved in mental health activities. In case the institution meets the standards to be able to provide psychological care to its students, this should be in an ethical manner where teachers or staff of the institution are not involved. Therefore, it will be necessary to have trained external personnel with special emphasis on the fact that their teaching staff cannot get involved in the treatment and/or consultations of the enrolled students and neither in a private way because they would fall into the error of making believe that because they are their teachers, they can be their therapists of choice.

It is important that the institution makes agreements with public health institutions to be able to channel those students who need more specialized care and at the same time the educational institutions can have a greater approach to the institutional programs of mental health and generate spaces where students can have reliable psychological support and adapted to the new needs that may arise from the research, in which they can contemplate telepsychology for those people who have more activities apart from the study. This point must have relevance in the formation of the database because all those involved in mental health should be in consultation and constant supervision mandatory.

In this way, it is intended that the research can be a starting point for those interested in the subject of mental health in future psychologists and psychologists, since most universities in the municipality offer the career, some without the requirements or equipment necessary for its good execution, others that are starting in their generations, but have not had an approach to the research results and that the needs of psychologists can be known, making this nourishing for the branch.

Not having a real interest in the mental health of psychology students can represent a risk, if they suffer from depression, anxiety, and suicidal ideation, the ideal is that we all get involved for generations in the realization of periodic measurements as discussed above. However, it can be shocking if the task is left only to one person or group because of the complications of time and population to study, so this must be carried out by mental health professionals who can recognize the risk of symptoms without falling into malpractice in both directions, taking into account that leaving the prevalence of symptoms not only represents a risk to the student but for all those with whom this will be involved.

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Association of depression and healthy behaviors in early adult mexicans

Asociación de la depresión y las conductas saludables en la adultez temprana de mexicanos

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SUMMARY

Introduction: *Depressive disorders are the major cause of mental care worldwide, understanding their origin is of utmost importance to establish better diagnostic and intervention strategies, for positive short- and long-term outcomes.*

Aim: *To establish the relationship between healthy behaviors and the level of depression in early adults by applying two assessment instruments: the Beck Depression Scale and the Fantastic Test to determine if there is a correlation between the two.*

Method: *96 participants between 20 and 30 years old, Mexican, being a probabilistic sample with a reliability margin of 95 % and a margin of error of*

10 %, of a non-experimental, cross-sectional design, with a correlational-explanatory scope, using the Beck depression scale with a reliability level of 0.86 % and the fantasy test of healthy behaviors with a reliability level of 0.60 %.

Results: *The results obtained showed that there is a positive correlation between both variables with a P-value of 0.723, which is statistically significant at a level <0.01, that is, the higher the level of healthy behaviors, the higher the level of depression.*

Conclusions: *The pandemic is a multidimensional stressor that affects various areas of people's lives forcing them to a greater effort of adaptation, awareness, and recognition of depression in early adults, which are key today for the development of more effective campaigns and strategies.*

Keywords: *Online intervention, healthy behaviors, depression, early adulthood, Mexico.*

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RESUMEN

Introducción: *Los trastornos depresivos son la mayor causa de atención mental a nivel mundial, entender su origen es de suma importancia para establecer mejores estrategias de diagnóstico e intervención, para resultados positivos a corto y largo plazo.*

Objetivo: *Establecer la relación entre las conductas saludables y el nivel de depresión en adultos tempranos mediante la aplicación de dos instrumentos de evaluación: La escala de depresión de Beck y la prueba fantástica para determinar si existe una correlación entre ambas.*

Método: *96 participantes de 20 a 30 años, mexicanos, siendo una muestra probabilística con un margen de confiabilidad del 95 % y con un margen de error*

del 10 %, de un diseño no experimental, trasversal, con alcance correlacional-explicativo, utilizando la escala depresión de Beck con un nivel de confiabilidad del 0,86 % y de la prueba fantástico de conductas saludables con un nivel de confiabilidad del 0,60 %.

Resultados: Los resultados obtenidos arrojaron que existe una correlación positiva entre ambas variables con un valor de P de 0,723 que es estadísticamente significativa al nivel $<0,01$, es decir, a mayor nivel de conductas saludables un mayor nivel de depresión.

Conclusiones: La pandemia es un estresor multidimensionales que afecta diversas áreas de la vida de las personas obligándolas a un esfuerzo mayor de adaptación, la conciencia y reconocimiento de la depresión en los adultos tempranos, son claves en la actualidad para la elaboración de campañas y estrategias de mayor eficacia.

Palabras clave: Intervención en línea, conductas saludables, depresión, adultos tempranos, México.

INTRODUCTION

Depression generates an annual expenditure of between 40 and 50 billion dollars, due to low productivity and use of health resources (1). Between 2001 and 2002 the National Survey of Epidemiology and Psychiatry (ENEP) shows that in Mexico the prevalence of Major Depressive Episode (MDD) in the population aged 18 to 65 years is 7.2 % in a ratio of 2 women for every man with 9.8 % and 4.4 % respectively (2). Age is one of the most variable factors in these conditions, prevailing in young adults (3). Depressive disorders are linked to inappropriate behaviors and lifestyles, such as weight loss, sleep problems, smoking, and unprotected sexual activities, due to immediate gratification as opposed to healthy lifestyles that require a longer time for gratification (4).

According to the World Health Organization (WHO) in its 2008 report, that year there were 57 million deaths worldwide, 63 % of which were related to diseases caused by inadequate lifestyles (5). In 2019, 7 out of 10 reasons for death were non-communicable diseases, these 7 causes represent 44 % of all deaths, and the set of non-communicable diseases accounted for 74 % of deaths worldwide (6). The WHO recognizes health as everyone's responsibility, so unhealthy behaviors have an impact on the overall health quality of the individual generating

deficiencies in the quality of life (7). Early adults are a population at risk due to their stage of development (8). In a study conducted at the Universidad Católica Andrés Bello in Caracas, Venezuela, a relationship was found between an unhealthy lifestyle and problems with sleep, weight, and physical problems (9). In a cross-sectional study between 2013 and 2014 of nursing students, the relationship between symptoms of depression and anxiety with excessive caloric intake and little physical activity reflected in problems such as overweight and obesity is evidenced (10). Research on the effectiveness of the promotion of healthy lifestyles in people with depressive symptoms shows that the promotion of healthy behaviors within the interventions decreases the negative effect and accelerates the improvement of the state of health perceived by the individual (11).

Chiluiza's project is a research related to the quality of life and depression in students of the faculty of education of the technical university of Ambato, as a result, it was obtained that students have 47.8 % of good quality of life, 35.5 % and a moderate level of depression with a percentage of 100 % (12). Unhealthy behaviors are related to psychological problems such as depression, stress, and anxiety. However, within this study, there is a relationship between these two factors that show a different view from previous studies, obtaining in its analysis, a correlation where the high presence of healthy behaviors is found in a population with moderate level depression showing that although this population has a good diet, and adequate weight, Although this population has a good diet, adequate weight, frequent physical activity, and adequate social activity, they currently present a depressive episode at different levels, which is an indicator that for an adequate and timely clinical diagnosis, the population should be educated to have a greater awareness of the importance of taking care of their mental health as part of their overall wellbeing.

There are few studies on the relationship between depression and healthy behaviors, therefore, the objective of the study is to determine if these factors that are evaluated for the diagnosis and classification of depression, are present in individuals and show to be effective protective factors in the early adult population.

METHOD

The research participants were 96 young adults between 20 and 30 years of age, from the community of Valle de Santiago, in Guanajuato, Mexico. It is a probabilistic sample, with a population of early adults of 24 008, with a confidence level of 95 % and a margin of error of 10 %, a non-experimental, cross-sectional, descriptive-correlational design will be used in this research to evaluate the associations of the variables (13).

Inclusion criteria

- Men and women
- Young adults who were natives of Valle de Santiago, Guanajuato
- Aged between 20 and 30 years old
- Who had a device to be able to take the tests electronically.
- Who agreed to participate voluntarily in the study

Measures

Two evaluation instruments were used for data collection, the Beck depression scale instrument, whose objective is to measure the severity of depressive symptoms, has a content validity and reliability of Cronbach's alpha 0.86 (14). The instrument has a number of items of 21 and the type of response is the Likert scale (15). The second one is the fantastic test, whose objective is to identify and measure the lifestyle of the population, which has a content validity and Cronbach's alpha reliability for the total scale of 0.60. The instrument has a number of items of 25 and the type of response is the Likert scale.

Procedure

Data collection was done by means of two online survey-type instruments. The surveys were conducted in Question Pro <https://laimportanciadelasaludmental.questionpro.com>, the application route was through social networks, given the pandemic situation that was

in the application time during March. Passing the generated link to each of the participants in the survey. Once the surveys were completed, we proceeded to the statistical analysis of the data to identify the significance between the study variables and thus indicate the conclusions, evaluating the feasibility of the hypotheses proposed for the collection of the data obtained in the implementation of the instruments.

Data analysis

An analysis based on Spearman correlations was used to find if there is a significant correlation between the two variables to be measured which are level of depression and presence of salable behaviors, in addition to the Mann-Whitney U test for the relationships between the variables, different subscales of each of the variables and dimensions with the sociodemographic data, the software used for statistical analysis in SPSS version 25.

Ethical considerations

This research study was based on the Helsinki code, published in 1964, (16) a document that regulates the medical community in relation to research. Considering the principles of this code, the freedom of the individual to participate freely and conscientiously in the research was respected through informed consent, where the reason for the study and its usefulness was explained, considering the well-being of the participant and the possibility of clarifying any doubts that might arise before, during or after participation. Within this research, topics that may be delicate and susceptible for the participants are touched upon, for which reason it was informed before starting the test that some questions may be sensitive and if you do not wish to answer you can leave your participation without any repercussion, as part of the considerations to the privacy of the participants in relation to the topics addressed in the test, the name of the participant was not requested, nor the e-mail address. The objective of the research was informed, and a follow-up was offered if the participant requested it after taking the test to provide guidance about their doubts or to orient them for mental health care if

they so wished, through the contact provided by the researcher in the informed consent form. In addition, ARCO rights were used for the safety of the participant.

RESULTS

Within the sociodemographic data, we found greater participation of young adults between

20 and 25 years of age, with a mean age of 23.54, with greater participation of women, in these sociodemographic results it is observed that 70 % of people have completed studies from high school to higher education. Table 1 shows that the most representative group of the study corresponds to women (52.2 %), the most representative age in this group is 20 years old (34.4). 81.3 % are single. On the other hand, 40.6 % work (Table 1).

Table 1
Sociodemographic data of the participants

Data				
Age mean		23.54		
Age range		n	%	Sd
20	33	34.4	3.32	
25	16	16.7	3.32	
Sex				
Woman	53	55.2	0.5	
Man	43	44.8		
Occupation				
Study	39	40.6		
Job	35	36.5	0.92	
Level of education				
High School or Technical	34	35.4		
Degree	38	40.6	0.80	
Marital status				
Married	8	8.3	0.5	
Single	78	81.3		

The results obtained were analyzed using Spearman's non-parametric correlation test, showing that there is a highly significant relationship between these two variables, where the greater the presence of healthy behaviors, the higher the level of depression in the subject. The results show that there is a highly significant correlation between the two variables measured, determining that 35.9 % of the population has high levels of healthy behaviors, however, this does not have an impact on reducing the levels of depression that individuals present, since 49.3 % of the population has some level of depression between moderate to severe, i.e. about half of the population. Based on the result, it is affirmed

that healthy behaviors are significantly related to the level of depression, in a positive way, that is, the higher the presence of healthy behaviors, the higher the level of depression in the population.

Table 2
Spearman correlations between healthy behaviors and level of depression

	Depression level	
	Pearson	P
Healthy Behavior	0.723	0.0001***

*** p<0.001

The Mann-Whitney U test was also used to compare the sociodemographic data with both variables to determine if there was a difference between the groups, obtaining from the analysis that these sociodemographic data considered in the research do not have a significance to

determine groups with important differences that show risk or protective factors such as a higher level of education or a prevalence by sex or age range. It can be observed that the level of depression and healthy behaviors in both variables are identical in relation to sex (Table 3).

Tabla 3
Mann-Whitney U of Sex with the level of depression and healthy behaviors

Sex	Depression		Healthy Behavior	
	Mann-Whitney U test	P	Mann-Whitney U test	P
	821.500	0.041*	1 061.00	0.021*

* p <0.05

DISCUSSION

According to the analysis of the results, the initial hypothesis, as well as the objectives of the research were fulfilled, rejecting the initial hypothesis presented in the research where the higher the level of healthy behaviors present in the individual, the lower the level of depression, if present. The results generated in the research show that the early adult population has a high index of healthy behaviors with a higher tendency in behaviors related to associativity at 6.02 %, nutrition, addictions at 7.55 %, and sexual behaviors at 5.92 %.

In Mexico, the National Survey of Psychiatric Epidemiology (ENE) estimated that 8.4 % of the population has suffered, according to the DSM-IV, an episode of major depression at some time with a median onset of 24 years. This is verified in this research, with 49.3 % of the population with the presence of depression, with a median of 23.54 % years (2).

From May 2013 to November 2014 in a random sample of 450 nursing and nutrition students, applying a structured questionnaire on physical activity and presumptive symptoms of anxiety and depression; the results highlighted that the prevalence of overweight/obesity estimated according to BMI was 32.4 % and symptoms of

anxiety and depression are evidenced in students of the health area, associated with excessive intake and mild physical activity with a predisposition to overweight and obesity, in this study shows that there is the presence of symptoms of depression in subjects who have excessive intake and little physical activity (6), in contrast in the current study shows that behaviors related to nutrition care are presented in a 5.57 % of the subjects present a high level of healthy behaviors, which is 35.9 % of the studied population. Therefore, it can be inferred that although a depressive episode is present in the individual, he/she has a high percentage of self-care related to physical activity and good nutrition, which is reflected in his/her behaviors of balanced nutrition, adequate weight, and regular physical activity.

Results in research in countries such as Chile between 2015 and 2016 (17) show that early adults have a clear awareness about the care of their health and healthy habits however they have deficiencies in the care of these and justify their lack of care, throughout the stages of development of the human being there are stages of greater risk for the acquisition of risk behaviors such as youth, A longitudinal study in a university in Lima between 2012 and 2014 shows through the application of the Fantastic test in the 30-item version (18), that there is an improvement in areas such as food, weight and

cigarette consumption that is attributed to the promotion and prevention within society.

The two studies previously described show that there is a knowledge of self-care and healthy behaviors, if we compare the results with those obtained in this study, it is shown that there is a higher prevalence of healthy behaviors in the population, with high levels obtained in the dimensions of fantastic test that measure additions with 7.55 % and 5.57 % of 35.9 % of the population, being these dimensions of the group with the highest percentages. In previously described studies on the effectiveness of the promotion of healthy behaviors in patients with depression problems and their effectiveness in improving symptoms and the subject's perception of their state of health, it is in contrast to the results obtained which show that the presence of high healthy behaviors does not have a positive impact that can be observed as an effective protective factor that decreases the level of severity of the episode because according to the results analyzed most of the subjects have a level of depression between moderate to severe with the need for psychological intervention. These results are consistent with those obtained by González-González et al., 2021 (19) with undergraduate students from Universidad de la Salle, Mexico, obtaining similar results in relation to the prevalence of high levels of depression in the participants.

The total population studied was 96 early adults, with a mean age of 23.54 % years, with a majority of the single population with 81.3 %, 40.6 % only studying, and 55.2 % of female participants, which leaves us with little representation of ages closer to 30 years and with significant sociodemographic data such as marital status, active in a labored way, with which the study could have been broader and more homogeneous to be able to give results that could be compared highlighting these data. This work is very interesting because it shows an interesting discrepancy with previous data in different studies that were contemplated in the theoretical framework of this research, where it is shown that healthy behaviors act as protective factors and are used in programs to decrease the levels of depression, stress or anxiety in patients of different age groups with efficacy and positive results for the therapeutic process. However, in

this research the correlation shows an increase in both variables, which may be related to the public health situation we are going through, which is the COVID-19 pandemic and its variants, demonstrating that external factors such as pandemics or earthquakes affect the mental and physical health of individuals, generating the need for intervention programs that take these aspects into account (20). Health psychology has a biopsychosocial approach to the mind and body influenced by society and the development of technologies (21). This concept makes us think about the different lines of research that can be followed based on these results and the concept and importance of health psychology in the current situation.

Pandemics are multidimensional stressors that affect various areas of people's lives, forcing them to make a greater effort to adapt. Anxious depressive symptomatology and stress have been described in previous pandemics (22) and current research has shown that the population has been affected not only physically but also in their mental health with problems such as anxiety (23) as well as problems related to increasing occupational stress (24). The behaviors and subjectivity of individuals, groups, and populations can contribute to avoiding contagion and spread of disease, and the promotion of healthy behaviors and prevention can be strategies to confront the disease (25); therefore, it is important to take into account the relationship of all these factors in the concept and perception of the health of the population. Awareness and recognition of depression in early adults are currently keys to the development of national campaigns to motivate the initiation of individual therapy as a tool for self-knowledge and management of tools for management of anxiety due to confinement and work stress.

Finally, we consider that it is important to emphasize the importance of programs of integration and follow-up of the therapy, many times the work of the therapy is left when the program drawn up in the therapy is finished or the times designated by the institutions that must be carried out according to the national programs that intend to standardize the clinical work, leaving a space to consider the study on the follow-up of the patients who have come for a crisis or as a consultation derived from their primary care.

Depression is a recurrent disease, frequently chronic and requiring long-term treatment, its prevalence in the general population is between 8 and 12 %, it is estimated that by the year 2030 it will occupy the first place in the measurement of burden of disease according to disability-adjusted life years (26). According to Nora Blum, high-functioning depression is characterized by not having the typical symptoms of depression, so it was diagnosed as atypical or within the description of dysthymia, the complexity of proper diagnosis of depression, as well as the individual's own recognition of needing help in relation to their mental health becomes complex due to these atypical cases where it is not recognized that there is a depression because the subject's general functionality is maintained, as well as the recognition of the individual himself about needing help in relation to his mental health becomes complex due to these atypical cases where it is not recognized that there is a depression because the general functionality of the subject is maintained, however there are changes in the way of feeling, thinking, experiencing, acting and behaving (27), these atypical forms of the presence of depressive disorders give the reflexive guideline to develop innovations in the clinical way of approaching these diagnoses (28), using different approaches of psychology with the purpose of favoring the efficacy in the process of diagnosis, intervention, follow-up and promotion of mental health (29). The concepts and approaches of psychology make it possible to carry out programs that cover the different points that are often left out of current interventions (30).

Therapeutic support should have a multifactorial approach and should be known by all health personnel who care for the population, especially at the first level of care, physicians, nurses, and psychologists who are in the first line of care should be constantly updated about the correct diagnosis of depressive disorders (31).

Two of the therapies with the greatest efficacy demonstrated so far are cognitive behavioral therapy and behavioral activation, therapies that have currently demonstrated the greatest efficacy in the treatment of depressive disorders (32). Intervention programs such as “Always Forward” in Peru are strategies that can monitor the efficacy and prevalence of these types of therapy approaches (32). Therefore,

we consider that the population participating in this research can be considered for a controlled study with workshops with these approaches to evaluate through a pre-test and post-test process the efficacy and prevalence of the results of the interventions in the participants.

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Psychometric properties of the questionnaire of educational inclusion (CIE) for university contexts

Propiedades psicométricas del cuestionario de inclusión educativa (CIE) para contextos universitarios

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SUMMARY

This study aimed to analyze the psychometric properties of the Questionnaire of Educational Inclusion (CIE) for University Contexts, applied to a sample of 171 university professors, stratified random sampling with proportional allocation. The CIE questionnaire's factorial structure, reliability, and validity were evaluated. The 4-factor model, including four scales Attitudes, Knowledge, Practice, and Context was tested by Confirmatory Factor Analysis (CFA). The scale shows adequate psychometric properties, the CFA presents goodness of fit indices (NFI=0.95; CFI=0.95 IFI= 0.90; MFI=0.80). This version of the instrument is useful for research in the field of

educational psychology and especially in institutional improvement processes for the development of inclusive higher education.

Keywords: Inclusive education, inclusive education, university, higher education, knowledge, teaching practices, teacher's attitude.

RESUMEN

Este estudio tuvo como objetivo analizar las propiedades psicométricas del Cuestionario de Inclusión Educativa (CIE) para Contextos Universitarios, aplicado a una muestra de 171 profesores universitarios, mediante un muestreo aleatorio estratificado con asignación proporcional. Se evaluó la estructura factorial. La fiabilidad y la validez del cuestionario CIE. El modelo de 4 factores, que incluye cuatro escalas Actitudes, Conocimiento, Práctica, Contexto, se probó mediante Análisis Factorial Confirmatorio (AFC). La escala muestra propiedades psicométricas adecuadas, el AFC presenta índices de bondad de ajuste (NFI=0.95; CFI=0.95 IFI= 0.90; MFI=0.80).

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CFI=0.95 IFI= 0.90; MFI=0.80). Esta versión del instrumento es útil para la investigación en el campo de la psicología de la educación, y especialmente en los procesos de mejora institucional para el desarrollo de la educación superior inclusiva.

Palabras clave: *Educación inclusiva, educación inclusiva, universidad, educación superior, conocimiento, prácticas docentes, actitud del profesor.*

INTRODUCTION

Currently, higher education is devoid of training for inclusive education, hence the importance of adapting the Educational Inclusion Questionnaire (CIE) conducted by (1) to the Colombian university context, to contribute to the processes of inclusion in higher education based on knowing the attitudes, knowledge, and practices of the main actor in the teaching-learning process, the university professor.

The concept of “inclusive education” appeared in the international context. in the scenario of the World Conference on Education for All and mobilized several countries to develop regulations mainly focused on guaranteeing the rights of persons with disabilities as in Latin American countries such as Salvador, Brazil, Honduras, Argentina, Brazil, Paraguay, Peru, Uruguay, Colombia, Venezuela, unlike the United States, which focused its interest in teacher training and education actions to bring teachers closer to the attention to diversity and respect for human rights (2-4).

However, the historical existence of attitudinal barriers has generated segregation, exclusion to heterogeneous populations and diverse functionality, to the point of vulnerability, being a large social gap due to non-inclusive educational practices and its reduction would require consensus and actions by government authorities, educational communities. and citizenship, for the development and sustainability of inclusive quality education (5,6).

In other words, the rigidity of the current school system and its practices makes it difficult to provide educational responses to the cultural and social diversity of the Colombian nation (7). Hence, it is evident the need to achieve the

contribution of teachers for inclusive education by solving their training and qualification needs. favoring the development of new skills and attitudes that eliminate social and cultural barriers. Therefore, it demands active participation in the search for profound changes in the initial and continuous training of university teachers (8).

This work is framed in educational psychology as a necessary and relevant discipline for the promotion of the processes of development learning and socialization (9,10), and is based on the principles of psychometrics for the processes of construction adaptation and validation of instruments and scales for measuring psychological attributes such as attitudes. knowledge and practices of teachers concerning inclusive education (11).

For the respective adaptation of the instrument, we proceeded to validate the aspect and content based on the relevance and clarity of the language for the university context, in terms of reliability, we used Cronbach's Alpha coefficient. For internal consistency, we used Spearman's Correlation, and for validation, we calculated the KMO and Bartlett's Sphericity tests and the Factor Analysis with Varimax Rotation verifying that the structure found reproduces that of the theory or base construct (12).

Regarding the theoretical construct (13), states that attitudes consist of a system of beliefs and cognitions that generates a predisposition to an action or situation related to affective factors that are in favor or against. Therefore, the teacher in his or her direct contact with students can reflect the attitude that he or she assumes towards inclusive education being positive or negative (14,15).

Knowledge is a relevant factor in the teaching-learning process since it is processed. Transferred or generated from the teacher-student relationship. Concerning the knowledge that a teacher should possess for the development of his or her functions in the classroom (16). The following categories are proposed: General knowledge of pedagogy, which consists of the principles, strategies, and the way to organize classes, considering how to teach (17). Another category is the knowledge of the contents of the subjects to be taught which is related to the selection of pedagogical-didactic materials and the methodological system to be used to teach. Furthermore, knowledge of the

students, understanding of how their students learn, and the strengths and aspects to improve that each one has. In agreement, Gumucio (18) affirms that "the degree of knowledge found makes it possible to situate the areas in which information or educational efforts are needed" (p. 5). With the above it can be deduced that teachers' knowledge of all aspects and situations that may arise in the classroom and of the general and individual characteristics of students, especially of people with disabilities, significantly influence the teaching-learning process (19).

Also, pedagogical practices are an important part of the development of inclusive education because through them it is evident if the teacher and the institution have the appropriate tools and knowledge to provide quality education. According to the above-mentioned, educational practices reflect the state of the culture and inclusive policies within the institution (20). In other words and institution that promotes inclusive education must have qualified personnel with the knowledge and experience necessary to enable the participation of its students inside and outside the school context.

Finally, according to the above, inclusive education is understood as a process that aims at the presence. Participation, and learning of students without distinctions, which requires the will, knowledge. Management, and resources for its progress and sustainability, leading to achievements such as educational quality measured in terms of qualified teachers and graduation competencies of students. student access and retention and institutional visibility for its significant teaching practices and production of new knowledge (21,22).

METHODOLOGY

For considering the adaptation of the Educational Inclusion Questionnaire (CIE) carried out by (1,23), to the Colombian university context a non-experimental research process of descriptive scope with a psychometric procedure based on the Classical Test Theory and Item Response Theory (24). And according to the considerations and recommendations for the

adaptation and validation of scales for measuring psychological attributes (12) the following steps were followed (Table 1).

Following the adjustments to the preliminary instrument, the field study was conducted with the final version of the Educational Inclusion Questionnaire (CIE) adapted to university contexts (65 items) in semester two of 2019-1. The reference population was teachers linked to a private university (182), aged 20 to 70 years, located in the municipality of San José de Cúcuta. The sample was determined by stratified random sampling with proportional allocation with 95 % confidence and 5 % error, determining the number of teachers by 10 strata corresponding to undergraduate careers offered by the institution. The sample size obtained was 171 university teachers (Table 2).

Once the instruments had been applied, the data obtained were tabulated and then the statistical analyses were carried out. Descriptive statistics were calculated for all the items under study (means and standard deviations), and the internal consistency was analyzed using Cronbach's alpha coefficient and the bivariate correlations of all the variables. To test the factorial structure, first, the Kaiser, Meyer, and Olkin test and Bartlett's test of sphericity were performed, both tests to verify the feasibility of performing the confirmatory factor analysis- CFA, to verify internal consistency and the correlation index was calculated.

Finally, the systems of initial and final variables are comparable (Table 3), and the psychometric properties of the questionnaire can be determined which will be presented in detail in the results section.

RESULTS

To standardize the scale three phases were developed. The first phase consisted of identifying the confidence levels of the instrument; the second was a reliability analysis and the third was a determination of the internal consistency of the Educational Inclusion Questionnaire in university contexts (Table 4).

The final psychometric properties of the

PSYCHOMETRIC PROPERTIES OF THE QUESTIONNAIRE

Table 1
Steps and procedures for adaptation of the Questionnaire of Educational Inclusion (CIE)

Step	Procedure	Technique -materials	Remarks
Instrument Selection	Verification of the psychometric properties of the instruments.	Educational Inclusion Questionnaire (CIE) (23,25) Educational Inclusion Questionnaire (CIE) for Colombian school contexts (1).	The existing adaptation of the CIE was only suitable for school contexts at the elementary and high school levels. Therefore, the original CEI was taken.
Appearance validity	Expert judgment and piloting,	It initially consisted of validation by experts, who evaluated the assertiveness of the items in the instrument, followed by a pilot test, in which 25 teachers and Higher Education Institutions completed the Questionnaire for Educational Inclusion (CIE). Fourteen items were discarded after the pilot test.	Acceptability and applicability (26).
Content validity			
Construct validity	Normality test Bartlett's test for sphericity Maximum likelihood and generalized least squares orthogonal methods; the most widely used is the Varimax method. Confirmatory factor analysis (CFA).	The structure found is expected to reproduce that of the underlying theory or construct.	The factors and dimensions of the instrument do reproduce the basic theoretical foundations.
Internal consistency and reliability	Rational equivalence method (internal consistency).	Its basic approach is that all items can be considered as parallel instruments, and the joint correlation coefficient will allow determining the total reliability of the test (27).	Cronbach's alpha coefficient of 0.89 High,

Source: Adapted from (12).

Questionnaire on Inclusive Education for university contexts are presented below, in correspondence with the recommendations for questionnaire adaptation processes and phases developed:

The reliability of the instrument. Both the items and scale in general. Have a very high level of confidence ($\alpha \geq 0.80$) as do the Attitudes and knowledge dimensions. while the practices and context dimensions have High reliability ($\alpha \geq 0.70$) (Table 5).

Table 2
Stratified random sampling with proportional allocation

Stratum	Identification	No. of subjects in the stratum	Proportion	Stratum sample
1	Administration	8	0.04	4
2	CBSH	29	0.09	9
3	CNI	6	0.04	4
4	Law	46	0.31	33
5	EMP	4	0.04	4
6	ING	11	0.06	6
7	Research	8	0.05	5
8	Psychology	35	0.20	22
9	Social Work	24	0.17	18
Review number of subjects in strata		171	1.00	105

Source: Own elaboration

Table 3
Variable system (initial version) vs. variable system (final version)

Variable	Dimensions	Indicators	Items Initial Version	Items Final Version
Inclusive education	Attitudes	Willingness to interact with people with diverse needs.	1 to 18 and 77	1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17
Concept A process that addresses and responds to the diversity of needs of all learners (Booth & Shaw, 2000) (Dussan, 2010)	Knowledge	Interest in receiving training on educational inclusion models.	19 to 36 and 76	18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38
	Practices	Teacher-student interaction. Curricular content for classroom application.	37 to 50 and 78	39-40-41-42-43-44-45-46-47-48-49-50-51
	Contexts	University and social context.	51 to 65 65 to 75 and 79	52-53-54-55-56-57-58-59-60-61-62-63-64-65

Source: Own elaboration.

On the other hand. When analyzing the relationship between the test dimensions, significant correlations were found between all its components ($\text{Rho} \geq 0.20$; $\alpha < 0.05$), which allows

inferring that the scale has adequate internal consistency when observing the interaction between all its components (Table 6).

PSYCHOMETRIC PROPERTIES OF THE QUESTIONNAIRE

Table 4

Phases and Psychometric Properties of the Educational Inclusion Questionnaire (CIE) for University Contexts

Phases	Procedure	Result
1. Reliability analysis	Cronbach's alpha.	0.89 high.
2. Reagent discard	Factorial analysis of the scale.	14 reagents were discarded.
3. Determination of internal consistency Structural model	Calculations of the proposed structural model. We proceeded to identify which reagents make up each component.	4 components on the scale.
	Confirmatory factor analysis.	The factors and dimensions of the instrument do reproduce the basic theoretical foundations.

Source: Own elaboration

Table 5
Reliability analysis

Dimension	N of elements	Cronbach's alpha	Level
Attitudes	17	0.83	Very high
Knowledge	21	0.89	Very high
Practices	21	0.72	High
Context	14	0.71	High
Total	65	0.89	High

Source: Own elaboration

Table 6
Internal consistency

Spearman's Rho		Attitudes	Knowledge	Practices	Context
Attitudes	Correlation coefficient	*	0.25	0.27	0.26
	Sig. (bilateral)	*	0.01	0.01	0.01
	N	*	105	105	105
Knowledge	Correlation coefficient	0.25	*	0.31	0.45
	Sig. (bilateral)	0.01	*	0.001	0.001
	N	105	*	105	105
Practices	Correlation coefficient	0.27	0.31	*	0.44
	Sig. (bilateral)	0.01	0.001	*	0.001
	N	105	105	*	105
Context	Correlation coefficient	0.26	0.45	0.44	*
	Sig. (bilateral)	0.01	0.001	0.001	*
	N	105	105	105	*

Source: Own elaboration

Upon analyzing the items that make up each component and the theoretical constructs used for the construction of the scale four dimensions of Educational Inclusion in university contexts were established. the first was called "Attitudes" and consisted of components 1 (17 items) and the second was called "Knowledge" and consisted of components 2 (21 items) as well as the third scale "Practices", and finally, the fourth-dimension context consisted of component 4 (14 items) (Figure 1). The first

refers to the Attitudes and/or disposition of the teachers to interact with the population with diverse needs and the second to the level of knowledge experiential and conceptual. which allows situating the teachers' actions regarding inclusion and interest in receiving training on models of educational inclusion. The third to practices understood as the development of actions favoring educational inclusion and the fourth to the context of possibilities of reducing inequalities in the university and social context.

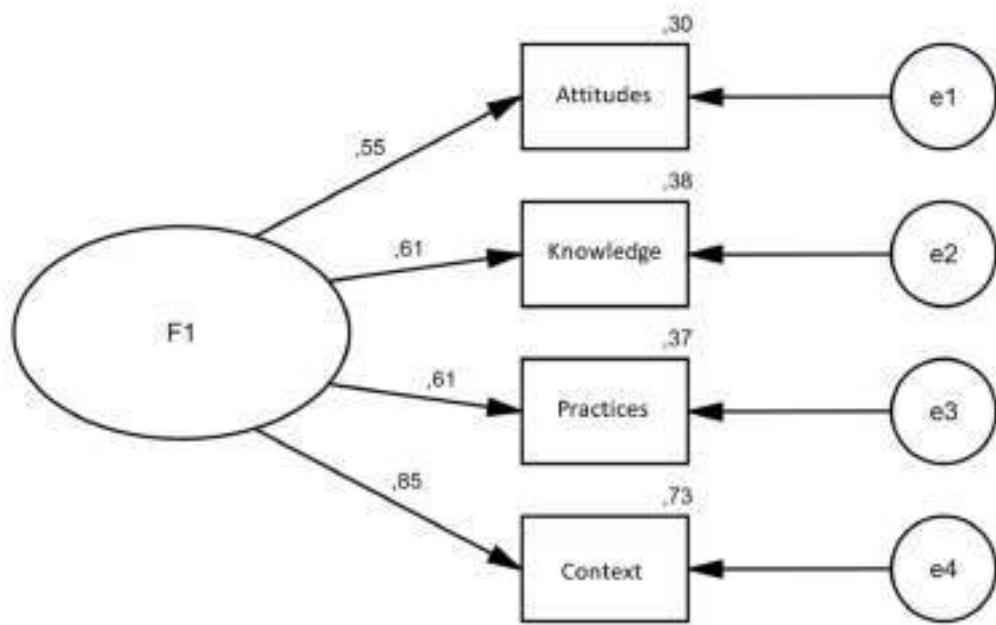


Figure 1. Source: Own elaboration.

Table 7
Internal consistency

Index	Abbreviation	Criteria	Value	Decision
Chi Square	χ^2	≥ 0.05	1.10	Complies
Level of Significance	P	≥ 0.57		
Bentler-Bonett Normed Fit Index	NFI	≥ 0.95	0.99	Complies
Comparative Fit Index	IFC	≥ 0.95	1.00	Complies
Bollen's Fit Index	IFI	≥ 0.90	1.00	Complies
McDonald's Fit Index	MFI	≥ 0.80	0.99	Complies
Joreskog-Sorbom's Fit Index	GFI	≥ 0.95	1.00	Complies
Joreskog-Sorbom's Fit Index	AGFI	≥ 0.95	0.97	Complies
Root Mean-Square Residual	RMR	Next to 0	0.01	Complies
Root Mean-Square Error of Approximation	RMSEA	< 0.05	0.001	Complies

Source: Own elaboration

PSYCHOMETRIC PROPERTIES OF THE QUESTIONNAIRE

Finally, the goodness-of-fit indices were tested and it was found that the factor structure complies with the X₂, NNFI, CFI, IFI, MFI, RMR, SRMR, and RMSEA; likewise, it meets the criteria for the Chi-Square (χ^2),

Bentler-Bonett Non-Normed Fit Index (NNFI), Joreskog-Sorbom's Fit Index (AGFI), Root Mean-Square Residual (RMR) and the Root Mean Square Error of Approximation (RMSEA) (Table 7).

Tabla 8
Interpretation

Dimension	N of elements	Minimum	Maximum	Level	Concept
Attitudes 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17	17	17	30	Very low	The willingness of teachers to interact with a population with diverse needs.
		31	44	Under	
		45	58	Moderate	
		59	72	High	
		72	85	Very high	
Knowledge 18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38	21	21	37	Very low	Experiential and conceptual knowledge that allows situating the teacher's actions regarding inclusion and Interest in receiving training on models of educational inclusion.
		38	54	Under	
		55	71	Moderate	
		72	88	High	
		89	105	Very high	
Practices 39-40-41-42-43-44-45-46-47-48-49-50-51	21	21	37	Very low	Development of actions in favor of educational inclusion
		38	54	Under	
		55	71	Moderate	
		72	88	High	
		89	105	Very high	
Context 52-53-54-55-56-57-58-59-60-61-62-63-64-65	14	14	25	Very low	Possibilities for reducing inequalities in the university and social context.
		26	37	Under	
		38	49	Moderate	
		50	61	High	
		62	70	Very high	
Total	65	65	117	Very low	Favorability of Educational Inclusion (CIE) in the University Context
		118	170	Under	
		171	223	Moderate	
		224	276	High	
		277	325	Very high	

DISCUSSION

The validation of a scale is a methodological contribution for the respective fields of study and actors interested in promoting educational inclusion processes. In Colombia, the Higher Education Inclusion Index (INES) was recently validated to provide a tool to higher education institutions, which added to the Questionnaire of Educational Inclusion (CIE) for University Contexts proposed in this research, making it possible for higher education institutions to understand the conditions in which they find themselves with respect to the attention to diversity (Ministry of Education, n.d.; Ministerio de Educación, 2013).

To develop inclusive actions an initial diagnosis and shared leadership are necessary to generate cultural guidelines that mobilize organizational changes and favor the sustainability of inclusive actions together with institutional policies (28).

The questionnaire of inclusive education in university contexts allows collecting data from the fundamental actor of the teaching-learning process. Such as the teacher, information that favors the identification of initial and continuous training needs of university teachers (8).

Regarding the initial training understood as a training course aimed at future teachers of learning support, the study by (29) confirms that attention to concerns, attitudes towards inclusion, and teachers' perceptions of effectiveness is fundamental in inclusive processes; therefore, they formulated a deepening course that positively influenced the participants' intentions to teach inclusively in classrooms. Consequently, with continuing education (30), proposed virtual training and summer schools to impact teachers' knowledge and perceptions of self-efficacy to work with students with disabilities in inclusive settings with positive effects after implementation. Similarly, the course on historical contextualization of school inclusion proposed by (31) shows that teacher training allows participants to reflect on the inclusion process and the work of teachers in this inclusive environment.

It should be noted that teacher training is a field for which this questionnaire of educational inclusion in university contexts, especially in terms of the possibility of evaluating both the needs and the effects of the training processes led by educational institutions governmental or interested entities (32). The study by (32) evaluated the impact of a training course on teachers' self-efficacy to improve teaching-learning strategies and classroom management to help students with diverse educational needs. The course proved to have a significant impact on teachers' self-efficacy and confidence in teaching students with diverse educational needs.

CONCLUSIONS

The Educational Inclusion Questionnaire (CIE) for University Contexts demonstrates adequate psychometric properties, with overall reliability according to Cronbach's Alpha of 0.89, with a high level of confidence, in addition, the AFC presents goodness-of-fit indexes (NFI=0.95; CFI=0.95; IFI=0.90; MFI=0.80; GFI=0.95; AGFI=0.95). Therefore, it is concluded that the instrument is useful for research on inclusive education in Colombian university contexts and measurement of the impact of future training actions aimed at a group of university teachers.

The theoretical constructs used for the construction of the questionnaire and its subscales "Attitudes", "Knowledge", "Practices" and University contexts, are consistent with each other, as well as relevant according to the review of teacher training programs implemented at the international level, as well as with the guidelines of the higher education inclusion initiative in the aspect of teacher participation and indicators of frequency and existence of inclusive teachers and practices.

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Typological characterization of child sexual abusers from court records

Caracterización tipológica de abusadores sexuales infantiles a partir de expedientes judiciales

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SUMMARY

Objective: To characterize the typologies of child sexual abusers based on judicial files registered in a center of attention to victims of sexual abuse in Sincelejo.

Method: Quantitative with a descriptive scope, as an instrument an analysis guide validated by experts was used to analyze the 112 judicial files registered between 2016-2020 in the center.

Results: It was found that the sexual abuser shows a preference for the crime of sexual acts with children under 14 years of age, and for people in the age range of 10 to 14 years, likewise the place where they perpetrate the crime is at the home of the abused or abuser, the victim is known by the abuser and used strategies such as deception, blackmail and threat to commit the act of abuse.

Conclusion: Child sexual abusers are generally older individuals who are not in control of their sexual behavior and manipulators who integrate into society and harm the most vulnerable in a silent way.

Keywords: Sexual abuse, sexual abusers, infants, judicial records.

RESUMEN

Objetivo: Caracterizar las tipologías de abusadores sexuales infantiles a partir de expedientes judiciales registrados en un centro de atención a víctimas de abuso sexual en Sincelejo.

Método: Cuantitativo con un alcance descriptivo, como instrumento se usó una guía de análisis validada por expertos para analizar los 112 expedientes judiciales registrados entre los años 2016-2020 en el centro.

Resultados: Se encontró que el abusador sexual muestra preferencia por el delito de actos sexuales con

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menor de 14 años, y por personas en el rango de edad de los 10 a 14 años, así mismo el lugar donde perpetran el delito es en casa del abusado o abusador, la víctima es conocida por el abusador y usaba estrategias como el engaño, el chantaje y la amenaza para cometer el acto de abuso.

Conclusión: *Los abusadores sexuales infantiles son individuos generalmente mayores de edad que no controlan su comportamiento sexual y manipuladores que se integran en la sociedad y dañan a los más vulnerables de forma silenciosa.*

Palabras clave: *Abuso sexual, abusadores sexuales, infantes, expedientes judiciales.*

INTRODUCTION

Sexual abuse is a phenomenon that mainly affects children since they are more vulnerable and fragile subjects due to the stage of evolutionary development in which they are, therefore the abuser exercises his superiority over them and perceives them as inferior (1); in Colombia, for example, in the period from January to June 2021, 8048 medico-legal examinations have been performed on minors between 0 and 17 years of age for alleged sexual offenses (2).

Based on what has been said, studies on child sexual abuse focus more on the victim and to a lesser extent the investigations focus on the victimizer or person who commits the crime (3); however, with this work, we intend to make a characterization of typologies of child sexual abusers from court records of an abuse detention center in the city of Sincelejo between 2016 - 2020. The interest in the sexual abuser arises because they are heterogeneous subjects, i.e. they do not have a unique profile, but they have similarities in personality traits, life background, a form of execution of abuse, and similar intentions, among other characteristics such as atypical sexual behavior, a deficit of social skills, low self-esteem, alcohol and drug consumption (4,5); likewise, abusers often have an antisocial personality, cognitive distortions, little empathy and attribute mental states to others (3).

Sexual offenders of adults commonly use violence for the commission of the sexual crime, and much more when the victim is unknown, but

in the case of sexual offenders of minors, there is no violence in the commission of the crime, because the selection of the victim is made based on the relationship of trust or family ties that the offender has with the victim (6). However, there are three types of sexual abusers, the infantilized/manipulators who show attraction for minors and point out that they are subjects with deficits in interpersonal relationships, low self-esteem, and infantilism; the second typology is called mediatic/circumstantial, who adapt to social norms, but in hostile situations resort to alcohol, drugs and perform sexual behavior and the third typology is called psychopathic/antisocial, who perform the crime when the context allows it and have the possibility of dominance (4).

The sexual abuser gives importance to the planning of the crime, because it allows him to have a sense of tranquility and control of the situation, exercising his power in the selection, stalking, planning, attack, and verbal and physical control when he acts (7). Due to the way the process is structured, abusers have general sexual characteristics such as exclusivity, for this reason, exclusive pedophiles can be found who are only attracted to children, and non-exclusive pedophiles, who are attracted to adults and children (3).

The socioeconomic stratum makes children vulnerable depending on the context and the economic social condition in which they find themselves, therefore, a common characteristic of the abuser is that the choice of the victim (8), is made taking into account that the child is in economically vulnerable conditions to meet their needs with deception and bribery. In addition to the above, it is also a dangerous fact that abusers are constantly living with minors (9).

Sexual abuse is a complex subject to study since a person of any age and gender can be a victim of this crime in their daily life since the abuser can carry out the sexual aggression without the need for physical contact (10). In this sense, investigating sexual abuse in minors, from the perspective of the abuser, allows observing this scourge from the perception of the victimizer, given that studies generally focus on the victim; in this way, the study of the phenomenon of child sexual abuse would have a more comprehensive approach (11).

However, it is recognized that sexual abuse of minors is a topic studied in advance by other authors, but it is still a relevant issue because it is a social and public health problem, therefore, it is necessary to investigate for a more complex discussion of the phenomenon (11). Hence, this research questions the typological characteristics of child sexual abusers based on the judicial files registered in a center of attention to victims of sexual abuse in Sincelejo, between the years 2016 to 2020.

METHOD

Type of research: This research is framed within a quantitative approach with descriptive scope, because it studies the phenomenon using statistics and numerical data, to identify the behavior of the problem under investigation; also because it allows characterizing, specifying, and profiling groups, individuals and communities under analysis, since the descriptive scope seeks to collect information on the variable studied to make descriptions of it (12).

Participants: The population under investigation were 112 judicial files of cases on child sexual abuse, that occurred between the years 2016-2020 from a center of attention to victims of sexual abuse in the city of Sincelejo; this center granted consent for the use of the information exclusively for research purposes, without revealing any type of name only the information of the crime.

The selection of the sample of cases that were part of the study was made taking into account that they were only cases of sexual abuse in children, that was between the period 2016-2020, and that also recorded all the information needed to achieve the objectives set. Therefore, all those files where the abuse was towards the adult population, not outside the period covered, and the information was incomplete were excluded.

Instruments: The instruments used for this research are the judicial files themselves, which contain information on the social, personal, and environmental characteristics of child sexual abusers. The other instrument used is an analysis guide elaborated to organize the information found in the judicial files according to the objectives of the investigation.

At the beginning of the guide, there are aspects related to sociodemographic characteristics, with items related to age, sex, and place of residence of both the abused child and the sexual aggressor. In reference to the affiliation, which is the second aspect, there are items of information about the environment in which the crime was committed, with the options of a home, open space, school, or other, and whether there is any type of relationship between the abuser and his victim, indicating whether it is a family member, authority figure, partner, friend, neighbor or other.

The third aspect of the guide is about the type of aggression or type of abuse committed by the aggressor, having the alternatives of primary or secondary, depending on how the abuse was carried out; the fourth aspect refers to strategies used by the victimizer to commit the sexual abuse, indicating choices such as the use of force, threats, blackmail, deception or use of the substance.

RESULTS

Sociodemographic characteristics of the abused

Table 1 shows that the abuser prefers victims between 10 and 14 years of age (67 %) and that they are female (81 %). Similarly, in relation to the place of residence of the abused, it is evident that in the urban area there is a greater predominance of abuse (89 %), however, this may be due to a greater social risk in the urban area and schemes with fewer social prejudices, therefore there are more reports, while in the rural area traditions, customs and taboos have an impact on a lower number of reports.

As for the sociodemographic characteristics of the abuser, Table 2 shows that, according to the judicial records, the abusers are of legal age (96 %), that is, in the case of Colombia, all were over 18 years of age, 99 % of the abuses are committed by men who reside mostly in urban areas (86 %).

Table 3 refers to the characteristics of the commission of the crime, where it is evident that 40 % of the crimes are associated with sexual acts and 41 % with abusive carnal access with a minor under fourteen years of age, where the place where the abuse takes place is in the home of the

Tabla 1
Sociodemographic characteristics abused

Variable	Type	Frequency	Percentage
Age of abused	0 – 5	3	3
	6 – 9	15	13
	10 - 14	75	67
	15 – 17	19	17
Sex of the abused	Male	21	19
	Female	91	81
Abused's residence	Rural Zone	12	11
	Urban Zone	100	89

Tabla 2
Sociodemographic characteristics of the abuser

Variable	Type	Frequency	Percentage
Age of abuser	Senior of age	108	96
	Under age	4	4
Sex of abuser	Male	111	99
	Female	1	1
Abuser's residence	Rural Zone	11	10
	Urban Zone	97	86
	No record	4	4

abuser (38 %) and the abused (33 %). Similarly, it is evident that there was an annual increase in the crimes of child sexual abuse, as well as the abuses were planned in advance, since 95 % are considered a primary type of abuse; in relation to the strategy used by the abuser to commit the crime, it is shown that deception, blackmail, and threat are the most used.

Affiliation of the abuser with the abused

The sexual abusers are 36 % family of the abused or victim, however, 30 % correspond to people close to the family or home of the child such as neighbors, and another considerable percentage of people who committed the crime is called "Others" because they are people who are close to the victim, but with whom there is no affective or filial bond, among this category were people who daily or occasionally transported the children to school. For more information (Table 4).

DISCUSSION

The objective of this research was to perform a characterization of the typologies of child sexual abusers based on judicial files from a sexual abuse victim care center in Sincelejo, between the years 2016 to 2020. Child sexual abuse is a widely researched topic because it has become a social problem, despite the enormous effort made to prevent it and decrease the high rates of abuse, which are increasing annually. After all, the abuser is a person who has no control over their sexual impulses and is a manipulator silently integrated into society.

Based on the fact an abuser is a person who tries to satisfy his sexual needs and for this purpose, he uses the most vulnerable, fragile, and physically inferior subjects in the exercise of power, a situation that allows them to perpetuate the crime; this study found that abusers show a preference for boys and girls between 10 and 14

TYPOLOGICAL CHARACTERIZATION OF CHILD SEXUAL ABUSERS

Tabla 3
Characteristics on the commission of the crime

Variable	Type	Frequency	Percentage
Crime	Abusive carnal access with a minor under 14 years of age.	41	36.6
	Sexual acts with a minor under 14 years of age.	45	40.2
	Sexual exploitation of a minor under 14 years of age	2	1.8
	Violent carnal sexual intercourse (from 15 to 17 years old)	11	9.8
	Carnal intercourse with a person incapable of resisting	6	5.4
	Violent sexual act	4	3.6
	Child pornography	3	2.7
Location of abuse	Home of abuser	43	38.4
	Home of the abused	38	33.9
	Open space	14	12.5
	School space	2	1.8
	Other	15	13.4
Year in which the crime was committed	2016	10	8.9
	2017	25	22.3
	2018	29	25.9
	2019	34	30.4
	2020	14	12.5
Type of abuse	Primary	106	95
	Secondary	6	5
Strategy	Use of force	24	21
	Threat	28	25
	Blackmail	29	26
	Deception	30	27
	Use of substances	1	1

Tabla 4
Abuser's affiliation with abused

Variable	Type	Frequency	Percentage
Affiliation (victim-victimizer relationship)	Family member	36	32.1
	Authority figure	5	4.5
	Companion	3	2.7
	Friend	11	9.8
	Neighbor	34	30.4
	Other	23	20.5

years of age and the female sex. These data are congruent with a study on the vulnerability of children to sexual abuse, where it was found that between 10 and 13 years of age (63 %) boys are more vulnerable to sexual abuse and that 81 % of girls are the most affected by this scourge (13).

In relation to the average age of the abuser, the majority of perpetrators are around 26 years of age, but the most common age range is between 18 and 36 years of age. This finding confirms the result of this research where the abuse is committed by people who have reached the age of majority, being then subjects who are in the capacity to act fully, the fact that the abuser is mostly an adult may be due to multiple factors, such as socio-environmental, family, the existence of emotional incongruences and psychic pathologies.

The perpetrators study their potential victims to know what type of personality they have if they can be easily deceived and if they stay alone in their homes, that is to say, they want to know if they are much more vulnerable to gaining access to him. Therefore, the place where the abuses are committed is inside the homes of the victims or the abuser (76 %), in 60 %; in these places the children are not forewarned or on the defensive, because they are considered a safe place and their main caregivers as protective subjects who would not harm them, likewise, the abuser perpetrates the act in these places because they exercise dominion over him, which facilitates the execution of the crime (14-16). This result is similar to that found in this research since 72 % of the sexual abuse crimes were committed in these places.

The relationship or link between the abuser and the victim is another characteristic that facilitates the perpetrator to commit the crime; in this study, the abuses were committed by family and neighbors (62 %). When there is a close relationship with the victim, i.e. family or acquaintances, the percentage of abuse is higher (90.9 %) and when the abuser resides in the same house as the victim, the percentage of abuse cases decreases (13). In another study on people who commit abuse, it was found that 80 % of the people who commit abuse are close to the child, such as neighbors, uncles, aunts, uncles, parents, and grandparents (17). Another

investigation with the same finding showed that 80 % of the sexual aggressors were acquaintances of the victim (14-16).

Child sexual abusers are primary abusers (95 %) because they show sexual interest in minors and little in adults, they plan the perpetration of the act in advance and the situation is seen by the aggressor as appropriate behavior and a way to sexually educate the child, without experiencing any feeling of guilt or shame (18). Primary sexual abusers are subjects who have difficulty in establishing a relationship with adults (70 %) according to this research, one reason being that the abuser has feelings of rejection towards the physical changes of the individual, also because children do not demand conditions of erection and potentiality within sexual relations; in the same way, sexual abusers when they were children were exposed to pornography to satisfy the sexual interest of their aggressor (19).

In this research it was found that the most used strategies were deception (27 %), blackmail (26 %), threats (25 %), and the use of force (21 %), however, the latter is used when the aggressor does not use the previous strategies or when he does not know the victim, he uses his strength to dominate the situation and commit the abuse (1).

CONCLUSION

Child sexual abuse is an act that the aggressor does not do impulsively because he plans and formulates hypothetical situations to commit the act, with which he seeks to satisfy his needs; for this reason, it is considered that families and children should receive sexual education, so that families have sufficient knowledge that allows them to recognize behavioral patterns, psychosocial characteristics of abusers, as well as when an adult prefers to be intimate with children or when he has problems of abuse of psychoactive substances, which are some of the common characteristics of abusers. However, this work shows that sexual abuse is a complex issue because there is no single pattern or profile of the sexual aggressor (16), so it is necessary to continue working on the prevention and protection of child sexual abuse.

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Conflict of interest statement

The authors declare that there is no conflict of interest.

Authors' contributions

First author: Conceived the research, assisted in writing the article and analyzed the data.

Second author: Conceived the research, assisted in writing the article and analyzed the data.

Third author: Conceived the research, assisted in writing the article and analyzed the data.

Fourth author: Performed the search for bibliographic information and assisted in editing the paper.

Fifth Author: Performed the search for bibliographic information, assisted in writing the article y in editing the paper.

Sixth author: Assisted in writing the article.

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Psychosocial risk factors associated with suicide in youth and adolescents: A systematic review

Factores de riesgo psicosocial asociados al suicidio en jóvenes y adolescentes: una revisión sistemática

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SUMMARY

The phenomenon of suicide is a worldwide problem that has been increasing in the last decade with greater prevalence in the adolescent and young population, generating impact in different contexts such as family, social, economic, and educational, among others. That is why this systematic review focuses on identifying psychosocial factors associated with suicidal behavior in adolescents and young people, in publications published worldwide. This will allow us to recognize within these studies the coincidence of different aspects, within which the following psychosocial factors are highlighted: family, exposure to various forms of violence, risk behaviors, psychopathology, and negative emotional states. The bibliographic review carried out confirms the multifactorial dynamics of suicide attempts and completed suicides. Suicide,

besides being a complex phenomenon to approach, has equally complex predictability. However, it is still possible to develop strategies to warn or prevent the behavior in a timely manner. Thus, the findings invite us to have a holistic view of the phenomenon and to aim from different angles to counteract the risk factors that predispose us to such behavior.

Keywords: Psychosocial risk factors, suicide, suicidal ideation, suicide attempt, young people, adolescents.

RESUMEN

El fenómeno del suicidio es un problema mundial que ha ido en aumento en la última década con mayor prevalencia en la población adolescente y joven, generando impacto en diferentes contextos como el familiar, social, económico, educativo, entre otros. Es por ello que esta revisión sistemática se centra en identificar los factores psicosociales asociados a la conducta suicida en adolescentes y jóvenes,

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en publicaciones publicadas a nivel mundial. Esto nos permitirá reconocer dentro de estos estudios la coincidencia de diferentes aspectos, dentro de los cuales se destacan los siguientes factores psicosociales: familia, exposición a diversas formas de violencia, conductas de riesgo, psicopatología y estados emocionales negativos. La revisión bibliográfica realizada confirma la dinámica multifactorial de los intentos de suicidio y los suicidios consumados. El suicidio, además de ser un fenómeno complejo de abordar, tiene una predictibilidad igualmente compleja. Sin embargo, aún es posible desarrollar estrategias para advertir o prevenir la conducta de manera oportuna. Así, los hallazgos nos invitan a tener una visión holística del fenómeno, para apuntar desde diferentes ángulos a contrarrestar los factores de riesgo que predisponen a dicha conducta.

Palabras clave: Factores de riesgo psicosocial, suicidio, ideación suicida, intento de suicidio, jóvenes, adolescentes.

INTRODUCTION

Suicide is a phenomenon that has become a priority target of public health policies worldwide, and according to the International Classification of Diseases of the World Health Organization ICD-10 (1) and the Diagnostic and Statistical Manual DSM V (2) According to the International Classification of Diseases ICD-10 and the Diagnostic and Statistical Manual DSM V, suicidal behavior is considered a symptom related to emotional distress or mental disorder and is not considered as a diagnosis in itself, i.e., the presence of other emotional symptoms associated with any behavior that together form part of the diagnosis should be reviewed.

Globally, suicide is a multicausal phenomenon, which complicates its approach. While it is true that different sectors have developed multiple strategies to control or reduce it, the frequent increase in reported cases, dimension the magnitude of the problem. In addition, most of society stigmatizes the issue of suicide and some families are afraid to mention it (3). Suicide has been defined based on three elements: it leads to death, it results from a self-inflicted act, and it is caused intentionally (4). Suicidal behavior includes suicidal ideation, attempted suicide, and completed suicide. The characteristics and differentiation are that suicidal ideation is

understood as the presence of suicidal ideas or desires, attempted suicide includes attempts or self-injurious and deliberate acts that seek to die, and finally, completed suicide is the successful outcome of the attempt to end life (5).

Addressing the phenomenon of suicide implies recognizing the serious consequences for the individual, the family, and society; for being a complex event that can affect people of any age, gender, socioeconomic or academic condition. In addition, this phenomenon is associated with different risk factors that can be intervened, if they are established beforehand. It should be noted that not only the suicidal act is considered a risk, but also the suicidal ideation and/or previous failed attempts (6). In this way, it is important to know the psychosocial factors that are associated with suicidal ideation and/or behavior, especially in adolescents and young people, allowing the activation of available social support networks, for possible preventive acts of new events and minimizing the adverse effects of self-destructive behaviors.

This systematic review allows a holistic understanding of the phenomenon of suicide. Being able to make a sweep through the risk factors that have been identified in the different studies conducted worldwide, offers the possibility of combating the phenomenon from different fronts. It is in this way that analyzing each of the factors of greatest incidence associated with suicide, generates the possibility of designing strategies and integrated public policies that aim to reduce multiple risk factors simultaneously and strengthen the various protective factors, as has been developed by institutions such as the Colombian Institute of Family Welfare, whose social goal is directly related to the protection of children and adolescents (7).

The annual reports published by the National Institute of Legal Medicine and Forensic Sciences in Forensis show a very discouraging behavior of suicide in our country. From Forensis 2017 to the monthly statistical bulletin of June, which contains information from the area of pathology from January to June 2021, there is an increase in suicides, mainly in the young population. In fact, in 2017 the highest frequency of suicides occurred in the population aged 20 to 39 years, and the department of Norte de Santander ranked fourth in suicides according to the rate per 100 000

inhabitants (8.30 - 85 cases). The analysis contained in *Forensis* 2017 agrees with the World Health Organization and the Pan American Health Organization (WHO-PAHO) that suicide is a complex and multi-causal phenomenon that has increased rapidly in the young population. In Colombia, suicide increased by 35.9 % in the population of children and adolescents (NNA) and young people, from 2008 to 2017, from 582 cases in 2008 to 791 in 2017 (8-11).

Taking into account the figures reported, it is of great importance to address the young and adolescent population since at this stage young people and adolescents are going through a series of physical and psychological changes attributed especially to changes in hormonal processes, which mark a transition period between childhood and adulthood (12). During this period, major psychosocial adjustments are generated that may be related to the adaptation to changes in their body structure, identity, and structuring of their life project. If adolescents do not have the minimum coping mechanisms to deal with these changes, they may resort to suicidal behaviors as a way to deal with these conflicts and compensate for the various family and social pressures (13).

METHOD

The present study is developed taking into account the parameters of the PRISMA methodology, a tool that allowed the systematic review of the scientific literature from the search and selection of research articles on suicide and psychosocial factors associated with it, thus ensuring the thoroughness of the process and providing the study with greater validity and reliability (14). On the other hand, the PICO model was implemented, a tool that helps to structure and design the question that guided the research process, when delimiting the bibliographic search process. This question is constructed from the selection of a combination of terms known as descriptors, which led to establishing with precision and clarity the phenomenon to be investigated (15). The question was formulated as follows: What are the psychosocial risk factors associated with suicide in young people and adolescents?

Research question

Table 1

Research Question

Component	Description
P: Patient or Problem of Concern (Population)	Youth and adolescents
I: Intervention	Suicide, suicidal ideation, and others
C: Comparison	Associated psychosocial factors
O: Outcome	Risk

Source: Own Elaboration

Inclusion criteria

1. Articles that expose suicidal ideation, intent, or behavior.
2. Articles focused on the identification of psychosocial risk factors associated with the suicidal phenomenon.
3. 10-year publication time window (2012-2022).
4. Studies in adolescents and young adults.
5. Full-text articles.
6. Open access articles and current DOI.

Exclusion criteria

1. Articles whose DOI is not current within the databases for downloading.
2. Research with a time window longer than 10 years.
3. Articles focused on interventions or treatments.
4. Articles that contemplate life cycle stages other than adolescence and youth.
5. Articles resulting from systematic reviews and meta-analyses.
6. Articles whose results are limited by the specificity of the population (minorities and rural areas) and the historical moment in which the information was obtained (COVID-19).
7. Articles that delve into biological or demographic factors associated with suicide.

8. Articles that focus on the mechanisms of suicide.

Sources of information

For the present review, six databases were selected: EBSCO, Redalyc, PubMed, Science Direct, ProQuest, and Scielo; which were systematically consulted in English and Spanish.

Search strategies

The search equations were constructed based on the keywords and the implementation of logical operators AND/OR/NOT, and symbols such as “” and (). The search for information was carried out in EBSCO, Redalyc, PubMed, Science Direct, ProQuest, and Scielo, in English (Table 2) and Spanish (Table 3).

Table 2
English search equations

Database	Search Algorithm
EBSCO, Redalyc, PubMed, Scienzia Direct, ProQuest and Scielo	<p>((("suicide" AND ((("adolescents" OR "youth")))) NOT ("adults" OR "childhood" OR "children")))</p> <p>("suicidal behavior" OR "suicidal ideation" OR "suicidal behavior") AND ("college students" OR "young people")</p> <p>("suicidal" OR "suicidal behavior" OR "suicidal ideation") AND NOT ("adults" OR "children")</p> <p>((suicide) AND "risk factors") AND ("university students"))</p> <p>((suicide) AND ((risk factors) OR (associated factors) OR (predictors))))</p> <p>(((suicide) AND ((risk factors) OR (associated factors) OR (predictors)))) AND ((college students)))</p> <p>((suicidal behavior" OR "suicidal ideation") AND (risk factors" OR "predictors") AND (adolescents" OR "young people" OR "university students"))</p> <p>(((suicide" AND "predictors") AND ("university" OR "university students"))))</p> <p>(((suicide" AND "juvenile" OR "youth" OR "adolescent") AND ("predisposing factors")))) AND NOT ("protective factors"))</p> <p>(((suicidal behavior" OR "suicide") AND ("protective factors" OR "associated factors")))) AND ("universities" OR "university students" OR "young people"))</p>

Source: Own elaboration.

Table 3
Search equations in Spanish

Database	Search Algorithm
	((("suicide" AND ("adolescents" OR "youth")))) NOT ((("adults" OR "childhood" OR "children"))))
EBSCO, Redalyc, PubMed, Scienzia Direct, ProQuest and Scielo	<p>("suicidal behavior" OR "suicidal ideation" OR "suicidal behavior") AND ("college students" OR "youth")</p> <p>("suicide" OR "suicidal behavior" OR "suicidal ideation") AND NOT ("adults" OR "children")</p> <p>((("suicide" AND "risk factors") AND ("college students"))))</p> <p>((suicide) AND ((risk factors) OR (associated factors) OR (predictors))))</p> <p>((suicide) AND ((risk factors) OR (associated factors) OR (predictors)))) AND (college students))</p> <p>((("suicidal behavior" OR "suicidal ideation") AND ("risk factors" OR "predictors") AND ("adolescents" OR "teens" OR "college students"))))</p> <p>((("suicide" AND "predictors") AND ("college" OR "college students"))))</p> <p>((("suicide" AND "juvenile" OR "youth" OR "adolescent") AND ("predisposing factors")))) AND NOT ("protective factors"))))</p> <p>((("suicidal behaviour" OR "suicide") AND ("protective factors" OR "associated factors")))) AND ((("universities" OR "university students" OR "young people"))))</p>

Source: Own elaboration.

Characteristics of the studies

The studies were classified considering the inclusion and exclusion criteria, giving priority to all those that mentioned specific psychosocial risk factors analyzed with young people and adolescents from different contexts in their titles. We also sought to ensure that the studies selected were conducted with the target population of this systematic review, as broadly as possible. Thus, we excluded studies involving adolescents and young people with characteristics of very specific or minority contexts.

Selection and analysis

A preliminary selection of studies was made based on the review by inclusion criteria, period (2012-2022), type of document, and accessibility. Eighty (80) articles were finally selected for the systematic review and a registration table was prepared by the authors in Excel, in which

the most relevant contributions of each of the selected studies were defined (see Table 5). Finally, the process used for the identification, screening, eligibility, and inclusion of the articles was described concretely, following the structure proposed by the PRISMA statement (14).

RESULTS

For the development of this systematic analysis, the three (3) phases of the PRISMA flowchart (Figure 1) are developed: The identification phase, selection and elimination phase, and inclusion phase.

Identification phase

The search was carried out in six (6) databases: EBSCO, REDALYC, PUBMED, SCIENCE DIRECT, PROQUEST, and SCIELO,

according to equations with Boolean operators in English and Spanish language, yielding a total of 4,038,120 articles, to which the filters of the period, type of document, accessibility to the article, non-compliance with criteria and

incomplete or duplicate texts were subsequently applied. Finally, a sample of eighty (80) articles was obtained, which were used for the present systematic review (Table 4).

Table 4
Filters Applied

Databases consulted	Total found	Documents Found					Total criteria Sample
		Time period	Type of document	No access	Non-compliance with variable	Incomplete/duplicated texts	
EBSCO							
REDALYC							
PUBMED							
SCIENCE DIRECT	4 038 120	1 532 319	388 485	317 372	626	80	80
PROQUEST							
SCIELO							
Deleted documents	0	2 505 801	1 143 834	71 113	316 746	546	4 038 040

Source: Own elaboration.

Selection and elimination phase:

The selection of articles was defined by the review of titles and abstracts. In this way, the articles most in line with the research topic, which met the variables defined in the inclusion and exclusion criteria, were chosen. At the time of reviewing the variable criteria, there were 317 372 articles, of which 316 746 were eliminated, leaving 626 articles, of which 546 were duplicates, which is why they were eliminated, leaving the total sample selected for this review (80 articles). (See Table 4).

Inclusion Phase

Having a total of 80 articles selected, we proceeded to a rigorous reading of them,

reviewing in detail that they met the inclusion criteria described above. It is in this way that it is possible to identify in them, the significant contributions that respond to the question posed for this research (see Figure 1).

ANALYSIS OF RESULTS

The systematic review carried out identified five psychosocial factors associated with suicide in young people and adolescents. It is evident that the family factor is the one that coincides to a greater extent among the different documents. This factor includes different aspects that converge in the family context, both at the level of history, behaviors, interactions, habits, and conditions, among others (16,46). This allows us to consider that the family is of vital importance since it is

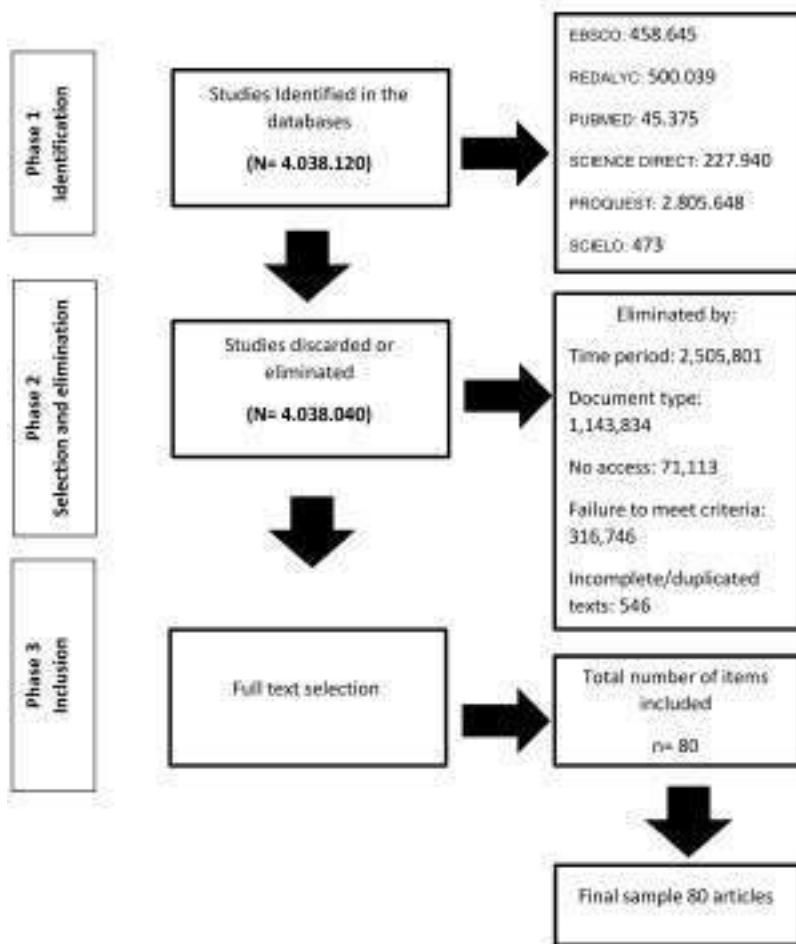


Figure 1. Graphic representation of PRISMA flow. Source: *Own elaboration*.

there where the processes of communication, trust, respect, union, and support are based (95).

Elements of the family context that influence the development of suicidal ideation and behavior were identified, such as poor family cohesion, intrafamily conflicts, limited and inefficient coping strategies in families, lack of support among family members, difficulties in the expression of affection, family history related to suicide or suicide attempts, failure to fulfill parental roles, and lack of parental responsibility (50), family history of suicide or suicide attempts, failure to fulfill parental roles, difficulties in communication, communication styles, and family coping strategies (96), difficulties in communication, authoritarian parenting styles, overprotection and bonding (46), and distant

emotional attachments (45). Based on the findings, it is possible to determine the importance of delving deeper into the factors associated with suicidal ideation and/or behavior in adolescents and young people related to the family and the life cycle; recognizing the need for independence, the challenges, and needs of this stage, as well as how the family responds to these needs (97).

Secondly, we found the factor that indicates the exposure of individuals to various forms of violence. Violence can be experienced in any of the contexts in which people interact and in which they develop their roles (family, school, work, couple, social, etc.). Victimization by bullying and cyberbullying are relevantly found as preponderant factors related to suicide ideation and attempts (73,81). Thus, the social and

PSYCHOSOCIAL RISK FACTORS ASSOCIATED WITH SUICIDE

Table 5. Selected studies.

Nº	DATABASE	TITLE	AUTHOR	YEAR	URL	CONTRIBUTION
1	EBSCO	Risk attitude and family functioning in adolescents with a history of suicide attempt.	García, López, L.; Quevedo, Navarro, M.; Boyeros, Fernández, I.; Ravelo, Pérez, E. (16)	2021	https://doi.org/10.4080/da64644b659f0e97381a185d	This study concludes that of the adolescents who attempted suicide who took part in the research, those with family dysfunction and difficulties in their relationships with their parents stand out.
2	EBSCO	Cognitive, behavioral, and affective components of suicidal ideation and its relationship with everyday situations of family life in Mexican adolescents.	Valadez, Figueroa, I.; Chávez, Hernández, A.; Vargas, Valadez, V.; Ochoa, Orendain, C. (17)	2019	https://doi.org/article/c67700d714b34ad5d65a8c4eec10a	Study in which an association was found between inadequate family communication and the elements involved in suicidal ideation.
3	EBSCO	Parental control and attempted suicide among Mexican adolescents	Dominguez, Velásquez, M.; Betancourt Ocampo, D.; Cañas, Martínez, J. (18)	2014	https://doi.org/article/b8e31a3e5cc42d3bb2ebf04969a1919	Youngsters who had made suicide attempts at some point in their lives perceived more psychological control and less behavioral control from their parents compared to those who had not made a suicide attempt.
4	REDALYC	Cognitive distortions and suicide risk in a sample of Chilean and Colombian adolescents: a descriptive-correlational study.	Bascuñán, Cisternas, R.; Victoria, Alvarez, L.; Ayala, Moreno, N. (19)	2022	https://www.redalyc.org/journal/4975/497562431010/497562431010.pdf	Statistically significant results between cognitive distortions and suicide risk among the adolescents who took part in the study (Chilean and Colombian). Most intense distortions: Filtering, polarized thinking, thoughtful interpretation, and overgeneralization.
5	EBSCO	School bullying, suicidal ideation and suicide attempts in Colombian adolescents	Viancha, Pinzón, M.; Martínez, Baquero, L.; Pérez, Prada, M.; Avendaño, Prieto, B. (20)	2017	https://doi.org/article/e99e0f12539244dd86f7aefaf0eb8fe26	40% of those who have attempted suicide has symptoms of anxiety, depression and post-traumatic stress disorder. Victims of school bullying show a high risk of suicidal ideation.
6	EBSCO	Mood and Suicidality among Cyberbullied Adolescents: A Cross-Sectional Study from Youth Risk Behavior Survey	Tracey, M.; Finkelstein, Y.; Schachter, R.; Cleverley, K.; Monga, S.; Barwick, M.; Szatmari, P.; Moretti, M.; Willan, A.; Henderson, Korczak, D. (21)	2020	https://doi.org/10.1186/s12874-020-01117-5	Young victims of cyberbullying, presented a higher prevalence of feelings of sadness, hopelessness, suicidal thinking, suicidal planning, and suicide attempts, compared to those who have not received cyberbullying.
7	EBSCO	Online sexual exposure, cyberbullying victimization and suicidal ideation among Hong Kong adolescents: Moderating effects of gender and sexual orientation	Chang, Q.; Xing, J.; Chang, R.; Ip, P.; Fong, D.; Fan, S.; Ho, R.; Yip, P. S. (22)	2021	https://doi.org/10.1016/j.pscom.2021.100003	Adolescents with online sexual exposure and cyberbullying victimization were at a higher risk of suicide than participants not exposed to these variables.
8	EBSCO	Relationship between binge drinking experience and suicide attempts in Korean adolescents: based on the 2013 Korean Youth Risk Behavior Web-based Survey	Byeon, K. H.; lee, S. H.; Sull, J. W.; Choi, B. Y.; Kimm, H. (23)	2018	https://doi.org/10.4178/epih.e2018046	Heavy alcohol use in adolescence is a risk factor related to suicide attempts.
9	EBSCO	Relationship Between the Early Initiation of Substance Use and Attempted Suicide Among in-School Adolescents in Seven Low- or Middle-Income African Countries: An Analysis of the Global School-Based Student Health Survey Data	Li, LianZhao, Y.; Shi, M.; Wang, Y. (24)	2021	https://doi.org/10.3389/fpsyg.2021.753824	A correlation is found between early use of tobacco, alcohol, and other drugs and attempted suicide in adolescents.

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Table 5. Selected studies. (continue from page S602).

Nº	DATABASE	TITLE	AUTHOR	YEAR	URL	CONTRIBUTION
10	EBSCO	Self-Harm, Suicidal Ideation, and Suicide Attempts in Chinese Adolescents Involved in Different Subtypes of Bullying: A Cross-Sectional Study	Peng, C; Hu, W; Yuan, S; Xiang, J; Kang, C; Xiang, J; Kang, C (25)	2020	https://doi.org/10.3389/fpsyg.2020.565364	An association is found between four forms of school violence (verbal, physical, relational, and cyber violence) self-harm, suicidal ideation, and suicide attempts.
11	EBSCO	Suicidal Ideation Mediates the Relationship Between Affect and Suicide Attempt in Adolescents	Rubio, A; Oyanedel, J; Bilbao, M; Mendiburo, Seguel, A; López, V; Páez, D. (26)	2020	https://doi.org/10.3389/fpsyg.2020.524848	Low positive affect and high negative affect are associated with suicidal ideation.
12	EBSCO	The Effect of Psychological Suzhi on Suicide Ideation in Chinese Adolescents: The Mediating Role of Family Support and Friend Support	Zhu, Z; Tang, W; Liu, G; Zhang, D. (27)	2021	https://doi.org/10.3389/fpsyg.2020.632274	Adolescents with positive perceptions of social support are less likely to have suicidal ideation.
13	EBSCO	The Relationship between Substance Abuse and Suicide among Adolescents	Evans, D; Tiwak, R. (28)	2016	https://doi.org/10.3764/75ff4e73b7b157d5131379f	There is a correlation between the consumption of psychoactive substances (PAS) in adolescence and suicidality.
14	PUBMED	"I Just Kept It to Myself": The Shaping of Latina Suicidality Through Gendered Oppression, Silence, and Violence.	Szlyk, H; Gultbas, L; Zayas, L. (29)	2019	https://pubmed.ncbi.nlm.nih.gov/30117539/	Experiencing violence against women in adolescence and their mothers are correlated with suicide attempts.
15	PUBMED	Adolescent and caregiver perception of family functioning: relation to suicide ideation and attempts.	Lipschitz, J; Yen, S; Wein-stock, L; Spirit-to, A. (30)	2012	https://pubmed.ncbi.nlm.nih.gov/22925373/	There is a relationship between suicide attempts in adolescence and negative emotional states, as well as the low perception of family support.
16	PUBMED	Adolescent attachment security, family functioning, and suicide attempts.	Sheftall A, H; Mathias, C; Furr, M; Dougherty, D. (31)	2013	https://pubmed.ncbi.nlm.nih.gov/23560608/	Adolescents with suicide attempts showed less paternal and maternal attachment, as well as less adaptability and family cohesion, compared to adolescents without suicide attempts.
17	PUBMED	Adolescents' Bipolar Experiences and Suicide Risk: Wellbeing and Mental Health Difficulties as Mediators.	Fumero, A; Marrero, R; Pérez, Albeniz, A; Fonseca, Pedrero, E. (32)	2021	https://pubmed.ncbi.nlm.nih.gov/33804197/	Adolescents with bipolar experiences are at increased risk for suicide, primarily related to their emotional, behavioral, and interactional difficulties.
18	PUBMED	Alcohol Use and Suicidality by Sexual Orientation Among U.S. Youth, 2009-2017.	Phillips II, G; Turner, B; Felt, D; Marro, R; Wang, X; Rapprecht, M; Broschart, J; Beach, L.B (33)	2020	https://pubmed.ncbi.nlm.nih.gov/32446749/	Alcohol use in students is associated with high suicidality
19	PUBMED	Association between Cannabis use and suicide risk in school-aged adolescents in Santa Marta, Colombia	Bustamante, F; Urquidi, C; Florenzano, R; Barruelo, C; De Los Hoyos, I; Ampuero, K; Terán, L; Fajeroa, M; Farias, M; Rueda, M; Giacaman, E. (34)	2018	https://pubmed.ncbi.nlm.nih.gov/33030835/	An association is found between cannabis use and elevated suicidality risk in school-aged adolescents.
20	REDALYC	Association between school bullying, depressive symptoms, and suicidal ideation.	Suárez, Colorado, Y; Ceballos, Ospino, G; Campo-Arias, Adalberto, Arias (35).	2019	https://www.redalyc.org/journal/4235423561568007/	Bullying was significantly associated with a high level of suicidal ideation.

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Table 5. Selected studies. (continue from page S603).

Nº	DATABASE	TITLE	AUTHOR	YEAR	URL	CONTRIBUTION
21	PUBMED	Beyond Same-Sex Attraction: Gender-Variant-Based Victimization Is Associated with Suicidal Behavior and Substance Use for Other-Sex Attracted Adolescents.	Ioerger, M.; Henry, K.; Chen, P.; Cigularov, K.; Tomazic, R. (36)	2015 https://pubmed.ncbi.nlm.nih.gov/26068796/	https://pubmed.ncbi.nlm.nih.gov/26068796/	Victimization based on sexual orientation was associated with a greater likelihood of suicidal thoughts and behaviors. It is also correlated with greater consumption of psychoactive substances.
22	PUBMED	Body dissatisfaction and symptoms of bulimia nervosa prospectively predict suicide ideation in adolescents.	Perkins, N.; Brausch, A. (37)	2019 https://pubmed.ncbi.nlm.nih.gov/31184380/	https://pubmed.ncbi.nlm.nih.gov/31184380/	Symptomatology associated with bulimia nervosa and body dissatisfaction is related to suicidal ideation.
23	PUBMED	Brooding, Inattention, and Impulsivity as Predictors of Adolescent Suicidal Ideation.	Sarkisian, K.; Van, Hulle C. Hill, Goldsmith, H. (38)	2019 https://pubmed.ncbi.nlm.nih.gov/29808397/	https://pubmed.ncbi.nlm.nih.gov/29808397/	Inattention is identified as a factor associated with suicide risk.
24	PUBMED	Child maltreatment, recent stressful life events, and suicide ideation: A test of the stress sensitivity hypothesis.	Duprey, E.; Handley, E.; Manly, J.; Cicchetti, D.; Toth, S. (39)	2021 https://pubmed.ncbi.nlm.nih.gov/33444849/	https://pubmed.ncbi.nlm.nih.gov/33444849/	An association is found between suicidal ideation and child maltreatment and negative emotional states, related to stressful life events (chronic and acute stress).
25	REDALYC	Relationship between psychopathologies and suicidal ideation in adolescents attending school in Colombia.	Caro, Castillo, J.; Salamanca, Camargo, Y.; López, Vega, J.; Amaya, Gil, M. (40)	2020 https://www.redalyc.org/journal/4975/49750227010/	https://www.redalyc.org/journal/4975/49750227010/	The analysis showed a co-relation between positive suicidal ideation and the scales of schizophrenia, anxiety, anxiety-related disorders, paranoia, somatization, borderline traits, depression, and mania.
26	PUBMED	Perceived family and peer invalidation as predictors of adolescent suicidal behaviors and self-mutilation.	Yen, S.; Ku-ehn, K.; Te-zanos, K.; Weinstock, L.; Solomon, J.; Spiritos, A. (41)	2015 https://pubmed.ncbi.nlm.nih.gov/25264807/	https://pubmed.ncbi.nlm.nih.gov/25264807/	Adolescents (males) with high perceived family disempowerment were more vulnerable to suicidal events. Both female and male adolescents with high perceived social invalidation were more likely to engage in self-mutilation behaviors.
27	REDALYC	Cognitive profile and prevalence of depression, hopelessness, and suicidal risk in young people linked to the first level of training in a Colombian military school.	Pérez, Pedraza, D.; García, Roncallo, P.; Niebles, Charis, J.; Abello, Luque, D.; Márquez, Jiménez, L.; García, Montaño, E. (42)	2016 https://www.redalyc.org/journal/213/21349352006/	https://www.redalyc.org/journal/213/21349352006/	Levels of hopelessness and depressive symptoms are directly proportional to suicidal risk.
28	REDALYC	Depressive symptomatology, hopelessness and psychological resources: a relationship with suicide attempt in a sample of Mexican adolescents.	Sahagún, Padilla, M.; Méndez, Sánchez, C.; Vacio, Muñoz, M.; Palacios, Salas, Pedro, Hernosillo, De la Torre, A. (43)	2015 https://www.redalyc.org/articulo.oa?id=4164831009	https://www.redalyc.org/articulo.oa?id=4164831009	A correlation was found between suicide attempts and hopelessness and depressive symptomatology in the adolescents who took part in the study.
29	SCIELO	Relationship between depression and personality traits in young people and adults with suicidal intentional behavior in Ibagué, Colombia.	Ovalle, O.; Riveros, A.; Turquino, L.; Prado, K. (44)	2017 http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-00112017000200211&lang=es	http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-00112017000200211&lang=es	It can be evidenced that emotional stability is associated with impulse control and emotional control, and the presence of depression has an affinity with coping strategies in the presence of suicidal behaviors, suggesting that the greater the presence of depression, the tendency to emotional stability decreases and suicidal intention increases.
30	PROQUEST	Parental attachment and suicidal risk in adolescents and young adults.	Suarez, Y.; Ebrait, J.; Samper, C.; Medina, J. (45)	2019 https://www.proquest.com/docview/264703120/4B0B383A0F9C4C78/PQ50?accountid=45648	https://www.proquest.com/docview/264703120/4B0B383A0F9C4C78/PQ50?accountid=45648	The negative parental attachment style brings with it a high risk of suicide. Avoidant and ambivalent attachment styles also pose a suicidal risk.

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Table 5. Selected studies. (continue from page S604).

Nº	DATABASE	TITLE	AUTHOR	YEAR	URL	CONTRIBUTION
31	REDALYC	Parental styles as predictors of suicidal ideation in adolescent students.	Perez, A.; Uribe I; Vianchá, M; Bahamón M; Verdugo L; Ochoa S. (46)	2013	https://www.redalyc.org/articulo.oa?id=21329176006	There is an association between parental style and suicidal ideation.
32	REDALYC	Factors associated with suicidal ideation in university students.	Salamanca, Y; Siabato E. (47)	2015	https://www.redalyc.org/comocitar.oa?id=297233780005	Factors associated with suicidal ideation in college students are related to ideas of failure, feelings of hopelessness, low self-efficacy, and feelings of frustration or sadness.
33	REDALYC	Parental Practices as Predictors of Suicidal Ideation in Colombian Adolescents	Alarcón, Y; Trejos A; Uribe, I; Bahamón, M; Reyes; Galindo, C (48)	2018	https://www.redalyc.org/journal/4975/49755219006/	There is a relationship between authoritarian parenting and poor communication and suicidal ideation in adolescents.
34	REDALYC	Suicidal Risk and Suicidal Ideation and its Relation to Impulsivity and Depression in Adolescent School Children	Aguedelo, M; Gómez, A; Grisales, A; Nunez, C. (49)	2020	https://www.redalyc.org/journal/4596/459664448014/	The direct relationship between impulsivity and depression and suicidal risk and suicidal ideation in adolescents is established.
35	EBSCO	Clinical Characteristics of Adolescent Patients with Suicidal Gestures and Attempts at the Children's Hospital of the State of Sonora.	Salazar-Torres, Y.M; Caballero-Gutiérrez, R. J; Vazquez-Pizáñan, E. (50)	2015	https://www.medicgraphic.com/pdfs/bolclinhosinfonfbis-2015bis152d.pdf	Suicidal gesture and attempt tend to occur generally at the end of early adolescence, one of the main causes of suicidal behavior is related to the origin of dysfunctional nuclear families.
36	EBSCO	Depression and suicidal behavior in high school students in Sonora.	Rodriguez, C; Pérez, R; Valdez, A; Barrera, G. (51)	2012	http://www.scielo.org.mx/scielo.php?script=tscic/article&pid=S0185-33252012000100007	There is evidence that the presence of depressive symptoms in youth is associated with suicidal behaviors.
37	EBSCO	Differences in Behavioral Inhibitory Control in Response to Angry and Happy Emotions Among College Students With and Without Suicidal Ideation: An ERP Study	Lin, L; Chenxu, W; Juanchan, Y; Ting, L; Yanping, J; Xuejin, B; Xia, W. (52)	2020	https://doi.org/10.3389/fpsyg.2020.02191	There is a relationship between suicidal ideation and difficulties in controlling emotional responses in adolescence.
38	EBSCO	Family functioning in adolescents at risk for suicide with borderline personality traits: an exploratory study.	Sánchez, S; Argón, M; Valencia, F; Roldón, L; Espriego, A; Delgado, C; Hervás, G. (53)	2020	https://doi.org/10.4236/ojs.20200100010001	It is found as a suicide risk factor in adolescents with borderline personality traits, family relationships, low quality of communication, and limited emotional expressions.
39	EBSCO	Perceived parental support in childhood and adolescence and suicidal ideation in young adults: a cross-sectional analysis of the i-Share study	Macall, M; Tournier,M; Galera,C; Montagni,L; Sounare, A; Coté, S; Tzourio, C. (54)	2018	https://doi.org/10.1186/s12888-018-1957-7	There is evidence of an association between perceived negative parental support and suicidal thoughts.
40	EBSCO	Perceived parental tendencies and its association with psychoactive substance use predictors among university students in Uganda: a cross-sectional study.	Wesonga, S; Osingada, C; Nabiseri, A; Nkemjika, S; Olwir, C. (55)	2021	https://doi.org/10.4314/ahs.v2i1.33	The abuse and dependence on psychoactive substances are highly related to suicidal tendencies in university students.

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PSYCHOSOCIAL RISK FACTORS ASSOCIATED WITH SUICIDE

Table 5. Selected studies. (continue from page S605).

Nº	DATABASE	TITLE	AUTHOR	YEAR	URL	CONTRIBUTION
41	PROQUEST	College Student Suicide Risk: The Relationship between Alexithymia, Impulsivity, and Internal Locus of Control	Loftis, A; Michael, T; Luke, C. (56)	2019	https://www.proquest.com/docview/2329910432/4CEC9A6B2F0841C8PQ72?accountid=45648	A significant relationship was found between suicidal risk, alexithymia, self-control, motor skills, and impulsivity.
42	PROQUEST	Suicidal ideation, family functionality and alcohol consumption in adolescents in Colombia.	Forero, I; Siabato, E; Salamanca, Y. (57)	2017	https://www.proquest.com/docview/1870932412/E4290058808F472EPQ14?accountid=45648	There is a highly significant relationship between suicidal ideation in adolescents and family dysfunctionality, in addition to the early onset of alcohol consumption at this stage.
43	PROQUEST	Parental overprotection and youth suicidal behavior in low- and middle-income countries: a multilevel analysis of cross-national data	Kim, H. (58)	2018	https://www.proquest.com/docview/213062831/4CEC9A6B2F0841C8PQ98?accountid=45648	It is considered that adolescents with greater parental accompaniment in childhood tend to reduce suicidal ideation and/or suicidal planning. In addition, it is found that overprotection has negative consequences for young people.
44	PUBMED	Associations between impulsivity, aggression, and suicide in Chinese college students	Wang, L; He, C; Yu, M; Oiu, X; H; Yang, X; Qi-ao, Z; X; Sui, H; Zhu, X; Yang, Y. (59)	2014	https://pubmed.ncbi.nlm.nih.gov/24894449/	Students with high aggression scores are more likely to commit suicide. Impulsivity may be a predictor of suicidal ideation or intent.
45	PUBMED	Dating Violence Victimization, Interpersonal Needs, and Suicidal Ideation Among College Students	Wolford-Clevenger, C; Elmquist, J; Bren, M; Zapot, H; Stuart, G; L. (60)	2016	https://pubmed.ncbi.nlm.nih.gov/26620918/	Relationship between dating violence (physical and psychological) and perceived frustration, with suicidal ideation and depressive symptoms, in university students.
46	PUBMED	Predicting Effects of Psychological Inflexibility/Experiential Avoidance and Stress Coping Strategies for Internet Addiction, Significant Depression, and Suicidality in College Students: A Prospective Study	Chou, W; P; Yen, C; Liu, T. (61)	2018	https://pubmed.ncbi.nlm.nih.gov/29670025/	College students who report predictive effects of inflexibility and experiential avoidance have greater suicidal tendencies.
47	REDALYC	Association between depression and suicidal ideation in a group of Colombian adolescents	Salamanca, Y; Forero, X; Siabato E. (62)	2017	https://www.redalyc.org/journal/801/8019351004/	The following are found as risk factors: depressive symptoms associated with mood and low self-esteem that influence suicidal behavior in adolescents. Regarding the relationship between suicidal ideation and depressive symptoms, the findings show that negative mood, the presence of anhedonia and low self-esteem correlate with suicidal ideation.
48	REDALYC	Family abuse and its relationship with suicidal ideation in adolescents attending school in public and private institutions in the cities of Tunja, Duitama, and Sogamoso.	Vianchá, M; Salas, C; Pérez, M; Martínez, L (63).	2014	https://www.redalyc.org/articulo/oai?id=4975194007	Family abuse is related to suicidal ideation in adolescents
49	REDALYC	Coping styles as predictors of suicidal risk in adolescent students.	Bahamón, J; Uribe, I; Alarcón, Y; Trejos, A; Reyes, L. (6)	2019	https://www.redalyc.org/journal/213/21362970007/	The findings allow us to establish that there is a highly significant correlation between suicidal risk and avoidant coping strategies in adolescents.

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Table 5. Selected studies. (continue from page S606).

Nº	DATABASE	TITLE	AUTHOR	YEAR	URL	CONTRIBUTION
50	REDALYC	Relationship between suicidal ideation, depression, and family functioning in adolescents	Equliz, L; Ayala, M (64).	2014	https://www.redalyc.org/articulo.oa?id=133938134009	A positive correlation was established between depression and suicidal ideation, and between depression and functional affective involvement.
51	REDALYC	The Relationship between Social Maladjustment, Childhood Abuse, and Suicidal Behavior in College Students	Restrepo, D; Jelic, E; Chesin, M. (65)	2016	https://www.redalyc.org/articulo.oa?id=56049049002	Childhood abuse and social maladjustment are identified as risks factors for the presence of suicidal behaviors in college students.
52	REDALYC	Victims of bullying, symptoms of depression, anxiety and stress, and suicidal ideation in teenagers	Della, C; Pimentel, F; Dapieve, N. (66)	2020	https://www.redalyc.org/journal/798/79864707009/	A positive correlation was established between suicidal ideation in adolescents and being a victim of bullying, in addition to the presence of symptoms of depression, anxiety, and stress.
53	PROQUEST	Family structure, suicidal ideation, and hopelessness in adolescents.	Guzza, R; Castro, L; Calderon, A. (67)	2019	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6436408/	It is possible to establish that the adolescent's family structure, history of violence, and alcohol and drug consumption in the family, maintain a relationship with suicidal thinking.
54	PUBMED	A Social-Ecological Approach to Understanding the Relationship between Cyberbullying Victimization and Suicidal Ideation in South Korean Adolescents: The Moderating Effect of School Connectedness	Lee, J; Chun, J; Kim, J; Lee, J; Lee, S. (68)	2021	https://pubmed.ncbi.nlm.nih.gov/34682368/	Victims of cyberbullying were found to be more likely to be at risk for suicidal ideation. In addition, parental abuse, family dysfunction, and perceived stress in peer interaction was also found to be related to suicidal ideation.
55	PUBMED	Suicidal adolescents' experiences with bullying perpetration and victimization during high school as risk factors for later depression and suicidality	Klomek, A. B; Kleinman, M; Altshuler, E; Marrocco, F; Amakawa, L; Gould, M. S. (69)	2013	https://pubmed.ncbi.nlm.nih.gov/23790199/	Those who present a suicidal risk and are bullies are at greater risk of substance use and functional impairment, unlike those who only present the risk, but are not involved in the dynamics of bullying. Likewise, it is the bully who will be more likely to develop psychiatric problems, so it is bullying and not victimization which is the risk factor for the subsequent development of psychopathological behaviors and suicidal risk.
56	PUBMED	Youth Bullying and Suicide: Risk and Protective Factor Profiles for Bullies, Victims, Bully-Victims, and the Uninvolved	Kwan, C; Wong, C; Chen, Z; Yip, P. (70)	2022	https://pubmed.ncbi.nlm.nih.gov/35270521/	There is an association be-tween bullying behavior and suicide, as well as increased stress and psychological distress. It is highlighted that the probability of selfharm is higher in those who were victims, as well as the future development of disorders such as major depression, schizophrenia, and social phobia.
57	REDALYC	Relationship between suicidal risk, self-esteem, hopelessness and parental socialization styles in high school students.	Andrade, J. A.; Gonzales, J. (71)	2017	https://www.redalyc.org/journal/4975/4975990006/	Cognitive and motivational factors such as: envisioning a negative future, giving up, and pessimism are associated with suicidal risks. As well as parental acceptance and imposition, characteristic of authoritarian parenting styles.
58	REDALYC	Dysfunctional family bonds are associated with suicidal risk in adolescence.	Pugliese, S. V. (72)	2019	https://www.redalyc.org/journal/3396/339619004/	There is a relationship be-tween risk and dysfunctional and violent families.

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PSYCHOSOCIAL RISK FACTORS ASSOCIATED WITH SUICIDE

Table 5. Selected studies. (continue from page S607).

Nº	DATABASE	TITLE	AUTHOR	YEAR	URL	CONTRIBUTION
59	REDALYC	Are Loneliness and Emotional Intelligence Important Factors for Adolescents? Understanding the Influence of Bullying and Cyberbullying Victimization on Suicidal Ideation	Neto, F; Rey, L; Quintana-Otis, C. (73)	2021	https://www.redalyc.org/journal/11798/17986477001/	Victimization by cyberbullying and traditional bullying are negatively related to suicidal ideation, but loneliness resulting from traditional bullying may partially mediate suicidal ideation.
60	SCIELO	Depressive symptoms and automatic negative thoughts as predictors of suicidal ideation in Mexican adolescents	Secundino-Guadarrama, G; Veyta-López, M; Guadarrama-Guadarrama, R; Míguez, M. (74)	2021	http://www.scielosp.org.mx/scielo.php?script=sci_artext&pid=S0185-3325202100010003&lang=en	Previous suicide attempts are a risk factor for suicide, as well as other factors such as a divided family nucleus, religion, tobacco, and drug use, having been a victim of violence and anguish in the last six months.
61	SCIELO	Impact of bullying victimization on suicide and negative health behaviors among adolescents in Latin America	Romo, M. L; Kelvin, E. A. (75)	2016	https://www.scielosp.org/article/rsp/2016.v40n5/347-355/#	Exposure to episodes of school violence and subsequent victimization leads to an increased likelihood of suicidal ideation and behavior. Such victimization is also associated with the adoption of risks behaviors such as tobacco use, truancy, physical fighting, and unprotected sex.
62	SCIELO	Prevalence and factors associated with depression and suicidal behavior among medical students	Pereira-Neris, B. S; Andrade-Aquino, M. L; Pietra-Pedroso, V.S. (76)	2021	https://www.scielosp.org/article/ibjpsiq/a/MhQW6sswqyDkgMcKZGvkpL7lang=en	Both depression and suicidal behavior are more prevalent among medical students. This psychopathology is associated with increased suicidal intent.
63	SCIENCE DIRECT	Sex differences in the association between sexual violence victimization and suicidal behaviors among adolescents	Balden, P; Xiao, Y; Asiedua-Balden, G; LaBrenz, C; Boateng, G; Graaf, G; Muchlenkap, J. (77)	2020	https://www.sciencedirect.com/science/article/pii/S2666915320300111	Women who are victims of sexual harassment or violence have a greater tendency to suicidal ideation than men who are identified as being at greater risk of committing the act. For both sexes, identifying as lesbian/gay, or bisexual leads to violence and victimization, symptoms of depression, alcohol consumption, and medication misuse, which in turn increases suicidal risk.
64	PROQUEST	Family relations from the perspectives of female youths with suicidal behavior: a qualitative study	Tience, D. V; Hadjiam, N. R; Afafiat, T; Good, B. J (78)	2021	https://www.proquest.com/docview/2524709270/950436A86B9241B3PQ/9?accountholder=45648	Family dysfunctionality evidenced through rigid parental attitudes, lack of emotional closeness, use of physical and verbal violence towards children, reduced participation of children in the family, acceptance of impositions and ways of dealing with conflicts, and denial of emotionality, are elements that show inflexibility and communication difficulties that lead to family dissatisfaction and become risk factors for suicidal behavior in adolescents.
65	REDALYC	Risk factors for suicide according to two questionnaires and associated factors in the student population of the University of Manizales (Colombia), 2011.	Cañón, S. C; Tovar-Aguirre, C.A; Rodríguez-Varegas, L.M; Atehortúa-Rojas, B. E; Gárcia-Ruiz, L. K; Botero-Mejía, P.; Castaño-Castrillón, J. J; Rincón-Urrego, E (79)	2012	https://www.redalyc.org/article/047328599005	There is a relationship between a high suicide risk with the presence of psychopathological disorders, family history of suicide, anxious and depressive symptoms, added to the experience of adverse events such as couple breakups, economic and academic difficulties, low level of self-esteem, family functionality, and alcohol consumption.
66	SCIENCE DIRECT	The mediating role of hopelessness in the relationship between self-esteem, social anxiety, and suicidal ideation among Japanese university students who visited a university health care center	Dai, N.T; Mit-sui, N; Asa-kura, S; Watanabe, S; Takanobu, K; Fujii, Y; Toyoshima, K; Kako, Y; Kusumi, I. (80)	2021	https://www.sciencedirect.com/science/article/pii/S2666915321001189	Self-esteem and social anxiety act as predictors of suicidal ideation, with hopelessness being a mediating factor between the two since it contributes to the increase in ideation and the onset of depression.

(continue on page S609).

Table 5. Selected studies. (continue from page S608).

Nº	DATABASE	TITLE	AUTHOR	YEAR	URL	CONTRIBUTION
67	PUBMED	Bullying Victimization (Being Bullied) Among Adolescents Referred for Urgent Psychiatric Consultation: Prevalence and Association With Suicidality	Alavi, N.; Roberts, N.; Sutton, C.; Axas, N.; Repetti, L. (81)	2015	https://pubmed.ncbi.nlm.nih.gov/26720189/	There is a correlation between victimization by school abuse and suicidal ideation, the population evidenced having been a victim of physical and verbal abuse in greater proportion, although it is cyberbullying which has a closer relationship with the development of ideation, as this tends to be more protracted and pernicious for the victim.
68	PUBMED	Evaluation of sexual minority identity as a moderator of the association between intimate partner violence and suicidal ideation and attempts among a national sample of youth	Nydegger, L.A.; White, L.; Nathan Marti, C.; Kreitzberg, D.; Quinn, K. (82)	2020	https://pubmed.ncbi.nlm.nih.gov/32764776/	Sexual minority youth are more likely to experience intimate partner violence, and it is this factor that increases the likelihood of suicidal ideation. Females are more likely to report such tendencies.
69	PUBMED	Is parenting style a predictor of suicide attempts in a representative sample of adolescents?	Donath, C.; Graessel, E.; Baier, D.; Bleich, S.; Hillemacher, T. (83)	2014	https://pubmed.ncbi.nlm.nih.gov/24766881/	The rejection-neglect parenting style predicts the risk for a suicide attempt, along with other variables such as ADHD, female sex, smoking, excessive alcohol consumption, school absenteeism, migration background, and parental separation events.
70	PUBMED	Risk-Taking Behavior and Suicidality: The Unique Role of Adolescent Drug Use	Brooke, A.; Steinberg, L.; McClosky, M. (84)	2018	https://pubmed.ncbi.nlm.nih.gov/27732082/	Drug use was associated with suicidal ideation and attempts, although in a second measure, despite continued drug use, ideation decreased. It was also identified that neither suicidal ideation nor suicide attempts predicted suicide attempts one year later.
71	PUBMED	Sex Differences in the Association Between Cyberbullying Victimization and Mental Health, Substance Use, and Suicidal Ideation in Adolescents	Kim, S.; Kimber, M.; Boyle, M.H.; Georgiades, K. (85)	2019	https://pubmed.ncbi.nlm.nih.gov/29783849/	Adolescent victims of cyberbullying are more likely to be exposed to substance use and other behaviors that put their mental health at risk, increasing psychological distress and leading to a simultaneous increase in suicide risk. An increase in the probability of substance use among women stands out.
72	PUBMED	Social anxiety symptoms and suicidal ideation in a clinical sample of early adolescents: examining loneliness and social support as longitudinal mediators	Gallagher, M.; Prinstein, M. J.; Simon, V.; Spirito, A. (86)	2014	https://pubmed.ncbi.nlm.nih.gov/24390470/	People with a diagnosis of social anxiety disorder presented a higher level of suicidal ideation. Loneliness correlated positively with social anxiety disorder and suicidal tendencies; the female gender revealed higher severity of social phobia and depression.
73	PUBMED	Suicidality, functioning, and associated negative life events in an adolescent psychiatric population at a 3-year follow-up	Gårdvik, K. S.; Torgersen, T.; Rygg, M.; Lydersen, S.; Indredavik, M. S. (87)	2021	https://pubmed.ncbi.nlm.nih.gov/33602162/	Suicidal ideation and behavior are related both to the persistence of psychiatric disorders (Anxiety Disorder, Depressive Disorder, and ADHD) and the vulnerability of adolescents. The female gender revealed lower psychosocial functioning, and greater association with negative life events such as sexual violence, which is the strongest indicator of association with suicidal behavior.
74	PUBMED	Suicidal ideation and drinking to cope among college binge drinkers	Gonzalez, V. M.; Hewell, V. M. (88)	2012	https://pubmed.ncbi.nlm.nih.gov/22522033/	Suicidal ideation in adolescent drinkers is associated with factors of impulsivity, mood regulation expectancies, and coping skills. It is added that these factors are not necessarily related to depression and hopelessness, but may contribute to their increase.
75	REDALYC	Suicidal orientation and its relationship with psychological and sociodemographic factors in college students	Montalvo-Peralta, Y. B.; Gomez Tabares, A. S. (89)	2021	https://www.redalyc.org/journal/4978/49780463003	In the studied population, a 9% prevalence of suicide is identified. Previous suicide attempts, a history of suicide and mental illness in the family, low self-esteem, deficits in emotional coping strategies, hopelessness, loneliness, and social isolation are established as risk factors.

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PSYCHOSOCIAL RISK FACTORS ASSOCIATED WITH SUICIDE

Table 5. Selected studies. (continue from page S609).

Nº	DATABASE	TITLE	AUTHOR	YEAR	URL	CONTRIBUTION
76	EBSCO	Coping strategies and coping styles in adolescents with suicidal intent.	Sánchez-Aguilar, D.; Domínguez-Forre, M.; Alfonso-Hernández, L.; Lázaro, González-Barceló, L.I. (90)	2015	https://doi.org/10.417042b34a	Adolescents with previous suicide attempts show the use of unproductive coping strategies, aimed at self-blame, stress reduction, and inactivity. Therefore, they tend to engage in behaviors such as crying, yelling, smoking, or drinking, in the inability to address their problems.
77	EBSCO	Associations Between Sad Feelings and Suicide Behaviors in the 2019 Youth Risk Behavior Survey: A Call for Action	Trimble, D.G.; Chandran, A. (91)	2021	https://doi.org/10.3389/fped.2021.694819	American adolescents reveal a high prevalence of feelings of sadness. Such a state leads to increased suicidal ideation, which, coupled with feelings of hopelessness, allows for the transcendence of ideation into planning. Women reported a higher prevalence of feelings of sadness than men. It is added that cyberbullying, the use of psychoactive substances, and identification as a sexual minority are also associated with suicidal risk.
78	EBSCO	Associations between depression, anxiety, stress, hopelessness, subjective well-being, coping styles, and suicide in Chinese university students.	Lew, B.; Huen, J.; Yu, P.; Yuan, L.; Wang, D.; Ping, F.; Talib, M.; Lester, D.; Jia, C. (92)	2019	https://doi.org/10.1371/journal.pone.0217372	The main risk factors for the development of suicidal behavior are Depression, anxiety, and hopelessness. Others represent a lower risk such as coping style as this population tends to adopt passive measures or go for avoidance through the use of substances.
79	EBSCO	Incidence of history of family functioning, psychoactive substance use, and mental illness versus suicide attempt.	Ordoñez-Gaona, B.I.; Bohorquez, A.; Gomez, P.; Ramirez, Y.D.; Barrientos, G.; Peñalozza, L.N.; Guecha, E.A. (93)	2012	https://doi.org/10.23234/734bd052d4df0b	There is a relationship between the presence of family dysfunctionality is characterized by emotional distancing, a conflictive environment, and little opportunity for personal de-development, with the suicide attempt.
80	PUBMED	Impulsivity and Suicidality in Adolescent Inpatients.	Auerbach, R.P.; Stewart, J.G.; Johnson, S.L. (94)	2017	https://pubmed.ncbi.nlm.nih.gov/27025937/	Specific domains of impulsivity increase the risk of suicidal ideation and attempts. The way feelings shape thoughts represent a risk factor for suicidal ideation, while the triggering action of feelings leads to an increase risk of the attempt. The disorders with the highest risk are Bipolar, GAD, Social Phobia, Eating, and Psychotic disorders, PTSD, and substance use disorders.

school environment are considered intervention scenarios conducive to the prevention of suicidal risk in adolescents and young people. According to some research, it has been determined that these victimizing experiences from any context are associated with suicidal risk, adversely impacting the youth population (29,69,77,75).

Likewise, with this review, the impact of difficulties in the loss of mental health and life itself was glimpsed, portraying how relational problems and the lack of support from friends, partners, and boyfriend/girlfriend, increase stress, lead to disappointments, frustrations, lack of love and other elements that can be decisive in suicidal orientation (27).

Another of the psychosocial factors associated with suicide, identified in the review was the practice of risk behaviors in a young and adolescent population, being very representative of the presence of impulsive behaviors and the consumption of alcohol and other psychoactive substances (28,34,98). Moreover, the articles point out that risk behaviors are exacerbated due to the search for the satisfaction of some characteristic needs of this stage, such as those related to the achievement of independence and autonomy, the need to belong, and the experience of pleasure (97). Likewise, some authors, when predicting the correlation between risk behaviors and suicide, point out how passive or unproductive coping strategies are related to this factor (55,92).

Additionally, the psychopathological component was found as a factor related to suicide, showing the risk that people with mental disorders have; especially depressive disorders, anxiety disorders, psychotic disorders, personality disorders, and Attention Deficit Hyperactivity Disorder (ADHD) (86,87,92,94). In the same way, several authors agree on how the cognitive component is important in this problem since it is recognized in the studies that it is more likely that the suicidal act is carried out when there is the presence of ideas related to death, as well as when there is a history of suffering from mental illnesses (19,87).

Finally, negative emotional states were identified as a psychosocial risk factor related to suicide; it was found that the feeling of uselessness, emotional instability, symptoms

associated with anxiety and/or depression, stress, intense frustrations, psychological distress, loneliness, pessimism, hopelessness, and crisis episodes, increase the risk of the occurrence of the phenomenon studied (42,43,89,99).

The studies reviewed show international interest from various disciplines in mitigating the rapid increase in these behaviors, mainly in adolescents and young people. The premise is that the prevention of suicidal ideation in this population is a challenge for mental health professionals and educational institutions.

DISCUSSION AND CONCLUSIONS

The bibliographic analysis of the psychosocial factors associated with suicidal behavior leads to the conclusion that, although suicide and suicidal behavior are indeed multi-causal phenomena that require the attention of various sectors in a prioritized manner, the predominant factors, in light of the findings, are mostly framed in the microsystem and mesosystem, which include individual and interactional aspects of the subject, with the environment that surrounds him/her.

In this sense, it is necessary to retake the main factor associated with suicide in the different publications: "The family", highlighting components related to cohesion, support, security, communication, care, and affection as elements whose absence or deficiency in the system would represent risk factors for suicidal behavior. This is in agreement with Wang et al. (59) Ordoñez et al. (93), and García et al. (16) who recognize that a difficult family environment increases the probability of the appearance of suicidal ideation in contrast to those who live in harmonious family contexts. Similarly, as stated by Goncalves et al. in 2014 cited by Garza et al. (100) the severity of suicidal behaviors tends to increase in adolescents and young people whose family support networks are fragile, or who live alone and far from home.

In contrast, Zhu et al. (27) and Lipschitz et al. (30) point out how disengagement with the family, the feeling of being misunderstood by the family, and the perceived lack of support from family members are related to cases of suicidal ideation and suicide attempts in adolescents and young people. Adding that, depending on

the parental style, emotional development may be favored, as stated by Donalth et al. (83) and Bahamon et al. (48). This is a key finding identified after the review, since it reiterates the importance of communication and affection, alluding that if a communicative-affective parental style is used, the vulnerability for the development of suicidal ideation will be lower (101).

Likewise, Palma and Da Silva (102) find the importance of the affection offered by the families and the absence of this factor associated with the phenomenon. They point out that the fragility of the bonds, caused by the lack of expressions of affection, care, and love; causes feelings of sadness that lead to suicidal behavior. In the same way, Álvarez et al. (103) agree in pointing out that belonging to a disharmonic family has an impact on the mental health of its members and constitutes an obstacle to the consolidation of self-regulation mechanisms.

In the same way, González and Picado (104) point out that the conflict in the family and the presence of physical punishment, produce emotional affectations that make the young person more susceptible, reaffirming how the family, being the system in which the construction of identity and subjectivities begins, and being a frame of reference for social interaction, decisively influences the forms of action of the young person and increase vulnerability to suicide.

Regarding the factor “Exposure to various forms of violence” as a psychosocial risk factor, according to the scientific literature consulted, types of violence associated with suicidal ideation and behavior are identified, including domestic violence, sexual violence, neglect, bullying, cyberbullying, harassment, partner violence, stigma and discrimination, oppression and sexting; being school violence the most named.

The above is not only another factor associated with suicidal behavior but reinforces the responsibility of the school context on this phenomenon. Cyberbullying is highlighted as a form of school violence that potentially increases the risk of suicide, unlike traditional bullying, due to the characteristics of this form of violence and the impact it has on the behavior of adolescents; elements that are highlighted in

the research of Neto et al. (73) Alavi et al. (81) and Kim et al. (85).

The bibliographic search led the investigation to another representative psychosocial factor associated with suicidal behavior, characterized by the presence of “risk behaviors” in which elements such as impulsivity, the consumption of psychoactive substances, and isolation behaviors are identified. This finding is supported by the contributions of Gonzalez and Hewell (88), Auerbach et al. (94), Brooke et al. (84), Campo et al. (105), and Wesonga et al. (55) who indicate that impulsivity facilitates the transition from suicidal ideation to the consummation of the act, adding that this trait is associated with drug and alcohol consumption. This aspect is validated by the results found by Davila (97), in which it is estimated that problematic substance uses correlates with seeking sensations, which again leads us to consider the role of impulsive and uninhibited behavior as a risk factor for suicide.

In accordance with the above, according to Davila (97), impulsivity increases the vulnerability of the individual when propitiating deficiencies in decision-making and the experience of painful experiences. Moreover, Tellez (106) affirms that impulsivity tends to increase the risk of suicide when it is associated with depression or alcohol or psychoactive substance abuse. This shows as Siabato and Salamanca state (107) that, although impulsivity and consumption in themselves do not lead to suicide, those who attempt suicide usually do have a history of such risky behaviors.

Likewise, coping strategies are directly related to the consumption of psychoactive substances, to the extent that the deficiency or implementation of passive strategies, leads the subject to initiate the consumption of alcohol, tobacco, and other substances. Using these mechanisms as a form of avoidance of their problems and emotional states, as referred to by Lew et al. (92) Bahamon et al. (108) Sanchez et al. (90).

Psychopathological disorders are another of the risk factors identified in the literature review, which highlights the predominance of depressive disorder, bipolar disorder, anxiety disorders, post-traumatic stress disorder, ADHD, psychotic disorders, and personality disorders. This is consistent with the study of López et al. (40)

which reveals descriptive and factorial analyses that show psychopathological symptoms, highlighting among them, anxiety, depression, and borderline traits. Likewise, Cañon et al. (79) Pumero et al. (32) refer to those mental disorders constitute a relevant risk factor for suicidal behavior, alluding that the reported cases present antecedents of mental illnesses such as depression and schizophrenia. It is worth mentioning that schizophrenia, despite being one of the disorders that the literature has identified the most, was not so often referred to in the review.

Another of the most mentioned factors in the review, the negative emotional states stand out, in which feelings of worthlessness, symptoms of depression, symptoms of anxiety, stress, and frustration are found, elements that were also suggested by Gómez et al. (109), Andrade and Gonzalez (71), Secundino et al. (74), Oyanedel et al. (26), who have referred that these states present a positive correlation with suicidal risk, in addition, these authors point out how negative affectivity constitutes a vulnerability factor as opposed to adequate emotional regulation and clarity. This is also consistent with the findings of Gómez et al. (109) and Torre et al. (43) in which it is clear that the difficulty of young people to understand their emotional states and regulate them represents a suicidal risk.

Finally, it is necessary to mention that the review made allowed to confirm the multifactorial dynamics of the suicidal phenomenon. Thus, in addition to being a complex phenomenon to address, its predictability is equally complex. This is not to say that it is not possible to develop strategies to warn or prevent the behavior in a timely manner. On the contrary, the findings invite us to take a holistic view of the phenomenon, to counteract the risk factors that predispose us to this behavior from different angles. The aim is to ensure that basic and higher education institutions work together to develop strategies that promote comprehensive training that transcends academic training, and in this way, achieve understanding and support for their students from an integrated perspective, with a high human approach.

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Analysis of web accessibility to Colombian universities under the guidelines proposed by WCAG 2.1

Análisis de accesibilidad web a universidades colombianas bajo las pautas propuestas por la WCAG 2.1

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SUMMARY

This article reports the results of a study that aimed to analyze the level of accessibility of the websites of Colombian universities under the accessibility guidelines for web content, WCAG 2.1. The web portals of 11 universities categorized in the Q1 and Q2 quartiles of the U-sapiens 2020-1 Ranking were analyzed. The results show that no university met all the success criteria, and the most accessible only reached 71.79 % of them. No relationship was found between the accessibility of web pages and the ranking of universities in the U-Sapiens 2020-1 ranking. This indicates that the websites of the universities studied are not fully accessible. Although there are regulations that promote web inclusion for all people, regardless of their disability status, it is necessary to promote educational campaigns that teach and motivate designers, digital content creators, and programmers to consider when developing websites.

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RESUMEN

En este artículo se reportan los resultados de un estudio que tuvo por objeto analizar el nivel de accesibilidad de los sitios web de las universidades colombianas, bajo las pautas de accesibilidad para el contenido web, WCAG 2.1. Se analizaron los portales web de 11 universidades categorizadas en los cuartiles Q1 y Q2, del Ranking U-sapiens 2020-1. Los resultados muestran que ninguna universidad cumplió con todos los criterios de éxito, y la más accesible tan solo alcanzó el 71,79 % de los mismos. Tampoco se encontró relación entre la accesibilidad de las páginas web y la clasificación de las universidades en el ranking U-Sapiens 2020-1. Lo anterior indica que los sitios web de las universidades estudiadas no son del todo accesibles. Esto se debe a que, aunque en la actualidad existen normativas que promueven la inclusión web para todas las personas, sin importar su condición de discapacidad, es necesario promover campañas pedagógicas, que enseñen y motiven a: diseñadores, creadores de contenido digital y programadores, a tenerlas en cuenta al momento de desarrollar los sitios web.

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Palabras clave: Accesibilidad Web, universidades, WCAG 2.1, educación inclusiva, sitios web, discapacidad.

INTRODUCTION

In Colombia, education is a right of the person and public service, which provides access to knowledge, science, technique, and other goods and values of culture (1). In this sense, educational institutions at all levels have established various study plans and modalities of access to the educational service, with the face-to-face modality being the one with the most outstanding coverage and acceptance (2). However, the appearance of SARS-CoV-2 or COVID-19 has generated inconveniences in providing educational services, significantly altering the face-to-face programs offered by universities (3,4).

Among the difficulties caused by COVID-19 is the migration from face-to-face to virtuality, which has led Higher Education Institutions (HEIs) to strengthen their technological platforms (5). This is to provide: officials, teachers, and students the possibility of performing their tasks optimally through virtuality (6,7).

The HEIs usually improve infrastructure aspects related to Information and Communication Technologies (ICT), such as greater bandwidth for connectivity, cloud storage services, hardware with greater processing capacity, and digital tools for content management (8, 9). However, acquiring or using computer tools does not guarantee success in providing an excellent educational service if they do not allow access (10,11).

In the case of web pages, accessibility is understood as the ease of accessing information, regardless of users' personal, social, or infrastructure characteristics (12,13). The World Wide Web Consortium (W3C) has established the Web Content Accessibility Guidelines, WCAG (14), at an international level. In the WCAG, version 2.1, 78 success criteria are established, which every website must meet to be considered accessible. In this sense, there are 3 levels of conformity (A, AA, and AAA); 4 principles: perceivable, operable, understandable,

and robust; and 13 guidelines, which provide the primary goals to be considered by developers so that content is accessible to users with different disabilities (15).

The objective of this study was to validate, under the guidelines proposed by WCAG 2.1, the level of accessibility of the websites of the 11 best-positioned Colombian universities in the U-Sapiens 2020-1 Ranking. The following section presents the methodology used to carry out this research. Then, the levels of accessibility of the evaluated universities are exposed based on the four principles established in the WCAG. Subsequently, the shortcomings are described, and some recommendations are provided to address them.

METHODS

In this study, 11 websites of Colombian universities, both public and private, were analyzed, 3 of them positioned in the Q1 quartile and 8 in the Q2 quartile of the Ranking U-Sapiens 2020-1 (16). It should be noted that the U-Sapiens Ranking classifies the best Colombian universities according to research indicators, such as indexed journals, postgraduate programs (masters and doctorates), and research groups categorized by Minciencias (17).

The evaluation of the accessibility levels of the websites of the selected universities was carried out automatically and manually. Although there are digital tools that automate the task, not all of the 78 success criteria proposed by WCAG 2.1 can be assessed in this way (18). In this case, the Google Chrome browser was used, along with the following tools:

WebValidator 2.1: “Análisis de accesibilidad de sitios web bajo pautas WCAG 2.1”. The authors of this article developed the tool. Its main objective is to assess the HTML, XHTML, and CSS code of websites, using the Web Scraping technique, to identify whether it meets some criteria of the WCAG 2.1 standard. This tool was also used as a rubric or matrix to report compliance or non-compliance with criteria that require manual assessment, like the way *Audit Tool WCAG 2.1* does (19).

TAW. Test de Accesibilidad Web. In addition to evaluating some accessibility criteria for levels A, AA, and AAA, this tool was also used to validate the accessibility of the codes produced by Javascript.

WAVE: Web Accessibility Evaluation Tool. This tool was used as an extension of the Google Chrome browser to identify accessibility errors on websites related to color contrast, font size, animations and interactions, hyperlinks, and redundant texts.

JAWS: Job Access with Speech. This screen reader was used to evaluate the criteria of keyboard accessibility, text alternatives for non-text content, and identification of labels or instructions.

The procedure followed to verify accessibility began with the analysis of each university's leading web page and 4 subordinate pages through the WebValidator 2.1 tool. The automatic analysis was complemented with TAW, which allowed the evaluation of some additional criteria. Then, the WAVE extension was used, and the missing criteria were evaluated manually with the help of the JAWS for Windows software.

The information collected during July 2020 was analyzed, emphasizing the 4 accessibility principles: perceivable, operable, understandable,

and robust. In the same way, the analysis of the websites was carried out in compliance with the 3 levels of accessibility: A, AA, and AAA proposed by WCAG 2.1.

RESULTS

Perceptibility principle

The results obtained for the principle of perceptibility are reported in Table 1. It shows that the only university that met criterion 1.1.1: “*content without text*,” stipulated in the *Text Alternatives* guideline, was the University of Caldas. Regarding the *time-based Media pattern*, Table 1 illustrates that the Universidad de Caldas met the highest number of compliance criteria, 6 out of 9, followed by the Universidad Industrial de Santander, with 5 criteria met.

Likewise, the Universidad Pontificia Bolivariana and the Universidad de Caldas met 4 of the 6 conformity criteria stipulated for the *Adaptable* guideline. Regarding the *Distinguishable* guideline, the Universidad de Caldas met all the established criteria, while the Universidad Javeriana was the institution with the lowest compliance, with only 5 of the 13 criteria.

Table 1
Criteria fulfilled for the principle of perceptibility

Quartile	University	Guidelines for the principle of Perceptibility (29)			
		Text Alternatives (1)	Time Based Media (9)	Adaptable (6)	Distinguishable (13)
Q1	Universidad Nacional de Colombia - Bogotá	0	0	1	9
	Universidad de Antioquia - Medellín	0	0	2	7
	Universidad del Valle - Cali	0	0	1	7
Q2	Universidad de los Andes - Bogotá	0	4	2	10
	Universidad Javeriana - Bogotá	0	4	1	5
	Universidad Nacional de Colombia - Medellín	0	1	3	7
	Universidad Industrial de Santander - Bucaramanga	0	5	1	6
	Universidad del Norte - Barranquilla	0	2	1	8
	Universidad Pontificia Bolivariana – Medellín	0	3	4	11
	Universidad de Caldas – Manizales	1	6	4	13
	Universidad Tecnológica de Pereira	0	2	3	9

Source: Authorship

Operability principle

Data in Table 2 indicate the university's conformity criteria for each of the 5 guidelines established in the principle of operability. Regarding the *Accessible Keyboard* guideline, the results show that the Universidad Tecnológica de Pereira was the only institution that met all

the proposed criteria (4), while the Universidad del Norte did not meet any of them.

Regarding the *Enough Time* pattern, the Universidad de Caldas was the institution that met the highest number of criteria (5 out of 6), while the Universidad de Los Andes did not meet any of them.

Table 2
Criteria met for the principle of operability

Quartile	University	Guidelines for the Principle of Operability (29)				
		Accessible keyboard (4)	Enough time (6)	Seizures and Physical Reactions (3)	Navigable modalities (10)	Entry (6)
Q1	Universidad Nacional de Colombia - Bogotá	2	1	1	4	1
	Universidad de Antioquia - Medellín	2	3	0	3	3
	Universidad del Valle - Cali	1	2	0	4	3
Q2	Universidad de los Andes - Bogotá	1	0	0	3	3
	Universidad Javeriana - Bogotá	2	3	1	5	3
	Universidad Nacional de Colombia - Medellín	1	3	1	6	2
	Universidad Industrial de Santander - Bucaramanga	1	3	0	6	2
	Universidad del Norte - Barranquilla	0	3	1	3	2
	Universidad Pontificia Bolivariana – Medellín	1	4	1	7	4
	Universidad de Caldas – Manizales	3	5	1	7	3
	Universidad Tecnológica de Pereira	4	3	0	3	3

Source: Authorship

Regarding the pattern of *Seizures and Physical Reactions*, in Table 2 it can be seen that the universities: Universidad de Antioquia, Universidad del Valle, Universidad de Los Andes, Universidad Industrial de Santander and Universidad Tecnológica de Pereira, do not comply with any of the 3 criteria proposed for this guideline. However, the remaining universities meet criterion 2.3.3, referring to *Animation from interactions*, since movement animations, triggered by user interactions, are disabled on their web pages.

Regarding the *Navigable* guideline, the Universidad Pontificia Bolivariana and the

Universidad de Caldas met the most significant criteria, 7 of the 10 proposed. In addition, in the *Entry Modalities* guideline, the Universidad Pontificia Bolivariana was the one that reached the highest number of fulfilled criteria (4 out of 6), while the Universidad Nacional de Colombia, Bogota, only met 1 of the criteria.

Comprehensibility principle

Results of accessibility analysis for the principle of content comprehensibility, which is found on the websites of the evaluated universities, are reported in Table 3. It is

highlighted that, for the *Readable* guideline, most of the universities complied with 3 of the 6 established criteria. However, the Universidad Nacional de Colombia sede Bogotá, only met 2 criteria, while the Universidad del Valle and the Universidad Industrial de Santander met only 1 of the criteria of the readable guideline.

Regarding the *Predictable* guideline, the Universidad de Caldas was the one that met the highest number of criteria (4 out of 5). Likewise, this same university was the one that obtained a more significant number of criteria (4) before the *Entrance Assistance* guideline, where the number of established success criteria is 6.

Table 3
Criteria met for understandable principle

Quartile	University	Guidelines for the Understandable Principle (17)		
		Readable (6)	Predictable (5)	Entrance Assistance (6)
Q1	Universidad Nacional de Colombia – Bogotá	2	3	0
	Universidad de Antioquia - Medellín	3	2	0
	Universidad del Valle - Cali	1	3	1
Q2	Universidad de los Andes - Bogotá	3	3	1
	Universidad Javeriana - Bogotá	3	2	3
	Universidad Nacional de Colombia - Medellín	3	3	2
	Universidad Industrial de Santander - Bucaramanga	1	2	1
	Universidad del Norte - Barranquilla	3	3	0
	Universidad Pontificia Bolivariana – Medellín	3	3	2
	Universidad de Caldas – Manizales	3	4	4
	Universidad Tecnológica de Pereira	3	3	2

Source: Authorship

Robustness principle

To identify if the web content is compatible enough to be interpreted by various users while being processed by different assistive technology tools, the 3 criteria proposed for the *Compatible* guideline, which make up the principle of robustness, were analyzed.

The results of the accessibility test made it possible to verify that only 2 of the 11 Colombian universities meet at least one criterion of the compatible guideline. The Universidad Tecnológica de Pereira complied with criterion 4.1.2, referring to *name*, *role*, and *value* given to form labels, box titles, and other HTML and XHTML markers of websites. The Universidad de Caldas, in addition to meeting criterion 4.1.2, met criterion 4.1.1, which evaluates that: the syntax,

labels, attributes, and IDs are well programmed, regardless of the markup language used.

Conformance levels A, AA, and AAA

Identify levels of conformity in which the websites of the universities studied are found; the analysis was carried out for the levels: A, AA, and AAA. The results are reported in Table 4.

Table 4 shows that the Universidad de Caldas was the institution that met the highest number of criteria at all levels of conformity: 56 of 78, equivalent to 71.79 %, thus: 22 criteria at level A, 17 criteria at level AA, and the same for AAA. In contrast, the Universidad del Valle was the one that obtained the lowest level of success criteria met: 23 of 78, equivalent to 29.48 % since it met 9 criteria for level A and 7 criteria for both level AA for level AAA.

Table 4
Criteria met by conformance levels

University	A (30)	Levels AA (20)	AAA (28)
Universidad de Caldas – Manizales (Q2)	22	17	17
Universidad Pontificia Bolivariana – Medellín (Q2)	14	16	13
Universidad Tecnológica de Pereira (Q2)	15	12	9
Universidad Javeriana – Bogotá (Q2)	13	9	10
Universidad Nacional de Colombia – Medellín (Q2)	10	12	10
Universidad de los Andes – Bogotá (Q2)	13	10	7
Universidad Industrial de Santander – Bucaramanga (Q2)	10	8	10
Universidad del Norte – Barranquilla (Q2)	6	10	10
Universidad de Antioquia – Medellín (Q1)	9	7	9
Universidad Nacional de Colombia – Bogotá (Q1)	8	9	7
Universidad del Valle – Cali (Q1)	9	7	7

Source: Authorship

DISCUSSION

The web accessibility analysis on the 11 Colombian universities, positioned in the first places of the U-Sapiens 2020-1 Ranking, established that only 2 of them exceeded 50 % of the accessibility level under the WCAG 2.1 guidelines. These institutions were: the Universidad de Caldas, which met 71.79 % (56 criteria), and the Universidad Pontificia Bolivariana, with 55.13 % (43 criteria). Because of the above, it can be said that none of the universities have accessible web pages since the levels of compliance (A, AA, and AAA) are only reached by meeting all the criteria associated with each level (18).

Among the most common errors that prevent websites from meeting accessibility criteria for the perceptible principle is that the images and buttons do not have alternative text, which prevents people with low vision or digital assistance tools from recognizing the presented information. Other errors are the absence of a description of pre-recorded audio and videos, the lack of sign language, the loss of information when accessing web content from technological devices with different screen resolutions, the large spaces between the texts, as well as the little contrast that exists between the background and the text.

Regarding the errors presented in the principle of operability, the inability of users to access web content through keyboard shortcuts is highlighted. Likewise, the excess of animations with interactions, which have some images and banners of news or offers, which disorientates the user's navigation process within the website, is notorious. This situation is common on Colombian university websites, such as Durán-Becerra and Tejedor-Calvo (20).

Regarding the existing errors in the principle of understandability, it was identified that several of the universities analyzed do not use the multilanguage function to present the textual information of the web pages in several languages. Likewise, the input error is presented, in which pop-up windows frequently appear to the user without being notified, and the system does not allow the error to be reported or prevented by the user. This situation violates the principles that guide educational institutions toward the so-called smart campuses, characterized by providing their services in an integrated and accessible way for users (21).

In the principle of understandability, it is highlighted that 5 universities did not comply with criterion 3.3.4, referring to the prevention of errors: legal, financial, and data. The absence of the security certificate, also known as Secure Sockets Layer (SSL), makes browsing unsafe and

unreliable (22). The preceding is worrying since computer crimes related to the impersonation of websites are constantly increasing (23).

In the principle of robustness, the code programming error in Web sites was identified. This issue causes users using the keyboard navigation method to be unable to identify first, second, or third-level titles and paragraphs or image descriptions. This error was one of the most recurrent 10 of the 11 universities and is due to the flexibility in HTML programming since some lexical and syntax elements are omitted. Some cause that, although no problem is visually identified on the website, users who access it through digital assistance tools, such as screen readers, cannot navigate correctly (24).

On the other hand, no relationship was found between accessibility to web pages and the ranking of universities in the U-Sapiens 2020-1 ranking. It is reflected in the fact that the Universidad de Caldas, located in Q2, is the institution that meets the most criteria, while the Universidad del Valle, Q1 in the ranking, is the one with the least accessibility.

Another interesting finding is that the two campuses of the National University of Colombia have different levels of accessibility, the one in Medellin being higher. Despite being the same institution, the administration of each branch's website is carried out independently. Similar results have been reported in other investigations, indicating that web accessibility problems are due to the limited permissions granted by web admins to publish content, together with the predefined templates or themes used to design and manage websites (25).

Failure to meet the minimum success criteria for each level of compliance in terms of web accessibility stipulated by the WCAG for the 11 universities analyzed is common in other pages associated with higher education. Examples of this are Colombian journals in the humanities area indexed in the IBN Publindex (18); some national libraries in Latin America (26); the websites of the Chilean Ministry of Education (27); as well as some higher education institutions in Ecuador (28).

CONCLUSIONS

The results presented above made it possible to verify that the websites of the Colombian universities best located in the U-Sapiens Ranking 2020-1 are not fully accessible. Although there are currently regulations that promote web inclusion for all people, regardless of their disability status, website developers do not consider the accessibility requirements that their designs must meet.

It concludes with the need to propose a pedagogical strategy that teaches and motivates designers, programmers, and creators of digital content, to configure and program websites so that they are accessible to any user and assistive technologies. Likewise, it would be important that in the university accreditation process, the accessibility of websites be considered as part of the quality indicators since most of the interaction that users have is managed through them with the institution.

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Resilience and mediation: mechanisms to resolve family conflicts in times of the SARS-CoV-2 pandemic

Resiliencia y mediación: mecanismos de resolución de conflictos familiares en tiempos de la pandemia de SARS-CoV-2

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SUMMARY

The article analyzes the importance of resilience and the usefulness of family mediation as an effective method of family conflict resolution in times of the SARS-CoV-2 pandemic. To meet the objective, an exploratory descriptive analysis was conducted comparing the official figures of complaints of domestic violence published by the National Police of Colombia during the years 2019 and 2020, in the period from January to February and those occurring after March 11, 2020, the date on which the World Health Organization (WHO), classified the epidemic outbreak of SARS-CoV-2 as a pandemic and in coherence with the mandatory preventive isolation in the country. The study was carried out based on the characteristics of the perpetrators, the type of weapons used, and the distinctive elements of the reports before and after the measure. The studies agree that the global health emergency is a completely new condition that will

be overcome, based on the contributions of different disciplines that emphasize the importance of the consequences on individual and family mental health, overcoming the intervention focused on prevention and treatment; to move towards an intervention oriented towards conflict resolution. From this perspective, family mediation is configured as a strategy that enhances positive personal and family development. The findings allow us to generate proposals that promote family mediation as an effective method for conflict resolution, prevention, and reduction of violence, with the benefits of resilience.

Keywords: Resilience, mediation, family conflicts, pandemic, SARS-CoV-2, and intrafamily violence.

RESUMEN

El artículo analiza la importancia de la resiliencia y la utilidad de la mediación familiar como método efectivo de resolución de conflictos familiares en tiempos de pandemia de SARS-CoV-2. Para cumplir con el objetivo, se realizó un análisis descriptivo exploratorio comparando las cifras oficiales de denuncias de violencia intrafamiliar publicadas por

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la Policía Nacional de Colombia durante los años 2019 y 2020, en el período de enero a febrero y las ocurridas después del 11 de marzo de 2020, fecha en la que la Organización Mundial de la Salud (OMS), clasificó el brote epidémico de SARS-CoV-2 como pandemia y en coherencia con el aislamiento preventivo obligatorio en el país. El estudio se realizó a partir de las características de los autores, el tipo de armas utilizadas y los elementos distintivos de los informes antes y después de la medida. Los estudios coinciden en que la emergencia sanitaria global es una condición completamente nueva que será superada, a partir de los aportes de diferentes disciplinas que enfatizan la importancia de las consecuencias en la salud mental individual y familiar, superando la intervención centrada en la prevención y el tratamiento; para pasar a una intervención orientada a la resolución de conflictos. Desde esta perspectiva, la mediación familiar se configura como una estrategia que potencia el desarrollo personal y familiar positivo. Los hallazgos permiten generar propuestas que promuevan la mediación familiar como un método eficaz para la resolución de conflictos, la prevención y la reducción de la violencia, con beneficios de resiliencia.

Palabras clave: Resiliencia, mediación, conflictos familiares, pandemia, SARS-CoV-2 y violencia intrafamiliar.

INTRODUCTION

In January 2020, the World Health Organization (WHO) notified that the outbreak of coronavirus disease 2019 (COVID-19) was an international public health emergency. After rigorous assessments, it defined it as a pandemic on March 11 of this year (1). In Colombia, by Presidential Decree, on March 22, mandatory preventive isolation was declared for the whole country (2).

In view of the sanitary emergency and the mandatory confinement, the Ministry of Health and Social Protection (2020) (3) announced the possible presence of altered emotional states that could occur in the Colombian population, such as the helplessness of not being able to offer protection to their loved ones, increased anxiety due to the uncertainty of confinement, reduced perception of security, irritability, among others, which could increase risk behaviors such as intolerance, family conflicts, and violence (4).

In addition to the above, Ramírez López et al. (5) refer that there is clear evidence of the

serious worldwide effects caused by the SARS-CoV-2 coronavirus pandemic on the capitalist system. This translates into an increase in the economic crisis and social inequality that had already been generated for several years, due to the slowdown in the growth and expansion of capital, where it is worth noting the subsidiary and residual role of the State and the low or null participation it has in the promotion of fair policies that promote the reduction of inequality, reflected during the health crisis in the suspension of the productive sector that has generated the maintenance of some jobs for certain workers, but without salary or with reduced fees. Other aspects to take into account are the effects on mortality and morbidity, the impact on economic and labor activity due to the mobility restrictions created by the closure of the productive sector at the private and governmental level, added to the extreme concern of the population in terms of obtaining the necessary income to support their families.

In this same sense, Marques et al. (2020) (6) makes special mention of the effects on interpersonal relationships that can be generated by the preventive measure of social distancing, mainly on the marital and parental subsystems, in which a considerable increase in the registration of cases of violence is observed; a situation that generates concern, since the home would become a synonym of fear and abuse within families.

This research proposes to answer the following research question: What are the mechanisms for the resolution of family conflicts and which benefit resilience in times of the SARS-CoV-2 pandemic? To evidence the existence of family conflicts, the official figures of complaints of domestic violence published by the National Police of Colombia during the period from January to February 2020 and those occurring after March 11, 2020, were analyzed, making a comparison with 2019.

Mental health, family and pandemic

The World Health Organization (2018) (7) defines mental health as a fundamental element to access integral health because its concept goes beyond the absence of disease or conditions, highlighting the optimal state of the

physical, psychological, and social components of individuals. Mental health allows the development of all human capabilities, including those required to cope with the stress of daily life, productive work, and contribute to society, generating individual and collective well-being.

Considering the above, when considering the main effects on the mental health of the population due to the mandatory preventive isolation established as a preventive measure against the new coronavirus (COVID-19), the family is the main area of study in this research because isolation has generated changes associated with psychosocial aspects that alter the functionality of this system reflected in everyday life.

In this manner, Gracia Fuster and Musitu Ochoa (2000) (8) refer that the importance of the family lies in the fact that this system is the first responsible for the emotional stability of its members, especially in childhood and adulthood; in addition, they consider that it is a determining factor in the process of formation and consolidation of values. In this sense, the family is configured as an aggregate of leisure and consumption, it is the basis for the foundation of a property, the key scenario of social location, the fundamental basis for social relations, and the main enclosure of protection, of support in the face of crises and the vital source for caring for and protecting the health of its members.

COVID-19 has been characterized as a pandemic that has forced preventive confinement in several countries, including Colombia, as a strategy to reduce the transmission of the virus (9). According to previous studies, confinement in the population can generate negative effects on people, not only because of the contagion, the damage it causes to physical health, the difficulties to meet basic needs and services, but also the presence of fear and hopelessness that cause damage to mental health, as well as the resulting interpersonal conflicts, especially in the couple, parenting and family (10). However, it is necessary to keep in mind that there are specific vulnerable groups that may be more sensitive to changes, and it is necessary not to underestimate these problems to avoid generating a mental health crisis (9).

On the other hand, Ramírez-Ortiz et al. (2020) (11) indicate that the consequences of

confinement affect even more the professionals, administrative, support, and general services personnel of the health entities that face the first line of operation in the face of COVID-19 because they have a high workload, feelings of uncertainty and fear due to exposure to the virus. Likewise, the saturated hospital environment, added to the accentuated stigmatization due to their work activities, family commitments, and the demanding need for emotional attention from their families and patients, lead this group to be exposed to the virus (12). The stigmatization of this population group leads them to test their maximum resilience in the face of the current adversity.

Useche, Acero, and Martinez (2020) (13) explain in the preliminary reports of the Colombian College of Psychologists that the most relevant sequelae of confinement are anxiety and stress, affecting not only physical but also mental well-being since it generates greater vulnerability in people to get sick and become involved in interpersonal conflicts. Consequently, this experience may alter the family dynamics either by the situation of isolation or prolonged contact (67). In this regard, Cortella (2019) (14) refers that currently there are urgencies and turbulences around the family and some urgencies cannot be considered causal factors of the loss of homeostasis in the family system.

Between March and April 2020, approximately 37 publications on COVID-19 and its relationship to mental health emerged, reporting a psychological impact on anxiety, depression, and stress level (15,66). As stated by Socías, Brage, and Nevot-Caldentey (2020) (16) high levels of stress can provoke unhealthy coping strategies in people, generating an unsafe environment and a higher risk of negative effects on minors.

Likewise, Tian et al. (2020) (17) refer that feelings of indignation, decreased happiness, dissatisfaction, and behavioral changes are presented due to the rapid spread and absence of treatment. Regarding anxiety levels, the appearance of bodily sensations is interpreted as symptoms of some discomfort, as well as dysfunctional beliefs about health, disease, catastrophic interpretations, decreased capacity for rational decision-making and behavioral control, and so on (15). Therefore, it is relevant that people have elements both at the individual

and community level that led to appropriately managing emotions, thus facilitating the possession of optimal welfare that allows them to strengthen their overall health (18).

Because of the above, Asmundson and Taylor (2020) (19) expose the tendency of people to frequently go to health centers in search of a diagnosis. On the other hand, there is anxiety generated by the desire to buy utensils that protect against the virus, excessive hand washing, and speculations that occur due to possible shortages. Family needs are established in the specific disposition to cover the needs of each member or group, because their internal dynamics, motivations, and order are unique, which makes them change and it is not possible to temporize or prioritize their needs (20).

Concerning the levels of depression, preeminence was found in men, people with a low level of education, and people who reported previous physical discomfort (21). Likewise, an increase in sadness, anger, and resentment due to the death of family members by COVID-19 and the need for psychosocial care mainly to front-line professionals in the face of COVID-19 were also described (22). It should be noted that this situation leads to the fact that relationships, especially with the family, may be associated with a significant number of possible psychosocial alterations, which is why the importance of assessing some aspects that the individual perceives about his or her family system is highlighted (3).

In addition to the foregoing, Minuchin and Fisherman (2004) (23) state that each person belongs to a family system, and at the same time the family is composed of a group of people who fulfill specific functions that are coherent with the role they play; Therefore, they reveal that the family and its members have a reciprocal containment in the processes of communication and spontaneous and continuous interaction, a product of the distribution of family responsibilities which in turn is determined by the hierarchies and the distribution of tasks, but not in a determinant way, because the environment and the situations demand that people perform different roles; therefore, the fracture or expansion of the contexts may facilitate the emergence of new possibilities.

On the other hand, Qiu et al. (2020) (24) report that in lockdowns, stress has manifested itself mainly in women and that young people, the elderly, women, and migrant workers as the most vulnerable. In turn, Cao et al. (25) also reveal the high levels of stress that occur in university students, but they consider them to have protective factors such as living in an urban area, having economic stability, and healthy coexistence with their parents (68). In addition, it is important to mention the impact that this contingency measure has had on people with previous mental health diagnoses because it has shown an increase in impulsivity, anger, and suicidal ideation (26).

Taking into account other aspects that may be affected, studies conducted Miranda-Nava (2018) (27) indicate the harmony of the relationship between wakefulness and sleep that should exist due to the imbalance that can be caused between the two can be considered as a crisis, circumstances that also give rise to disorders that reduce the psychosocial well-being of a person and can even cause public health problems. In relation to this, the affectations in the cognitive and emotional areas, when not treated in time, could unleash not only family, intrapersonal and interpersonal conflicts, but also problems at the public health level.

From the social sphere and after the appearance of the COVID-19 virus, which was cataloged as a global pandemic, the dynamics of human interaction in its different contexts have changed. The family has not been oblivious to this and from the daily experiences within the home, there has been an increase in the perception of stress, which has been analyzed from the transactional theory of Lazarus and Folkman (1986), cited by (28) (1986), is defined based on the relationship between people and their environment, and the subjective evaluation that the subjects make about the stressor is of great importance. In this case, the stressor could be defined as preventive isolation, mandatory in which coexistence is given for prolonged and continuous periods, added to the fear of contagion. Specifically, perceived stress is defined as the perception that people have of the levels of stress generated in their environment; in the case of most people in a health crisis, the most immediate context referred to is the family system.

In this sense, Cadenas (2015) (29) says that due to the current situation and the value of the family, its importance is legitimized. To reduce the effects of the measure, it is essential to give special attention to the family as a priority, in which its fundamental functions that have an impact on the development of individuals are rescued (30).

Conflict and family violence

People are defined as complex systems that contain intrapersonal components such as cognitive processes and emotions, interacting through groups that at the same time relate to each other, forming societies and in turn interrelate as states and nations that can constitute civilizations and regions that develop a world that links and forms a planetary system (31), which evidences the social component and the relational nature of man of which the conflict is a part.

In regard to the above, Silva García (2008) (32) indicates that societies throughout history in their different generations evidence conflict as an inherent, natural, determining phenomenon in the daily life of social changes that have been necessary in the dynamics of human life, although he specifies that not in an absolute manner; for humanity to reach the moment in which it is, man needed to face situations of conflict that have accompanied its history, that is why the author identifies it as something connatural to man.

A key definition is that the internal conflict is an inevitable personal experience, allowing us to understand that the conflict is inherent to the human being and that it is immersed in the interpersonal process that each one develops in the environment that surrounds him, as a form of expression between what he perceives as acceptable or not (33).

Likewise, Lederach (2007) (34) proposes from his point of view, the conflict transformation approach, to give a broader look at the situations that arise, getting to the background that produces the conflict to provide a more assertive and fair solution for all those involved in the situation, noting the importance of getting to the root of the real situation that has triggered the conflict, which is nothing more than being able to see but also to look beyond the situation itself, to

understand and respond to the non-conformity that causes the conflict to occur, highlighting those situations that are underlying the situation and that add up to the conflict, allowing a complete view of the event.

For Lederach (2009) (34) the center lies in being able to see and respond to social conflicts, creating changes that lead to a decrease in violence and an increase in justice, and responding to real-life problems produced in human relations, if the conflict can be understood as an opportunity for change for the good of society and even family dynamics, since this explanation applies in any social context and that is why, because of the current health crisis, it is necessary to take up these concepts again.

On the other hand, Calderon Concha (2009) (31) highlights Galtung's definition of conflict: "Attitudes + assumptions + behavior + contradiction" (p. 69). It specifies that attitudes refer to how the parties involved in a conflict feel and think, the perception they have of each other, and the view of their own goals and of the conflict itself. Behavior indicates how the parties to the conflict act, whether or not they seek common interests, their creative or constructive action, or whether they harm or cause pain to the other. Contradiction reveals the real issue(s) of the conflict and how it manifests itself.

In addition to the above, Calderon Concha (2009) (31) indicates that the parties involved in the conflict most of the time difference in their perception of the root of the conflict or contradiction. In many cases, such issues are complicated and hidden, as parties and conflict actors on both sides (including politicians and the media) prefer to focus on attitudes and behavior, both their own (which is generally self-perceived as positive) and that of the other (which is generally described as negative).

Along the same lines, the authors refer that economic poverty promotes the corruption of moral values, leading to the degradation of society and, in turn, to the presence of aberrant behaviors in all environments. This has significant repercussions in homes where there are conflicts among its members and also leads to numerous forms of aggression, a variable dimension, which is called "domestic violence", "family violence" or "intrafamily violence" (35).

For Goyeneche González et al. (2018) (36) violence is attached to the life of human beings, it is part of society and the interaction processes that can occur in the different contexts in which people live and develop, it seems that violence among family members includes the relationships between them that are conflictive, such as disagreements, unaccepted differences, power struggle (inverted roles, authoritarianism, among others), these facts can occur from, sharing the same interests, goods, benefits, and affection, in the same way, that is the power struggle, obtaining dominance and control of one or more people. Perhaps the inverted role due to the socio-economic conditions of the families may have an impact on the upbringing processes, where rules and limits are scarce (children who take care of younger siblings, or children who support their parents) authority is shifted to the grandparents or older children, when parents are absent and they are the ones who share more time with the children (37).

In this way, violence associates people, when there are strong links between those who experience aggression (those who exercise it, those who receive it or closely perceive it), as happens between the members of a family, it may be that as a result of this problem alliances or coalitions arise, whether positive or negative, situations of economic and affective dependence may also arise as a result of psychological abuse. In this way, the oppression of the other in the family (family violence) is interpreted as a form of coexistence under subjection and domination, unacceptable for many and society, but not precisely so for those who experience it (37).

Family violence includes "violence against partners and other family members, who are considered to be perpetrators of abuse; grandparents, parents, children, in-laws, brothers and sisters-in-law, grandchildren, nephews, nieces, daughters-in-law, among others; parents, step-parents, siblings and children are also frequent aggressors" (36).

This type of violence occurs most frequently between spouses, where the male sex predominates as the abuser; therefore, it is the woman who tends to be abused, followed by children and the elderly, in cases where the victim is a minor, the mother is usually the abuser, followed by the father, stepfather or stepmother (37,38). Considering

that this type of violence occurs within the family system, with children, without children, in de facto marital union or free union, in extended, nuclear, or constitutive families, it can be deduced that this problem not only affects the victim but the system as a whole (36).

In families where there is family violence, there is a great problem with communication; it can be deduced that there is aggressive communication, with shouts and verbal threats accompanied by blows or physical punishment. In addition to poor communication with the children, there is abandonment as another type of violence against the child, in this sense, the parents or caregivers are disinterested in the cleanliness and feeding of these and omit the controls or visits to the doctor, also, they generate guilt in children and intimidate them increasing their fear (38).

It has been proven that when family violence occurs, it will have negative effects on those who receive it; this type of physical and mental abuse can lead them to consume alcohol, drugs, and tobacco; in the least favorable conditions it can be a risk factor for suicide; abused children have low academic performance, On the other hand, family violence can be transmitted from generation to generation, giving rise to repetitive cycles of violence among family members, taking into account that children tend to imitate their parents and adopt the same behaviors, customs, and beliefs (38).

Violence has repercussions for children in their future. Family violence could be one of the causes of social crimes, impacting people and generating social problems, this would arise from how the formation of values within the home is given, and how the family dynamics occur. Family violence can likely cause disruptive behavior in adolescents and young people (36).

Undoubtedly, the family is the most important system and for this reason, it is called the primordial nucleus of society (39). Therefore, if it did not exist, there would be a social detriment. However, it is important to emphasize that structural changes in the family have spoiled it; modernism, globalization, and the increase of poverty worldwide have favored the increase of urban and rural violence; and consequently, the growth of insecurity within and outside the family (35).

Since March 2020 when SARS-CoV-2 was declared a global pandemic, studies have been conducted demonstrating the psychological effect, anger, and post-traumatic stress symptoms due to confinement, which impacts family relationships. Vera-Villaroel (2020) (40) explains that in relation to the specific effect of confinement given by SARS-CoV-2, anger and post-traumatic stress symptoms have been reported as psychological effects (41). In addition, there is an increase in reports of family violence. The limitation of the movement of people and animals has revealed an increase in aggression. Therefore, individuals are restricted in their freedom to move around in cities as is already being reported in the rates of violence in different countries. However, abuse, domestic violence, and gender-based violence are naturalized situations in society, they are pre-existing to the SARS-CoV-2 situation. Consequently, lockdown measures can become a death trap for a number of people because of the impossibility of movement (42).

Along the same lines, several authors (43,44) say that during lockdowns in Latin America, the cases of domestic violence have increased; evidencing through the results of this study that the couples satisfied before this time conserved or increased their levels of satisfaction; however, the couples with a predisposition to violence increased the risk. On the other hand, these authors explain that couples have a higher level of dissatisfaction with the structural and boundary elements, compared to the emotional, sexual, and interactional aspects, and that the risk of violence is not related to the condition of the dwelling and is not an exclusive problem that is present in one of the sexes, since both shows to be vulnerable to aggression from their partner; however, there is a higher risk for women (44).

In some cases it is evident that in the face of this adverse situation, “internal skills” of self-control and emotional regulation emerge, which function as resources that promote alternative solutions, in the same way, the family support network and assertive parenting styles also act as protective factors (36,45). Therefore, families in conflict are concerned about improving communication between their members (parents and children) to have a good coexistence among them (38).

Resilience and family mediation in times of COVID-19

Currently, the population worldwide is facing the threat of COVID-19, caused by a virus belonging to the coronavirus family, first recognized in China in December 2019, reaching an exponential rate of contagion and transmission that has come to collapse healthcare systems in high-income countries (46). Despite the importance of mental health problems that have been generated during pandemics, little information is available in the context of COVID-19 (15).

Hence, Vera-Villaroel (2020) (40) says that cognitions, emotions, and behaviors are fundamental in the specific health-disease processes of COVID-19. In this sense, the author states that currently there is initial evidence on emotions and COVID-19 reported as fear and uncertainty. In addition, reactions of anguish, anger, and extreme fear in the face of the contagion of the disease in addition to anxiety and depression disorders, increased consumption of food and psychoactive substances, which from Psychology are considered coping strategies against extreme and continuous stress as has been this pandemic in different countries. Likewise, there has been an increase in domestic violence due to anger and aggression (44).

Gallegos et al. (2020) (42) explain that the absence or decrease of interpersonal communication increases the risk of presenting or increasing depressive and anxious disorders, although some people try to channel their fears and worries through different behaviors and it is also likely that irrational behaviors are manifested as a response to the perceived demands in the environment, which are inadequate psychological responses to face the healthcare crisis since psychosocial coping strategies and prosocial behavior should be implemented.

Likewise, fear is a response generated naturally in situations of uncertainty and confusion such as the situation of lockdown, and also has an adaptive advantage because it allows people to be alert and guide decision-making, benefiting more responsible intra- and interpersonal behaviors, resulting in important to provide an adequate

treatment to fear and uncertainty so that they do not become disorganizing and paralyzing (41).

In addition to the above, it is recommended to act prudently and not to create unnecessary alarms that magnify the risk, or underestimate the danger to avoid fear; furthermore, it is necessary to adequately manage official information to deactivate non-existent alarms, reduce anxiety and promote more adaptive behavior (47).

Likewise, recognize the feelings and provide adequate care, understanding that the SARS-CoV-2 pandemic is a transitory condition and that in time life will return to normal and everything will help to develop resilience as a capacity to cope with adverse situations (48). However, each individual has to identify the actions and strategies that best fit or help them to cope with the circumstances and overcome the symptoms or manifestations associated with the confinement (42).

Therefore, it is pertinent to consider resilience as an interdisciplinary concept that facilitates investigating alternative approaches in the processes of assistance in social intervention and although it is a common word in everyday life, there is no consensus on the definition; this concept and resiliency have emerged as holistic concepts that explore individual and interpersonal capabilities and internal forces that can be developed to grow and learn in adverse situations (49,50).

The American Psychological Association (2020) (51) defines resilience as the process that facilitates good adaptation to situations of adversity, trauma, tragedy, threats or sources of stress, as well as relational and family problems, serious illness or work and financial stressors; resilience not only involves recovery from difficult experiences but can also involve profound personal growth.

Similarly, Rosenberg (2020) (52) states that it is transcendental to rescue the abilities, capacities, and skills that allowed facing similar situations in the past, taking into account that as a process, people possess the capacity for resilience because it is inherent, it can be increased and used in favor to facilitate adaptation and overcome the COVID-19 pandemic; starting by understanding what resilience is and what

it is not, for its promotion among workers and healthcare organizations.

Castañeda Rosas (2020) (53) states that resilience is conceived as a process but sometimes also as a series of columns that reflect a capacity; It is not intrinsic to the person, since it comes from an adverse or traumatic event, and resilience is based on a balance of forces between the internal strengths of the person and his or her social relationship with other people. Therefore, the resilience caused by the confinement of SARS-CoV-2 is considered by this author as a potential to take time to work on the formation of resilient mechanisms that have helped to move forward in times of adversity and strengthen communication.

Finally, family resilience because it enables collaboration among family members, allowing the establishment of renewed or new competencies, mutual support, and the confidence that together they will be able to withstand moments of adversity. From this approach, each member should be empowered, strengthening the belief that if they act together, family members can overcome obstacles that are apparently insurmountable and also experience that success is largely the result of their efforts, resources, and skills, increasing the family's confidence and effectiveness, allowing them to face subsequent adjustments more effectively (49). This author, citing Walsh (1998) (49), emphasizes that from this point of view, resilience provides a positive pragmatic framework, which directs interventions aimed at strengthening the family through the resolution of its current problems, which is indispensable at this time of health crisis.

In the same sense, Gallegos et al. (2020) (42) state that during preventive isolation people need to feel that they live in a controlled and safe context, since the uncertainty and insecurity caused by the health crisis and associated with the lack of certainty about the current phenomenon, facilitate the origin of anxiety that can lead to selfish and individualistic behaviors in the search for solutions to problems that are collective, in addition to the condition of confinement that reduces the timely provision of psychosocial intervention services and routine psychotherapeutic counseling.

Therefore, it is necessary to use preventive measures, accompaniment, monitoring, and

emotional and psychosocial assistance to respond to the demands of each situation, promoting conflict resolution effectively, which is why it is essential to refer to mediation, which is defined as a method of conflict resolution, in which the parties involved in a family discussion voluntarily decide that a neutral, impartial person, without decision-making capacity, will intervene so that the members of the family in conflict can reach an agreement through a process of communication (54).

In addition to the above, Siller Hernandez (2016) (55) says that in the family system, it is usual for conflicts to originate because it is the first and most significant socializing entity. However, if there is no adequate conflict management, they can escalate and end up in court, being necessary to receive help from a partial and neutral third party to reach a solution, opening a broad context for the application of mediation. Likewise, Vásquez Gutiérrez (2011) (56) mentions that society is facing the benefit and broad study of conflict and its peaceful solution, so it is necessary to make available to the community the positive perception and apply tools of change from mediation that allows dealing with these situations in a rational, objective way and reaching the best agreements for the parties. This becomes a great opportunity in the current health crisis to strengthen the family through mediation as an effective method of conflict resolution.

Conflict in itself is not necessarily destructive, because it can produce positive changes and growth, a family crisis at a time when instability interacts intensely with those of stability generates unique opportunities for change and growth that takes advantage of mediation not as a process of counseling or psychotherapy, but as a joint work aimed at a middle point that, in certain problems, allows the parties to listen to each other perhaps for the first time (57).

METHODOLOGY

This study was conducted under the quantitative paradigm, with data provided by the National Police Officer of the Department of Norte de Santander, in relation to the complaints of domestic violence, formulated by the victims

during the years 2019 and 2020, from January to May; study with exploratory-explanatory scope, being the purpose the understanding and familiarization of the phenomenon of domestic violence in Norte de Santander, the study is conducted under a descriptive scope since it uses variables to locate the phenomenon and thus be able to describe a situation and is a work developed under the non-experimental transactional-descriptive design (58).

The cross-sectional period in which the study data is located is between January 1 to May 15, 2020, considering that on March 11, 2020, the World Health Organization (WHO) classified the SARS-CoV-2 epidemic outbreak as a pandemic and Colombia declared mandatory preventive isolation according to Decree 457 of March 22, 2020.

The instrument for data processing was organized into 8 variables, which are presented below: sociodemographic data of the aggressor; gender, marital status, age, grouped by childhood, adolescence, young adulthood, and older adults; occupation, profession, and country of origin of the aggressor. Aspects that characterize the acts of violence were also analyzed, such as frequency by year, month, hour, frequency by the municipality, modality of the act, and weapon used.

RESULTS

According to Table 1, it was found that between 2019 and 2020 from January to May 2793 cases of domestic violence were presented in Norte de Santander (100 %), of which 1 455 cases (52 %) were presented in 2019 and 1 338 cases (48 %) in 2020, this allows concluding that, in 2020 there were 117 cases less than in the previous year. However, it is important to take into account that the measure of mandatory preventive isolation limited the movement and mobility of people, which may have influenced the number of reports made during this period.

Table 2 shows that, when comparing the number of cases of domestic violence in 2019 and 2020, in January and February of the last year, an increase of 234 cases was found compared to the previous year, contrary to what happened in March, April and May, in which 351 cases were

Table 1

Frequency and percentage of cases of domestic violence
by year in the months from January to May

Year	Frequency	Percentage
2019	1 455	52
2020	1 338	48
Total	2 793	100

Source: Prepared by the authors with data from reports of domestic violence in the National Police of Colombia, Department of Norte de Santander.

found less than in 2019. However, the caveat is that the country is in confinement since March 25, 2020, and the family remains together for a long time, which possibly prevents the victim from filing complaints, as they are generally made without the presence and prior knowledge of the perpetrator.

In this regard, the United Nations High Commissioner for Human Rights notes that domestic violence has increased in many countries

due to the measure of mandatory confinement. While, on the one hand, quarantine contains the outbreak, on the other hand, it forces many women to remain at home with their perpetrators, a situation aggravated when there is no police presence and access to justice is limited because the courts are closed or have restricted opening hours (59). In relation to the episodes of domestic violence, generally, the severity is ascending, starting with offenses and threats, reaching injuries, and may reach homicide or femicide.

Table 2

Frequency and percentage of cases of domestic violence
by month

Month	Frequency (2019)	Percentage (2019)	Frequency (2020)	Frequency (2020)
January	227	16	390	29
February	274	19	345	26
March	354	24	226	17
April	268	18	161	12
May	332	23	216	16
Total	1 455	100	1 338	100

Source: Prepared by the authors with data from reports of domestic violence in the National Police of Colombia, Department of Norte de Santander.

When analyzing Table 3, it was identified that Cucuta is the municipality with the highest number of reported cases of domestic violence (2 314) in 2019 and 2020, followed by the municipality of Villa del Rosario (242) and Los Patios (173 cases). Likewise, it was evidenced that in the

municipalities of Cucuta and Zulia, the number of cases reported in 2019 was higher, compared to 2020, the opposite case was identified in the municipalities of Los Patios and Villa del Rosario where there was an increase in 2020.

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Table 3

Frequency and percentage of cases of domestic violence by the municipality in 2019 and 2020, from January to May

Municipality	Frequency (2019)	Percentage (2019)	Frequency (2020)	Frequency (2020)
Cúcuta (CT)	1 229	84	1 085	81
Zulia	39	3	15	1
Los Patios	70	5	103	8
Puerto Santander	2	0	4	0
San Cayetano	2	0	2	0
Villa del Rosario	113	8	129	10
Total	1 455	100	1 338	100

Source: Prepared by the authors with data from reports of domestic violence in the National Police of Colombia, Department of Norte de Santander.

Based on the data in Table 3, the rate of complaints per 1 000 inhabitants was constructed, observing that in 2019 in the municipalities of Cucuta, El Zulia and Villa del Rosario per 1 000 households filed 5.6; 4.7, and 3.6 complaints of domestic violence respectively.

In 2020 in Cucuta, Villa del Rosario, and Los Patios, 4.7, 3.9, and 3.6 complaints were filed per 1 000 households, respectively.

The municipalities where complaints increased in 2020 with respect to 2019 were Los Patios (3.2 %), Puerto Santander (2.1 %), and Villa del Rosario (1.4 %).

Table 4
Rate of reported domestic violence per 1,000 inhabitants

	Total number of complaints (2019)	Total projected population (2019)	Nº of households (2019) (total population/average number of persons per household)	Complaint rate per 1 000 households (2019)	Total number of complaints (2020)	Total projected population (2020)	Nº of households (2020) (total population/average number of persons per household)	Complaint rate per 1 000 households (2020)
Cucuta	1 229	749 197	220 352	5.6	1 085	777 106	228 561	4,7
Zulia	39	28 240	8 306	4.7	15	29 392	8 645	1,7
Los Patios	70	93 754	27 575	2.5	103	97 220	28 594	3,6
Puerto Santander	2	8 938	2 629	0.8	4	9 262	2 724	1,5
San Cayetano	2	7 442	2 189	0.9	2	7 790	2 291	0,9
Villa del Rosario	113	107 288	31 555	3.6	129	111 254	32 722	3,9

The rate of reported domestic violence is equal to:

$$TDVI = \frac{\text{No. of domestic violence reports}}{\text{Total households in each municipality}} * 1000$$

To calculate the number of households, the average number of persons per household was considered to be 3.4 according to DANE (2019).

According to the data in Table 5, more than 80 % of family violence incidents occurred on public roads in both years. This indicates that most of the episodes occur outside the home.

In 2019 9 % and 2020 15 % of the events occurred at the victim's home.

Table 5 shows that episodes of violence against a family member, in addition to occurring in the home, can occur in different spaces, with the highest incidence occurring in the home, followed by inside the home and in public spaces. According to several studies, the abuser not only commits violence in the home, but also frequently

commits aggression in the street or on public roads, and impulsivity has been found in those who commit family violence (60-62). Although family violence occurs outside the home, as in the case of public spaces, it is related to domestic violence since impulsive people are unable to inhibit their behavioral responses, showing that if the aggressor exercises violence in front of third parties, it is very likely that he does it at home alone with his victims.

Table 5
Frequency and percentage of cases of family violence according to the site of the event

Site	Frequency (2019)	Percentage (2019)	Frequency (2020)	Percentage (2020)
Apartment	0	0	2	0
House in gated community	0	0	2	0
Residential houses	75	5	163	12
Shopping mall	2	0	0	0
Inside the house	60	4	35	3
Building	0	0	4	0
Public / state entity	0	0	1	0
Commercial establishment	9	1	6	0
Public establishment	9	1	0	0
Farms and similar	0	0	2	0
In front of residences -public road	8	1	9	1
Hotels, residences, and similar.	4	0	0	0
Judicial facilities	0	0	2	0
Commercial Premises	2	0	5	0
Another	4	0	2	0
Cab vehicle	0	0	2	0
Public roads	1 282	88	1 103	82
Total	1 455	100	1 338	100

In relation to Table 6, it was identified that during 2019 and 2020, single people are the ones who report the most cases of family violence, followed by people in free unions. When comparing the cases reported during these years, it was found that single persons presented an increase of 14 cases in 2020, while, in free union, there was a decrease of 97 cases, as well as in married persons with a decrease of 32 cases.

Proportions reflect that this is not gender-based violence against women. Source: Prepared by the authors with data from reports of domestic violence in the National Police of Colombia, Department of Norte de Santander.

According to Table 7, based on the gender reported, it can be observed that both men and women have filed complaints in similar

Table 8, presents the cases of domestic violence according to age group, it was concentrated in people between 18 and 59 years old, 81 % in 2019 and 78 % in 2020; existing a higher incidence of violence and therefore complaints in the group of young adults (18-26 years old).

Table 9 allowed identifying the frequency of the modality with which the act of violence was carried out in 2019 and 2020, this information was not reported, however, in the cases in which it was reported, it was found that fights are the

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Table 6
Frequency and percentage of cases of domestic violence according to marital status

Marital status	Frequency (2019)	Percentage (2019)	Frequency (2020)	Frequency (2020)
Married	83	6	51	4
Divorced	2	0	0	0
Not reported	1	0	5	0
Separated	12	1	18	1
Single	1 066	73	1 080	81
Free union	280	19	183	14
Widower	11	1	1	0
Total	1 455	100	1 338	100

Table 7
Frequency and percentage of cases of domestic violence according to gender

Gender	Frequency (2019)	Percentage (2019)	Frequency (2020)	Frequency (2020)
Female	739	51	681	51
Male	715	49	652	49
Not reported	1	0	5	0
Total	1 455	100	1 338	100

Source: Prepared by the authors with data from reports of domestic violence in the National Police of Colombia, Department of Norte de Santander.

Table 8
Frequency and percentage of cases of domestic violence according to age group

Age	Frequency (2019)	Percentage (2019)	Frequency (2020)	Frequency (2020)
Not reported	97	7	158	12
0 - 5 years (early childhood)	9	1	6	0
6 - 11 years (infancy)	27	2	22	2
12 - 17 years (adolescence)	60	4	51	4
18 - 26 years (young adult)	409	28	341	25
27 - 59 years (average adult)	776	53	706	53
60 or older (senior citizen)	77	5	54	4
Total	1 455	100	1 338	100

Source: Prepared by the authors with data from reports of domestic violence in the National Police of Colombia, Department of Norte de Santander.

main modalities of violence reported with an increase of 283 cases, compared to 2019.

In Table 10, it is observed that in both years the type of weapon reported with which the

acts of violence were exercised were blunt objects, which means that the arguments have surpassed verbal to physical harm. Likewise, it was observed that the percentages of violence

Table 9
Frequency and percentage of cases of domestic violence according to the modality of the event

Modality	Frequency (2019)	Percentage (2019)	Frequency (2020)	Frequency (2020)
Not reported	957	66	338	25
Quarrel between permanent partners	143	10	502	38
Spousal quarrel	67	5	43	3
Sibling quarrel	34	2	60	4
Son-father quarrel	32	2	37	3
Son-mother quarrel	45	3	57	4
Quarrels	177	12	301	22
Total	1 455	100	1 338	100

Source: Prepared by the authors with data from reports of domestic violence in the National Police of Colombia, Department of Norte de Santander.

without the use of weapons have been very low 3 % in 2019 (although the percentage of cases not reported is high) and 22 % in 2020 (the cases where it is not reported decreased). In addition, the non-resolution of conflicts by peaceful means is evident, taking into account that in most cases there is ignorance of alternative methods of conflict resolution or the

non-use of these within the justice system, it is common that in most cases people and justice choose to use traditional judicial procedures, through penalties, punishments or sanctions (63). Omitting the possibility of addressing conflicts from their origins and linking all actors (victims and perpetrators) in the judicial process to new alternatives for conflict resolution.

Table 10
Frequency and percentage of cases of domestic violence according to weapons and/or means

Weapons -Media	Frequency (2019)	Percentage (2019)	Frequency (2020)	Frequency (2020)
Bladed weapon / Sharp	61	4	56	4
Firearm	15	1	11	1
Blunt weapon	376	26	636	48
Not reported	957	66	338	25
Without the use of weapons	46	3	297	22
Total	1 455	100	1 338	100

Source: Prepared by the authors with data from reports of domestic violence in the National Police of Colombia, Department of Norte de Santander.

In Table 11, it is evident that in 2019, the hours with the highest frequency of domestic violence cases were from 18:00 to 21:00 hours, midnight between 21:00 and 24:00 hours, and early morning from 00:00 to 3:00 hours.

While in 2020 the highest frequencies are at midnight at 00:00 to 3:00 hours, with the same number of cases, followed by night from 18:00

to 21:00 hours and morning from 9:00 to 12:00 hours.

In the cases in which the aggression is exercised towards the children, it is recorded that the hours in which the maltreatment occurs are during the day, while with the other members of the family (the partner or the elderly) it occurs with a greater incidence at

night or in the early morning hours (64). In addition, there is evidence of increased alcohol consumption during lockdowns, more frequently on weekends (Saturday and Sunday) at the end of the afternoon, at night, and in the early hours of the morning (65). Thus, a coincidence is identified between the times at which the cases of violence and alcohol consumption were

reported, as well as the relationship between alcohol consumption by the aggressor and the risk of domestic violence (66). Consequently, there is evidence of an increase in cases of domestic violence at night and in the early morning hours, which coincides with the condition of lockdowns in which they share more time in their homes, a situation that could be associated with alcohol consumption.

Table 11

Frequency of cases of domestic violence according to the time of occurrence by year

Year	Time									Total
	00:00 -03:00	03:01 -06:00	06:01 -09:00	09:01 -12:00	12:01 -15:00	15:01 -18:00	18:01 -21:00	21:01 -24:00		
2019	276	62	160	152	124	166	301	214	1 455	
	276	42	147	204	120	195	212	142	1 338	
Total	552	104	307	356	244	361	513	356	2 793	

Source: Prepared by the authors with data from reports of domestic violence in the National Police of Colombia, Department of Norte de Santander.

Finally, Table 12 shows that the highest frequencies of cases of domestic violence according to the hours in which the event occurred by month in 2020, are in January from 18:00 to 21:00 hours, in the early morning from 0:00 to

3:00 am, and in the morning from 9:00 to 12:00 hours. In February from 18:00 to 21:00 hours, from 15:00 to 18:00, and from 9:00 to 12:00 are more frequent in the first two months of 2020 than in 2019.

Table 12

Frequencies of domestic violence cases according to the time of occurrence by month.

Year	Time									Total
	00:00 -03:00	03:01 -06:00	06:01 -09:00	09:01 -12:00	12:01 -15:00	15:01 -18:00	18:01 -21:00	21:01 -24:00		
January (2019)	54	14	19	26	17	27	40	30	227	
January (2020)	63	24	53	63	39	39	69	40	390	
February (2019)	39	14	38	31	16	43	63	30	274	
February (2020)	53	8	34	57	22	59	62	50	345	
March (2019)	66	21	38	28	21	41	72	67	354	
March (2020)	46	4	22	48	28	29	25	24	226	
April (2019)	54	3	29	44	28	18	51	41	268	
April (2020)	55	4	21	21	11	28	12	9	161	
May (2019)	63	10	36	23	42	37	75	46	332	
May (2020)	59	2	17	15	20	40	44	19	216	
Total	552	104	307	356	244	361	513	356	2 793	

Source: Prepared by the authors with data from reports of domestic violence in the National Police of Colombia, Department of Norte de Santander.

In March, April, and May they have occurred more in 2019, in March the most frequent from 18:00 to 21:00 hours, followed by midnight from

21:00 to 24:00 hours and early morning from 0:00 to 3:00 hours. In April the highest frequency is from 18:00 to 21:00 hours, from 0:00 to 3:00

hours, and from 9:00 to 12:00 hours. In May the highest frequency was from 18:00 to 21:00 hours, from 0:00 to 3:00 hours, and from 21:00 to 24:00 hours. It is important to note that in March, April and May the cases were higher in 2019, while in 2020 January and February were higher.

CONCLUSIONS

The results of the study show that various forms of aggression are present in the family, in contrast to the concept of family as a place of protection characterized by the union of its members (67). Intrafamily violence is a recurrent factor that originates different social problems, demonstrated in a significant number of reported complaints, which has made this phenomenon an object of research due to the need to delve in-depth into the elements that configure it and propose intervention strategies with effective methods that allow the solution of family conflicts and consequently, contribute to the prevention of violence.

Likewise, it is evident that during the mandatory preventive lockdowns due to the SARS-CoV-2 pandemic, domestic violence has occurred, with a decrease in reported complaints (117 cases) compared to the same period of the previous year, inferring that these figures may be affected by the same conditions of mandatory isolation, taking into account that the victims are forced to share 24 hours a day with their aggressor and, in the worst conditions, they lack space and means to file complaints or seek help (68). It should be noted that during lockdowns there is a reported increase in several psychosocial risk factors for domestic violence, such as increased alcohol consumption, increased workload, loss of employment, or decrease in income.

For this reason, family mediation becomes a strategy that positively enhances personal and family development. Consequently, based on the results found, it is suggested to generate proposals that contain family mediation as an effective method for the solution of family conflicts, the prevention, and reduction of violence, and the promotion of resilience.

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Knowledge about sexually transmitted infections and sexual practices among young university students in the city of Cúcuta

Conocimientos sobre infecciones de transmisión sexual y prácticas sexuales en jóvenes universitarios de la ciudad de Cúcuta

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SUMMARY

In Colombia, young people are part of the population group that is most at risk regarding their sexual health and the knowledge associated with this component, which is why we chose to describe the sexual practices and the knowledge they have regarding HIV and other STIs, consolidating an approach to undergraduate students of an HEI in northeastern Colombia from a quantitative perspective with a non-experimental design, descriptive and cross-sectional scope. The population was 2 605 students while the sampling was probabilistic with proportional allocation resulting in a sample of 525 students, considering the 12 academic

programs considered for the study. Broadly speaking, the disjunctive between the knowledge associated with STIs and the sexual practices of young university students is consolidated, and strategies should be focused on sensitizing students to strengthen healthy sexual practices that reduce their risk of acquiring STIs.

Keywords: University wellness, sexually transmitted infections, sexual health, sexual practices, sexually transmitted infections, sexual practices.

RESUMEN

En Colombia los jóvenes forman parte del grupo poblacional que más se encuentran en riesgo frente a su salud sexual y los conocimientos asociados a este componente, razón por la cual se opta por describir las prácticas sexuales y los conocimientos que estos dominan en lo referente al VIH y otras ITS, consolidando un acercamiento a estudiantes de pregrado de una IES del nororiente colombiano desde una perspectiva

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cuantitativa con diseño no experimental, de alcance descriptivo y corte transversal. La población fue de 2 605 estudiantes mientras que el muestreo fue probabilístico con afijación proporcional dando como resultado una muestra de 525 estudiantes, considerando los 12 programas académicos tenidos en cuenta para el estudio. A grandes rasgos, se consolida la disyuntiva entre los conocimientos asociados a las ITS frente a las prácticas sexuales de los jóvenes universitarios que se deben focalizar estrategias para sensibilizar a los estudiantes para fortalecer prácticas sexuales saludables que disminuyan su riesgo a la adquisición de ITS.

Palabras clave: Bienestar universitario, infecciones de transmisión sexual, salud sexual, prácticas sexuales.

INTRODUCTION

Studies developed in Latin America on sexual and reproductive health in young university students have been conclusive in detecting the level of knowledge that undergraduate students have acquired regarding their sexuality in the course of their academic life (1-3). This clearly indicates a remarkable implementation of strategies based on public health policies by HEIs (higher education institutions) to address the panorama that afflicts them as an institution; the causalities that generate constant research on this topic are diverse since its impact is reflected in the reduction of academic desertion factors attributed to unwanted pregnancies (4-5) to raising awareness about STIs (sexually transmitted infections) for the minimization of discrimination in educational environments and last but not least, the detection of behaviors that promote sexual health (6-8), additionally, the generation gap has left in evidence significant changes regarding behaviors, cognitions, and emotions associated with human sexuality, as well as the implications involved in this student population (10-13).

Therefore, generating an exploratory contribution of the differential notions that students have about HIV (human immunodeficiency virus) and other sexually transmitted infections in addition to referring which are the sexual practices that they usually implement from a diverse sample evidenced in 12 academic programs that belong to different faculties (social sciences and

humanities, health, engineering, and arts) of an HEI in northeastern Colombia, constitutes the epidemiological contribution that allows facilitating an approach to the panorama of sexual health of the university population in various cities in Colombia. The epidemiological contribution of this study is to facilitate an approach to the sexual health panorama of the university population in different cities of Colombia through the use of 2 standardized instruments for the collection of such data.

Seen from this perspective, the epidemiology related to STIs would allow taking forceful measures in terms of public health, in fact, the National Institute of Health during the information bulletin of the year 2021(14) through its official website contextualizes in an updated way everything related to HIV and other STIs, it is worth mentioning that the primary source of information resides in the database of the Portal-SIVIGILA (15) (software of the Colombian Ministry of Health), there a report of communicable diseases is notified by the EPS (health-promoting company) according to Figure 1 with the following characteristics: HIV registers the highest rate of cases were at the historical level it has reported around 17 346 cases and so far in 2021 it evidences a percentage of 26.27 % of new cases, followed by syphilis, which in turn is divided into two typologies, congenital syphilis, with a total of 1 551 cases, while so far this year there have been 48.57 % of reported cases; on the other hand, the difference with gestational syphilis shows a significant gap by reflecting a total rate of 8 290 cases of which only 39.28 % are identified finally it is found that hepatitis B and C which total 2 664 cases of which in the first half of the year 2021 19.29 % is evidenced.

The situation in Latin America as reported by the UNAIDS "Preliminary UNAIDS special analysis, 2021" (16) in relation to HIV, indicates that the infection figures between 2000 and 2020 have had an increase of 2 % in new cases compared to the approximate 110 000 cases reported in 2000, while the number of deaths during this time has decreased by 19 % from the base of 40 000 people reported in 2000; in addition to this, the NGO has registered the approximate amount of 4 000 million dollars as a budget donated by different public and private entities to provide prevention strategies for the disease. Therefore, it can be

inferred that research aimed at detecting, raising awareness, and designing impact strategies in populations with a higher probability of risk, such as young people, is essential to mitigate the increase in the number of new cases and deaths reported for this continent (17-19).

Thus, the occurrence of new cases is evident, although it is true that there are three ways of contagion: a. sexual intercourse, b. blood transfusion and c. inherited during gestation/lactation. However, the greatest possibility of occurrence is evidenced in sexual intercourse, the risk of contagion is higher compared to the other possibilities and sexual abstention is not an effective solution to counteract the problem since sexuality is an inalienable component of human nature and from an evolutionary point of view each individual requires interactions of a sexual nature. At the biological level, the human body prepares itself physiognomically from an early stage of development and finishes until the last stage of the life cycle, which leads to the conclusion that individuals are exposed to contracting STIs (as in this case HIV) during a large part of their lives (20).

However, the population group with the greatest possibility of acquiring HIV are adolescents and young adults who represent the population with the greatest risk of acquiring the virus, the main route of infection would be through sexual intercourse; research on the subject indicates that the beginning of sexual life is presented in most cases within the range of 13 to 24 years; however, most young people who begin their sexual life are located in the ages of 14, 15 and 16 years specifically (2,6,11,21).

This is why the beginning of sexual life means exposure to the risk of contracting an STI, taking into account the above, adolescents and young adults are the population group most likely to be infected with the virus mainly because of the way they engage in sexual practices, which consist of having sexual intercourse under the effects of PAS such as alcoholic beverages, marijuana, ecstasy, cocaine or other stimulants; the high rate of promiscuity by having sexual encounters with more than one sexual partner per year, and finally, avoiding the use of barrier methods represent high-risk sexual behaviors for the acquisition of the virus (3,22,23).

As a result of the exposed panorama on sexual health in Colombia and Latin America, as well as the types of risks to which young people between 16 and 24 years old are exposed within the common range to be undergraduate students, the need arises to inquire about how this HEI describes the level of knowledge about HIV and other STIs as well as the registration of sexual practices of its student body since this population is inevitably exposed to a greater number of novel scenarios and freedom in multiple areas of individual development as reflected in the research of Dominguez et al. (24) and Zapata et al. (25) involving educational, social/family, spiritual and self-care areas.

Objective

To establish the attitudes of undergraduate students of the University of Santander towards HIV/AIDS in 2019 in the municipality of Cucuta, Norte de Santander, Colombia.

Design, setting, and patients

The methodology used for the study was under the quantitative approach proposed by Albayero et al. (26) who were based on what was proposed by Sampieri; for the methodological design, a non-experimental transectional design was chosen and the sample was delimited through a proportional allocation, the analysis of the variables was purely descriptive, as proposed by Rendon-Macias et al. (27). Two standardized quantitative questionnaires were used for data collection. The first was used to detect knowledge about HIV and other STIs, and is called the "Scale of Knowledge about HIV and Other Sexually Transmitted Infections - STIs". This instrument presents high reliability ($\alpha = 0.88$), which was adapted for the Colombian population with a high degree of validity ($\alpha = 0.85$) by Guerra Ramírez et al. (28), the second instrument focused on sexual practices and is known as "Confidential Questionnaire on Active Sexual Life (CCVSA)" the reliability of the instrument is good ($\alpha = 0.66$) and was designed by the Ministry of Health in 1997 which was cited by Uribe (29) and by Uribe Rodriguez (30).

The population used corresponds to 2 605 undergraduate students from an HEI in northeastern Colombia, applying the formula described by Rendon-Macias et al. (27), the stratified sampling yields a total sample of 525 participants.

The analysis of the information was carried out using descriptive statistics considering the structure established by Albayero et al. (26) through the free access software PSPP, which favored the establishment of the results annexed in section VII. Regarding the ethical implications to be considered, this research will be carried out in accordance with Law 1 090 of 2006 (Code of Ethics of the Psychology Professional), which refers to the importance of the principle of confidentiality, in addition to using the consent of the person, safeguarding, and respecting the integrity and well-being of the people participating in the project. There were no conflicts of interest between the users and the institutions.

Design and development of experiments

The project took into account 2 phases to highlight, the first was responsible for the characterization of undergraduate students of the University of Santander campus in Cucuta, followed by the second phase was responsible for collecting the sexual practices and the level of knowledge that they have about sexually transmitted infections.

Main outcomes studied

The main results derived from the process were classified into two aspects, the characterization of the population and the diagnosis of those connected with the intervention process.

The undergraduate students of the Cucuta campus participating in the project were organized as follows: the average age ranged from 20 years to 6 months, a prevalence of 83 % of female students who consider themselves as women (cisgender) while the remaining 17 % of students were male participants self-perceived as men (cisgender), generally on the issue of sexual orientation, the predominance of 91 % is identified for heterosexual preference followed by 6 % with bisexual preference and the remaining 3 % for homosexual preference.

On the other hand, the proportion of students per semester was randomly distributed according to the participants within the sampling, the highest predominance was located in the first 5 semesters with about 74 %, taking into account that this was connected with the time availability of the first semesters compared to the last ones in their study times, in addition, the tendency to present a lower number of students in the higher semesters was observed, according to these results it can be highlighted how heterogeneous was the sample approached (Table1).

Table 1
Stratified sampling by proportional allocation

Stratum	Identification	Subjects	Proportion	Stratum Sample	Percentage
1	Systems engineering	96	1 %	3	0.01
2	Psychology	122	2 %	9	1.71
3	Marketing and advertising	132	4 %	8	0.02
4	Financial administration	123	3 %	9	1.71
5	Industrial engineering	123	3 %	9	1.71
6	Occupational therapy	139	4 %	28	5.33
7	Foreign trade	149	4 %	6	1.14
8	Bacteriology and clinical laboratory	211	10 %	21	4.00
9	Law	314	12 %	38	7.24
10	Physiotherapy	363	14 %	65	0.12
11	Nursing	423	23 %	247	47.05
12	Medicine	410	20 %	82	15.62
Total		2 605	100 %	525	100.00

As mentioned, the population participating in the study corresponded to cisgender people with heterosexual sexual preference, where the highest population density was found organized in the first 5 semesters, highlighting the programs of the faculty of health with a share of 84 % among the undergraduate programs of bacteriology

and clinical laboratory, nursing, physiotherapy, occupational therapy, and medicine; on the other hand, the proportion for the faculty of human sciences with law and psychology corresponds to a share of 9 %; finally, the areas of engineering and accounting areas showed a share of 7 % (Table 2).

Table 2
Description of sociodemographic data

Academic Program	Average age	Sex		Gender		Sexual Orientation		
		Female	Male	Man	Women	Bisexual	Heterosexual	Homosexual
Financial administration	19.7	1.14 %	0.57 %	0.57 %	1.14%		1.71 %	
Bacteriology and clinical laboratory	17.4	3.43 %	0.57 %	0.57 %	3.43 %		4.00 %	
Foreign trade	19.2	0.95 %	0.19 %	0.19 %	0.95 %		1.14 %	
Law	22.9	6.86 %	0.38 %	0.38 %	6.86 %	0.19 %	7.05%	
Nursing	21.8	40.19 %	6.86 %	7.24 %	39.81 %	2.6 7%	42.67%	1.71%
Physiotherapy	19.2	9.71 %	2.67 %	2.67 %	9.71%	0.38 %	12.00%	
Systems engineering	19.0		0.57 %	0.57 %			0.57 %	
Industrial engineering	17.1	1.71 %			1.71 %		1.71 %	
Medicine	19.7	12.38 %	3.24 %	3.43 %	12.19 %	1.52 %	13.14 %	0.95 %
Marketing and advertising	17.6	1.33 %	0.19 %	0.19 %	1.33 %		1.52 %	
Psychology	19.7	1.52 %	0.19 %	0.19 %	1.52 %	0.38 %	1.33 %	
Occupational therapy	18.4	3.62 %	1.71 %	1.71 %	3.62 %	0.57 %	4.76 %	
Partial results	20.6	82.86 %	17.14 %	17.71 %	82.29 %	5.71 %	91.62 %	2.67 %

Regarding the socio-economic component, 83 % of the participants are located in strata 1 to 3, the main activity in which they spend their time is studying since about 82 % said they are not working; however, the students who do develop work activities, their participation was in the commerce and health sectors, which is considered consistent with being located in a border territory specialized in commerce in addition to the high student population belonging to the faculty of health.

According to the results obtained after applying the ECI questionnaire of Guerra et al. (31), it should be clarified that the test has 4 criteria to be evaluated, the first corresponds to an overall rating where the level of knowledge about HIV and other STIs is condensed integrally, while

the second focuses on the present knowledge about HIV, the third component focuses on the exploration of the understanding related to the routes of transmission and the last one points directly to the conceptual notions about the other STIs.

RESULTS

Detailing the above, the results of the ECI questionnaire were analyzed through the statistical data processing of the PSPP software (open source data analysis program), which reflects a high level of knowledge on the part of undergraduate students regarding HIV, as well as other STIs and their means of transmission, as expressed in the Table of results.

In reviewing the results, 82 % of the population is identified as having a moderate to medium level of knowledge about HIV and other STIs, followed by 18 % of the population indicating a moderate to medium level of knowledge; this demonstrates a competent command of the undergraduate students' understanding of HIV transmission and acquisition, as well as other STIs.

Therefore, the value of identifying a high competence in terms of knowledge about HIV and the transmission of other STIs derived from implementing the "Confidential Questionnaire on Active Sexual Life" (CCVSA) of Uribe Rodríguez (30) would allow strengthening the attitudes of awareness of good sexual practices and their level of exposure to the risk of contracting

STIs by the undergraduate student population in case of having stable sexual partners or casual encounters.

For the analysis of this set of data, it should be noted that 98 % of the participants have not initiated their sexual life, so they did not mark answers in this questionnaire, thus the evaluations are made based on the 427 answers, although in certain fragments there is a box for "not having initiated sexual life". On the other hand, the initiation of sexual life and the use of condoms are identified in this case, 52.57 % of the participants used condoms and the average age of initiation of sexual life ranged between 16.3 years with an average error of 2 years (Table 3).

Table 3
Distribution of participants by program with respect to average age at sexual debut and condom use

Academic Program	Average age	Condom use (n)			Condom use (fi%)		
		No	Yes	Total	No	Yes	Total
Financial administration	15.5	5	3	8	0.95	0.57	1.71
Bacteriology and clinical laboratory	15.8	5	4	9	0.95	0.76	4.00
Foreign trade	16.0	3	2	5	0.57	0.38	1.14
Law	16.9	16	19	35	3.05	3.62	7.24
Nursing	16.5	77	139	216	14.67	26.48	47.05
Physiotherapy	16.2	11	36	47	2.10	6.86	12.38
Systems engineering	15.7	-	3	3	-	0.57	0.57
Industrial engineering	15.3	-	6	6	-	1.14	1.71
Medicine	16.4	25	43	68	4.76	8.19	15.62
Marketing and advertising	15.5	1	1	2	0.19	0.19	1.52
Psychology	17.2	-	5	5	-	0.95	1.71
Occupational therapy	15.1	8	15	23	1.52	2.86	5.33
Partial results	16.3	151	276	427	28.76	52.57	100.00

Within sexual practices, the questionnaire (CCVSA) of Uribe Rodríguez (30) allows for clarifying certain risk behaviors related to sexual practices, in fact, the first questions clarify specific aspects such as the types of sexual encounters with penetration (penis-vagina, penis-mouth, penis-anus) that they have had during their sexual life, as well as clarifying the use of condoms during that first encounter. Indeed, after their review, 19 % of the total number of participants stated that they had not started their sexual life and among the modalities of sexual encounters the ones that obtained the highest participation

in their first relationship were vaginal sex with a participation of 79.24 %, followed by 65.14 % with oral sex and third position with 19.05 % was anal intercourse; regarding the use of condoms in that first sexual relationship, 52.57 % of the participants affirmed their use, while 28.76 % reported not using a condom during intercourse (Table 3).

In relation to the sexual practices that the participants have had in the last year, the following results have been identified: 69.71 % of the participants reported having sexual intercourse with penetration of the vagina, and in relation

to the use of condoms the participants reflected a low rate of condom use in which the option "sometimes" predominated with 42.48 % followed by "always" with 22.10 % and "never" with 12.95 %. On the other hand, for oral sex, the affirmative participation in this modality of sexual encounter was 55.24 %, while the use of a condom for this encounter was among the lowest, with "always" having a rate of only 2.67 %, while "never" obtained a rate of 50.67 %. Finally, anal intercourse was the modality with the lowest participation, with a rate of 13 %. With regard to condom use, 11.62 % of the participants reported not using condoms, while 9.33 % reported using them in every encounter.

From the above, the fact that condoms were rarely used in their sexual encounters stands out, even if these were with stable and monogamous sexual partners or casual encounters with multiple partners, with the predominant options being "sometimes" and "never"; Therefore, the reason for these unconscious attitudes regarding the non-use of condoms as a barrier may lie in the promiscuity index, where it is identified that most of the young participants in the study (62.86 %) have sexual encounters with only one partner, while the remaining 18.48 % have had encounters with more than one partner, where for either of the 2 cases no arguments of value are expressed for the non-use of condoms, most of the answers being aspects related to the level of subjective trust in the partners without objective confirmation of their current health status, in addition to the fact that sexual encounters are spontaneous, ephemeral and/or under the influence of alcoholic beverages or other substances, where the level of cognitive judgment for those involved before and during the sexual act is affected.

However, it is inevitable to contemplate the high rate of risk to which the participants are exposed during their sexual encounters without condoms, so it was given the task of collecting how many sexual partners the young people have had throughout their sexual journey and the sexual preferences associated with them, from this search it is identified that only 17.33 % of the participants have had between 2 to more than 6 sexual partners in 12 months. In addition to the above, the most probable reasons for not using a condom during the last sexual encounter

were identified, among which the most important ones (almost 56 %) were having only one sexual partner and trusting this person as an argument to avoid using a condom.

Continuing with the exploration of the information found in the (CCVSA) of Uribe Rodriguez (31), it is identified that during the last 12-month period the psychoactive substance with which most sexual encounters were had was liquor with a share of 26.09 % followed by marijuana with 1.14 % and 0.57 % with inhalants and hallucinogenic pills, in fact, the similarity in the results contrasts with the research of Moure-Rodriguez et al. (3) which showed a high prevalence of alcohol and cannabis during their reported sexual encounters.

In relation to the behaviors that represent a protective factor on the part of the participants when it comes to avoiding the acquisition of STIs, it is evident (Table 4) that the young people are aware of the risks related to the routes of transmission; however, the use of condoms obtained the lowest percentage even though it is 54 %, since in general the use of condoms is only used in 37.90 % of the occasions when they have sexual encounters, basing their decision on the two main reasons why it is not used: trust in the partner and monogamous relationships.

In addition, the prevention behaviors associated with sexual practices, such as regular visits to periodic examinations to detect any type of STI, are reviewed, as well as receiving proper instruction from the health professionals in charge of making this process feasible.

Regarding the criterion related to acquiring an STI during the last 12 months, it was identified that about 7.81 % of the participants had reported cases, after eliminating 84.38 % of participants who did not have STIs and those who have not initiated sexual life, the alarming thing is visualized in the behavior used by the participants to care for and treat the STI, where the option "a. Nothing" stands out with a proportion of 12 %. "Nothing" stands out with a proportion of 12 % and it is aggravating that only 2.29 % went to a health professional or a pharmacist to treat their condition.

In other words, the knowledge that was evidenced in the results of the ECI test does

Table 4
Behaviors used by participants to prevent STIs

Behavior	Activities carried out to prevent STIs (n)				Activities carried out to prevent STIs (fi%)			
	N/A	No	Yes	Total	N/A	No	Yes	Total
a. Having sex only with the same person	98	69	358	525	19	13	68	100
b. Condom use	98	144	283	525	19	27	54	100
c. Discuss with the person(s) with whom you have had sex the risk of acquiring the virus.	98	122	305	525	19	23	58	100
d. Agree with the person(s) with whom you have had sexual intercourse on the use of protective measures.	98	120	307	525	19	23	58	100

not reflect a coherence about the behavior to be addressed in case of acquiring an STI, the reasons for which they decided not to do anything remain unclear considering that the questionnaire did not have a question that facilitated access to information. However, based on the information collected, it could be affirmed that one of the lines to be addressed for this HEI at the level of university welfare is to link a process of sensitization regarding the passive practice of attending an annual health check-up as well as attending the service of professional accompaniment on sexual and reproductive health.

DISCUSSION

The main conclusions are derived from contrasting the studies developed in Latin America on sexual and reproductive health in university students that have focused their efforts on general knowledge about HIV, in relation to other STIs and especially regarding the main routes of transmission (1,3,21), since scientific evidence has shown that the high levels of knowledge in the previously mentioned contribute to the minimization of health risks and the refutation of myths associated with the social imaginaries linked to this type of transmissible infection (6,8,32).

In addition, it is also possible to detect in the field that the results obtained when verifying the knowledge scores of the ECI test (28) were

remarkably high, representing 82 % of the participating students of this HEI in northeastern Colombia; however, the next finding to be unveiled was mainly oriented to the reported sexual practices; Among them, the one that is prioritized are the causes for which 28.76 % said they were not using condoms, basing their decision on the perception of protection associated with having a stable, cisgender and monogamous partner with 63 % of participants, to this is added the fact that 58 % of them had conversations and establishment of agreements consolidated by idyllic concepts related to couples such as love, fidelity, loyalty, among others, as reflected in the research, In contrast, those 18 % of participants who reported having more than one sexual partner showed that 13 % of them did not use condoms and were part of the 58 % of participants who simply made agreements and conversations with the person with whom they had a sexual encounter, presenting a higher level of risk and therefore susceptibility to the acquisition of STIs as described in Campos-Rosas et al. (11).

Being consistent with the perspective of Domínguez et al. (24) regarding the importance of distinguishing risk or protective behaviors in terms of sexual practices, the articulation of university welfare would be recommended as mentioned by Zapata et al. (25) and Marrodán-García et al. (23) with impact strategies based on specific needs through student awareness of sexual practices and planning to reduce the 15 % annual growth rates in STI reports from the SIVIGILA portal database (15).

CONCLUSION

In conclusion, the main findings identified after reviewing the disjunctive between the knowledge associated with STIs versus sexual practices of young university students located in the age range of 16 to 25 years, makes evident the need to continue the research by addressing a multifaceted model, among which, participatory link the different spheres of development related during this life cycle, allowing to recognize the aspects as varied in their interaction as they are: learning practices, social activities in which family and spiritual activities are found, as well as those focused on self-care (22,24,32,34-36) as well as their correlation with sexual practices from a narrative perspective capable of eclectically linking the foundations of their discourse in comparison with quantifiable findings from standardized questionnaires that favor the way in which intervention programs are consolidated from the university welfare line on the use of condoms, regular attendance to sexual health exams and participation in awareness-raising sessions on healthy sexual behaviors that will favor the free development of their sexuality.

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Psychological effects associated with preventive isolation by COVID-19 in early childhood in Colombia

Efectos psicológicos asociados al aislamiento preventivo por COVID-19 en la primera infancia en Colombia

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SUMMARY

Background: There are enough documented records worldwide to date on the number of infections and deaths from the COVID-19 pandemic, and it is foreseeable that there will be a worsening of psychological health in the entire population, however, there are few studies that have addressed the emotional and psychological effects that preventive isolation has caused in Colombia in early childhood so the objective of this study was to know these effects through a survey carried out with caregivers of children in Colombia from different social strata.

Method: Cross-sectional, descriptive, and quantitative study that included 1 006 surveys conducted in the last quarter of 2020.

Results: The study mainly showed three psychological dimensions that impacted early childhood in Colombia during social isolation due to COVID-19: changes in an emotional state, behavior problems, and results of difficulties associated with sleep.

Conclusions: Our results shed light on the specific groups with a higher risk of emotional and psychological difficulties due to a state of preventive confinement. These results suggest the strengthening of affective relationships at home and psychosocial support by qualified personnel for the good integral development of early childhood.

Keywords: Childhood, emotional changes, early childhood, COVID-19, preventive confinement.

RESUMEN

Introducción: Hasta la fecha existen suficientes registros documentados a nivel mundial acerca del número de contagios y muertes debidas a la pandemia occasionada por el COVID-19 y es previsible que haya un agravamiento de la salud psicológica en toda la población. Sin embargo, son escasos los trabajos que han abordado los efectos emocionales y psicológicos que ha occasionado el aislamiento preventivo en Colombia en la primera infancia.

Objetivo: Analizar los efectos psicológicos en los niños y las niñas entre los 3 y 6 años, en el tiempo del

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aislamiento preventivo obligatorio por la pandemia del COVID-19, a través de una encuesta realizada a cuidadores de niños y niñas de diferentes estratos socioeconómicos en Colombia.

Método: Mediante muestreo no probabilístico, llevado a cabo en el último trimestre de 2020, se aplicó un cuestionario a 1 006 personas utilizando un análisis factorial exploratorio para determinar una escala de afectaciones emocionales y psicológicas en los niños.

Resultados: El estudio mostró principalmente tres dimensiones psicológicas que impactaron en la primera infancia en Colombia durante el aislamiento social por la pandemia de la COVID-19: cambios en el estado emocional, problemas en la conducta, y dificultades asociadas al sueño.

Conclusiones: Nuestros resultados arrojan luz sobre los grupos específicos con un riesgo más alto para las dificultades psicológicas emocionales a causa del estado de confinamiento preventivo. Estos resultados sugieren el fortalecimiento de las relaciones afectivas en el hogar y el apoyo psicosocial por personal calificado para el buen desarrollo integral de la primera infancia.

Palabras clave: Aislamiento preventivo, COVID-19, cambios psicológicos, primera infancia.

INTRODUCTION

The Coronavirus family, contrary to popular belief, is a virus that has affected human beings for several years. The current pandemic, however, is due to a new mutation, SARS-CoV-2, later classified as COVID-19 based on the year in which the first case was reported (1).

The first case of COVID-19 disease was reported in the city of Wuhan, China, in December 2019 (2). The main symptoms described related to the disease are fever, cough, shortness of breath, expectoration, muscle pain, fatigue, throat and chest pain, nausea, vomiting, and diarrhea. However, these can escalate other conditions such as pneumonia, pulmonary thromboembolism, cardiovascular accidents, or death according to the study by Yang et al. (3). Worldwide infections since the first outbreak have been increasing exponentially, not only in China, but in different countries, and on March 11, 2020, the World Health Organization declared the spread of this disease a pandemic, which caused an emergency with implications for the physical and mental health of infected people.

Initially, adults were the focus of interest, more than the child population, due to the number of infections and registered cases. However, in the child population, pandemics are associated with an increase in anxious, depressive, and psychosomatic symptoms (4,5).

More than 249 million confirmed cases of COVID-19 have been reported as of November 2021 and more than 5 million deaths (6). South America has been the continent with the highest numbers of infections and deaths from COVID-19 per million inhabitants. The countries with the highest number of reported cases are Brazil, Argentina, and Colombia, and so far in 2021, cases have increased in these regions in proportion to other areas of the world, according to data from the Pan American Health Organization and the BBC World (7,8).

According to measurements from the Colombian Ministry of Health (9), the first case of COVID-19 was registered in the country on March 6, 2020, and the number of infections reported until February 2021 was 2 173 347, with 56 733 deaths: a mortality rate of 2.6 %. In response to the declaration of a pandemic by the World Health Organization (WHO), the Colombian Government declared a state of health emergency on March 17 through Decree 417 of 2020. The Ministry of Health, through Resolution 470, established the mandatory isolation of older adults on March 20, 2020, a measure that would be extended to all citizens days later through Decree 457 of March 22, 2020, issued by the President of the Republic. As of October 2021, in Colombia, an average of 89 378 children have been infected, from babies to children under 9 years of age, of whom 26 have died, while 9,601 have recovered (10).

Children have not been identified as groups at high risk of morbidity and mortality from COVID-19, but there are psychosocial risk factors: isolation, domestic violence, poverty, overcrowding, and the abuse of new technologies that are associated with the COVID-19 pandemic and generate changes in the routine of life. In many cases, some boys and girls do not have enough spaces to carry out adequate physical activity; Coupled with this factor are the fear of becoming infected, the decrease in work and the purchasing power of families, the loss of loved

ones, and grieving processes that can significantly influence the emotions and psychological well-being of boys and girls (4), 15 % in many of the American States.

Considering that early childhood is an essential stage in a person's life —because the experiences that occur in this stage, whether positive or negative, have a substantial impact on the integral development of human life (11)—the possible negative effects on mental and physical health that prolonged isolation can cause in boys and girls. Andreu Cabrera (12) recalls, for example, that several studies have confirmed that the psychological sequelae or traumas following a pandemic can manifest themselves in symptoms of post-traumatic stress, return to previous stages, aggressiveness, and rebellion, and even sleep disorders in boys and girls. In addition to this, children absorb the emotional atmosphere of their parents at home, which is a positive sense. It helps children adapt to new circumstances in line with the social environment. However, the effect of preventive isolation denotes children's difficulties with emotional and behavioral regulation because they lack spaces such as sports and games with their peers, which allow interaction with others, a key element for their socio-emotional development. It is also necessary to continue with the habits and routines they had, as they allow them to feel safe and continue with their biological course and understand that the few spaces given for them to develop their movements usually cause irritability, crying, fear and even eating disorders and something of hyperactivity.

Preventive isolation can also aggravate metabolic diseases during the stay at home. In the United States, for example, 1.27 million new cases of childhood obesity were reported as of December 2020: an increase in its prevalence of around 15 % in many American states (13). A similar increase may have occurred in other countries of the world because the diet is neglected and food is sought as a way to calm anxiety.

Consistent with the above, observing the clinical effects of COVID-19 in boys and girls, the first observations made it possible to establish the invulnerability of this population. However, during the development of the pandemic, both serious clinical conditions in infants and deaths were evidenced (14). Despite this, it is usually

stated that the child population is not the main one affected by the virus. This population has been affected in several particularly essential aspects, such as the closure of kindergartens and schools, which affected food security: in countries such as Colombia, a considerable part of this population depended on the food ration provided in educational centers (15).

Additionally, it has been observed that the compulsory isolation of children has affected their mental health with the emergence of psychological disorders such as anxiety, depression, obsessive-compulsive disorder (OCD), and hyperactivity, among others Cifuentes-Faura (16). And there is also concern about the stagnation of the educational process and school desertion since not all boys and girls had access to the technological tools necessary for their continuation through virtual means.

In Colombia, there are few studies with boys and girls that show the mental health effects associated with preventive isolation due to the COVID-19 pandemic. The purpose of this work was to reveal the main emotional and psychological effects in early childhood through a survey applied to 1006 caregivers of children between the ages of 3 and 6, based on an instrument used by Orgilés Mireia et To (18). The study mainly showed three psychological dimensions that impacted early childhood in Colombia during social isolation due to COVID-19: changes in an emotional state, behavioral problems, and difficulties associated with sleep.

METHODOLOGY

The present investigation is conceived from a quantitative approach with a cross-sectional descriptive scope, since they describe characteristics in a single sample and analyze data of the variable and dimensions collected in a period on the defined population, a non-probabilistic sampling was used, using contacts through social networks, which allowed reaching a sample of 1006 parents or caregivers who answered a questionnaire on the emotional and psychological affection in children caused by social isolation due to COVID-19. The surveys were answered online during the last quarter

of 2020. The participating sample was made up of adult caregivers or parents residing in 10 departments of Colombia: Antioquia, Atlántico, Bolívar, Cesar, Guajira, Cundinamarca, Norte de Santander, Santander, San Andres and Valle del Cauca.

The instrument used in this study consists of 31 items and was based on one previously used by Orgilés et al. (18) that allows evaluating, through the perception of parents or caregivers, how confinement due to COVID-19 affects children emotionally and psychologically. An ordinal scale was used that assesses changes from 1 - less compared to before the COVID-19 lockdown - to 5 - a lot compared to before the COVID-19 lockdown. 19 items with socio-demographic information were also attached to the instrument.

For the collection of information, a digital version of the instrument was created in a forms-Google application that collects the responses of parents or caregivers with children from 3 to 6 years of age who voluntarily and with informed consent have decided to be part of the study. Both the instrument and the informed consent were applied digitally and asynchronously, taking into account the preventive measures against COVID-19 and confinement given by the National Government of Colombia for the year 2020. Initially, permission was requested from the University of Santander to share the link of the format with workers who met the inclusion criteria, which was also shared on social networks and WhatsApp groups. The proposal was approved by the research committee of the psychology program, in the application of the instrument the objective of the research, the use of information, as well as the principles of confidentiality, beneficence and non-maleficence, voluntariness, were exposed, taking into account ethical principles established by the Deontological and Bioethical Code of Psychology in Colombia, Law 1 090 of 2006 (22), informed consent is used based on the recommendations of the Deontological and Bioethical Manual of the Psychologist in Colombia (23) and was classified as an investigation without risk-based on article 11 of Resolution 8 430 of 1993 (24).

For data analysis, factorial analysis (based on polychoric correlations, with VARIMAX rotation) was used to determine the latent variables or associated dimensions. The Kaiser-

Meyer-Olkin (KMO) sample adequacy criterion was considered before the application of factorial analysis. Once the factors or latent variables were generated, tests of differences between groups were carried out according to some of the sociodemographic characteristics of the population. The Kruskal-Wall's test was used as a non-parametric technique to check the non-compliance with the assumptions of normality and homoscedasticity between the groups. In all the analyses, the R software (version 4.02) was used.

RESULTS

According to the sociodemographic description, the age range of the parents and caregivers was between 18 and 65 years. 72.79 % of the respondents were female. 67.69 % of the surveys were answered by the child's mother and 11.93 % by the father (the rest were uncles, brothers, grandparents, or caregivers). 43.04 % of the surveyed population belongs to socioeconomic stratum 1, 34.59 % to stratum 2, and 14.81 % to stratum 3 (only 7.56 % to higher strata). 60.12 % of those surveyed have university or technological studies and 8.13 % have completed postgraduate studies.

About 5 % reported being unemployed, 18 % said they were studying, 23.7 % are housewives, about 30 % are employed, and 22 % worked informally. Regarding the type of housing, 61.53 % reside at home, 30.81 % in an apartment, and the rest live in a room, farm, or plot. Only 12.72 % of the population lives in rural areas. Similarly, 20.27 % is a population that has suffered forced displacement, around 4 % belongs to indigenous communities, and 6.56 % are Afro-descendant.

From the information referred to the boys and girls, it was found that 51.43 % are female, 31.87 % are three years old, 20.45 % are four years old, 23.23 % are five years old and 24.42 % are six years old.

For the factorial analysis, the 30 items of the survey were introduced. The Kaiser-Meyer-Olkin (KMO) measure of adequacy was evaluated for each item and only those that presented a value greater than 0.8 were left, which reduced the scale to 21 items. The overall measurement (KMO) was 0.9.

The proposed final model contemplates three factors or latent variables, including only those items with weights greater than 0.4, which are the frequency of behavioral problems, difficulty concentrating, being alarmed, difficulty sleeping, sleeping little, waking up at night, having nightmares, being angry, being bored, showing frustration, asking about death, being irritable, crying, feeling nervous, uncomfortable,

indecisive, sad, showing anxiety, being restless and showing concern. Globally, the three factors explain 44.6 % of the total variability.

The 3 factors formed contemplated Changes in the emotional state (with 9 items), Behavioral problems (8 items), and Difficulties associated with sleep (4 items). Table 1 shows the factor loadings or weights of each item with the corresponding factor.

Table 1
Factorial weights of each item with the corresponding factor

Item	Factor 1	Factor 2	Factor 3
Is the boy or girl worried?	0.549		
Is the boy or girl more restless?		0.571	
Is the boy or girl more anxious?		0.534	
Is the boy or girl sad?	0.619		
Does the boy or girl have nightmares?			0.485
Does the child feel alone?	0.577		
Does the child wake up more often?			0.725
Does the boy or girl sleep little?			0.722
Is the child very indecisive?	0.461		
Is the child uncomfortable?	0.450		
Is the boy or girl nervous?	0.424		
Does the child cry easily?		0.557	
Is the boy or girl more irritable, irascible?		0.673	
Does the boy or girl ask about death?	0.521		
Does the child feel frustrated	0.737		
Is the boy or girl bored?	0.701		
Is the boy or girl angry?		0.459	
Does the child have difficulty sleeping?			0.742
Is the child easily alarmed?		0.476	
Does the child have concentration difficulties?		0.411	
Does the child have behavior problems?		0.683	

Table 2 shows the goodness-of-fit measures, with a mean square error of approximation (RMSEA) value of 0.085 and a root mean square residual RMSR of 0.04 —considered within the

acceptable range for a good fit— and a value of the comparative fit index CFI equal to 0.98 and of the non-normalized fit index NNFI of 0.893. In general, it can be concluded that the fit is good.

Table 2
Factor analysis fit measures

X2 (p value)	RMSEA (90%, lo-hi)	CFI	NNFI	RMSR
1242.23 (p < 3e-171)	0.085 (0.081-0.09)	0.98	0.893	0.04

Once the goodness of the factorial model was evaluated, the respective scores or weights were assigned to each of the 1006 observations under study: three indices were created —from the normalization of the scores—, whose range goes from 0 to 1.

$$\text{Normalization} = (X_{ij} - X_{\min}) / (X_{\max} - X_{\min})$$

As the items are directly correlated with the factors, it can be interpreted that high values in any of the indices are associated with a higher frequency observed in the evaluated items that make up the factor.

Table 3 shows the descriptive results of the indicators created.

Table 3
Results of the created indicators

Indicator	Mean	SD	Median
Index of changes in emotional state	0.28	0.14	0.25
Behavioral Problems Index	0.25	0.14	0.21
Index of difficulties associated with sleep	0.30	0.16	0.29

The descriptive results show that, in general, the values of the indices are low. Around 33 % of the observations presented values less than or equal to 0.2 in the Index of changes in an emotional state, 46 % in the Index of behavioral problems, and 27 % in the Index of difficulties associated with sleep. 17 % of the observations presented values above 0.4 in the Index of changes in an emotional state, 14 % in the Index of behavioral problems, and 21 % in the Index of difficulties associated with sleep. In other words, the greatest

changes in children, according to the perception of adults, are related to difficulties in sleeping.

To analyze whether the value of the indices is associated with any of the sociodemographic variables studied, contrasts of differences between groups were proposed using non-parametric Kruskal-Wallis contrasts (when evaluating non-compliance with assumptions of normality and homoscedasticity). Table 4 shows the results of the variables that presented significant differences.

Table 4
Factor analysis fit measures

Characteristic	Index of changes in emotional state (p-value)	Index of behavioral problems (p-value)	Index of difficulties associated with sleep (p-value)
Child sex	0.0265	0.478	0.285
child's age	<2*10e-16	0.281	0.924
Community	0.789	0.366	0.03322
Socioeconomic	4.66*10e-8	0.07577	0.02097 (higher in strata 4 and 5)

In the Index of changes in an emotional state, significant differences were observed according to the sex of the child: girls present higher values than boys. In relation to age, it was found that

older children have higher values of this index. According to socioeconomic status, higher values were found in children belonging to high socioeconomic status. In the Index of difficulties

associated with sleep, significant differences were found according to the community to which they belong, and higher values were found in the displaced and indigenous population and socioeconomic stratum —higher index values in children belonging to socioeconomic stratum 4 and 5.

DISCUSSION

The three factors resulting from the applied scale were related to difficulties associated with sleep, changes in the emotional state, and behavioral problems, which constitutes a measurement of the psychological effects in early childhood in Colombia caused by social isolation due to COVID-19 (19).

The older children presented high indicators of changes in their emotional state and behavioral problems, while it is assumed that they have a clearer perception of the world around them because they can understand, according to their life cycle, the situation which that happens. This does not indicate that younger children do not understand it, but rather that for them it is the reality they are perceiving—it has not changed, as it has for older children—and, therefore, they have not established differences that there is a different one. A similar study in Germany also used an online questionnaire and parents reported their children's stress levels, well-being, and problem behaviors: it showed the same pattern of behavior in older children, who had high indicators of behavior problems and hyperactivity compared to younger children (25).

Likewise, other research indicates that older children who managed to have the school experience perceived a strong change in their life habits with the closure of educational institutions, which has limited not only their learning and recreation activities, but the strengthening of interpersonal relationships, since the school provides an important space for the socialization process in boys and girls that strengthens their socio-emotional skills (16,26,27).

Similarly, in the data obtained, it was observed that the girls presented higher indicators of the changes in emotional effects, a result that may

be subject to sociocultural gender stereotypes that establish the roles and norms of behavior within Latin American societies. Therefore, it can be said that girls in early childhood were more emotionally affected than boys according to the perception of their parents or caregivers, especially because a patriarchal political system has been determined in Colombia; In addition, the regions where the greatest source of information was extracted was the coastal zone, characterized by a profoundly sexist cultural system, where children are taught that "men do not cry", as confirmed by a UN Women report (28) carried out in Colombia. It must be taken into account that the information was provided by the parents, which somehow represents one of the limitations of this study, as the emotional experiences of the boys and girls were not directly evaluated. This data also suggests opening lines of research on the psychological effects on boys and girls during social isolation due to the pandemic from a gender perspective, especially in Latin American countries where the inequality gaps towards women are quite wide and few scientific sources can confirm the assessment.

Another of the most relevant data is that there was a similarity in difficulties associated with sleep in boys and girls displaced by violence and in boys and girls who belong to indigenous communities. In general, this population shows risk or vulnerability factors associated with traumatic situations caused by armed conflict, poverty, and social exclusion (29,30). The effects of the armed conflict on childhood have left significant impacts on the mental health of early childhood; many ethnic communities in Colombia were also victims of the armed conflict due to the geographical position in which they found themselves and went through situations of confinement by illegal armed groups, who adopted measures very similar to those taken by COVID-19 as ratified by Arias-Campos and Roa-Mendoza in a study carried out in 2015; Hiller et al., in 2017; Sepúlveda and Garavito, in 2019 (31-33). The effects of post-traumatic stress caused by the violence experienced by the parents or caregivers of these children may have a generational impact on the mental health of the children, even though they were not direct victims of it (34,35).

CONCLUSION

There are external psychosocial factors that increase the risks of vulnerability in emotional and subjective development in early childhood in Colombia that has gone through the confinement of COVID-19, such as ethnic minorities that in a country like Colombia tend to be invisible and with low presence of the state, these populations being the most marked by the internal armed conflict, which increases the probability of having greater psychological effects in social isolation (28). On the other hand, the child population, especially girls, were the most affected according to the results, which suggests carrying out studies focused on gender, considering that Latin America has been marked by a male chauvinist patriarchal political system that has generated establishing gender roles where I have allowed girls to express their emotions, while boys are often denied the possibility because they are men (28,31,33).

Likewise, according to Palacio-Ortiz (36), the imposition of restrictions on the freedom given by the COVID-19 measures embodies risk factors for a greater psychological impact and exerts pressure that ultimately affects the family nucleus. The context in which the boy and girl develops has a great influence on their behavior, while the personal protective factors are strengthened with a network of support and values that are acquired not only with the family group but also with the exercise of their interpersonal relationships (34).

Regarding the limitations of this study, it is considered necessary that it was necessary to collect the narratives of the boys and girls, their voices recounting the experience and their perceptions of social isolation, it was a highly relevant fact that could not be carried out by the situation of mandatory confinement and low economic resources that did not make these meetings possible. However, in the present investigation, it is possible to show some indicators in the psychological affectations presented in early childhood that must be taken into account to create lines of action and opportune psychological interventions, in addition to management thought from public policies that must be included by the pandemic effect. According to UNICEF (37), the pandemic has

left significant damage on the indicators related precisely to childhood, while the new normality has been devastating, which has generated poorer families and has worsened the mental health of children, it also anticipates that this type of socio-economic alterations tends to increase.

In this sense, various options are proposed to mitigate these effects, as well as actions designed to strengthen affective relationships at home, manage emotions and improve coping skills as psychological skills in early childhood, which can serve as a resource for situations that have left mandatory confinement, in addition, that public policies establish programs in emotional education for boys and girls that allow them to develop executive functions, which not only enhance academic performance (34), which was affected during the pandemic (37) but also provides resources to regulate emotionally, which will boost comprehensive development in early childhood. Finally, he wants to highlight that there are programs designed for early childhood with early intervention strategies to equalize opportunities for cognitive-emotional development despite being in situations of poverty and social inequality (38), which is considered an alternative proposal to these risky situations.

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Systematic literature review: Mental health promotion in organizations during the pandemic by COVID-19

Revisión sistemática de la literatura: promoción de la salud mental en las organizaciones durante la pandemia por COVID-19

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SUMMARY

It is essential to review the working conditions of the organizations and the risk factors that arose in the midst of the pandemic and that generated repercussions on the mental health of the collaborators, highlighting the strategies or protective factors that were used to reduce them.

Objective: To characterize the strategies and programs implemented by different organizations as mental health promotion responses during the COVID-19 pandemic.

Method: We analyzed 17 research and review articles in different continents, under the search criteria, mental health, organizations, and COVID-19.

Results: The design and implementation of a positive and resilient organizational model, early psychological intervention teams, adaptive leadership, and the implementation of a corporate policy that encourages independent work are recognized within

organizations, mainly oriented to collaborators in the health and education sectors. **Results:** The COVID-19 contingency forced organizations to undertake restructuring processes, in which job roles, performance, and competencies affected the integral development of employees, leading institutions to design strategies to safeguard the life, health, and safety of each of their employees.

Conclusion: The impact of the COVID-19 pandemic accelerated and favored processes of innovation, and technological development and marked the path to follow on the implementation of remote work as a widely feasible work modality, but also increased the challenges already present in the assessment, intervention, and promotion of mental health in organizations.

Keywords: Mental health, organizations, COVID-19.

RESUMEN

Resulta indispensable revisar las condiciones laborales de las organizaciones y los factores de riesgo que surgieron en medio de la pandemia y que

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generaron repercusiones en la salud mental de los colaboradores, resaltando las estrategias o factores protectores que se utilizaron para su reducción. **Objetivo:** Caracterizar las estrategias y programas implementadas por distintas organizaciones como respuestas de promoción de la salud mental durante la pandemia de COVID-19.

Métodos: Se analizaron 17 artículos de investigación y de revisión en distintos continentes, bajos los criterios de búsqueda, salud mental, organizaciones y COVID-19.

Resultados: Se reconoce dentro de las organizaciones el diseño e implementación de un modelo de organización positiva y resilientes, equipos de intervención psicológica temprana, un liderazgo adaptativo y la implementación de una política empresarial que fomenta el trabajo independiente, principalmente orientadas en colaboradores del sector salud y sector educación.

Discusión: La contingencia por el COVID-19 obligó a las organizaciones a procesos de reestructuración, en el cual los roles, desempeño y competencias laborales afectaron el desarrollo integral de los colaboradores, llevando a las instituciones a diseñar estrategias para salvaguardar la vida, salud y seguridad de cada uno de sus colaboradores.

Conclusiones: El impacto de la pandemia del COVID-19, claramente aceleró y favoreció procesos de innovación, desarrollo tecnológico y marcó la ruta a seguir sobre la implementación del trabajo remoto como una modalidad de trabajo ampliamente factible, pero también aumentó los desafíos ya presentes sobre la evaluación, intervención y promoción de la salud mental en las organizaciones.

Palabras clave: Salud mental, organizaciones, COVID-19.

INTRODUCTION

The current contingency situation caused by the COVID-19 pandemic has affected organizations, including their internal dynamics and aspects related to the well-being of their collaborators; the consequences are unprecedented and are felt worldwide. The labor scenario is deeply affected by the global pandemic of the virus, in addition to being a threat to public health, the consequences at the economic and social level, endanger the long-term livelihoods, welfare, and mental health of millions of people (1).

The situations and problems experienced by the population during the pandemic led organizations to question what strategies could

be implemented to improve the mental health conditions of employees, which, together with the pressures of the context, affected humanity and impacted productivity (2).

In this sense, mental health is a fundamental factor in organizations, related to extrinsic and intrinsic factors of the human being; as defined by the World Health Organization (3), it is a state of well-being through which individuals recognize their abilities, and can cope with the normal stresses of life, work productively and fruitfully, and contribute to their communities.

The literature (4) reports a trend in different countries indicating that strategies or policies aimed at emotional and mental aspects were not prioritized in the face of the health emergency decreed, and the subsequent impacts of social isolation and the changes associated with the loss of job stability, loss of loved ones that put coping strategies and psychological resources to the test.

Likewise, as stated by Salanova (5), the situation of adversity generated by COVID-19 will not only spread discomfort and many negative emotions but will also allow the development of individual and collective resources and strengths that may have been unknown until now and that need to be put into practice. It is therefore essential to review the working conditions of the organizations and the risk factors that arose during the pandemic and that had repercussions on the mental health of employees, highlighting the strategies or protective factors that were used to reduce them. To this end, a systematic review of the literature was conducted to identify which mental health promotion strategies have been implemented in organizations during the COVID-19 pandemic?.

METHOD

We conducted a systematic review of publications on mental health and organizations or in the workplace, during the global health emergency caused by COVID-19. The search was conducted in the Web of Science (WoS), Scopus, and ProQuest databases, which were selected due to their recognition and academic quality. The systematic review seeks to identify, evaluate, and synthesize scientific research, using

a systematic and explicit method of information collection (6).

SELECTION CRITERIA

For the selection of studies, we used the elements for systematic review and meta-analysis

described in the Preferred Reporting Items for Systematic Review and MetaAnalysis Protocols (PRISMA) (7), establishing the inclusion criteria for the identification and screening phase of the records, and the exclusion criteria in the eligibility phase for full texts. These criteria (Figure 1) allow studies not relevant to this work that was picked up by the search code to be discarded.

Table 1
Study selection criteria

Inclusion criteria	C1	The study integrates the variables: mental health and organizations (referring to the workplace)
	C2	The study presents the variables of interest referring to organizational and/or work environments during the health emergency
	C3	This is an empirical study (qualitative and/or quantitative) or review of the literature
Exclusion criteria	E1	The full text cannot be located
	E2	The full text is in languages other than Spanish or English
	E3	The study is carried out in different contexts and periods other than the health emergency caused by COVID-19

Source: Own elaboration.

The description of the study selection process (Figure 1) is made using the PRISMA flow chart (7).

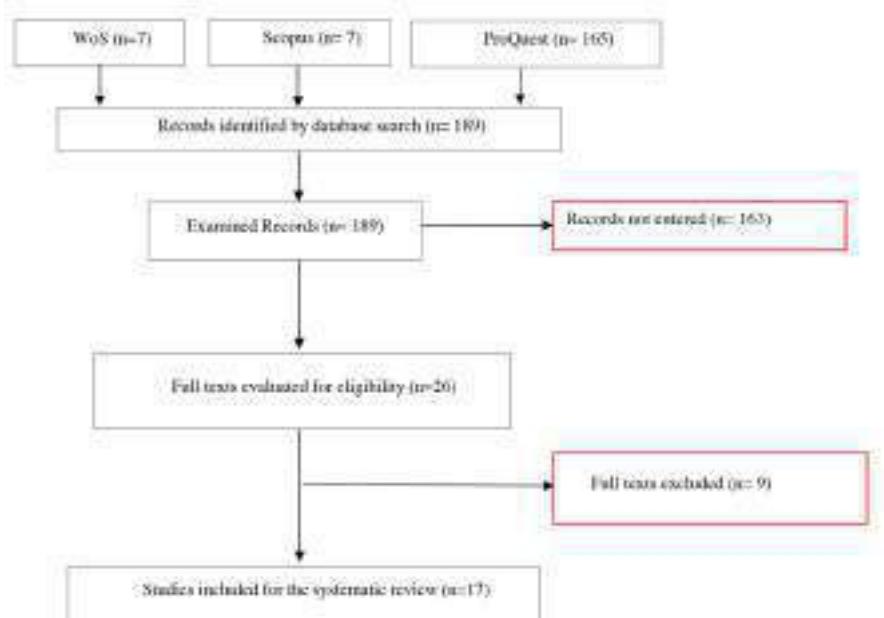


Figure 1. PRISMA Flowchart of the study selection process.

Note: Adapted from page (7).

For this article, 17 documents were reviewed between scientific articles and previous literature reviews under the search criteria mental health, organizations, and COVID-19.

RESULTS

Characterization of the research was carried out considering three units of analysis: the

country where the study was produced, the year of publication, and the type of study. The results are presented in Table 2.

As shown in Table 2, the largest number of research studies related to mental health in organizational settings during the COVID-19 pandemic have been conducted in South American countries (59 %), followed by European countries with (23 %), Asia (6 %) and finally, globally (6 %).

Table 2
Characterization of the publications reviewed

Unit of analysis	No. of studies	%
Country where the studies are produced		
Central America (Mexico 1)	1	6
South America (Colombia 3, Chile 5, Ecuador 1, Perú 1)	10	59
Europe (Spain 4)	4	23
Asia (Indonesian 1)	1	6
Global	1	6
Year of publication		
2020	3	18
2021	13	76
2022	1	6
Type of study		
Quantitative	5	29
Qualitative	12	71

Source: Own elaboration.

With respect to the year of publication, it is evident that there is a growing trend of publications on the subject, with 2021 representing the year of publication of the most important publications 76 % of the publications reviewed and 6 % so far in 2022, at the beginning of the pandemic in 2020, 18 % of the studies were identified. Regarding the type of study, it was found that 71 % of them used a qualitative methodology, and 29 % are quantitative studies. In relation to mental health promotion strategies used in organizations during the pandemic of COVID-19, in Table 3, the following results were classified.

Table 3 shows the scarce existence of research related to the promotion of mental health in times of COVID-19 pandemic, most of the studies have been conducted in the health sector as frontline health workers, followed by the education sector

due to the need to implement remote education and the challenges it has implied.

Within the documents analyzed, it is identified that in countries such as Chile, Colombia, Spain, and Indonesia, workers have perceived little or no psychological support strategies in terms of prevention and control of situations of high emotional impact in pandemics (8,9,13,17,21). Betancur et al. (13) evidenced that health care workers in Colombia use personal resources to adjust to the psychological demands produced by the pandemic such as a positive attitude with hope, isolating themselves from the media, or thinking about quitting their job. Similarly, López-Núñez et al. (19) highlight the protective role of personal resources in psychological adjustment during COVID-19 confinement in workers in Spain.

SYSTEMATIC LITERATURE REVIEW

Table 3
Mental health promotion strategies used in organizations during COVID-19

Authors	Year	Country	Sample	Type of research	Occupation Participants	Variable or Category	Strategy
Plaza, Jorques, Salgado.	2022	España	3	Qualitative	Doctor/Nurse	Psychological impact	Little or no ongoing training or psychological support in the prevention and management of high emotional impact situations in pandemics (8).
Calquín, Guerra-Arraya, Araya	2021	Chile	15	Qualitative	Psychosocial workers	Exposed life, suffering, and moral injury	No training or psychological help (9).
Osonio-Parraguez, Arteaga, Galaz, Piper-Shafir.	2021	Chile	17	Qualitative	Working mothers	Psychosocial consequences	*Provisioning and social support. *Self-care (10).
Acuña-Hornazabal, Mendoza-Llanos, Pons-Peregorr.	2021	Chile	408	Quantitative	Education, commerce, health.	Burnout, engagement, and management practices	Daily support practices by leaders and managers (telephone contacts, via text message, social networks, or in-person interviews). *Model of healthy and resilient organizations (11).
López, Rivera-Aguilera, Gonzalez, Nova, García, Forján.	2021	Chile Colombia	77	Qualitative	Health professionals	Epic narrative/health professionals/ pandemia	Exaltation of individual values based on heroic prose. Attributes such as determination, a conviction in success, and total dedication to the task, "putting on the shirt", "the first line of defense", and "the first line of defense" are highlighted (12).
Betancur, Rojas, Pulido, . Aguilar	2021	Colombia	109	Qualitative	Professionals and nursing assistants	Caring for the patient	*Uncertainty and no support. *It is faced with a positive attitude with hope, isolating oneself from the media or thinking of quitting one's job" (13).
Peñafiel-León, Ramírez- Coronel, Mesa-Cano, Martínez-Suárez	2021	Ecuador	92	Cuantitativo	Health professionals	Psychological impact, resilience and coping.	*Coping strategies and resilience. * Psychological treatment (14).
Ramos, Inga, A nzahueldo, Diaz.	2021	Perú	14	Qualitative	Teachers and students	Teachers and students	*Strengthening the use and adequate management of technological resources. * Coping strategies to continue with their hard work (15).

Continued in page 669...

...continuation Table 3.

Authors	Year	Country	Sample	Type of research	Occupation Participants	Variable or Category	Strategy
Ramos, Inga, Anzuñuelo, Díaz.	2021	Perú	14	Qualitative	Teachers and students	Teachers and students	*Strengthening the use and adequate management of technological resources. * Coping strategies to continue with their hard work (15).
Benítez-Saña.	2021	España	N/A	Qualitative	N/A	High-performance work systems and a healthy organization model.	Design of a positive, healthy, and resilient organization model (16).
Lázaro-Pérez, López, Galán, del Pino. Tolosa, Malas	2021	España	40	Qualitative	Health professionals	Communicative and cultural approach	None (17).
	2021	España	49	Qualitative	Healthcare Personnel	Psychological Impact, Risk Factors, and Psychological Interventions.	*Programs based on the solution of immediate problems related to personal and family safety, lack of protective materials and equipment, effective rest, and lack of training to care for these patients. *Early psychological intervention teams (18).
López-Náñez, Piquerás, Falcó	2021	España	440	Quantitative	Active and inactive workers and students	Personal resources, Two-dimensional mental health (psychological well-being and distress).	*The protective role of personal resources in psychological adjustment during COVID-19 confinement is highlighted (19).
Villavicencio-Ayub, Quiroz-González, García-Meraz, Santamaría-Plasencia	2021	Méjico	724	Quantitative	Work Experience	Personal and Organizational Affects	*Exercise inspirational leadership and company policies that allow and encourage independent work. *Preventive and hygienic measures for work at home (20).
Iskandaryah, Shabrina,	2021	Indonesia	200	Quantitative	Nurses, pharmacists, general practitioners, medical specialists, and laboratory assistants.	Mental health, job satisfaction, and quality of life.	*None.

SYSTEMATIC LITERATURE REVIEW

...continuation Table 3.

Authors	Year	Country	Sample	Type of research	Occupation Participants	Variable or Category	Strategy
Véliz, Dörner, Soto, Toledo.	2020	Chile	12	Qualitative	Senior management	University governance	* Crisis preparedness, strengths, difficulties, challenges, and lessons learned from management in times of pandemic. * Accompaniment and training plans for management teams with competencies to coordinate and motivate the work with others (22).
Torner	2020	Colombia	113	Quantitative	Electricity sector workers	Adaptive leadership and performance	To exercise adaptive leadership is characterized by: 1. Addressing an adaptive challenge. 2. Managing an adaptive change. 3. Influencing during an adaptive challenge (23).
Castellanos, Quintana, Gómez, González.	2020	Global	No report	Qualitative - Documentary review	Teachers and administrative staff	Stress at work	* Implementation of work at home as a strategy to counteract economic losses and prevent the rapid spread of COVID-19. * It is recommended to implement epidemiological surveillance systems on psychosocial risk to follow up on the mental health of the most vulnerable workers (24).

Source: Own elaboration.

The design and implementation of a positive, healthy, and resilient organizational model (11,14,16,22), early psychological intervention teams (18), and adaptive (23) and inspiring leadership and the implementation of a company policy that allows and encourages independent work, with preventive measures for working at home (20) are recognized within the organizations.

Similarly, Castellanos et al. (24) recommend to organizations the implementation of an epidemiological surveillance system on psychosocial risk to monitor the mental health of those workers who are more vulnerable to trigger stress due to the demands of working at home.

DISCUSSION

The COVID-19 contingency forced organizations to restructure, reorganize and manage organizational change, in which roles, functions, performance, labor relations, and competencies affected the integral development of the worker, leading institutions to design and implement strategies to safeguard the life, health, and safety of each of their collaborators. From the human talent management systems of each organization, health measures established by the World Health Organization WHO and the protocols according to the jurisprudence or regulations of each country had to be adopted.

The first finding to discuss is related to the few studies that have been developed on the promotion of mental health in organizations during the pandemic of COVID-19, this confirms the need for further research from different organizational contexts or sectors since most of the articles were found related to the health area, understanding that by being in the front line in the care of patients with COVID-19 affectations, they showed an emotional overflow, which led to the implementation of various therapeutic resources.

Another finding is associated with the limitation of the reports in the studies reviewed on the design and intervention of mental health promotion programs in organizations in the face of COVID-19. However, we highlight from the

analysis of the articles the implementation of a positive, healthy, and resilient organizational model, which can generate benefits at various levels.

At the individual level, the employee feels involved and motivated, finds meaning and significance in the work he/she performs, and experiences a sense of belonging and well-being, which results in a higher level of performance. At the organizational level, there are advantages since an engaged employee can spread this feeling of engagement to other employees and groups in the same organization, which triggers an environment or work climate of engagement (16).

Finally, we note that we found two systematic review articles, both only related to healthcare workers and healthcare professionals, that report a sample of the strategies implemented in organizations to address mental health during the pandemic.

CONCLUSIONS

According to the analyzed documents, we can identify that there is a concern about the impact, still under consideration, on mental health in the COVID-19 pandemic. As pointed out in the review, in the labor and productive scenario we see one of the most important affectations considering the obligatory nature, in most cases, of the implementation of remote work and its challenges, as well as the demands of permanent operation for the health and education sectors.

This has led to greater attention being paid to these populations, to review and promote mental health promotion plans and in other cases strategies were implemented on the fly, associated with the context of uncertainty experienced at the time. However, it is necessary to disseminate the strategies implemented in other sectors, types, and sizes of organizations (small and medium enterprises), functions, and socioeconomic contexts that allow a more detailed evaluation of the impact and successful actions on mental health in the organizational environment.

We are beginning to understand that mental health in all areas, in this case in the workplace, has a sense of co-responsibility in which collaborators

and organizations at both levels are interrelated and demand the implementation of permanent promotion plans and/or systems with a response capacity according to the global and local context.

The impact of the COVID-19 pandemic, which is just beginning to be evaluated, clearly accelerated and favored processes of innovation, and technological development and marked the path to follow on the implementation of remote work as a widely feasible work modality, but also increased the challenges already present on the assessment, intervention, and promotion of mental health in organizations.

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Perspectives and assessment of psychosocial risk in latin America: A systemic review of the literature

Perspectivas y evaluación del riesgo psicosocial en América Latina: una revisión sistemática de la literatura

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SUMMARY

The purpose of this systematic review was to analyze the perspectives and evaluations of psychosocial risk in Latin America. The reviews of the articles were carried out independently complying with the inclusion and exclusion criteria, 15 were the articles that met the inclusion, criteria analyzed by the 8 dimensions, and in these studies, it was observed that the qualitative approach predominated, with non-experimental and cross-sectional design with descriptive scope, these searches were carried out through the Web of Science (WOS), Scopus and ProQuest databases. The results showed that psychosocial risk factors are related to social class and can be used as tools to propose interventions to reduce inequalities in health, socioeconomic status, and gender. The importance of research associated with the development of strategies for the prevention and promotion of psychosocial risk factors is discussed.

Keywords: Psychosocial risk, health, Latin America.

RESUMEN

El propósito de esta revisión sistemática consistió en analizar las perspectivas y evaluaciones del riesgo psicosocial en América Latina. Las revisiones de los artículos se realizaron de manera independiente cumpliendo con los criterios de inclusión y exclusión, 15 fueron los artículos que cumplieron con los criterios de inclusión, analizados por las 8 dimensiones y en estos estudios se observó que predominó el enfoque cualitativo, con diseño no experimental y transversal con alcance descriptivo, estas búsquedas se realizaron a través de las bases de datos Web of Science (WOS), Scopus y ProQuest. Los resultados mostraron que los factores de riesgo psicosocial están relacionados con la clase social y pueden ser utilizados como herramientas para proponer intervenciones que reduzcan las desigualdades en salud, estatus socioeconómico y género. Se discute la importancia de la investigación asociada al desarrollo de estrategias de prevención y promoción de los factores de riesgo psicosocial.

Palabras clave: Riesgo psicosocial, salud, América Latina.

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INTRODUCTION

Organizations face transcendental transformations from the social, political, economic, and cultural contexts that affect the quality of working life of workers, generating a risk to physical and emotional health, when this occurs, psychosocial support actions must be implemented to intervene unsafe behaviors that can cause adverse effects on people or work.

Studies on psychosocial risk factors have shown that “psychological or cognitive demand is the psychosocial risk factor most frequently reported by managers and supervisors” (1) and that violence and psychological harassment at work are psychosocial risk factors associated with impoverished organizations and ineffective management in communication, conflict management, and inappropriate leadership; the ravages can be very serious for both victims and organizations” (2).

The Joint Committee of the International Labor Organization (ILO) and the World Health Organization (WHO) state that “Psychosocial factors at work consist of interactions between work, its environment, job satisfaction and the conditions of its organization, on the one hand, and the other hand, the worker’s capabilities, needs, culture and personal situation outside work, all of which, through perceptions and experiences, can influence health and job performance and satisfaction” (3).

Likewise, the WHO defined psychosocial work factors as “those characteristics of work conditions, organization and emotional factors linked to the job that affect people’s health at the physiological and psychological level” (4). The effects of psychosocial risks on health can affect organizational performance at the individual, group, and organizational levels, generating alterations in behavior, interpersonal relationships, work performance, and subsequently productivity, creativity, and innovation (5).

In compliance with the protection of the safety and health of workers, organizations must implement the Occupational Health and Safety Management System (OHSMS), for this, we find international standards such as OHSAS 18001

(Occupational Health and Safety Assessment Series) that seeks to perform systematic and structured management to ensure the improvement of OSH (6) and the International Standard ISO 45001 (International Organization for Standardization) that adopts an OSH management system, which aims to enable an organization to provide safe and healthy workplaces, prevent work-related injuries and health impairment, and continuously improve OSH performance (7).

For its part, in Colombia, the Ministry of Labor and Social Protection, to comply with international standards, establishes in its Sole Decree of the Labor Sector 1072 of 2015, which in Chapter 6 emanates the mandatory guidelines to implement the Occupational Safety and Health Management System (SG-SST) (8).

In terms of Psychosocial Risk Factors, it is important to understand, analyze, evaluate and intervene in psychosocial risk factors, being a matter of concern for companies in the world, in this sense, an awareness of care and prevention of risks at work should be promoted. In countries such as Colombia, Mexico, Chile, and Peru we find legislation in favor of labor welfare that seeks to protect occupational health (9-12).

Therefore, we set out to develop a systematic review of the literature to answer the following question: What are the perspectives and evaluations of psychosocial risk in Latin America?

METHOD

The main objective of this study was to learn about the perspectives and evaluations of psychosocial risk in Latin America, identifying definitions, regulations, evaluation instruments, and strategies for the prevention of psychosocial risks at work and in organizations.

Employing the systematic review, different studies were identified that allowed the description and analysis of the literature reports on the research topic. The search was carried out in the following databases: Web of Science (WOS), Scopus and ProQuest, in which the selected articles were ordered by rigorously establishing their general categories: sources, the context of the

problem, type of document, design, participants, method, instruments, procedure, results, and conclusions, as well as the existing relationships around the evaluation of psychosocial risk.

The search phase for information units focused on scientific and review articles, where combinations of the following keywords "Psychosocial risk" and "Latin America" were used, both in English and Spanish, and 190 articles were found, distributed as follows: in the Web of Science (WoS) database, 8 articles were analyzed, of which 2 met the general requirements of the study and were included for the in-depth review; 8 articles were analyzed in the Web of Science (WoS) database, of which 2 complied with the generalities of the study and were included for the in-depth review; 46 articles were obtained

from the Scopus database, among them, 10 were included for in-depth review and only 3 complied with the generalities of the study, and 136 articles were reviewed in ProQuest, of which 1 was carried out an in-depth review and only 10 complied with the generalities of the study.

Finally, 15 articles were selected for the systematic review.

For this review, 23 documents were examined, including scientific articles and standards issued by the ministries of labor and health.

Inclusion and exclusion criteria: Figure 1 show the criteria taken into account for the selection of the articles analyzed. The research had to meet all the criteria to be included.

Table 1
Study Selection Criteria

Inclusion criteria	C1. Articles that contemplate variables such as psychosocial risk, work stress, working conditions, job satisfaction, health, and work. C2. Language of publication: Spanish and English.
Exclusion criteria	E1. Articles that do not consider the variables. E2. Articles that the context is different from the work and organizational environment.

Data selection and extraction process

In the article selection process, we were able to identify and eliminate all the records that did not include the inclusion criteria. The reviewers developed a selection of titles, variables, and abstracts to discard all the records that did not meet the inclusion criteria. As a result, a ranking list was determined according to the exclusion criteria, and the articles were finally selected for analysis. After the selection, the data extraction process was carried out, examining the complete texts and recording all the compliance criteria in Excel form.

Finally, the reviewers consolidated each of the analyses of the results of the data selection

and extraction process. The description of the process (Figure 1).

RESULTS

It was possible to structure a matrix that allowed the extraction and analysis of each of the articles in eight dimensions: 1) Type of document, 2) Problem, 3) Design, 4) Instruments, 5) Procedure, 6) Results, 7) Conclusion, 8) Keywords. After establishing the dimensions and characteristics for the extraction of the criteria, we proceeded to code each of the texts, and we also observed that the main character was the predominance of a qualitative approach, with a non-experimental

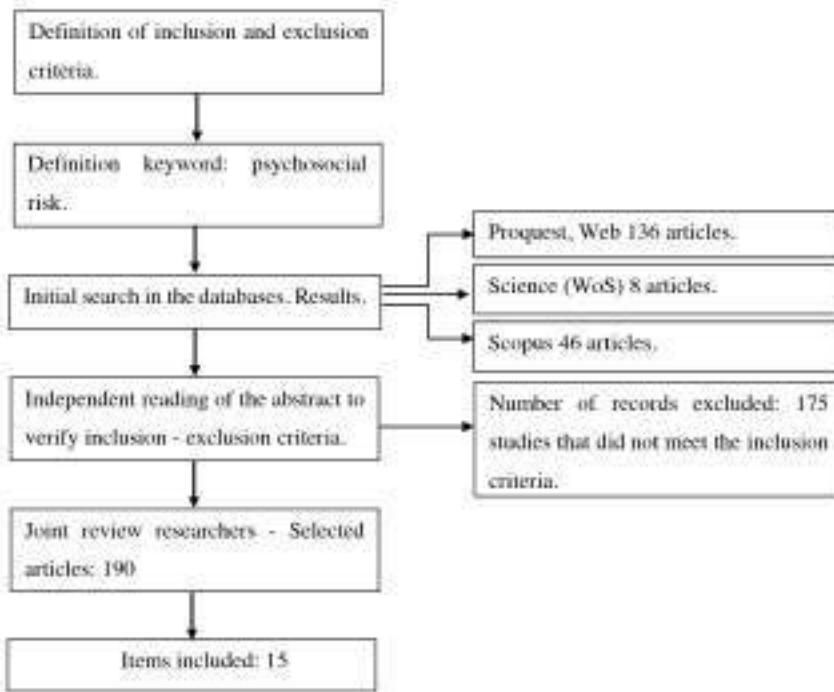


Figure 1. General Search Process.

Source: Own elaboration.

and cross-sectional design, mostly descriptive in scope. Table 2 shows the articles with the respective characteristics, approaches, design, and scope of the studies.

It should be noted that, of the 190 articles found in the first search in the selected databases, only 26 were preselected that met at least two of the four inclusion criteria established to be taken into account. From these articles, in the third stage of preliminary readings, 15 documents were selected that were directly related to the chosen variable.

The coding and classification of the articles whose focus of attention included the variable psychosocial risk were carried out and finding associated with these: a) Occupational stress, b) Health and work, c) Psychosocial risk factors and disability, d) Mental health. After the analysis of the articles included in this review, the period in which they were published was from 2005 to 2022. Six of the research with all the inclusion criteria were developed in Colombia, but it was possible to observe analyses in Argentina, Mexico, Brazil, Peru, Ecuador, and Chile.

Perspective analysis and psychosocial risk assessments

It is important to note that a small number of articles were found that met the inclusion criteria defined for this systematic review (15 articles), only two systematic reviews were found related to psychosocial risk (5,13) and one to occupational stress, which is a consequence of psychosocial risk factors (14).

Table 3 shows the different perspectives of psychosocial risk in some Latin American countries.

Table 3 shows that there are similarities in the definition of psychosocial risk factors in the different countries; psychosocial risk factors are related to negative aspects that affect the psychological conditions, health, and well-being of workers (9-12). Likewise, for Serafim et al. (17), psychosocial risks are factors that deteriorate work relationships and generate suffering, occupational illness, incapacity, and organizational dysfunction (17).

PERSPECTIVES AND ASSESSMENT OF PSYCHOSOCIAL RISK

Table 2

The main characteristics of the research review

Author	Country of Study	Variables	Approach	Design	Scope	Keywords
Salamanca Velandia, S. R., & Garavito Santander, Y. S, (2020).	Colombia	Work Stress	Qualitative	Non-experimental/ Transversal	Descriptive	Occupational stress, psychosocial risks, and occupational disease.
Monroy-Castillo, A., & Juárez-García, A. (2019).	Latin America	Psychosocial risk	Qualitative	Non-experimental/ Transversal	Descriptive	Keywords: stress, health, health, teachers, universities, Latin America.
Ortiz, V. G., Toro, L. E. P., & Hermosa, distress; A. M. (2019).	Colombia	Psychosocial factors	Qualitative	Non-experimental/ Transversal	Descriptive	Psychosocial risk factors; university teachers; psychological demand-control model; effort-reward model.
Pujol, A., & Gutiérrez, M. I. (2019)	Argentina	Health and work	Qualitative	Non-experimental/ Transversal	Descriptive	Work, Health, clinic.
Rivera-Porras, D., Bonilla-Cruz, N. J., Carrillo-Sierra, S. M., Forgyony-Santos, J., & Silva-Monsalve, G. (2019).	Colombia	Occupational health	Qualitative	Non-experimental/ Transversal	Descriptive	Occupational health, risk factors, stress.
Muñoz Rojas, D., Orellano, N., & Hernández Palma, H. (2018).	Colombia	Occupational Risk	Qualitative	Non-experimental/ Transversal	Descriptive	Stress, risk factors, impact, occupational health, organizational culture.
Velasco, A. A., Orozco, C. S., & Lira, E. R. (2017).	México	Working conditions	Qualitative	Non-experimental/ Transversal	Descriptive	Working conditions, psychosocial, health, and safety, health and safety.
Acosta-Fernández, M., Parra-Osorio, L., Restrepo-García, J. I., Pozos-						Psychosocial working conditions, violence, harassment, mental

Continue in page 679...

...continuation Table 2.

Author	Country of Study	Variables	Approach	Design	Scope	Keywords
Radillo, B. E., de los Ángeles Aguilera Velasco, M., & Torres-López, T. M. (2017).	Colombia	Working conditions	Qualitative	Non-experimental/ Transversal	Descriptive	health, teachers, medicine, nursing, mental health, nursing.
Arenas Ortiz, F., & Andrade Jaramillo, V. (2013).	Colombia	Psychosocial risk factors	Qualitative	Transversal	Descriptive	Occupational health, risk factors, occupational stress, food industry.
Serafim, A. D. C., Campos, I. C. M., Cruz, R. M., & Rabuske, M. M. (2012)	Brasil	Psychosocial risk factors and disability.	Qualitative	Exploratory	Descriptive	Psychosocial factors, occupational health, occupational diseases, occupational stress, and quality of life at work.
Palomo-Velez, G., Carrasco, J., Bastias, A., Mendez, MD, & Jimenez, A. (2015).	Chile	Psychosocial risk factors and job satisfaction	Qualitative	Non-experimental/ Transversal	Descriptive	Women's health; job satisfaction; risk factor women's work; Chile.
Rocha, K. B., Muntaner, C., Solar, O., Borrell, C., Bernales, P., González, M. J., & Vallebuona, C. (2014).	Colombia	Mental health, self-perceived health, neo-Marxist, psychosocial risk factors, and material deprivation.	Qualitative	Non-experimental/ Transversal	Descriptive	Social Class; Labor; Mental Health.
Celly, JJ y S Suasnavas, P. (2012, septiembre).	Ecuador	Psychosocial Risks	Qualitative	NR	Descriptive	Health and safety, psychosocial risk, FPSICO questionnaire, oilfield personnel.
Scarone, M. y Cedillo, LA (2007)	México	Psychosocial risk factors	Qualitative	Non-experimental	Descriptive	No Report
Pujol-Cols, L. & Lazzaro-Salazar, M. (2021)	América Latina	Psychosocial risk, health, performance	—	—	Descriptive	Psychosocial risks Work-related stress Well-being, Effectiveness, Bibliometric analysis.

Source: Own elaboration.

PERSPECTIVES AND ASSESSMENT OF PSYCHOSOCIAL RISK

Table 3
Perspectives Psychosocial Risk

COUNTRY	NORMN	ENTITY	PERSPECTIVE
Colombia	Resolution 2646 of 2008	Ministry of Labor	Psychosocial conditions whose identification and assessment show negative effects on workers' health or work (9).
México	Mexican Official Standard NOM-035-STPS-2018.	Ministry of Labor and Social Welfare	Those that can cause anxiety disorders, non-organic disorders of the sleep-wake cycle, and severe and adaptive stress, derived from the nature of the job functions, the type of workday, and exposure to severe traumatic events or acts of workplace violence to the worker, due to the work performed.
Chile	Resolution 218 Exempt	Ministry of Health; Subsecretaría De Salud Pública; Instituto De Salud Pública	They include hazardous and unsafe conditions in the work environment; workloads when they exceed the worker's capacity; lack of control over the work (possibility of influencing the organization and development of the work when the process allows it); working hours longer than those provided for in the Federal Labor Law, shift rotation that includes night shift and night shift without recovery and rest periods; interference in the work-family relationship, and negative leadership and negative relationships at work (10).
Perú	Regulation of Law No. 29783. SUPREME DECREE N° 005-2012-TR	Ministry of Labor and Employment Promotion	Characteristics of work organization, labor relations, and work culture, can affect the well-being of workers, therefore, psychosocial work factors are present in all workplaces, as long as there is a work organization and a working relationship, with its own work culture (11).
			Exposure to psychosocial risks is considered to exist when workers' health is impaired, causing stress and, in the long term, a series of clinical symptomatology such as cardiovascular, respiratory, immune, gastrointestinal, dermatological, endocrinological, musculoskeletal, and mental diseases, among others. The clinical symptomatology must be supported by a medical certificate issued by medical centers or duly qualified medical professionals (12).

Source: Own elaboration.

As shown in Table 4, countries such as Colombia, Mexico and Chile have validated instruments endorsed by governmental bodies. It should be noted that there are standardized instruments that can be used in studies and research for the diagnosis and identification of psychosocial risk factors, among which we can highlight:

- The Questionnaire of Psychosocial Factors in Academic Work (FPSIS ACA- DÉMICOS): For exposure to work demands of psychosocial origin (18).
- Questionnaire of biopsychosocial risks associated with accidents (19).

Regarding the prevention of psychosocial risk factors, studies were found that refers to the need to develop methodological strategies congruent with the organizational reality, identifying the level of maturity (20). Second, to use preventive measures aimed at "modifying the organization of work, enriching tasks, allowing autonomy, rotate tasks and positions, improve the work environment, control risks, provide adequate workspaces, make reasonable time management by establishing adequate breaks and rests, provide assertive information about the processes and tasks to be performed, enable formal and informal communication between workers and superiors" (21).

Table 4
Psychosocial Risk Assessment Instruments

COUNTRY	NORMN	ENTITY	PSYCHOSOCIAL RISK
Colombia	Resolution 2404 of 2019	Ministry of Labor	Psychosocial Risk Assessment Battery.
México	Mexican Official Standard NOM-035- STPS-2018.	Ministry of Labor and Social Welfare	Questionnaire of intralaboral psychosocial risk factors.
Chile	_____	Superintendency of Social Security and the Labor Directorate and the Institute of Public Health.	Questionnaire of psychosocial risk factors outside the workplace. Stress assessment questionnaire. General data sheet (sociodemographic and occupational) (16). Measuring instruments: Questionnaire 1: Reference Guide I. Questionnaire: Reference Guide II. Questionnaire: Reference Guide III (10). Questionnaire for the evaluation of psychosocial risks at work SUSESO/ISTAS21 (1)

Source: Own elaboration

In accordance with the above, it was observed that psychosocial risk factors are related to social class and can be used as tools to propose interventions to reduce inequalities in health, socioeconomic status, and gender (22).

DISCUSSION

It is evident that, in Latin American countries, psychosocial risk factors should be identified to implement prevention and intervention measures from the Occupational Safety and Health Management System (OSHMS), according to current legal regulations (6,7), given that the unfavorable demands of the development of the functions caused by mental workload, working hours, interpersonal relationships, salary,

environment, and job, affect the social and labor well-being of workers in organizations (5).

It was found that countries such as Colombia and Mexico have exclusive legislation for the evaluation and control of psychosocial risk (9,10), and Chile and Peru implement them from the SGSST (11,12). Likewise, it was identified that most of the articles establish the definitions of psychosocial risk factors from the perspective of the WHO and the ILO, which are linked to intrinsic and extrinsic factors that generate affectations associated with anxiety, psychosomatic symptoms, and social maladjustment (23).

The electronic search for studies on psychosocial risk factors carried out in WOS, Scopus and Proquest allowed us to find two

systematic reviews. The first one “Psychosocial risk factors at work in academics in higher education institutions in Latin America: A systematic review” evidences the characterization of risk and health factors that the precarious work environment, age, sex, and lifestyle contribute to the development of diseases (13).

Likewise, the second research entitled “Ten years of research on psychosocial risks, health, and performance in Latin America: an integrative systematic review and research agenda”, reports 85 studies that examined the relationships between psychosocial risks, health, and performance in a wide range of organizational contexts in Latin America during the last ten years. The review found that psychosocial risks are a consequence of job demands, autonomy, social support, imbalance, and effort-reward (5).

Regarding the evaluation of exposure to psychosocial risks, it was found that in Colombia organizations must apply the psychosocial risk battery (16); in Mexico, there are the reference guide questionnaires I, II, and III (10), while Chile validated and adapted the SUESO ISTAS-21 questionnaire (1). In addition, there are other instruments such as the Questionnaire of Psychosocial Factors in Academic Work (FPSIS ACA-DEMICOS) (18) and the Biopsychosocial Risk Questionnaire associated with accidents (19).

Finally, it is emphasized that more research should be developed aimed at developing strategies for the prevention and promotion of psychosocial risk factors since few studies related to this topic were found. On the contrary, several results associated with the identification, measurement, and diagnosis of psychosocial risks in organizations were highlighted.

CONCLUSIONS

We emphasize that psychosocial risk factors allow organizations to identify which work conditions and interactions affect people from the mental, emotional, personal, and work-related components, which contribute negatively, generating difficulties in physical and psychological well-being. This perspective

is formulated from the experience obtained in the articles and regulations analyzed, which report definitions of psychosocial risk factors in countries such as Colombia, Mexico, Peru, and Chile.

From this perspective we can infer that the theoretical bases of Psychosocial Risk Factors and their key concepts have been issued by the WHO and the ILO, allowing various countries to establish their conceptualizations and regulations for the regulation of these in their territories, to ensure the welfare of the working population in the world. This allowed to establish the processes of evaluation and diagnosis of psychosocial risks, some Latin American countries such as Colombia, Mexico, and Chile implemented questionnaires for risk assessment according to the needs of organizations, however, it has been shown that in these countries for research processes other instruments can be used.

It is important to highlight that the evaluation of psychosocial risk factors provides important input to developing prevention and promotion strategies according to the needs of the working population, so we emphasize that strategies should be developed to improve the working conditions of workers taking into account their health and welfare; in the research, there were not many results aimed at this process of intervention and treatment against the findings evidenced in the evaluations and diagnoses that are developed within organizations.

Finally, it is recommended to carry out studies related to intervention strategies in psychosocial risk factors, to identify the tools that are used to mitigate the factors that affect people's health at the physiological and psychological levels. This will undoubtedly provide relevant information to support the design and implementation of action plans to address the health effects generated by work.

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Effects of COVID -19 on women's mental health: A systematic review

Efectos del COVID-19 en la salud mental de las mujeres: una revisión sistemática

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SUMMARY

Women are part of the first line of care not only in the healthcare field but also in the care economy, which is why they tend to be more susceptible to distress due to infection amid a pandemic, triggering mental health consequences that could extend into the long term, even after the end of the pandemic. To present findings on the mental health effects on women during the period of the COVID-19 pandemic, a systematic review is presented that shows an increase in symptoms associated with depression, anxiety, and post-traumatic stress in women, as well as problems of insomnia and stress in female healthcare professionals due to direct contact with suspected or confirmed cases of COVID-19. Identifying vulnerable groups amid the pandemic and investing efforts in improving the physical and psychological well-being of this population would reduce chronic mental health problems in the general population, given that women tend to be the support of families and society.

Keywords: Mental health, COVID-19, women.

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RESUMEN

Las mujeres forman parte de la primera línea de atención no sólo en el ámbito sanitario, sino también en la economía asistencial, por lo que suelen ser más susceptibles a la angustia por contagio en medio de una pandemia, desencadenando consecuencias en la salud mental que podrían extenderse a largo plazo, incluso después del fin de la pandemia. Para presentar los resultados sobre los efectos en la salud mental de las mujeres en el período de la pandemia de COVID-19, se presenta una revisión sistemática que muestra un aumento de los síntomas asociados a la depresión, la ansiedad y el estrés postraumático en las mujeres, así como problemas de insomnio y estrés en las profesionales sanitarias debido al contacto directo con casos sospechosos o confirmados de COVID-19. Identificar los grupos vulnerables en medio de la pandemia e invertir esfuerzos en mejorar el bienestar físico y psicológico de esta población reduciría los problemas crónicos de salud mental en la población general, dado que las mujeres suelen ser el soporte de las familias y de la sociedad.

Palabras clave: Salud mental, COVID-19, mujeres.

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INTRODUCTION

The COVID-19 pandemic has resulted in many mental health issues, which is why this article focuses on the most relevant effects on women during the pandemic. These effects are mentioned in the two sections in which this article is developed; in this regard, since the beginning of the pandemic there has been a need to understand its effects on mental health; the rates of depression, anxiety, and stress were higher during the first week of lockdowns (1), which allows visualizing that much of the population needs to strengthen their mental health, being women who have a greater re-experiencing, negative alterations in cognition or mood and a prevalence of hyperactivity (2), as well as severe distress that can be related to post-traumatic stress disorder (PTSD) (3).

This population is the most susceptible to experience mental distress as a consequence of their economic situation, having as incident factors the decrease in income, change of social status, unemployment, and those who express higher levels of mental distress as a consequence of their economic situation, having as incident factors the decrease of income, change of social status, unemployment, and those who express higher levels of mental distress (4,5). And those who express higher levels of stress, “higher levels of worry about the virus”, a higher rate of anxiety about the virus (5), and a higher rate of post-traumatic stress disorder (PTSD) (6).

METHODOLOGY

A documentary review was carried out using as a search tool the databases Science Direct, PubMed, Apa PsycNet, and Elsevier in the period from January 2020 to January 2022, using keywords: COVID-19 and Mental Health with the AND and OR operators; which allowed identifying scientific articles in Spanish and English focused on the effects on the mental health of the general population during the COVID-19 pandemic that had within their results differentiation by gender to select those corresponding to women. Initially, around 80 articles were obtained from the search in the

databases; excluding those that were theoretical reviews, articles that were not within the range between the years 2020, 2021, and 2022 and those that did not have women as a sample, finally, 21 articles were included, from which 10 articles extracted from Science Direct, 4 articles from PubMed, 3 from Elsevier and 4 from Apa PsycNet were selected (Table 1).

Symptoms of stress and insomnia during the COVID-19 pandemic

Liu et al. (2), conducted a study that sought to know the prevalence and predictors of post-traumatic stress symptoms in China during the outbreak of COVID-19 among 300 residents of Wuhan and surrounding cities, as a result of this research women respondents had statistically significant higher PCL-5 scores than male respondents, in terms of the prevalence of symptoms has shown a higher prevalence of symptoms in women, who had a higher re-experiencing, negative alterations in cognition or mood and a prevalence of hyperactivity. On the other hand, this article establishes a relationship between sleep quality, early awakenings, and post-traumatic stress disorders, expressing those participants with better sleep quality or lower frequency of early awakenings reported lower post-traumatic stress symptoms.

PTSD has also affected female health professionals, in the study on PTSD Symptoms in Greek health professionals where 270 people participated, peritraumatic distress, presence of PTSD, perception of Health, Depression, Insomnia, and negative perceptions of COVID-19 were measured, and it was found that women presented higher scores in all the instruments applied compared to men, highlighting severe distress that can be related to a post-traumatic stress disorder, however, there were no significant differences between men and women in terms of insomnia since in general deterioration in sleep quality was reported (3).

In Israel, a study was conducted to identify the influence of socioeconomic inequalities on the development of mental distress during the pandemic in which 273 people, aged between 20 and 68 years, participated. These variables were measured through the Center for Epidemiological

EFFECTS OF COVID -19 ON WOMEN'S MENTAL HEALTH

Table 1
Studies on the effects of the COVID-19 pandemic on women's mental health

Database	Country	Authors	Sample	Results
Sciedirect	China	Liu et al. (2020) (2).	300 residents of Wuhan and surrounding cities	"Women reported significantly higher PTSD."
Sciedirect	Spain	Puertas-González et al. (2021) (7).	200 pregnant women, with an average age of 33.1 years.	"The group of women who were pregnant during the pandemic showed higher levels of perceived stress, insomnia increased depressive symptoms and stress."
Sciedirect	United States	Marroquín et al. (2020). (8).	National online sample of 435 U.S. adults.	"Women reported more intrusive thoughts, more GAD symptoms, and greater social support."
Sciedirect	Saudi Arabia	Alfawaz et al. (2021) (9).	A total of 1 542 respondents participated: 726 men and 816 women.	"Women with the highest quartile of family bonding showed 47% and 75% lower risk of anxiety and depression."
Sciedirect	Spain	Fernández-Abascal and Martín-Díaz (2021) (10).	The participants were 647 students	"There are no differences between men and women on measures of affect, depression, physical and mental health within each period assessed".
Sciedirect	Spain	González-Sanguino et al. (2020) (11).	The online survey of 3 480 people (2020)	Female gender, previous diagnoses of mental health problems or neurological disorders, having symptoms associated with the virus, or having a close family member infected were associated with greater symptomatology of depression, anxiety, and PTSD.
Sciedirect	Austria	Pieh et al. (2020) (12).	Online survey with 1 005 participants	"The highest mental health problems were located in adults under 35 years of age, women, people out of work, and low income."
Pubmed	United Kingdom	Gray et al. (2020) (13).	A total of 12 989 people participated.	"Clinically significant psychological distress was found in about 50% of the population (men = 47.4%, women = 58.6%)."
Pubmed	United Kingdom	Pierce et al. (2020) (14).	53 351 participants	"GHQ score increases were greatest in people aged 18 to 24 years female and people living with 'young children'".
Elsevier	China	Zhao et al. (2021) (6).	The final sample size was 29 118 people.	"PTSD due to COVID-19 was higher for women than for men."
Sciedirect	Netherlands	Vloo et al. (2021) (15).	167 729 people living in the north of the Netherlands.	"Significant gender differences were found in mental health during lockdowns: women experienced more depressive symptoms and disorders than men."
Sciedirect	Peru, Vietnam, Ethiopia, and India	Hossain (2021) (16).	The longitudinal survey involving 12 000 young people	"Young women who faced economic hardship through job or income loss were more likely to report anxiety".
Pubmed	Israel	Refaeli and Krumer-New (2021) (4).	The sample consisted of 273 participants, ranging in age from 20 to 68 years.	"The findings indicated that groups vulnerable to mental distress in routine times (e.g., women, people with economic hardship) showed the same pattern during the pandemic."
Pubmed	Israel	Horesh et al. (2020) (5).	A total of 204 participants	"Female sex, younger age, coronavirus-related loneliness, and preexisting chronic illness were associated with higher levels of psychological distress and lower levels of quality of life."
Apa PsycNet	Greece	Blekas et al. (2020) (3).	In total, 270 health professionals.	"Women scored higher on all clinical scales of depression, anxiety, PTSD, and insomnia."
Apa PsycNet	China	Lai et al. (2020) (17).	A cross-sectional study of 1 257 health care workers in 34 hospitals.	"Chinese healthcare workers exposed to COVID-19, women, nurses, people in Wuhan, and frontline healthcare workers are at high risk of developing unfavorable mental health outcomes."
Sciedirect	Spain	Awad-Sirhan et al. (2021) (18).	695 pregnant women	"The results indicate that during the first wave of the pandemic, a medium level of prenatal stress and an elevated level of anxiety were observed."

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...continuation Table 1.

Database	Country	Authors	Sample	Results
Elsevier	Spain	Erquicia et al. (2020) (19).	A total of 395 workers were included.	Risk factors associated with greater psychological distress were being a female or young male."
Apa PsycNet	United States	Hernández et al. (2021) (20).	A total of 298 participants	"Front-line nurses who provided care during the initial COVID-19 surge reported high levels of traumatic stress and demonstrated risk of developing PTSD as measured by the TSQ."
Apa PsycNet	United Kingdom	Jia et al. (2020) (21).	3 097 participants, the cohort was predominantly female (n = 2618); the mean age was 44 years.	"Being younger, female, living alone, and being in a recognized risk group for COVID-19 were independently and significantly associated with higher levels of depression and anxiety".
Elsevier	An international study with 30	Eisenbeck et al. (2022) (22).	A total of 11 227 people from 30 countries on all continents participated in the study.	"Relative to men, women reported significantly lower physical and mental well-being, along with higher levels of distress".

Studies Depression Scale (CES-D) in addition to the evaluation of socio-demographic and economic factors; The results suggest that women are more susceptible to experience mental distress as a consequence of their economic situation and that the decrease in income, change of social status and unemployment may be factors that affect these results (4). Another research conducted in the same country sought to identify risk factors for psychological distress during the COVID-19 pandemic taking into account loneliness, age, gender, and health status; 204 participants were evaluated who filled out self-report questionnaires 71.1 % (145) were women and 28.9 % (59) were men, the results showed that women reported higher levels of stress, as well as "higher levels of worry about the virus", in addition, variables such as younger age, loneliness and chronic illnesses corresponded with "high levels of psychological distress and low levels of quality of life" (5).

Zhao et al. (6) raise in their article the record of posttraumatic stress and posttraumatic growth of the general population in China during the first wave of COVID-19 through an online survey, applied to 29 118 people finding that posttraumatic stress disorder was higher in women because of COVID-19.

In the United States, traumatic stress was evaluated among front-line American nurses during the COVID-19 pandemic, where about 298 women participated, the Trauma Screening Questionnaire (TSQ) was used, and of the total scores obtained 185 (58.7 %) were positive for the diagnosis of a possible post-traumatic stress disorder, the symptomatology associated with these results was marked by involuntary mental content of the events that have generated emotional impact, irritability, sleep problems and fear of the possible dangers to which they are exposed (20).

Anxiety and depression during the COVID-19 pandemic

Puertas-González et al. (7), assess the psychological effects caused by the COVID-19 pandemic in 200 pregnant women, divided into two groups: 100 women evaluated with psychological evaluation instruments during

the pandemic, and a second group called pre-pandemic, made up of 100 women evaluated before the pandemic. In this research, perceived stress, prenatal concerns, and psychopathological symptoms were evaluated and compared. The results showed that women who were part of group 1 scored higher in depression, phobic anxiety, and stress than women who were in the pre-pandemic group. This leads to the conclusion that the COVID-19 pandemic could produce an increase in psychopathological symptoms, which negatively affects the mental health of pregnant women.

Marroquín et al. (8), conducted a study with 435 American adults applying instruments such as the Center for Epidemiological Studies Depression Scale (CES-D), The GAD-7, The Experience of Intrusions Scale (EIS), The Insomnia Severity Index (ISI), The Stress Overload Scale-Short Form (SOS-S), Perceived social support was measured with the Social Provisions Scale; said the study shows that women presented greater intrusive thoughts, more symptoms of generalized anxiety and greater social support.

A study conducted on 647 undergraduate students before and during the confinement by COVID-19 sought to know the evolution and effects on affect, psychological well-being, depression, and mental and physical health, during the pandemic, finding significant differences between men and women in some of the scales of psychological well-being, having in women a higher measure than men, in aspects such as depression no significant differences are found between the two genders (10).

Likewise, in the United Kingdom, the researchers sought to identify the mental health sequelae of the COVID-19 pandemic. For this purpose, we applied the 9-item Patient Health Questionnaire (PHQ-9), the Generalized Anxiety Disorder Scale (GAD-7), the Perceived Stress Scale (PSS-4), as well as sociodemographic variables: age, gender, ethnicity, worker status, living alone, positive mood, concern about getting COVID-19, perceived loneliness, and risk of COVID-19 in 3097 adults, in the period from April 3, 2020, to April 30, 2020. The results were marked by a trend in the participation of women with 84.5 %, as well as high scores compared to men in the 3 instruments applied, highlighting

a higher score in young women aged 18 to 24 years (Mean PHQ-9:11.24; GAD-7: 9.02; PSS-4: 8.13 compared to the other age groups); when performing a multivariate analysis it was evident that being young, female, living alone, belonging to a group at risk of infection was associated with higher levels of depression, anxiety, and stress (21).

González-Sanguino et al. (11), in their study, evaluated the presence of depression, anxiety, and post-traumatic stress disorder in 3 480 people, obtaining as a result that women, previous diagnoses of mental health problems or neurological disorders, symptoms associated with the virus or having a close relative infected were associated with greater symptoms of depression, anxiety, and Post Traumatic Stress Disorder, which allows us to know the impact on mental health caused by the COVID-19 pandemic.

In Austria, a study was conducted through online surveys applied to 1 005 individuals of which 53 % were female, in this study variables such as depressive symptoms, anxiety symptoms, and clinical insomnia was measured; obtained as a result that women were more burdened than men, the tests showed the highest mental health problems in adults under 35 years, women, unemployed people, and low-income individual (12).

Gray et al. (13) showed the results of data collected through an online survey of 12 989 people, these data were compared with those of April 2018 and March 2019, in which well-being showed a large decrease with respect to the levels of 2019. Regarding psychological distress, it is evident that women present clinically significant psychological distress with a percentage of 58.6 %, 20.9 % present severe effects, with the most affected being women, young people, and inhabitants of not so favored areas, thus showing the detrimental effects of the pandemic on mental health.

Pierce et al. (14), analyzed mental health as assessed by the 12-item general health questionnaire in UK households in which they found that women had an increased score on the general health questionnaire.

Lai et al. (17), conducted a cross-sectional study of 1 257 health care workers in 34 hospitals

in China where symptoms of depression, anxiety, insomnia, and distress were measured, the participants had an age range between 26 and 40 years and 76.7 % were women, within the results obtained it is highlighted that women (5.8 %) obtained severe anxiety scores compared to men (3.4 %), likewise nursing professionals, women, first-line doctors and workers in Wuhan obtained high scores on the depression, anxiety, insomnia and distress scales compared to men, doctors from other areas, or workers outside Wuhan.

In relation to the previous study, similar research was conducted in Spain with the participation of 395 health professionals from a hospital in Barcelona; the measurement was made between March and April 2020; and for this purpose, the DASS-21 (Depression Anxiety Stress Scales), Hamilton Anxiety Rating Scale (HARS) and the Montgomery-Asberg Depression Rating Scale (MADRS) were used to measure the levels of anxiety and depression.

In addition, a questionnaire of 18 symptoms associated with acute stress disorder and a survey of sociodemographic data were designed, within the results of the study, it was evidenced that 73.6 % of the participants were women, “The level of emotional distress was more severe in women than in men”, the associated risk factors for this indicator were: being a woman, working on the front line, not having had a PCR test, feeling of not wearing the required personal protective equipment (PPE) and the death of someone close to them from COVID-19 (19). In a study of 167 729 people living in the northern Netherlands, significant differences in gender and mental health during confinement were found to exist, with women experiencing greater depressive symptoms and disorders stemming from COVID-19 confinement making evident the difference in mental health effects among women (15).

Likewise, in research conducted by Hossain (16), which involved young people aged 17-29 years from 4 countries, distributed in 1 029 and 1 459 from Ethiopia, 829 and 1 759 from India, 745 and 1 401 from Peru, and 1 581 and 2015 from Vietnam; which sought to identify gender differences based on the economic and mental health effects of COVID-19, it was found that young women are more likely to experience

anxiety as a result of the economic effects of the pandemic, as well as the affectation in their well-being generated by the difficulties presented in that period, and there were no significant differences between the economic level of the participating women since in cases of rich and poor women had similar chances of developing anxiety.

Alfawaz et al. (9) in their research carried out in Saudi Arabia, in which 1 542 respondents participated, of which 816 were female, found that most of those evaluated stated that they had suffered anxiety (58.1 %), depression (50.2 %) and insomnia (32.2 %) during the lockdowns. On average, 65.3 % of the respondents agreed that the family bond was strengthened during the confinement due to the pandemic, as relevant data in this study, it is concluded that no significant differences were observed in the responses between men and women.

In a quantitative study conducted by Awad-Sirhan et al. (18), with 695 confined pregnant women between the age range of 21 and 47 years, where they sought to describe the levels of prenatal stress and anxiety and their association with obstetric factors, perception of health care and concern provoked by the COVID-19 socio-health situation, the results indicated that “during the first wave of the pandemic demonstrated a mean level of prenatal stress of 16.98 (SD = 25.20) and an elevated level of anxiety (M = 25, 20/DS = 11.07)”; in addition, the factors that correlated positively with anxiety and prenatal stress were concern associated with COVID-19 and mental health history, however, the presence of anxiety was also marked in women who had more than one child and as a protective factor the perception of health care and planned pregnancy were identified.

Finally, in a study conducted in 30 countries across continents, the following were measured: “psychological distress (depression, stress, and anxiety), loneliness, well-being, and physical health, along with measures of problem-focused and emotion-focused attention, focused coping, and a measure called the Meaning-Centered Coping Scale (MCCS)”, the participants were in total 11 227 people, where 69.9 % were women who reported high levels of distress and low levels of physical and mental well-being, however,

women and older people scored higher on the sense of life (22,23).

CONCLUSIONS

According to the results obtained in the systematic review, it is evident that women belong to the risk groups that have suffered the mental health effects of the COVID-19 pandemic, highlighting an increase in stress, anxiety, depression, and health problems. Most of the studies examined evaluated women with heterogeneous characteristics based on sociodemographic variables that allowed us to understand that the pandemic can affect specific groups the most, especially young women that live alone and that have a history of mental disorders, and healthcare workers with high exposure to the virus; It is also important to note that in most studies a trend was observed in the samples, which exceeded more than 50 % of female participants; it was also shown that advanced age favored the sense of life and well-being since high levels of anxiety, depression or stress were not reported in these age groups for most of the studies reviewed.

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Psychological well-being and everyday activities in rural and urban teachers in North of Santander during the COVID-19 pandemic

Bienestar psicológico y actividades cotidianas en docentes rurales y urbanos del Norte de Santander durante la pandemia por COVID-19

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SUMMARY

This research review shows how isolation due to the COVID-19 pandemic has affected daily activities such as quality of sleep, physical activity, and work life. This review exercise is developed to provide information that will help different professionals to point out the psychological impact and possible changes presented in the daily activities of people during confinement. Sleep hygiene and quality of sleep were affected due to factors such as age - young, sex - female, history of mental illness, insomnia, anxiety, depression, psychological distress, low back pain, and stress. With regard to physical activity during preventive isolation, it was found that there was a lack of physical exercise,

weight gain, increased sedentary life, decreased outdoor activities, increased consumption of cigarettes, alcohol, and the use of electronic devices, as well as increased intake of ultra-processed foods. As for the work activity during COVID-19, there were difficulties in the adaptation and qualification to the management of Tics, and work overload, in addition, it is observed that the predominant gender is female, and there is psychological and mental affection and emotional exhaustion.

Keywords: Daily activities, COVID-19, pandemic, sleep, physical activity, work activity.

RESUMEN

Esta revisión de investigación muestra cómo el aislamiento debido a la pandemia de COVID-19 ha afectado a las actividades diarias como la calidad del sueño, la actividad física y la vida laboral. Este ejercicio de revisión se desarrolla con el fin de proporcionar información que ayude a los diferentes

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profesionales a señalar el impacto psicológico y los posibles cambios presentados en las actividades diarias de las personas durante el confinamiento. La higiene del sueño y la calidad de este se vieron afectadas debido a factores como, la edad - joven, el sexo - femenino, los antecedentes de enfermedades mentales, el insomnio, la ansiedad, la depresión, el malestar psicológico, el dolor lumbar y el estrés. En cuanto a la actividad física durante el aislamiento preventivo, se constató la falta de ejercicio físico, el aumento de peso, el incremento del sedentarismo, la disminución de las actividades al aire libre, el aumento del consumo de cigarrillos, alcohol y el uso de dispositivos electrónicos, así como el aumento de la ingesta de alimentos ultra procesados. En cuanto a la actividad laboral durante el COVID-19, hubo dificultades en la adaptación y calificación al manejo de las Tics, sobrecarga de trabajo, además se observa que el género predominante es el femenino, hay afectación psicológica y mental y agotamiento emocional.

Palabras clave: *Actividades diarias, COVID-19, pandemia, sueño, actividad física y actividad laboral.*

INTRODUCTION

Currently, the health emergency situation in the world has had a great impact, and the consequences are incalculable, not only because of the loss of thousands of human lives (1), The consequences are incalculable not only because of the loss of thousands of human lives, by the end of August 2021, the Ministry of Health estimated in Colombia that the maximum peak of deaths due to COVID-19 was around 44 471 individuals, but also because of the effects caused by the disease (2). The effects on the mental health and well-being of people during the health emergency were not only due to the deterioration of the health of individuals but also to the deterioration of their mental health and wellbeing (3), with deterioration at the individual and group levels due to episodes of stress, anxiety, panic disorders, depression due to the loss of family members and fear of the imminent risk of contagion (4).

Along the same lines, other authors mention that confinement due to the pandemic generates psychological impact reflected in worry, hopelessness, nervousness, restlessness, intolerance to uncertainty, sleep problems, such as difficulty in falling asleep, waking up earlier than usual, and interrupted dreams (5).

However, there are also positive effects related to daily activities within the home, because the population under investigation reports devoting more time to family and even to the discovery of skills that they did not practice before the pandemic, as well as using activities that they did not practice before the pandemic (6), as well as using a variety of leisure activities, creating a weekly plan (7). However, perceptions and systematized experiences vary according to sociodemographic factors and sleep patterns (8).

Thus, the World Health Organization (9), states that the pandemic is negatively impacting the whole society in general in the psychological field, including the educational communities, who have had to look for alternative strategies to resume the teaching-learning process by taking on new situations, alternative strategies to resume the teaching-learning process, assuming limiting situations such as the lack of internet and technological resources, especially in those institutions that are far from the urban centers, being affected mainly due to the closure of the schools (10) due to the mandatory confinement and by the social distancing implemented by most national governments (11).

The transition from face-to-face to telepresence or work at home has affected the psychological well-being of teachers, since not being prepared for the virtual or remote education currently experienced and the work overload, are factors that have increased the states of stress, anxiety, and physical discomfort (12). In relation to the modality of working at home for teachers in the public sector, especially in rural areas, the Ministerio de Educación Nacional (13) orients that the academic process is carried out through learning guides that are delivered to parents, taking into account the difficulties of access to connectivity, signal and technological equipment to carry out synchronous pedagogical meetings.

Continuing along the same lines, Ramos-Huenteo et al. (14), in their study about the modification of face-to-face work to telework caused by COVID-19, refer that it leads to adaptations of the pedagogical system, emotional attention to students, and the implementation of the management of virtual platforms, giving greater use to ICTs. This situation generates especially in teachers' states of fear, a feeling of

uncertain future, and affection in the work and domestic activity. Thirty-six percent of the sample reported general and psychological discomfort; 42 % mentioned irritability and moodiness; 45 % reported sleep problems; 53 % expressed the need for psychological help to address stress and anxiety problems; 12 % showed depression and 65 % stated that they had food problems (15).

Thus, the various situations caused by the pandemic have led to depression, stress, anxiety, anguish, and even panic worldwide (16), which has been widely documented in scientific literature, stating that the consequences of the pandemic are not only economic, social and medical but also of a psychological nature due to its serious consequences on mental health (17).

Therefore, the COVID-19 pandemic has compromised the development of academic processes, labor activity, the productivity of the countries, work creation, and produced a collapse of the health systems of low-income countries, since there was a deterioration in the mental health of health personnel, lack of protective equipment, insufficient number of personnel for the demand of infected individuals, lack of drugs and an increase in pre-existing psychiatric problems (18).

The purpose of this review is to analyze the effects generated by the COVID-19 pandemic on the activities of daily life, addressing different positions on social activity, sleep, physical activity, and work; likewise, a theoretical review of daily activities in teachers and/or educational sectors is made, considering the work at home or telework generated as a result of SARS-CoV-2.

METHODOLOGY

A systematic search was carried out based on the review of scientific articles in databases such as Science Direct, Scopus, APA PsycNET, ProQuest, Scielo, and Redalyc. The words used for the search were sleep disorders, COVID-19, pandemic, physical activity, daily activities, work activity, work at home, and social activity. The review of the articles was carried out until December 2021, without discriminating from profession, place, or age, taking into account that the population under study is only human beings.

These bases were selected for their worldwide scientific contribution.

Initially, 30 studies were found; however, filtering was performed excluding those studies that did not emphasize daily activities during the COVID-19 pandemic, as well as articles that did not refer to psychological effects. Among the studies reviewed, references related to the effects generated by the COVID-19 pandemic on activities of daily living were taken into account.

Changes in sleep routines and their effects on psychological status

According to studies, COVID-19 has caused individuals to suffer from insomnia, waking up earlier than expected, interrupted dreams, and having the sensation of not having rested even though they have slept enough, a condition that can affect their health and increase alterations in their immune system (5). With respect to healthy people during isolation, they presented changes in their habits and daily activities and fear of contracting the disease. It is also found that factors such as young age, female sex, history of mental illness, and the ability to cope with stress can be considered a cause of insomnia. This situation leads to thinking about the development and implementation of sleep hygiene as a tool for the management of the consequences generated in sleep by this pandemic (19).

Other studies (20) conducted in Chile with front-line health personnel, in which they found that 65 % reported sleep disturbances related to the symptoms of anxiety and depression reported amid the COVID-19 pandemic. The most common symptoms are associated with difficulty falling and staying asleep, as well as dissatisfaction with current sleep (21).

Likewise, the coronavirus has generated difficulties in sleep hygiene and sleep quality in the general population but especially in health care workers, some factors associated with these difficulties in sleep-wake cycles are decreased social activity, alterations in the hours of falling asleep, and time spent in bed; however, it should not be overlooked that other factors such as anxiety symptoms, depression, post-traumatic stress disorder (PTSD), psychological distress and

stress, are also highly related to sleep dysfunction during the pandemic (22).

Diz-Ferreira et al. (23), stated in their study with 451 subjects during the pandemic that alterations in the quality of sleep have been registered, specifically a slight decrease and dissatisfaction in the quality of sleep, presence of insomnia, and a minimal increase in the number of hours spent in bed; in addition, the lack of physical exercise would be related to some of the established difficulties in sleep.

Malta et al. (24), agree with the aforementioned authors in that during the COVID-19 pandemic, sleep problems have occurred. These authors conducted a study in Brazil in which they found that the sample presented affection in the quality of sleep, especially young people, women, and people who before isolation were diagnosed with depression. The factors that could explain the prevalence of sleep difficulties would have to do with the different stressors generated by the pandemic, among which we can mention the fear of contagion, uncertainty about the future, economic conditions, and work at home, among others.

In another study, Nakai et al. (25), state that after the application of a survey to 597 elderly participants, over 77 years of age, people who presented lumbar or knee pain. Of them, 23.9 % showed difficulty in the quality of sleep, which allows concluding that, during this time of isolation, the increase of low back pain was associated with the sleep problems presented in the elderly participants.

On the other hand, in a study presented by Siddique et al. (26), conducted through an online survey, with a sample of 521 participants, ages 18 - 80 years, it was found that the quality of sleep can be altered due to stress, since the higher the level of stress the lower the quality of sleep, during the pandemic, it was found that women have experienced greater difficulty in sleeping; likewise, it was found that the fear of people to catch the virus during this pandemic generates an increase in brain stimulation. This may be related to the difficulties in sleep, as well as the anxiety and stress developed in people during COVID-19 (27) as well as other pandemics, natural disasters, and social crises may also experience such symptomatology (28).

Other authors state that the impact generated by COVID-19 goes beyond physical illness, some symptoms associated with anxiety, fear, and traumatic stress have influenced mental health causing nightmares. People with frequent nightmares are at risk for suicide, especially if related to depression. The impact of increased nightmares during the pandemic may be associated with an increase in suicide cases (29).

Changes in physical activity and their impact on the psychological state

In Colombia, one of the effects of preventive isolation for SARS-CoV-2 has been the affection in the daily physical activity of people and weight gain. Preventive isolation is a strategy to prevent the spread of the virus, people are forced to restrict their habit of physical activity, preventing contact with nature and the inability to play games or physical activity outdoors directly impacting the physical activity and mental health of people (30).

Therefore, the aforementioned authors mention that the lack of physical activity and preventive social isolation has led to an increase in sedentary activities such as spending more than 60 minutes in front of the television, computer, cell phone, or video games, increasing unproductive leisure time and decreasing the ability to be in direct contact with nature and the environment.

In studies before COVID-19, the World Health Organization emphasizes the importance of physical activity, since it contributes to the improvement of a healthy lifestyle, improves the quality of life, strengthens mental health, and manages to prevent clinically significant pathologies; therefore, when there is a reduction in physical activity and an increase in sedentary activities, there is an affection of their quality of life, increase of pathological diseases, and affection in the psychosocial sphere (31).

On the other hand, Malta et al. (24), prove in their research that during the COVID-19 preventive isolation, people were forced to decrease the practice of physical activity, and to be at home without social contact; in addition, it was shown that during social isolation and home confinement, there was an increase in the consumption of smoked cigarettes, consumption of alcoholic beverages and a greater increase

in the time spent using computers, tablets, and television. Finally, the aforementioned authors state that during confinement there was also an increase in the consumption and intake of ultra-processed foods, concluding that all these components influence people's lifestyles and increase health affectation.

Thus, as Clemente-Suarez et al. (32), stated physical activity improves the conditions of the immune system and mental health and during the COVID-19 pandemic, there has been a decrease in motor activity and the practice of physical exercise. These facts could cause difficulties in the general health of people with comorbidities and those affected by the virus, increasing the possibility of death of hospitalized patients and the decrease in motivation to engage in physical activity and other outdoor activities.

In the aforementioned study, the authors state that in studies carried out in various parts of the world during the pandemic, it was found that patients affected by the virus were less physically active than those not affected. There was a greater decrease in physical activity, especially in men, increased use of different electronic devices, and increased exposure to screens. These activities caused an increase in food consumption and weight gain in people.

In the same way, Oliveira et al. (33), state that, the confinement and social isolation due to the COVID-19 pandemic have generated a decrease in the performance of activities that involve physical activity, especially in the elderly, a fact that when associated with the decrease in the same and sedentary lifestyle can cause falls, motor loss, difficulty in the quality and lifestyles and daily activity of people. Similarly, they refer to the importance of physical activity in improving the quality of sleep, stress, anxiety, depression, and other aspects related to mental health, especially in the elderly, i.e., when physical activity is affected, the mental health of the elderly is compromised. Taking into account that people in the world were in social isolation and as argued above, not being able to perform physical activity brought with it effects that alter not only the quality of life and their daily activities but also psychological aspects.

Effects of forced isolation on work activity during the COVID-19 pandemic

Scasserra and Partenio (34), state that with the advent of COVID-19, confinement and social distancing, the various work sectors worldwide have had to integrate more actively and continuously alternative strategies making use of ICT; in such a way that, workers had to be quickly prepared to acquire the necessary skills and tools to assume teleworking, or in other sectors, the so-called work at home. Therefore, the authors developed a study related to the difficulties of work and strategies that women workers have implemented by digital means from home and found that, in virtual platforms of the care economy, 100 % of the collaborators are female, existing in the greater demands with the housework, which generates inequalities with respect to the male gender.

Gaxiola-Villa (35) conducted a study on housewives including her research on college teachers. Through the research it is possible to identify that before the pandemic there were already great challenges for them, since, at the time, they reported feelings of emotional exhaustion and professional burnout, affecting their well-being. However, with the advent of COVID-19, the outlook for teachers has become more complex due to technostress and teacher-student depersonalization (36).

On the other hand (12), a study on anxiety as one of the effects generated in teachers in the district of Yanahuanca in Pasco as a result of the COVID-19 pandemic, using a quantitative approach and a cross-sectional descriptive design as part of the methodology. The number of the sample is 353 teachers, applying the Coronavirus Anxiety Scale (CAS) with which they obtained relevant results that 10.8 % presented anxiety, 38 teachers in total.

In addition, the aforementioned authors refer that, not being prepared for the virtual or remote education currently experienced and the work overload, are factors that have influenced the stress, anxiety, and physical discomfort of teachers, represented by 65.2 % of teachers with dizziness, 68.8 % with sleep disorders, 83.9 %

with tonic immobility, 85 % with a loss of appetite and 86.7 % with abdominal discomfort.

In the same way, (10) mention that having faced COVID-19 in the educational sector, which had been gradually implementing the use of ICT without any apparent eagerness and, with the confinement, having had to accelerate the process, generated affectations at the psychological level and mental health in general, represented with anxiety and even frustration for not immediately achieving what the ministries of education were suggesting to give continuity to the teaching-learning process at the digital level with the technologies and resources available on the web for education during the closure of the Educational Institutions.

Consequently, Chacon (37), states that the barriers in teacher-student communication are due to difficulties of network connectivity, and lack of technological devices, arguing that in the Colombian rural sector there is a very low percentage of students who have the basic conditions to connect remotely with their teachers. This is because only 17 % of them allegedly have WiFi network and electronic devices, in addition to the scarce or null signal in some places where students live, among other barriers that generate anguish and frustration in teachers when they are unable to guide the teaching-learning process effectively, according to the interests and needs of the students.

In relation to the modality of work at home for teachers in the rural sector, the MEN (38) orients that the academic process is carried out through learning guides that are delivered to parents, considering the difficulties of access to connectivity, signal and technological equipment to carry out asynchronous pedagogical meetings.

Also, other research shows that teachers in rural areas report that factors such as emotional exhaustion, fatigue from work activities, physical fatigue, failure to achieve established goals, increased irritability, and lack of motivation associated with the lack of social contact, are linked to frustration and stress manifested in isolation time, which is apparently related to low performance and work performance (39-42).

CONCLUSIONS

From the present review it can be concluded that, during the COVID-19 pandemic, stress due to the fear of contagion caused alterations in the quality of sleep. The greater the stress, the greater the difficulty in sleeping, especially for women, young people, and health care workers. Likewise, the diagnosis of depression and anxiety before voluntary isolation was related to sleep disturbances and the presence of insomnia. During this time, not only sleep was affected but also the physical activity of the individuals, an aspect that was reflected in weight gain, sedentary activities, increased consumption of cigarettes, alcohol, ultra-processed products, and decreased motivation, which are all associated with people's quality of life and lifestyle. Another aspect to take into account is how the adaptation to the new work activity affected mental health, the long working hours, the lack of adaptation to the management of technological tools, and the difficulty in separating work and home activities, are raised by the participants in the different studies as generators of emotional exhaustion, stress, frustration, aspects that are associated with demotivation and low work performance.

The contributions found allow establishing the importance of working on the mentioned aspects and developing intervention strategies aimed at reducing the affectations in the development of daily activities and mental health in future pandemics, thus contributing to different sectors of society, such as education, to the extent that greater relevance is given to the psychological well-being of the teacher, who, like the students, is also an active part of the teaching-learning process. Psychology professionals, as gaps in knowledge are filled with respect to the impact generated in individuals and communities from the necessary changes in daily activities, can help implement new mental health protocols, considering that their contributions can resignify the experiences from future pandemics and health, which also fills gaps in knowledge, favoring the possibilities of generating new public policies, according to the previous experience with the COVID-19.

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Anxiety, sleep quality and stress in college students during the COVID-19 confinement

Ansiedad, calidad del sueño y estrés en estudiantes universitarios durante el confinamiento por COVID-19

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SUMMARY

Confinement by COVID-19 impacted the physical, mental and psychological health of the Colombian population and other countries, increasing the rates of stress, anxiety, and insomnia, which is an alert to mental health professionals. Therefore, this article aims to analyze the impact of confinement due to COVID-19 on the quality of sleep, anxiety, and stress in young people, with the main objective of observing the relevant changes perceived in the population as well as significant aspects in mental health that may affect the population, through a review of the literature associated with the problem posed and analysis of variables in them, from different scientific sources.

Keywords: isolation, COVID-19, anxiety, insomnia, stress.

RESUMEN

El confinamiento por el COVID-19 impactó la salud física, mental y psicológica de la población colombiana y de otros países, aumentando los índices de estrés, ansiedad e insomnio, lo que es una alerta para los profesionales de la salud mental. Por ello, este artículo pretende analizar el impacto del confinamiento a causa del COVID-19 en la calidad del sueño, la ansiedad y el estrés en los jóvenes, con el objetivo principal de observar los cambios relevantes percibidos en la población, así como aspectos significativos en la salud mental, que puedan afectar a la población, a través de una revisión de literatura asociada al problema planteado y análisis de variables en las mismas, provenientes de diferentes fuentes científicas.

Palabras clave: Aislamiento, COVID-19, ansiedad, insomnio, estrés.

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INTRODUCTION

The pandemic caused by the new coronavirus (COVID-19), which was reported by the World Health Organization (WHO) in March 2020, and which spread to every country, modifying the lifestyle of the population, who, in view of this situation, adopted biosecurity and isolation measures (Paricio and Pando) (1). The respective public health institutions took actions intending to prevent the spread of the virus, creating new regulations, which affect social, educational, family, and health aspects of citizens, and it is here where attention is directed especially to mental health, an issue that has been observed during the confinement; various groups of people between the stages of childhood, adolescence, young adulthood, adulthood and the elderly, have possibly presented stressors, fear, anxiety, anger, grief, stress, and difficulties in the quality of sleep.

Some cases of contagion by COVID-19 can occur because a person expels small particles of infected saliva and these come into contact with other people, as well as when a surface on which the virus is touched by hands, which are carried to the face, mouth, nose or eyes enter the body of another individual, therefore isolation and disinfection are essential to avoid contagion (Mayo Clinic) (2). Therefore, according to authors such as Gualano et al. (3), and Diz et al. (4), it can be inferred that the use of restrictive measures to counteract the COVID-19 pandemic has caused significant alterations in the quality of sleep, increasing the symptoms of stress as well as the incidence of insomnia, depression, and anxiety.

Especially young adults affected by social distancing, isolation, or the same lockdown by COVID-19, suffered a profound lifestyle change since individuals at this stage of the life cycle interrupted academic activities, sports, recreation, and leisure, generating their feelings of irritability, stress, anxiety, and difficulty in falling asleep, moving to risk behaviors such as domestic violence, cases of physical or sexual abuse, as indicated by Espada et al. Therefore, they are the ones who have been perceived as more predisposed to social confinement, due to possible emotional alterations that they experience in such a situation, such as fear, uncertainty, anguish,

among others, plus the lack of interest in their studies, recreational activities and family life, which can cause possible psychological disorders (Atencio et al.) (5).

In addition, it is important to investigate the variables of sleep quality, anxiety, and stress in the population at this point, especially when social isolation was implemented, focusing on individuals who meet the ages that involve the stage of the life cycle known as youth or young adulthood, since mainly, due to the lack of departmental (Norte de Santander Colombia) or international bibliographic and research content, it is hard to find research products on these topics, highlighting the alterations that it has caused in mental health, as reported in some national and international institutions on the consequences of isolation due to the pandemic, as well as the interest for the guild of psychology and psychiatry.

Given the above, a premise is proposed on the main problems seen in the isolation by the COVID-19 associated with the variables to be studied, followed by current published research, which has references of relevance as relevance to the topic to be studied, then thanks to the bibliographic collection in which the investigative background at the municipal, national and international level is exposed in greater detail on the impact of the confinement of the COVID-19. This study desires to describe the consequences found in the quality of sleep, anxiety, and stress in such published material, to then state the various theories found in the quality of sleep, anxiety, and stress in the published material, national and international on the impact of the confinement of COVID-19, to then describe the consequences found in the quality of sleep, anxiety, and stress in such published material, to then state the various theories that frame the research to be proposed and likewise, the methodology applied.

METHOD

As pointed out by the methodology in a review article is intended to summarize, collect and analyze information on a particular topic, allowing the consolidation of multiple scientific research articles, allowing such analysis, as well as creating conclusions of scientific evidence in

an objective manner (FESC) (6), selection of the information according to prior compliance with the necessary characteristics being the selection criteria proposed in this article such as topics associated to Anxiety, Sleep Quality and Stress these in the period of confinement by COVID-19; affection by confinement in young people; national or international studies; studies belonging to indexed magazines; period of confinement and isolation from 2020 to the present, with a final total of 10, with previous revision of other writings that show a minor relationship with the topic to be treated.

Anxiety

For Rodríguez et al. (7) in their article *Ideación suicida, ansiedad, capital social y calidad de sueño en el transcurso del primer mes de aislamiento* establish as objective to explore suicidal ideation, anxiety, social capital and sleep quality in Colombian men and women in the first month of isolation by COVID-19 pandemic, with an exploratory and online research design, whose sample of 484 people, where four Okasha scales were used in suicide theme (Okasha. IS), ZungSelf-Rating Anxiety Scale-15 (SAS-15), The Personal Social Capital Scale (PSCS) and the Pittsburgh Sleep Quality Index (PSQI). The instruments were digitized (Online) and provided median social networks (WhatsApp, Facebook, and E-mail).

The following results were obtained with these applications: an index of suicidal ideation of 40 % between mild and severe, 97 % of mild to severe anxiety, 81 % in relation to regular person social capital, and 23 % with poor quality of sleep ($p<0.01$) and with PSCS ($p<0.05$), sex was positively correlated with SAS-15 ($p<0.01$) and PQSI ($p<0.05$). The authors found a significant difference in men, as opposed to women, in relation to the various age groups, which led to the conclusion that women are more likely to experience anxiety and suicidal ideation associated with physical isolation, with low social capital, causing possible major psychological problems, Finally, it was recommended by the study to make it clear that the distancing is physical, but it does not mean that it is social isolation, relating it to the fact that social relationships can be maintained from

different levels than physical contact. Taking into account the above, it is observed that one of the variables of interest in Colombia in the first months of isolation by COVID-19 was the quality of sleep people; it should be added that there are other processes and factors associated with the alterations caused by preventive confinement, one of them being alterations in the quality of sleep.

According to Baysan et al. (8), the lockdowns have had a significant impact on the health of people from an international perspective. Thus, they studied the mental health of people in the United States, evaluating characteristics of anxiety and depression, allowing them to determine if these are related to the appearance of new cases in their research effects of the COVID-19 pandemic on mental health (anxiety and depression symptoms) in the United States of America, conducting a retrospective study obtaining data from 1 351 911 adults. According to these authors, new cases of COVID-19 were positively correlated with the mean of anxiety, depression, and anxiety or depression symptomatology, as indicated by the data $r=0.858$, $r=0.710$, and $r=0.887$; $p<0.001$, data $r=0.858$, $r=0.710$, and $r=0.887$; $p<0.001$.

From another point of view, Monterrosa-Castro et al. (9) developed their studies in pandemic regarding the possibility of the presence of symptoms related to generalized anxiety in pandemic and medical performance in general practitioners in the Colombian Caribbean, of cross-sectional type, specifying thoughts, feelings, perceptions, as well as subjectivities. They found that 38.4 % presented generalized anxiety disorder and more than half of them indicated feeling fear or dread of COVID-19. To this, it is possible to associate the symptoms, discomfort in the pandemic, work disillusionment, and perception of discrimination by other individuals towards themselves.

Sleep Quality

According to Monterrosa and Monterrosa (9) in their paper *Prevalencia de problemas de sueño en mujeres climatéricas durante la pandemia COVID-19* to build an approach to the prevalence of sleep problems (PDS) in Colombian climacteric women during the COVID-19 pandemic, a cross-sectional methodology study

that corresponds to a research project on quality of life in menopause under the pandemic where Colombian women and residents in Colombia from 40 to 50 years of age participated in the study in June 2020 anonymously and voluntarily, using the Menopause Rating Scale tool, focusing especially on the third item where the PDS were identified. Likewise, sociodemographic differences were identified, the presence and severity of the PDS as the menopausal status, with which to use to develop quantitative research with descriptive statistics. A sample of 984 women was obtained with a median age of 47.0 (RIC: 42.0 - 53.5) years; 84.5 % of the women were mestizo, 13.7 % Afro-descendants, and 1.7 % indigenous.

In total, 64.5 % were premenopausal; In turn, 39.3 % were in their postmenopausal state, 70 % lived in the Caribbean region of Colombia, and it was found that 637 (64.7 %) of the participants had PDS and 112 (11.3 %) of the participants presented severe PDS. 65.1 % of postmenopausal women reported PDS and 10.1 % had severe PDS. This led the authors to conclude that PDS could be a common difficulty in women in the premenopausal and postmenopausal states during the pandemic. Therefore, this situation should be explored in the gynecological consultation to access prevention services.

In relation to the present investigation, it can be observed how the female population of older ages in their premenopausal or postmenopausal state, can present sleeping problems. This subject is being investigated in the present study but regarding young people, unlike the first investigation at the national level where it is pointed out that women do not present symptoms of stress as they get older; problems are mostly perceived in the quality of sleep, as shown by these authors.

On the other hand, young people were not only influenced by the confinement caused by the pandemic but also by children, as their sleep habits changed. In fact, Rosero and Ortega (10), study the variable of sleep quality in children under the COVID-19 lockdown, which modified mental health. The authors studied how confinement as a preventive measure modified sleeping habits in a sample of Colombian children.

The objective as proposed by Rosero and Ortega (10) was to determine the problems in sleeping habits and their relationship with some characteristics generated by confinement, taking a sample of 259 children aged 5 to 12 years of Colombian nationality residents of Pasto Nariño, through the application of questionnaires addressed to their parents, using the Children's Sleep Habits Questionnaire and the Ad Hoc Questionnaire to evaluate alterations in daily routines, the use of technology and the emotionality of the minors. The research had a descriptive analysis methodology for each instrument, applying an X2 test to verify the association of the variables of sex and socioeconomic level and Spearman's rho correlations between the scales.

This had as relevant results the finding that 45.5 % of boys and girls showed some sleep problems. Parasomnias and daytime sleepiness had the highest prevalence; in turn, positive correlations were found between the scores of the scales, identifying a relationship between the use of technology and emotional changes with sleep difficulties. Thus, it was concluded that indeed sleep habits have been altered due to confinement.

However, it can be observed that the sleep variable is studied in children, while we wish to work with adolescents and young adults as the confinement by COVID-19, has caused alterations in their quality of sleep which has repercussions on their mental health. Likewise, stress is given as a cause of the multiple lifestyle changes, specifically in confinement.

It is noteworthy that Medina-Ortiz et al. (11) developed their study on sleep disorders as a result of the COVID-19 pandemic through the analysis and narrative review of indexed scientific articles and databases such as PubMed, Science Direct, Scopus, and Scielo, identifying the publications where the evaluation or assessment associated with sleep disorders is performed. A total of 12 publications were identified, finding that the different studies indicate that confinement has a negative influence on sleep, in addition to finding that other factors such as stress and anxiety also have an impact on the presence of insomnia. Medina-Ortiz et al. (11) also indicate that, for public health, it is essential to maintain

adequate sleep hygiene. This would positively influence the reduction of difficulties present in chronic diseases.

Rodríguez-De Avila (12), in his article Psychological impact and sleep quality in the COVID-19 pandemic in Brazil, Colombia, and Portugal, evaluates through online questionnaires characteristics of anxiety, suicidal thoughts, and sleep quality in 988 people from Colombia, Brazil, and Portugal, using a non-probabilistic snowball sampling in virtual platforms such as Facebook, email, WhatsApp and Google Forms. It was identified that 85.5 % of the participants had moderate anxiety; in terms of suicidal thinking the results ranged from 57 % to 31.1 % in moderate levels, 53.5 % had poor sleep quality and 32.5 % had a possible presence of a sleep disorder.

Stress

During the confinement due to COVID-19, children, adolescents, young people, adults, and older adults, according to Muvdi et al. (13), indicate that they experienced a variety of emotions, behaviors, and physical or mental symptoms, among others. In this case, the research *Estrés percibido en estudiantes de enfermería durante el confinamiento obligatorio por COVID-19* aimed to determine the level of stress perceived in the period of confinement by COVID-19 in nursing students of a university of the Caribbean region of Colombia. It used a methodology of analytical study, with a sample of 398 students of a university on the Colombian Caribbean coast, using two instruments; one to obtain sociodemographic information and the scale called Perceived Stress created by Cohen and Williamson in 1988, which evaluates the perception of psychological stress and everyday situations that may be perceived as stressful, which was validated in Bucaramanga, Colombia, with a cross-sectional, analytical, quantitative research methodology.

The results were 18.83 and 5.19 in average stress, which indicates a moderate level of stress, being lower in individuals 30 to 35 years of age, with a score of (0.0), in relation to females. Women presented a slightly decreased level of stress, in parallel with men with a score of

(0.04). Finally, the people with higher levels of stress were people residing in rural areas, as conclusions mention that younger males stand out with higher levels of stress in comparison to women, who show lower levels of stress as they age. It is worth mentioning that this research was used as a variable to investigate the “stress in confinement by COVID-19”, which is related to the research that was developed with young university students in the psychology program of the Simon Bolívar University in Cúcuta, where the need to study the levels of stress in young people during a pandemic is observed.

On the other hand, in the research conducted in Peru by Marquina (14), he proposes to describe the self-perception of stress in isolation in times of COVID-19. To achieve this, he proposed a quantitative methodology of cross-sectional type, with a sample of 1,420 people; within the data obtained, it was found that the population under study had high levels of stress during confinement, and women had higher stress compared to men, and those who perform work virtually and those who are between 20 and 30 years old. With respect to the stress variable, the psychological responses to the pandemic are classified as *very high*, due to the concern of acquiring the virus and suffering from the disease caused by it.

Ozamiz et al. (15) analyzed the relationship between the levels of stress, anxiety, and depression in the initial stage of the COVID-19 outbreak. To achieve this, an exploratory-descriptive cross-sectional study was carried out with a sample of 976 individuals, using the DASS-21 (Depression, Anxiety, and Stress Scale). The evaluation instrument used in the research was provided through social networks and e-mail.

The results of this research showed that 81.1 %, representing 792 people were women and 18.9 %, 184 people, were men: 56.5 % were between 18 and 25 years of age for a total of 551 people, while those aged 61 or more represented only 8 %. Stress, anxiety, and depression increase in the high-risk population, as well as the essential preparation to face difficult situations or confinement again, on the other hand, it was evidenced that psychological well-being is essential to face changes in daily life due to isolation.

CONCLUSIONS

This study carried out the collection of different references in which variables or categories such as anxiety, stress, and sleep quality were consulted, where different populations in Colombia and abroad were addressed, which had in common the social isolation by COVID-19. This situation affected different populations significant level, according to what was collected in the various investigations mentioned above, where it is highlighted through statistical evidence, percentages, or through the fulfillment of the hypotheses, it is possible to perceive the negative damage caused by isolation by COVID-19 in the female population as well as in young people or young adults, who are perceived with higher rates of insomnia, high levels of stress and anxiety, which has caused damage to healthy living habits, as well as mental health.

Therefore, it has generated the interest to continue with research on mental health issues in populations at ages that involve the stage of adolescence, young adulthood, and women, who have highlighted a greater impact on variables such as sleep quality, anxiety, and stress in a time of social isolation by COVID-19, including an increase in possible symptoms that can become over time in mental disorders that can cause consciences, if not prevented with the support of professionals in psychology and psychiatry.

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Conceptualizations of the migration phenomenon and its contribution to psychology

Conceptualización del fenómeno migratorio y su aporte a la Psicología

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SUMMARY

The purpose of this article is to reflect on the conceptualizations that arise from the migratory phenomenon and its psychological contribution, starting from the ideas of classical authors, who approach the theoretical approaches to the subject, as well as the contribution of psychology to the migratory phenomenon. It also compiles current information from authors who highlight the need to pay attention both to the existing theoretical work and to the immigrant's experiences. The reflection was made based on 27 articles that gather the theoretical and psychological aspects of the subject, from a tour of classical authors in the databases of Dialnet, Scielo, and PubMed. The aspects resulting from the conceptualization of the migratory phenomenon, reflect on the way the immigrant faces his/her process, which not only depends on the attitude he/she assumes of acculturation

but also on the forms (ways) of valuation (assessment) and meaning that he/she gives to his/her experience. The intention of the authors is reevaluated when clearing the migratory phenomenon from the conceptualizations that were emerging through time. From the Psychology of Liberation, towards a Psychology of Acculturation, which assumes the theories on the dual change (cultural and psychological) that an immigrant faces in his/her process of adaptation, attitude, and culture.

Keywords: Migration phenomenon, immigrants, acculturation, adaptation, coping.

RESUMEN

El propósito de este artículo es reflexionar sobre las conceptualizaciones que surgen del fenómeno migratorio y su aportación psicológica, partiendo de las ideas de autores clásicos, que abordan las aproximaciones teóricas al tema, así como la aportación de la psicología al fenómeno migratorio. También recoge información actual de autores que destacan la necesidad de prestar atención tanto a los trabajos teóricos existentes como a las experiencias de los inmigrantes. La reflexión se hizo a partir de 27 artículos que recogen los aspectos teóricos y psicológicos del tema, a partir de un recorrido por autores clásicos en las bases de datos de Dialnet, Scielo y PubMed. Los aspectos resultantes de la conceptualización del fenómeno migratorio, reflexionan sobre la forma en que el inmigrante enfrenta su proceso, que no sólo depende de la actitud que asume de aculturación, sino también de las formas (maneras) de valoración (evaluación) y significado que le da a su experiencia. La intención de los autores se reevalúa al despejar el fenómeno migratorio de las

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conceptualizaciones que fueron surgiendo a través del tiempo. De la Psicología de la Liberación, hacia una Psicología de la Aculturación, que asume las teorías sobre el doble cambio (cultural y psicológico) que enfrenta un inmigrante en su proceso de: adaptación, actitud y cultura.

Palabras clave: *Fenómeno migratorio, inmigrantes, aculturación, adaptación, afrontamiento.*

INTRODUCTION

The United States, the main receiving country for migrants in the world and the main source of international remittance flow from 2000 to 2010 (1), according to UN data (2), has received 3 167 072 people in recent years, being the main country of origin of immigration, Latin American countries, increasing annually by 1.78 %. The United States, both now and for many decades, has been the leading destination country for international migrants worldwide, topping the list of destination countries since UN DESA (3) began collecting and publishing. Thus, in 2020 a total of 50.63 million Latin American migrants were living in the country. Of the 25.4 million migrants from Latin America and the Caribbean in the region in 2020, 85 % (or 21.7 million) came from Central America, Mexico, and the Caribbean. Among the 58.71 million migrants in 2020, 48.2 % were men and 51.8 % were women, this gender distribution among migrants in the region has remained relatively equal over the last three decades, with 29 % of them from 30 to 44 years old; 18 % from 15 to 29 years old; 5 % from 0 to 14 years old; 27 % from 45 to 59 years old and 22 % over 60 years old.

Migration, also called “emigration, immigration or return” (4), is considered a phenomenon that has been increasing in recent decades, and the trend is for it to increase even more (5), which has been demonstrated by current statistics (2) since Latin American immigrants are in constant challenges of adaptation and intercultural dialogues with the host country. Migration can thus result from cultural dialogue, as well as from the psychological processes of adaptation that an immigrant faces. With respect to this, Psychology has tried to contribute so that this process may be satisfactory in the psychological and cultural changes, to which it can respond.

Thus, immigrants appear as a focus of interest for research that focuses on diverse migratory

experiences: dreams, experiences, expectations, frustrations, and disappointments (6); not only because of the recurrence of immigrants but because of the psychological and cultural processes they face. In addition, there is a tendency to define the migratory phenomenon according to the experiences that immigrants describe and typecast as a “dream or a nightmare” (7). In this sense, this article aims to reflect on the conceptualizations that arise from the migratory phenomenon and its psychological contribution, based on the ideas of classical authors, who approach the theoretical approaches regarding the subject, as well as the contribution of psychology to the migratory phenomenon.

This article also compiles current information from authors who highlight the need to pay attention, both to existing theoretical work and to immigrant experiences, to answer the following question: how do immigrants deal with the migratory phenomenon? Finally, the reflections on the subject are highlighted as well as the need to continue researching it.

METHOD

A literature review of scientific articles published in the 90s was carried out, collecting the classical authors who studied the migratory phenomenon, bringing together the theoretical and psychological aspects of the subject. In addition, these aspects were considered, from 2004 to 2020, to reflect in chronological order. A search process was followed in the Dialnet, Scielo, and PubMed databases, using the descriptors “migratory phenomenon” and “classical authors”. The criterion that each pair of terms appeared listed in the title of the article or the abstract was applied, identifying a total of 27 susceptible articles for this study. It is important to mention that the selected articles were imported into the Nvivo software, which produced a word cloud that will be important to highlight the theoretical evaluation of the scope according to the conceptualizations found.

DISCUSSION

Theoretical Approaches to the Migratory Phenomenon

The study of migration was born in Great Britain and the United States at the end of the 19th century

and the beginning of the 20th century, due in large part to the fact that both countries had a large volume of immigrants and because of the possibility of generating scientific knowledge to face social problems that arose around the displacement of populations in space (8). The first studies on migrant populations focused on the study of sociodemographic characteristics, and on the regularity and social changes that occurred in migratory processes (8). Ravenstein (9), was one of the forerunners of studies on migrations, highlighting the characteristics of this population (10), in topics of “volume”, he built “the laws of migrations”, explained by Arango “one hundred years later”, developing the idea in which he explains:

The order of difficulties in the study of migratory movements, as a multifaceted phenomenon, would require an interdisciplinary treatment for its full understanding. Indeed, the dimensions of the migratory fact (event) are multiple, and, for this reason, it constitutes an object of interest for demographers, economists, sociologists, anthropologists, geographers, statisticians, social psychologists, and historians. As has often been pointed out, the explanation of migratory movements requires a prior understanding of the complex interrelationships between demographic factors and economic and social factors, paying due attention to the cultural and socio-psychological reference frameworks in which the decision to migrate is inserted (10).

On the other hand, Thomas et al. (11), were interested in knowing the social regularities related to migrations. In contrast to Ravenstein (9), these authors adopt a sociological perspective of social reality. While for Ravenstein the most important thing was the volume of migrants and their sociodemographic characteristics (9), these sociologists contrast the traditions, customs, social values, and individual attitudes, through which they consider that it is possible to obtain knowledge about the institutions and social organizations. Next, we reflect on the contribution of psychological theories that explain the migratory phenomenon.

Contribution of psychological theories from the classical authors

Haas (12) argues that psychological theories, especially neoclassical and other functionalist theories, which try to explain migrations, lack a comprehensive model of “behavior” and therefore

treat immigrants as “experiments” in a culture that is not their own. In this sense, from the Liberation Psychology current “it is about identifying, analyzing and transforming the situations that legitimize and sustain a *status quo*, in which asymmetrical relationships between groups are naturalized” (13). That is to say, the study of the migratory phenomenon is allowed, but internalizing the experience of those who live it. Coinciding with Sayad (14), it can be affirmed that migration is conceived as a transition process that implies incorporation into a new socio-cultural context. In this way, the dimension of vulnerability and risk of exclusion of the immigrant population is also considered, as well as the creation of mechanisms that are seeking to overcome said injustices.

In the Contributions of Liberation Psychology to the integration of the immigrant population, Albar et al. (15) define migration as an inherent dimension of the human being. However, the dominant psychological perspective in the study of international migration has been the *Psychology of Acculturation* (16). Therefore, together with the *Psychology of Liberation*, the psychological perspective adopted for the study of international migrations has been the *Psychology of Acculturation* (15), in which the concept of acculturation is understood as: “the dual process of cultural and psychological changes that take place as a result of contact between two or more cultural groups and their members. At the social level, this concept implies changes in social structures, institutions, and cultural practices. At the individual level, it implies changes in the behavioral repertoire of people” (16). In this order of ideas, the primary psychological phenomenon that immigrants have to face is called acculturation (5) and it is the process of psychological and cultural change resulting from intercultural contact (17).

Immigration as a Psychological Phenomenon of Acculturation: Conceptualizations

Cultural changes have been primarily highlighted in the study of the phenomenon of immigration; these include alterations in customs and the economic and political life of immigrants. Regarding these alterations, in 2019 ECLAC (18), reported that the social, economic, and cultural impact of migration is notoriously positive for the countries of Latin America, this has to do with the need for the immigrant to connect, not only to a new culture but also to a new

form (way) of social organization, which implies the rethinking and resignification of their identity.

Following Ferrer (4), cultural changes require introspection of the concept of adaptation, which has been studied since the 1990s, to explain the changes that immigrants have to face. In 1990, Lambert and Taylor (19) called the “Melting Pot” the basic idea that immigrants, whatever their culture, once they arrive in the host society gradually assume the new culture as their own and they build with all the others a common cultural life. However, this theory was not enough to explain all the difficulties, especially psychological, of the immigration phenomenon, so the concepts of acculturation are assumed to explain the attitudes of immigrants in the receiving country.

Thus changes, not only cultural but also psychological ones, are explained from the theory of psychological acculturation, which involves attitudes towards the acculturation process, one's own identity, and behaviors towards the host culture (16). Therefore, the adaptation can be psychological or cultural (20). Psychological adaptation is related to the well-being experienced as a result of cultural contact. Cultural adaptation involves the implementation of social skills that are necessary to function adequately in a complex cultural environment (16). In this way, the authors propose that the successful solution, when facing these changes, is about having knowledge of the host culture, and having contact with them, even from Psychology contributions can be made in the development of “intercultural competencies”, which facilitate the immigration process (5).

From this perspective, the phenomenon of immigration is understood from the integration of the four “acculturative” strategies (21), which result from the study of two dimensions, with this, the immigrant population seeks to achieve its well-being based on: (dimension 1) the relative preference for maintaining one's own identity and culture; and (dimension 2) the preference for having contact with other cultural groups. Combining these two dimensions, the Psychology of Acculturation proposes four possible acculturation strategies, which, in turn, can be seen as a practical solution to this process:

Integration, in which it is considered valuable to maintain the identity and culture of origin and develop relationships with the receiving society.

Assimilation, in which it is considered valuable to maintain relations with the groups of the receiving society.

Separation, in which identity and cultural characteristics are preserved, avoids relationships with the receiving society.

Marginalization is characterized by the loss of cultural identity and avoidance of the receiving society.

In parallel, Berry (21) proposes four acculturative strategies in the receiving society:

The host (receiving) country accepts and values cultural diversity: multiculturalism.

The receiving (host) country considers establishing relationships with immigrants: assimilation.

The cultural characteristics of immigrants are maintained, but relationships with them have been rejected: segregation.

The force of the receiver causes them to lose contact with the culture of origin: exclusion.

Here, *culture* plays a preponderant role, the authors consider that acculturation is a process that can make one forget the culture of origin (5). In this sense, acculturation denotes psychological and cultural changes resulting from intercultural interaction. However, Berry's research and experiments (21) with immigrants denote an “attitude towards acculturation”, in which he proposes a model with an interactional impact, in response to the acculturative strategies of the receiving country:

Immigrants consider their cultural identity and customs valuable enough that they can maintain them in the receiving country (maintenance).

Relationships with other people or groups in society are really valuable enough to seek and foster them (participation).

Starting from these attitudes, and seeing immigration as a psychological phenomenon, capable of being addressed, the immigrant has the possibility of maintaining his/her culture, and in turn, maintaining contact with the people of the receiving (host) country. Also, it may happen that the immigrant does not want to maintain his/her culture and his/her native language (marginalization), that is, the attitude toward the acculturation of this migratory phenomenon, depends on the immigrant, on his/her dream and his/her way of facing the dual change of the phenomenon.

In this order of ideas, another conceptualization arises in the phenomenon of immigration, because, if the practical solution of the immigration process is found in the attitude of acculturation, the need

arises to ask, how do immigrants face the migratory phenomenon? Initially, the Acculturation theory responds to attitudes, however, Lazarus and Folkman (22) consider that any event will have different meanings for each individual, and the stress that harms them is the result of that assessment. Thus, coping, according to this theory, is the adaptive response as response to stress in the face of a threatening event (personal experiences of immigrants), and it is understood as the way that a person has to overcome the demands that are presented to him or her throughout life. In this sense, reference is made to *coping strategies* as the resources that the subject uses (cognitive, behavioral, and emotional responses) in the assessment of a situation (to immigrate), and to the reaction (attitude of acculturation) that he/she has when coping with the situation (23,24).

Coping is defined as “the constantly changing cognitive and behavioral efforts that are carried out to manage specific external and/or internal demands that are evaluated as exceeding or overflowing a person’s resources” (25 p.164). In accordance with the above, Lazarus and Folkman (25) propose two ways of dealing with situations:

Problem-focused coping: These are actions focused to solve the problem, as well as the developing of new resources to deal with the situation.

Emotion-focused coping: Actions carried out by people who are focused on redirecting and controlling the emotional repercussions experienced by stressful situations. It is based on the feeling of lack of control over the threatening situation.

Complementing Ferrer (4), this cognitive assessment model of Lazarus and Folkman (26) applied to the phenomenon of immigration is recognized, from:

The immigrant’s assessment of the act of emigrating (cognitive coping).

The way of behaving in the new culture (behavioral coping).

The regulation of emotional aspects and the attempt to maintain emotional balance in his/her adaptation process (affective coping).

Considering these last aspects of the conceptualization of the phenomenon, we reflect on the way immigrants face their process, which not only

depends on the attitude they assume of acculturation but also on the ways of assessment and meaning that he/she gives to his/her experience.

CONCLUSION

From the reflection proposed in this article on the theoretical perspective, which highlights the beginning of migratory studies, which were initially focused on the statistics of the recurrence of immigrants and later, focused on social changes, the dialogical character (nature) that allowed the contribution of psychological theories on the subject is considered. In fact, although there are currently statistical studies of migration, the position of the immigrant is even recognized in relation to a psychological and cultural state, in the social context. Therefore, the intention of the authors is revalued when clearing the migratory phenomenon from the conceptualizations that were emerging over time. From the Psychology of Liberation, towards a Psychology of Acculturation, which assumes the theories on the dual change (cultural and psychological) that an immigrant faces in his/her process of adaptation, taking the attitude of acculturation that he/she decides, in the resignification of his/her experience, and the rethinking of assimilating, maintaining or segregating his/her culture. And, in turn, the importance of the assessment that an immigrant gives to his/her experience is highlighted, from the cognitive, behavioral and emotional coping towards the migratory phenomenon. Which clears the way for the researcher interested in contributing from the cultural, social, and psychological from an integrating look at the phenomenon of study. Here, new ways of studying attitudes, adaptation, and coping with migration begin to be reconsidered, from intercultural dialogue; personal decisions about multicultural interaction; the individual experiences of immigrants; the ways of reacting to social discourse; and the new ways of studying culture, from its maintenance to its dissociation; new ways of social interaction; the new social changes; the mental conceptions of the immigrant in response to the attitudes and changes of the receiving country; from the integration of all these aspects in Psychology.

Table 1
Theoretical evaluation of the scope according to the conceptualizations found

Authors	Year	Keywords	Fundamental elements	Critical analysis
Ravenstein; Arango; Thomas et al.; Lambert and Taylor	The 90's: 1976 1985 1990 1996	Volume, migratory processes, social changes.	Theoretical aspects of the phenomenon. Migration is a multifaceted phenomenon that deserves interdisciplinary treatment.	At the beginning of the study of migrations, statistical and sociodemographic aspects were considered. Then, the need to study the phenomenon from interdisciplinarity was created.
Ward; Sayad; Hass; Sevillano; Sam; Berry; Castro	2004 2005 2006 2010 2011	Liberation Psychology. Psychology of Acculturation. Adaptation. Dual changes: cultural and psychological	Psychological theories that explain the phenomenon. Strategies and “acculturative” dimensions.	The primordial psychological phenomenon that the immigrant has to face is acculturation. Seen as an attitude that he/she assumes when he/she arrives in the host country, the receiving country.
Ferrer Cepal Freier UN	2014 2019 2020	Changes, adaptation, impact	Social, cultural, and economic impact.	Culture plays a predominant role in this study since acculturation can make the immigrant forget his/her culture of origin.
Lázarus and Folkman; Fernández et al., Ferrer.	1991 1984 1986 1987 2014	Coping strategies	Assessment of the immigrant experience. Meaning he/she gives to his/her experience.	If the practical solution is found in the attitude of acculturation; the psychological solution lies in coping.

Source: Data Analysis Nvivo 12.

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Obesity and depression: A molecular and epidemiological view of two comorbid disorders

Obesidad y depresión: una visión molecular y epidemiológica de dos trastornos comórbidos

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SUMMARY

Currently, depression and obesity are chronic disorders considered public health problems because of their association with functional impairment, ominous healthcare costs, and increased morbidity and mortality rates worldwide. However, based on the high prevalence of both pathologies, a possible relationship between obesity and depression has been presumed and studied in recent years, demonstrated through observational epidemiological studies and meta-analyses, positioning them as commonly comorbid chronic diseases. Thus, obesity increases the risk of depression, while depression can lead to obesity, thus

establishing a bidirectional relationship between them. From a molecular point of view, depression and obesity are chronic diseases where immune disruption in the form of neuroinflammation or low-grade systemic inflammation are the hallmark disturbances in the central and peripheral tissues alongside the classic obesity-related metabolic disorders, characterized by insulin and leptin resistance and cortisol increase leading to hypothalamic-pituitary-adrenal axis dysregulation. However, how obesity and depression are linked at the pathophysiological level is not fully understood yet, so the present narrative review aims to determine the shared molecular basis of obesity and depression and the epidemiological evidence supporting the bidirectional link between these entities.

Keywords: *Obesity, depression, epidemiological evidence, pathophysiology, molecular basis.*

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RESUMEN

Actualmente, la depresión y la obesidad son trastornos crónicos considerados problemas de salud pública por su asociación con el deterioro funcional, los ominosos costes sanitarios y el aumento de las tasas de morbilidad y mortalidad en todo el mundo. Sin embargo, en base a la alta prevalencia de ambas patologías, en los últimos años se ha presumido y estudiado una posible relación entre la obesidad y la depresión, demostrada a través de estudios epidemiológicos observacionales y meta-análisis, posicionándolas como enfermedades crónicas comúnmente comórbidas. Así, la obesidad aumenta el riesgo de depresión, mientras que la depresión puede conducir a la obesidad, estableciendo así una relación bidireccional entre ambas. Desde un punto de vista

molecular, la depresión y la obesidad son enfermedades crónicas en las que las alteraciones inmunológicas en forma de neuroinflamación o inflamación sistémica de bajo grado son las alteraciones distintivas en los tejidos centrales y periféricos, junto con los clásicos trastornos metabólicos relacionados con la obesidad, caracterizados por la resistencia a la insulina y la leptina y el aumento del cortisol que conduce a la desregulación del eje hipotálamo-hipófisis-suprarrenal. Sin embargo, aún no se comprende del todo cómo se relacionan la obesidad y la depresión a nivel fisiopatológico, por lo que la presente revisión narrativa pretende determinar las bases moleculares compartidas de la obesidad y la depresión y las pruebas epidemiológicas que apoyan el vínculo bidireccional entre estas entidades.

INTRODUCTION

Depression and obesity are chronic diseases considered global public health problems due to increased morbidity and mortality rates over the last half-century and are associated with individual functional impairment and high healthcare costs (1-4). Depression is a common disorder worldwide, affecting approximately 3.8 % of the population, including 5 % of middle-aged adults and 5.7 % of adults over 60 years, affecting about 280 million people globally (5). In Latin America and the Caribbean, 5 % of the adult population has depression (6), while Ecuador exhibits a 4.6 % prevalence (7). Thus, depression is the leading cause of disability in developed countries, with a clear association in the quality of life and functional impairment comparable to that observed in other chronic non-communicable diseases such as diabetes or heart disease. In addition, depression has also been associated with increased national absenteeism and health care costs (8,9). The World Health Organization (WHO) has stated that depression, followed by cardiovascular disease, will continue to be the leading cause of disability worldwide in the coming years (10).

Obesity is another disease of global proportions that mainly affects industrialized countries and has been affecting an increasing number of individuals (11). According to the WHO, by 2016, there were 1.9 billion overweight adults in the world, of whom some 650 million were obese, noting that these conditions were once problems

of the first world. Still, these disorders are now increasing in low- and middle-income countries, particularly in urban settings (12).

On the other hand, it has been estimated that six of every ten adults in Latin America had obesity by 2016, and approximately 40 % of children and adolescents are overweight (13). Similarly, in Ecuador, according to the 2012 national health and nutrition survey (ENSANUT), 62.8 % of the participants had weight-related problems, of which 40.6 % were overweight and 22.2 % obese, with a lower obesity prevalence in rural settings like the Sierra (14.9 %), Coast (20.5 %) and Amazon (16.1 %) respectively (14).

In this regard, obesity has been linked to a wide range of comorbidities, including hypertension, atrial flutter, atherosclerosis, type 2 diabetes, non-alcoholic fatty liver disease and steatohepatitis, musculoskeletal system disorders, cancer, and psychiatric disorders associated with functional impairment, cognitive dysfunction, anxiety, depression and reduced quality of life (15,16). Obesity is also associated with higher healthcare costs, increased medication use, high absenteeism rates, disability, early retirement, and loss of productivity (17,18).

Based on the high prevalence of obesity and depression, a possible link between the two diseases has been presumed and consequently studied in recent years. Many epidemiological studies and meta-analyses have demonstrated a positive and statistically significant association between obesity and depression, positioning them as commonly comorbid chronic conditions (19-23). In this regard, it has been shown that obesity increases the risk of developing depression. In the same vein, depression, specifically in its atypical forms, can lead to obesity, establishing a bidirectional relationship (24). A meta-analysis of longitudinal studies found that obese people have a 55 % risk of developing depression, while depressed people exhibited a higher risk of developing obesity (58 %) (21). Factors like gender, age, ethnicity, and socioeconomic status probably were confounding variables in this relationship (25).

The molecular mechanisms involved in developing these entities have been extensively studied. They could originate in the hypothalamic-pituitary-adrenal (HPA) axis dysregulation,

low-grade inflammation, endocrine disorders, and oxidative stress genetic factors (26,27). Depression and obesity share critical immune features like adipose and central nervous system inflammation. This is especially true in the adipose tissue where monocytes experience polarization to M1 macrophages during hypertrophic expansion since leptin, IL-1, and IL-6 change the proteomic program in the sick adipocytes. It is essential to highlight that insulin and leptin resistance and increased cortisol blood levels may cause dysregulation of the HPA axis in obese people via increased inflammation induction (27,28).

Since the pathophysiological processes linking obesity and depression are not fully understood yet, this narrative review provides an in-depth view of the epidemiological and molecular evidence supporting the bidirectional link between these exciting conditions.

Obesity and depression: epidemiological evidence of a bidirectional association

There is epidemiological evidence demonstrating the link and interaction between obesity and depression. Furthermore, several cross-sectional and longitudinal studies meta-analyses have confirmed the positive association between both pathologies, highlighting the bidirectional nature of the association as the main feature of this phenomenon (Table 1) (21,23,29-41). For this reason, some authors have focused their attention on whether obesity increases the risk of depression or whether depression increases the obesity risk. A systematic review including 25 population-based studies found that 10 of these reported that significant weight gain or body mass index (BMI) represented good predictors for the onset and severity of depression. Whereas, of the remaining 15 studies assessing the depression related to obesity, only half reported that depression was a significant predictor of weight gain and BMI over time (39).

Furthermore, variability in weight gain according to depression subtype has been reported in people with the highest BMI levels, specifically in individuals with atypical depression than those with melancholic depression (32). Similarly, evidence shows that the onset of obesity in

late adolescence increases the likelihood of developing depression in adulthood. In contrast, the development of depression in early adolescence increased the risk of obesity in late adolescence (35,41).

Another peculiarity of this pair of diseases is that their association seems stronger among women (21,29,30) and morbidly obese individuals. At the same time, it becomes weaker or even non-significant when the patient is male or when the BMI is between 25-30 kg/m² (21,29). In this regard, Byrne et al. proposed that the increased risk of developing depression in women may be due to the increase in sex hormones during adolescence, which may increase the risk of obesity (40).

On the other hand, this relationship is stronger when abdominal circumference is employed as a diagnostic criterion for obesity rather than BMI. This behavior could be explained because visceral fat accumulation is associated with more metabolic disturbances and a higher low-grade inflammation process. Moreover, obese individuals with hypertension, insulin resistance, dyslipidemia, elevated C-reactive protein (CRP), and other disorders had a higher risk of depression than obese subjects with a healthier metabolic profile (36,38).

Another relevant factor to consider is antidepressant medication because there is a common belief that these drugs can increase patients' weight. In this regard, a meta-analysis including 116 studies assessing the influence of antidepressant administration on body weight found that, in the short term, these drugs do not significantly impact patients' anthropometric variables. However, when assessing its long-term effect (up to 4 years), only mirtazapine was associated with obesity (42). Similarly, another meta-analysis, including 70 clinical studies, reported that normal or overweight patients with depression had better remission rates with antidepressant treatment than obese patients (43). Likewise, a longitudinal study in patients with depression under pharmacological treatment revealed that depression status was a better predictor of weight gain than antidepressant treatment (44). These findings suggest that the relationship between obesity and depression has a common pathophysiological origin beyond the use of the antidepressant.

OBESITY AND DEPRESSION

Table 1
Epidemiological evidence of the association between obesity and depression

Authors (year)	Journal	Methodology	Results	Conclusions
Luppino y col. (2010) (21)	Archives of general psychiatry (Q1)	SR and Meta- analysis: 15 longitudinal studies (N=58745).	Obe -> Dep: OR= 1.55; 95 % CI= 1.22-1.98; p<0.001. SP -> Dep: OR= 1.27; 95 % CI= 1.07-1.51; p<0.01. Dep -> Obe: OR= 1.58; 95 % CI = 1.33-1.87; p<0.001.	Obesity increases the risk of depression and depression predicts the development of obesity.
de Wit y col. (2009) (23)	Psychiatry Research (Q1)	SR and Meta- analysis: 17 Cross-sectional studies (N= 204507).	Obe -> Dep: OR= 1.26; 95 % CI = 1.17-1.36; p <0.001. Obe -> Dep in Women: OR= 1.31; 95 % CI = 1.27-1.40; p <0.001. Obe -> Dep in men: OR= 1.12; 95 % CI = 0.96-1.30; p = 0.148. Obe -> Dep: - BMI 25-29,9 kg/m ² : OR= 1.02; 95% CI= 0.84-1.23; p>0.05. Men: OR= 0.84; 95 % CI= 0,72-0,97; p>0.05. Women:	There is a significant positive association between depression and obesity, which appeared to be more marked among women.
Jung y col. (2017) (29)	The British journal of psychiatry (Q2)	SR and Meta- analysis: 183 clinical studies, cross-sectional and longitudinal studies (N= 6788834)	OR= 1.16; 95 % CI=1,07-1,25; p<0.05. - BMI \geq 30 kg/m ² : OR= 1.18; 95 % CI =1,11-1,26; p<0.05. Men: OR= 1.07; 95 % CI=0,95-1,19; vs. Women: OR= 1.41; 95 % CI=1,23-1,63; p=0.003. - BMI \geq 40 kg/m ² : OR= 1.59; 95 % CI=1,12-2,24; p<0.05.	Obesity increases the risk of depression. The association between obesity and depression differs by gender. Morbid obesity increases the risk of depression more than non-morbid obesity.
Abou Abbas y col. (2015) (30)	Clinical obesity (Q3)	SR and Meta- analysis: 8 Cross-sectional studies and case- control studies (N= 12641)	Obe -> Dep: OR= 1.27; 95 % CI = 1.11-1.44; p=0.003. Women: OR= 1.41; 95% CI=1.11-1.79; vs. Men: OR= 0.73; 95 % CI=0.34- 1.54; p = 0.08.	There is evidence of a positive association between obesity and depression among adult populations in Middle Eastern countries, which appears to be more marked among women.
Mannan y col. (2016) (31)	Asian Journal of Psychiatry (Q2)	SR and Meta- analysis: 21 Longitudinal studies (N= 226063)	Dep -> Obe: RR= 1.37; 95 % CI = 1.17-1.48; p<0.05. Obe -> Dep: OR= 1.18; 95 % CI = 1.04-1.39; p<0.05.	This study suggests a bidirectional link between obesity and depression. However, the direction in which depression leads to obesity appears stronger.
Silva y col. (2019) (32)	Obesity Reviews (Q1)	SR and Meta- analysis: 22 Observational studies (N= 14757)	Atypical depression vs Melancholic: DMP = 2.55; 95 % CI = 1.32 -3.70; p < 0.001.	Atypical depression was significantly associated with elevated BMI compared to melancholic depression.
Quek y col. (2017) (33)	Obesity Reviews (Q1)	SR and Meta- analysis: 18 Cross-sectional studies (N= 51272)	Children and adolescents Obe -> Dep: OR= 1.34; 95 % CI = 1.10-1.64; p = 0.005.	Obese children and adolescents are more likely to suffer from depression and depressive symptoms.

Continue page S6...

...continuation Table 1.

Authors (year)	Journal	Methodology	Results	Conclusions
Mannan y col. (2016) (34)	SR and Meta- PLoS One (Q1)	Adolescents analysis: 13 Longitudinal studies (N= 32026).	There is a bidirectional association Dep -> Obe: RR= 1.70; 95 % CI = 1.40-2.07; p<0.05. Obe -> Dep: RR= 1.40; 95 % CI = 1.16-1.70; p<0.05. Obe -> Dep in women after 10 years follow-up: RR= 1.93; 95 % CI = 1.76-2.52; p=0.03.	between depression and obesity. This association was stronger in female adolescents.
Rao y col. (2019) (35)	Journal of Affective Disorders (Q1)	SR and Meta- analysis: 11 Cross-sectional and longitudinal studies (N= 69893).	Children and Adolescents Obe -> Dep: OR= 1.851; 95 % CI = 1.410-2.429; p<0.05. SP -> Dep: OR= 1.068; 95 % CI = 0.889-1.283; p>0.05.	Obese children and adolescents had a significantly higher risk of depression.
Xu y col. (2011) (36)	Obesity Research and Clinical Practice (Q2)	SR and Meta- analysis: 15 Cross-Sectional studies	Abdominal obesity -> Dep: OR= 1.38; 95 % CI = 1.22—1.57; p < 0.05.	Abdominal obesity increases the risk of developing depression, regardless of gender and age.
Pereira- Miranda y col. (2017) (37)	Journal of the American College of Nutrition (Q2)	SR and Meta- analysis: 9 Observational studies (N= 171701)	Obe -> Dep: RP= 1.32; 95 % CI = 1.26-1.38; p < 0.05.	There is consistent evidence that being overweight or obese increases the risk of developing depression.
Jokela y col. (2014) (38)	Molecular Psychiatry (Q1)	SR and Meta- analysis: 8 Observational studies (N= 30337)	Obe -> Dep: OR= 1.45; 95 % CI= 1.30-1.61; p < 0.05. Metabolically healthy obesity vs non-healthy obesity: Obe -> Dep: OR= 1.23; 95 % CI = 1.05-1.45; p < 0.05.	Obese vs Non- Obese: Obese people with a favorable metabolic profile have an increased risk of depression, but the risk is higher when obesity is combined with an adverse metabolic profile. with an adverse metabolic profile.

Q: Quartile; SR: Systematic Review; Obe: Obesity (BMI: $\geq 30 \text{ kg/m}^2$); OW: Overweight BMI: 25-29,9 kg/m^2); Dep: depression; DMP: Weighted mean differences ; OR: Odds Ratio; RR: Relative Risk; RP: prevalence ratio; CI: confidence interval; BMI: Body mass index.

Pathophysiological and molecular basis involved in obesity and depression

The previously demonstrated bidirectional relationship between depression and obesity can be explained based on behavioral, psychological, and biological factors shared by both pathologies, or that some of these factors present in one of them lead to the development of the other, the purpose of this section is to delve into the biological aspects common to both pathologies. Thus, it is plausible that the biological bases of obesity and depression may have a common genetic component, which

leads to alterations in the systems that maintain energy balance and the brain circuits that regulate mood and homeostatic responses. It is therefore not uncommon to observe that hyperactivation of the HPA axis, the autonomic nervous system (ANS), the systemic inflammatory response, neuroinflammation, and energy metabolism are some of the most studied biological determinants that molecularly link obesity and depression and that may act as common mechanisms or as mediating mechanisms in the causal relationships between them (Figure 1).

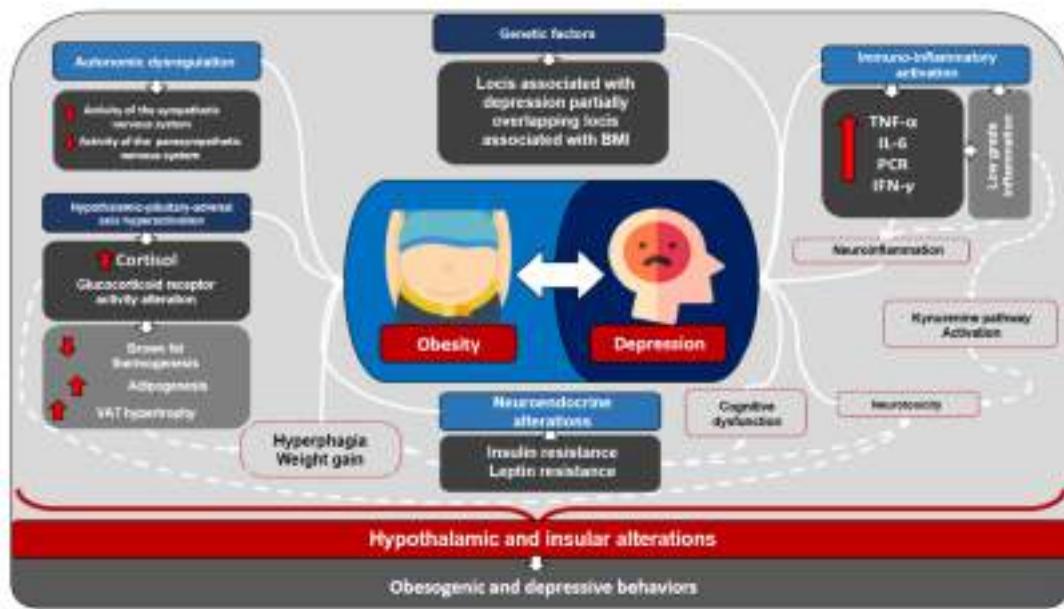


Figure 1. Molecular basis of obesity and depression. Genetic factors, autonomic dysregulation, hypothalamic-pituitary-adrenal (HPA) axis hyperactivation, immuno-inflammatory activation, and neuroendocrine disturbances trigger hypothalamic and insular alterations responsible for obesogenic and depressive behaviors. TNF- α , tumor necrosis factor-alpha; IL-6, interleukin-6; CRP, C-reactive protein; IFN- γ , interferon-gamma.

Genetic factors

According to recent evidence, the link between depression and obesity (from a phenotypic point of view) may originate in partially overlapping genetic factors. In fact, these factors are equally involved during the development of these pathologies, with an additive genetic effect accounting for 40 % of these conditions' heritability (45,46). Genome-wide association studies conducted in patients and animal models of depression have identified at least half a hundred genetic loci associated with depression phenotypes (47-49). Some of these factors overlap or were relatively close to genes previously linked to BMI and severe early-onset obesity (50,51). These include the ras kinase suppressor gene 2 (KSR2), olfactomedin 4 (OLFM4), and neuronal growth regulator gene 1 (NEGR1), the latter responsible for modulating synaptic plasticity in the cortex, hypothalamus, and hippocampus, and thus, interfering with appetite and mood regulation and playing a crucial role in the possible shared mechanisms between obesity and depression (52-54).

Genome-wide association studies for obesity have recognized >200 loci related to BMI, obesity status, and measures of fat distribution (50). In addition, genes close to loci associated with BMI are also highly expressed in the hypothalamus and pituitary gland and the hippocampus and limbic system, structures involved in appetite and energy homeostasis and mood regulation, respectively (46). These findings suggest a genetic overlap of brain regions involved in mood regulation with specific brain regions involved in the body mass and energy homeostasis, a fact reaffirmed by studies showing partial overlap of the polygenic architecture of depression on obesity-related traits (55).

HPA axis hyperactivity

Within the neurobiology of psychiatric disorders, one of the most consistent findings is hypercortisolism caused by hyperactivation of the HPA axis, leading to a non-adaptive or physiological secretion of cortisol (56). HPA axis hyperactivation represents an important and latent

mechanism connecting depression and obesity. Indeed, chronic exposure to elevated cortisol levels induces neurotoxicity in stress-susceptible limbic regions associated with depression, such as the amygdala and hippocampus (57-59). The influence of chronic hypercortisolism on mood is well-illustrated in Cushing's syndrome, where 50 %-80 % of patients with active disease have depressive symptoms or major depressive disorder. This entity improves with an appropriate hypercortisolism treatment, demonstrating the role of cortisol in depression (60).

Prolonged hyperactivation of the HPA axis is common in at least 50 % of adult obese patients. Similarly, it has also been found that hypercortisolemia can substantially increase the risk of developing obesity in children (61,62). In addition, a decreased rate of brown fat thermogenesis due to low energy expenditure, increased appetite for hypercaloric foods, adipogenesis induction, and visceral adipose tissue hypertrophy are some of the mechanisms triggered by high cortisol levels in obesity (63).

A finding of interest in the HPA axis during chronic inflammation secondary to obesity is glucocorticoid receptor (GR) activity dysregulation, which influences the axis inhibition indirectly, as this receptor is responsible for the negative feedback of cortisol suppression. In this respect, proinflammatory adipokines activate components of the intracellular signaling cascade that repress the nuclear translocation of the GR or are involved in the interaction between this receptor and gene promoter response elements (64). Likewise, altered 5 α -reductase activity and dysregulation of 11- β -hydroxysteroid dehydrogenase (11- β HSD) isoenzymes 2 and 1 are other alterations in cortisol metabolism related to obesity and depression interplay (65,66).

Autonomic dysfunction

Autonomous nervous system dysregulation is another pathophysiological process linked to obesity and depression. The hallmark of this disturbance is a state of sympathetic hyperactivity and parasympathetic hypoactivity. In this regard, during depression and mental stress development, the total sympathetic activity,

specifically cardiac activity, is increased and linked to depressive symptoms severity and an increased heart disease risk (67-69). In addition, sympathetic hyperactivity in obesity is evident in the muscular and kidney level, both related to leptin metabolism (70,71).

Regarding parasympathetic activity, studies have shown that decreased vagal activity is a common mechanism linking obesity and depression. Thus, an increased heart frequency with decreased inhibitory signals to orexigenic hypothalamic nuclei and ghrelin resistance are some examples of the alterations caused by a decreased parasympathetic tone in obesity (72,73). Conversely, the reduced vagal tone in depression promotes sympathetic hyperactivation and immuno-inflammatory dysfunction by suppressing the negative feedback on the sympathetic system, blocking the cholinergic anti-inflammatory response (74-76).

Inflammation activation

People with depression exhibit all the inflammation features, including inflammatory cytokines elevation, plasma and cerebrospinal fluid upregulation of soluble cytokine receptors and acute phase proteins increment, chemokines adhesion molecules, and inflammatory mediators such as prostaglandins elevations in plasma. Of these, the Tumor Necrosis Factor-alpha (TNF α) and interleukin-6 (IL-6) appear to be the most reliable peripheral biomarkers of major depression (28,77).

In obesity, macrophages and other immune cells' infiltration into adipose tissue drive the production of proinflammatory cytokines, contributing to a low-grade inflammatory state, one of the obesity hallmarks (78). Peripheral immune activation induced by the sick adipose tissue leads to neuroinflammation through humoral and neuronal pathways expressed as an increased cytokine expression in the hippocampus and cortex in animal models of obesity (79,80). In this vein, neuronal pathways are activated to counteract this peripheral inflammation that seeks to inhibit cytokine production through efferent signaling, such as inflammatory activation of the afferent and efferent vagal pathways (81).

When these regulatory pathways are altered, non-resolved inflammation contributes to obesity development.

It has also been described that central inflammation also affects monoaminergic neurotransmission, one of the main pathophysiological processes seen in depression (82). In this sense, stress and immuno-inflammatory activation stimulate depressive symptoms development and onset, with a correlation of IL-6, C-reactive protein (CRP), and cortisol levels with depression severity (24). In addition, systemic inflammation promotes neuroinflammation, a pathological process resulting in microglial proliferation and a decrease in the astrocytes population, favoring kynurene pathway activity, which ultimately reduces tryptophan bioavailability for serotonin synthesis. In this respect, studies have shown that high gamma interferon (IFN- γ) and IL-6 levels induce indoleamine 2,3-dioxygenase expression, which reduces tryptophan bioavailability by promoting its degradation to quinolinic acid. This neurotoxic end product causes neuronal damage in the hippocampus, increasing excitotoxicity and decreasing neurotrophic factors (such as BDNF) synthesis, affecting hippocampal neurogenesis (24,83). Thus, the prolonged involvement of the central nervous system (CNS) in systemic inflammatory activation is another pathophysiological process in obesity and depression. Its importance relies on the chronic inflammation effect on other neuroendocrine systems alteration such as the HPA axis and those involved in energy homeostasis.

Inflammasomes, multi-protein complexes enabling proinflammatory caspase activation, play an essential role in regulating inflammation in obesity (84). In this regard, increased expression of NLRP3 inflammasome and caspase-1 has been found in adipose tissue from obese patients (85) and peripheral mononuclear cells from patients with depression (86). In contrast, caspase-1 inhibition appears to reduce weight (87) and depressive behaviors (88) in obesity and depression animal models, respectively. In addition, increased expression of NLRP3 inflammasome also contributes to prolonged hyperactivation of the HPA axis by GR cleavage, thereby affecting its regulatory response (89).

Neuroendocrine disruption of energy metabolism

The hypothalamus is the regulatory center of hunger, appetite, satiety, and energy balance. It is well-known that the specific neurons involved in the control of food intake are located in specific regions of this structure, which are highly sensitive to hormones such as leptin, insulin, and ghrelin (90). Among the components responsible for energy metabolism homeostasis, leptin and insulin-mediated regulation play a central role in the link between obesity and depression. Leptin is a peptide hormone produced in white adipose tissue with critical regulatory functions in energy homeostasis. By acting on specific neurons in the hypothalamus, leptin enables the integration of physiological and behavioral pathways that promote energy expenditure and inhibit food intake (91). Leptin resistance represents a state commonly associated with obesity, where the anorexigenic effect is diminished despite its high circulating concentrations. Plausible explanations for this phenomenon may be due to deflective intracellular signal transduction, problems at the leptin receptor level, or alterations in the transport of this hormone across the blood-brain barrier (92). In this regard, the inflammation associated with obesity (elevated CRP levels) and neuroinflammation (activation of inhibitory signals from negative feedback loops) trigger responses that affect the binding of leptin to its hypothalamic receptor (92,93).

Leptin and leptin resistance also play an important role in mood regulation, as evidenced at the preclinical level, where peripheral and central administration of leptin have antidepressant effects (94), which can be explained through its ability to enhance neurogenesis and neuroplasticity in the cortex and hippocampus, through its direct action on neurons in the hippocampus and amygdala, and modulation the immune system and the HPA axis (95,96). In addition, several researchers have hypothesized that leptin resistance represents a phenotype that increases the risk of depression. Thus, elevated levels of circulating leptin are significantly associated with neuro-vegetative depression symptoms, such as hyperphagia and weight gain (97,98).

Obesity is frequently associated with insulin resistance, a state with a low peripheral response

to insulin despite high circulating levels, which is promoted by increased concentrations of proinflammatory adipokines that interfere with intracellular insulin signaling and insulin receptor response (99,100). This dysregulation in glucose metabolism due to insulin resistance in specific brain regions, specifically in the medial prefrontal cortex and the hippocampus, is related to the impairment of executive functions, memory, and neuronal damage. Thus, it has been proposed that central insulin dysregulation plays a role in psychiatric illnesses developing such as depression and dementia (101,102).

Saturated or trans-fat-rich foods consumption may increase the likelihood of depression through increased general and abdominal adiposity, whereas diets containing mainly unsaturated fats reduce the likelihood of depression and decrease depressive symptoms. Furthermore, saturated fatty acids may alter the leptin and insulin signaling pathway at the hypothalamic level, with one study finding that elevated serum saturated fatty acid levels correlate with the severity of depression (90).

Ca²⁺ signaling pathways Dysregulation

Some authors have hypothesized that intracellular Ca²⁺ dysregulation is also part of the pathophysiological processes of depression and obesity. Preclinical studies have demonstrated Ca²⁺-mediated signaling involvement in neurons, which plays a key role in cell death and neurotransmitter release mechanisms (103,104). Thus, these researchers have found that Ca²⁺ dysregulation, abnormal neuronal death, and decreased neurotransmitter release were linked to the progression of obesity and clinical symptoms of depression. Some of the Ca²⁺ alterations associated with obesity and depression include increased inositol triphosphate-sensitive calcium stores, increased ryanodine-mediated Ca²⁺ release, and increased Ca²⁺ entry through voltage-gated channels, leading to increased intracellular calcium concentration, altering its physiological functioning (103,104). Based on the above, it is believed that calcium-blocking drugs could improve depressive symptoms and reduce the progression of obesity by reducing

high intracellular Ca²⁺ concentrations (103,105). Likewise, the relationship between the Ca²⁺/cAMP signaling pathway and the interaction between obesity and depression has been studied, showing that increases in cAMP concentration induce a more significant release of calcium from the endoplasmic reticulum; however, the true role of this pathway in obesity and depression needs to be further investigated (106).

Hypothalamic and insular alterations

The aforementioned pathophysiological processes mediate regulatory and homeostatic mechanisms of appetite at the CNS level, promoting obesogenic and depressive behaviors. In this sense, peripheral biological signals of inflammation, metabolic dysregulation, and stress, among others, activate central structures such as the insula and hypothalamus related to interoceptive and homeostatic perception. In this sense, clinical and preclinical evidence shows that obesity and depression are linked to alterations in the hypothalamic response to metabolic signals, such as occurs in leptin resistance, where the hypothalamus does not correctly respond to anorexigenic leptin signals, just as elevated cortisol levels are associated with altered hypothalamic function, promoting the development of obesity or depressive symptoms (97,98,107,108).

The insula and its vagal afferents are another structure that receives peripheral body information (with visceral interoception function), which is involved in the interaction between obesity and depression (109,110). Studies have shown that the insula receives anorexigenic signals from biomarkers related to energy homeostasis, such as glucose, ghrelin, and insulin (111-113), thus decreasing its physiological activity (114,115). However, in obese patients, it has been observed that sensitivity to internal satiety signals is diminished due to altered response in the insula activity (116). Similarly, studies have shown that depression results partly from interoceptive body misperception (117,118). In fact, neuroimaging studies highlight altered insula activity in patients with depression, which could explain the somatic symptoms and altered body awareness in this disorder (119,120).

CONCLUSIONS

There is overwhelming evidence of a bidirectional association between obesity and depression, a link that appears to be stronger in females than in males. Furthermore, evidence suggests that obese individuals have an increased depression risk than their overweight counterparts, mainly when $BMI \geq 40 \text{ kg/m}^2$, while atypical depression is most strongly associated with obesity.

From a molecular point of view, even though obesity and depression share a critical genetic component; in reality, HPA axis hyperactivation with hypercortisolemia, sympathetic hyperactivation, immunoinflammatory activation, and neuroendocrine alterations, leading to low-grade systemic inflammation and neuroinflammation, which ultimately induces neurotoxicity and adiposopathy promoting obesogenic and depressive behaviors.

These findings have practical and clinical relevance, already representing the basis for the design and promotion of therapeutic strategies to treat depressive symptoms in obese patients, weight gain in patients with depression, or promote their treatment as comorbid diseases.

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Psychological well-being and suicide orientation in teachers in Norte de Santander during COVID -19 confinement

Bienestar psicológico y orientación al suicidio en docentes de Norte de Santander durante el confinamiento por la COVID-19

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SUMMARY

The objective of this research is to analyze the relationship between psychological well-being and suicidal orientation in teachers from Norte de Santander during the COVID-19 confinement, implementing a methodology with a positivist approach, a non-experimental design of cross-sectional correlational scope, with a sample of 86 teachers from Norte de Santander. The findings obtained correspond to the identification of psychological well-being and the evaluation of suicidal orientation. Finally, the respective correlation between the variables was carried out. In conclusion, it is possible to determine that the population studied does not present anomalies in psychological well-being and suicidal orientation, taking into account the unforeseen change due to the confinement of COVID-19 and the new workload assignments.

Keywords: *Psychological well-being, suicidal orientation, COVID-19, teachers.*

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RESUMEN

El objetivo de esta investigación es analizar la relación entre el bienestar psicológico y la orientación suicida en docentes de Norte de Santander durante el encierro COVID-19, implementando una metodología con enfoque positivista, un diseño no experimental de alcance correlacional transversal, con una muestra de 86 docentes de Norte de Santander. Los hallazgos obtenidos corresponden a la identificación del bienestar psicológico y la evaluación de la orientación suicida. Finalmente, se realizó la respectiva correlación entre las variables. En conclusión, es posible determinar que la población estudiada no presenta anomalías en el bienestar psicológico y la orientación suicida, teniendo en cuenta el cambio imprevisto por el confinamiento del COVID-19 y las nuevas asignaciones de carga laboral.

Palabras clave: *Bienestar psicológico, orientación suicida, COVID-19, docentes.*

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INTRODUCTION

Suicide is an act of violence that generates consequences in individuals, families, communities, and countries, both in the short and long term, as it has detrimental effects on healthcare services. Due to the number of people who present suicidal ideation, there are approximately 20 people who attempt suicide for each completed suicide, this is due to the way they face the difficulties that arise in their daily lives and see this act as their only way out (1).

The mental health of the population is affected in times of isolation as they experience situations such as feelings of fear of death and feelings of loneliness, sadness, and irritability; leading to an increase in negative emotions (anxiety, depression, and indignation) and a decrease in positive emotions. In addition, lockdown increases the possibility of psychological and mental problems, mainly due to the distancing between people and over-information (2).

To understand this public health problem, it is necessary to take into account the statistical data on suicides in Colombia in recent years. The World Health Organization (3) states that every year 800 000 people commit suicide and many more attempt to do so likewise, at the national level according to the National Administrative Department of Statistics (4) between 2017 and the third quarter of 2018.

In Colombia 2 711 people committed suicide of which 2 204 were men and 507 women, at the local level according to the National Institute of Legal Medicine and Sciences (5) there was a death rate of 95 suicides which 76 of these were men and 19 women; Among the cities that occupied the first places in suicide during 2018 were Medellin, Cali, Barranquilla, Cartagena, and Bogotá.

Psychological well-being

Muñoa (6) who defines psychological well-being as a broad concept that includes social, subjective, and psychological dimensions, as well as health-related behaviors in general that lead people to function positively (7), with the purpose of understanding psychological well-

being, proposes a multidimensional model that encompasses the six dimensions of PWB which are self-acceptance, positive relationships, mastery of the environment, autonomy, purpose in life and personal growth.

Ryff defines self-acceptance as the ability of people to feel good about themselves, even though they are aware of their limitations. He then defines positive relationships as the perception of establishing stable social relationships and having friends to confide in. Autonomy is defined as the person's ability to make his or her own decisions without being affected by social pressure. The mastery of the environment is classified as the personal ability to choose or create a favorable environment, personal growth is the effort to develop one's potential and thus be able to reach one's maximum capacity, and finally, Ryff defines purpose in life as the ability of people to define a series of objectives that allow them to give meaning to life (7).

Suicidal Orientation

Suicidal orientation is defined by the appreciation that the individual has about himself, before a situation or circumstance through which he goes through in his environment, in such a way that he considers not to be useful for society and other people, highlighting the boom of thoughts and ideas that he has about the destiny of his life, where he considers that he should not be present or should stop being present (8). The risk of suicidal orientation is a state that precedes suicidal ideation that can lead to a suicide attempt and possibly to completed suicide. In this way, suicidal orientation is a set of beliefs of an individual and these precede the ideation, a stage in which the person is planning how to commit suicide, evaluating the damages and consequences, to later reach the act of completed suicide. This variable is composed of the following dimension: Low Self-Esteem, Hopelessness, Coping, Isolation, and Suicidal Ideation.

Therefore, low self-esteem is defined as the negative valuation of oneself, including experiences, feelings, and thoughts that are built over time, which are part of the life cycle process of individuals (9).

Hopelessness is part of the dimensions of suicidal orientation; it is a state in which the person usually does not emit any type of signal or response that allows controlling this situation, either because the individual cannot find a way out of this state or because he/she cannot focus on a reinforcing stimulus that generates pleasure (10).

Additionally, coping is characterized by the ability of an individual to overcome and persist in the face of the adversities of an event for which he/she is experiencing difficulties, coping is complemented by everything that the person does to combat and drastically change the interruptions that generate difficulties to cope in his/her environment, in addition, these situations are problematic in his/her family, social, economic, emotional environment and everything that intervenes and prevents the free development of the individual (11).

Isolation is a response to adverse situations for which an individual is not at ease and does not want to perform or comply, isolation is presented through pressures, obligations, threats, and non-tolerance; therefore, the person decides not to deal with the situation and isolate himself from those people with whom he lives or relates (12).

Subsequently, suicidal ideation is the set of ideas of a person and that are combined in the function of seeking a solution to the difficulties; it is also the moment when the individual considers that there is no solution and seeks, plans how to end his life, so that raises a set of ideas to achieve the next step which is suicide (13).

Adulthood

Adulthood is a stage characterized by the independence of the person, where he/she proposes long-term goals during his/her life project, and also in this stage stable relationships and emotional balance are sought (14). In this stage, “In love, in the constitution of a family, in the realization of a job (profession) that he chooses and exercises, in the assumption of a religious experience”, the individual fulfills planned objectives in his life in order not to reach the stage of stagnation and to complete the process of transition between the age of adolescence and adulthood, given that in adolescence an identity

is sought, while in adulthood this facilitates the process of confidence in the individual, based on relationships that guarantee emotional, economic, family, work and health stability.

METHODOLOGY

The proposed development of the research was carried out using a quantitative methodology -Correlational, transversal- non-experimental, and with a probabilistic sample of 87 teachers from Norte de Santander (15).

The instruments used were: Psychological Well-Being Scale (PWBS), validated in Colombia (7) with a McDonald's Omega of (0.93); this scale consists of 39 Likert-type items that evaluate the dimensions of psychological well-being which are self-acceptance (1, 7, 13, 19, 25, 31), mastery of the environment (5, 11, 16, 22, 28, 39), positive relationships (2, 8, 14, 20, 26, 32), personal growth (24, 30, 34-38), autonomy (3, 4, 9, 10, 15, 21, 27, 33) and finally purpose in life (6, 12, 17, 18, 23, 29).

We used the Suicidal Orientation Inventory (ISO 30); this questionnaire was designed by King and Kowalchuk (1994) and adapted by Fernandez, Liporace & Casullo (2006) in Buenos Aires, Argentina, adapted in Colombia (8) with a Cronbach's Alpha (0.92), this instrument consists of 30 Likert-type items and measures the dimensions of suicidal orientation which are low self-esteem (1, 6, 11, 16, 21, 26), hopelessness (2, 7, 12, 17, 22, 27), coping (3, 8, 13, 18, 23, 28), isolation (4, 9, 14, 19, 24, 29) and finally suicidal ideation (5, 10, 15, 20, 25, 30).

RESULTS

As shown in Table 1, the sample consisted of 87 teachers, of whom 20.7 % (n=18) were female and 79.3 % (n=69) were male. In the same order, regarding the results of the psychological well-being (BP) scale, 18.4 % (n=16) of the population scored a moderate BP, on the other hand, 80.5 % (n=70) showed a high BP and finally, 1.1 % (n=1) reflected a high BP.

PSYCHOLOGICAL WELL-BEING AND SUICIDE ORIENTATION

Table 1
Psychological well-being scale (PWBS)

		Psychological well-being		Valid percentage	Cumulative percentage
		Frequency	Percentage		
Valid	MODERATE PWB	16	18.4	18.4	18.4
	HIGH PWB	70	80.5	80.5	98.9
	VERY HIGH PWB	1	1.1	1.1	100.0
	Total	87	100.0	100.0	

Source: Statistical analysis of SPSS package

Table 2 shows the results of suicidal orientation 94.3 % (n=82) of the population scored a low level of suicidal orientation, on the other hand,

3.4 % (n=3) showed a moderate level of suicidal orientation and 2.3 % (n=2) reflected a high suicidal orientation.

Table 2
Suicidal Orientation Inventory (ISO-30)

		Suicidal orientation		Valid percentage	Cumulative percentage
		Frequency	Percentage		
Valid	LOW	82	94.3	94.3	94.3
	MODERATE	3	3.4	3.4	97.7
	HIGH	2	2.3	2.3	100.0
	Total	87	100.0	100.0	

Source: Statistical analysis of SPSS package.

For the results obtained in Table 3, where the correlation between psychological well-being and suicidal orientation is presented, it was found that there is no significant correlation between

the variables, with respect to the reflected scores that indicate ($r=0.842$) ($p= -0.022$) inferring with this that there is no evident correlation.

Table 3
Correlations between psychological well-being and suicidal orientation

Correlations			Suicidal orientation	
Spearman's Rho	Psychological well-being	Sig.Bil	1.000	-0.022
			87	0.842

Source: Statistical analysis of SPSS package

The results reflected in Table 4 show a correlation between some of the dimensions of psychological well-being and suicidal orientation in the sample, the significant results between the dimensions are described below. In this order, there is evidence of a relationship between positive relationships and isolation ($r=0.014$) ($p=0.263$), a directly proportional correlation

between the dimensions, indicating that in the case of the sample, as positive relationships increase, so does isolation. Likewise, we found that the dimensions of positive relationships and suicidal ideation ($r=0.024$) and ($p=0.242$) have a directly proportional Spearman correlation, indicating that as positive relationships increase, so does suicidal ideation.

Table 4
Correlation of the dimensions of psychological well-being and suicidal orientation

Correlations between dimensions of psychological well-being and suicidal orientation			Low self-esteem	Despair	Isolation	Coping	Suicidal ideation
Spearman's Rho	Self-acceptance	Sig.Bil	-0.003 0.978	0.308 0.004	0.014 0.897	-0.046 0.672	0.055 0.612 87
	Mastery of the environment	Sig.Bil	-0.003 0.978 87	0.308 0.004 87	0.014 0.897 87	-0.046 0.672 87	0.055 0.612 87
	Positive relationships	Sig.Bil	0.194 0.071	0.066 0.544	0.263 0.014	0.150 0.165	0.242 0.024
	Personal growth	Sig.Bil	0.082 0.450 87	0.115 0.288 87	0.063 0.561 87	0.175 0.106 87	-0.117 0.279 87
	Autonomy	Sig.Bil	0.112 0.300 87	0.107 0.322	0.358 0.001	0.167 0.123	0.116 0.285
	Purpose In life	Sig.Bil	-0.128 0.236	0.298 0.005	-0.022 0.839	-0.299 0.005	-0.330 0.002

Source: Statistical analysis of SPSS package

DISCUSSION

It was found that psychological well-being in teachers is categorized at a moderate level scoring 18.4 %, at a high level of 80.5 %, and at a very high level of 1.1 %, which indicates that the population studied has good psychological well-being with an absence of low levels. It is understood that the population studied by presenting high levels of psychological well-being complements the eudaimonic perspective, transcending affective states and valuations based on life satisfaction since well-being is found in aspects that seek

and facilitate the realization of people and their optimal development (16). In agreement with the findings (17) found in the population, 52.76 % are at a high level, 40.70 % at a medium level, and 6.53 % at a low level.

Next, the suicidal orientation in teachers shows that 94.3 % are at a low level, 3.4 % at a moderate level, and 2.3 % at a high level. This data represents that the sample studied has low levels of suicidal orientation, while a minority has high levels of orientation, which represents according to (18) "from a dynamic point of view, we all have in our nature suicidal desires

to a greater or lesser degree. Therefore, almost all people have thought about the possibility of killing themselves or have carried out acts that have endangered their lives in some way", therefore this degree of suicidal orientation does not represent a risk for the population. Thus, this study contrasts the research conducted (19), in which they found the average suicidal orientation, which indicates a significant presence of the variable in the population with an average score of 40.70. Therefore, it can be deduced that the isolation required by COVID-19 did not influence a risk factor in the suicidal orientation of teachers in Norte de Santander.

On the other hand, in general, no significant correlation was found between the two variables studied, since it yielded a Spearman's Rho ($r=.842$), supporting similarity with the research conducted (20) in which they found no correlation between the variables psychological well-being and behaviors associated with suicide.

However, it should be noted that a positive relationship was found between the dimensions of isolation and positive relationships ($r=0.014$), indicating that the higher the isolation scores, the higher the positive relationships increase proportionally. This represents that isolation in a person is characterized by avoiding situations that are not to the individual's liking and in cases where the individual is strictly independent, managing to fend for himself (12), in contrast, positive relationships are a set of characteristics in which the individual can create close ties and fully trust each of the members (7). On the other hand, the dimensions of isolation and suicidal ideation ($r=0.024$) indicate that a person with the presence of suicidal ideation is in a state of vulnerability given that their thoughts revolve around how to plan the termination of their life (21-26).

CONCLUSIONS

In conclusion, it was determined that the population studied did not present anomalies in psychological well-being, considering the unforeseen change due to the confinement of COVID-19 and the new workload assignments.

Consequently, it can be deduced that the population studied does not show signs of suicidal

orientation due to mandatory confinement during the pandemic.

In relation to the above, it is necessary to point out the absence of information on the relationship between the variables studied in this research.

On the other hand, it is worth mentioning the difficulty that limits the evaluation process in the population and the support from the directors of the educational institutions, taking into account the availability of timetables.

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The pharmacological treatment of obesity: A historical perspective

El tratamiento farmacológico de la obesidad: Una perspectiva histórica

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SUMMARY

Obesity is a highly prevalent disease associated with several metabolic pathologies such as diabetes, hypertension, metabolic syndrome, hepatic steatosis, and different types of cancer. However, since 1933, when the first pharmacological treatments for obesity appeared, their effectiveness and safety have been questioned, leading to the withdrawal of several drugs from the market. Currently, five drugs have been approved by the Food and Drug Administration (FDA) and are still in use for obesity control, of which GLP-1 analogs have demonstrated a better safety profile and moderate efficacy in reducing body weight. This literature review presents a historical analysis of anti-obesity drugs, focusing on their efficacy and adverse effects.

Keywords: *Obesity, anti-obesity drugs, anti-obesity agents.*

RESUMEN

La obesidad es una enfermedad con alta prevalencia, asociada a varias patologías metabólicas como diabetes, hipertensión arterial, síndrome metabólico, esteatosis hepática, entre otras; así como diferentes tipos de cáncer. A partir de 1933, cuando aparecen los primeros tratamientos farmacológicos para la obesidad, se ha cuestionado su efectividad y seguridad, lo que ha llevado a la retirada del mercado de varios fármacos. Actualmente 5 medicamentos cuentan con la aprobación de la Food and Drug Administration (FDA) para el tratamiento de la obesidad, de los cuales, los análogos de GLP-1 han demostrado un mejor perfil de seguridad y una eficacia moderada para la reducción de peso corporal. Esta revisión bibliográfica presenta un análisis histórico de los fármacos anti-obesidad, enfocados en su eficacia y efectos adversos.

Palabras clave: *Obesidad, drogas anti-obesidad, agentes anti-obesidad.*

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INTRODUCTION

Obesity is a pandemic with a rapidly increasing prevalence worldwide. In 2015, 107.7 million children and 603.7 million adults were obese (1) and it is estimated that by 2030, 60 % of the world's population will be overweight (2,3).

An elevated body mass index (BMI) is associated with high morbidity and mortality; therefore, weight loss in obese patients is important (1,4). Anti-obesity treatments include lifestyle changes, pharmacological treatment, and bariatric surgery (5).

Lifestyle changes in overweight patients result in significant weight loss (6); however, long-term weight loss is difficult to achieve (7) due to neurobiological mechanisms leading to weight regain (7,8), like leptin, ghrelin, peptide YY, gastric inhibitory polypeptide, cholecystokinin, among others (9).

For 100 years, a wide variety of drugs have been tested for body-weight loss with relative efficacy. Dinitrophenol appeared in 1933 (10), and since then, a wide variety of molecules have been developed, but due to their low effectiveness and severe adverse effects, the vast majority have been withdrawn from the market (11). The drugs for losing weight mediate their effects through three primary mechanisms: 1) decreasing the appetite, 2) Reducing intestinal fat absorption, and 3) Increasing thermogenesis (12). Currently, gut incretin receptor agonists are promising therapies because of the significant decrease in body weight and few adverse effects associated with this drugs (7).

Although pharmacological treatment of obesity criteria is well-established, there is a lack of prescription for these drugs (13), mainly due to physician concerns about safety and efficacy (8,14).

This review aims to describe the historical evolution of the pharmacological treatment of obesity and analyze the efficacy and adverse effects of those drugs currently available, providing evidence for decision-making within the individualized care of people with obesity.

Obesity definition

Since ancient Greece, an image evoking ideal body weight has been established. This concept was reinforced by the Hippocratic school, where excess body fat was considered a deviation from normality as a product of one of the four humors alterations (15).

The use of anthropometry to assess body composition is universally accepted because it uses non-invasive, inexpensive, and reproducible techniques (16). BMI is a practical measure that indirectly assesses body fat percentage in adults (17) through the ratio of body weight in kilograms to height in meters squared (17,18). Adolf Quetelet developed this indicator in 1832 as a practical index of relative body weight, coined as body mass index by Ancel Keys in 1972 (19). Since 1995, the World Health Organization (16) classifies a person as obese once their body mass index is greater than or equal to 30, with subclassifications that include: grade I obesity when the BMI is between 30 and 34,9, grade II obesity when BMI is between 35 and 39,9, and when the BMI is greater than or equal to 40, the person is classified as grade III obesity carrier.

The primary BMI limitation is the incapacity to assess the body fat distribution, namely, fat mass from fat-free mass discrimination. Another difficulty in using BMI to classify obese patients is the difference in body structure seen across different ethnic groups, which has led to characterizing ethnic-specific cut-off points, especially for the Asian population (20).

According to the American Association of Clinical Endocrinologists and the American College of Endocrinology, obesity is “a chronic disease characterized by pathophysiological processes that increase adipose tissue mass with an increment in morbidity and mortality”. This definition bears BMI as a tool for a patient's risk assessment and considers the interaction between susceptible genes and the environment in disease development. This fact allows the classification of obesity into three stages according to the comorbidities: stage 0, those patients with $BMI \geq 30 \text{ kg/m}^2$ with no complications; stage 1, $BMI \geq 25 \text{ kg/m}^2$ with mild complications and stage 2, $BMI \geq 25 \text{ kg/m}^2$ with severe complications (21).

Pharmacological treatment indications

Loss of at least 5 % of body weight has been shown to have significant benefits in patients with obesity (22,23); pharmacological treatment has been established for those individuals presenting with obesity ($BMI \geq 30 \text{ kg/m}^2$) or those presenting with $BMI \geq 27 \text{ kg/m}^2$ plus comorbidities such as diabetes, pre-diabetes, hypertension, dyslipidemia, obstructive sleep apnoea, non-alcoholic fatty liver disease or other obesity-associated pathologies (24).

The past of pharmacology in obesity

In 1933 an energy chain uncoupling drug called dinitrophenol was used for the treatment of obesity due to its ability to accelerate metabolism by 50 %, with a 4 kg weight loss in approximately 40 days (10); however, three years later, severe adverse effects were reported like thrombocytopenia, granulopenia, anemia and purpura complicated by lung abscess (25).

In 1954 Simeons (26) published human chorionic gonadotropin (HCG) use associated with a 500 kcal diet resulted in a 20 to 30 pounds loss in weight in forty days. This effect was attributed to a decrease in compulsive hunger. In 1977 Shetty and Kalkhoff (27) also evaluated the effect of a restrictive diet plus HCG vs placebo, but they did not find a significant weight loss when compared with the control group, a result verified by Greenway and Bray (28) who also did not find a significant difference in either weight loss ($p=0.366$) or perceived hunger decrease ($p= 0.709$).

Around the 1960s, thyroid hormones became popular because of the general belief that obesity was associated with an underactive thyroid gland. This fact convinced that synthetic thyroid hormone administration would lead to weight loss (29). However, in 1967 Gwinup and Poucher (30) confirmed that thyroid hormone prescription does not lead to significant weight loss in patients with obesity; on the contrary, a high frequency of side effects like severe anxiety, increase in systolic blood pressure (9 mmHg), and heart rate elevation of 25 beats per minute. Similarly, Bray et al. (31) reported that 80 % of the lost weight was due to lean mass breakdown. The

discouraging data regarding weight loss and three sudden death cases secondary to atrial fibrillation by L-thyroxine reported by Bhasin et al. (32) in 1981 led to the complete dismissal of this anti-obesity treatment.

FDA approved fenfluramine and phentermine for obesity (33) when clinical studies demonstrated significant weight loss ($p<0.001$) (34). However, in 1997 these drugs were withdrawn because of asymptomatic valvular abnormalities in 32 % of patients (33) and primary pulmonary hypertension increased risk (OR 6.3; 95 % CI 3.0 - 13.2). In addition, irrespective of the prescribed drug or dose employed, pulmonary hypertension risk was ever high if the treatment was administered for three or more months (OR 23.1; 95 % CI 6.9 - 77.7) (35). Another anti-obesity drug was phenylpropanolamine, an appetite suppressant sympathomimetic amine (36) that has been off the market since 2000 due to its association with hemorrhagic stroke (RR 3.13; $p = 0.08$) (36,37), hypertension, seizures and death (36).

A widely used drug was sibutramine, approved in 1997 by the FDA. This compound is a serotonergic and adrenergic drug inhibiting serotonin and norepinephrine reuptake, causing appetite suppression, satiety, and increased activity thermogenesis (38). Sibutramine produced a sustained weight loss of 4.45 kg at a 2-year follow-up, along with improved lipid profile and glycaemic control associated with a slight increase in heart rate and blood pressure (39); however, in 2010, a recall was requested due to a 16 % increase in major cardiovascular events such as non-fatal myocardial infarction and stroke when compared to placebo ($p = 0.02$ and $p = 0.03$) (40,41).

Lorcaserin, approved in 2012 by the FDA as an anti-obesity treatment, is a selective serotonin 5-hydroxytryptamine 2C receptor agonist that modulates appetite (42,43). This drug demonstrated a 5 % weight loss in 38.7 % of treated patients ($p<0.001$) (42) and a decreased risk of incident diabetes and diabetes microvascular complications (44). The most frequent side events reported with lorcaserin included nausea, vertigo, and headache (43), with a low rate of major cardiovascular events 4.1 % (42); however, in February 2020, the FDA requested the withdrawal of this drug (45) due to

the high frequency of adverse events associated with cancer, mainly pancreatic, colorectal and lung cancer (46).

Drugs approved in the treatment of obesity

Table 1 summarizes the main developments related to the pharmacotherapy of obesity to date.

Table 1
Milestones in the pharmacological treatment of obesity

Year	Drug	Milestone
1933	Dinitrophenol	Weight loss of 4 kg in 40 days (10).
1936	Dinitrophenol	This compound is considered a poison since it causes bone marrow aplasia (25).
1954	Gonadotropina coriónica humana	Simeons attributes weight loss of 20 to 30 pounds (26).
1960	Thyroid hormones	Obesity is secondary to an underactive thyroid gland (29).
1966	Phenfluramin y Phentermin	FDA-approved as anorexigenic (33).
1977	Human Chorionic Gonadotropin	Weight loss was due to calorie restriction but not the drug (27,28).
1981	Thyroid hormone	Sudden deaths were reported during thyroid hormone administration (32).
1997	Anorexigenics	Symptomatic valvular abnormalities and pulmonary hypertension (33,35).
1997	Sibutramine	FDA-approved, it inhibits the reuptake of serotonin and norepinephrine, leading to appetite suppression, satiety, and increased thermogenesis (39).
1999	Orlistat	Pancreatic lipase inhibitor approved by FDA decreasing fat absorption by 30 (53,54). Gastrointestinal adverse events (57).
2000	Phenylpropanolamine	This drug was withdrawn from the market for association with hemorrhagic stroke (36,37).
2010	Sibutramine	This drug was withdrawn from the market for increased major cardiovascular events (40,41).
2012	Lorcaserin	FDA approves its use due to a 5% decrease in weight and a decrease in comorbidities (44).
2012	Phentermin/topiramate	Approved by FDA in 2012, it acts as an appetite suppressant and food taste modifier, resulting in weight loss of more than 10% (61,65).
2014	Liraglutide	GLP-1 analog, FDA approved for more than 5% weight loss associated with few gastrointestinal adverse effects (68,70).
2014	Naltrexone/bupropion	Anorexigen approved by FDA in 2014, is a combination of an opioid antagonist and a selective inhibitor of neuronal reuptake of catecholamines with an effect on hypothalamic pro-opiomelanocortin neurons (76,79).
2020	Lorcaserin	It was withdrawn from the market due to increased cancer, especially pancreatic, colorectal, and lung cancer (45,46).
2021	Semaglutide	GLP1 analog was approved by the FDA with weekly dosing for a decrease of almost 15% in body weight, with mild gastrointestinal effects (52,82).

Made by: The authors

Current FDA-approved anti-obesity drugs have shown to be safe and well-tolerated, with few adverse events (47,48) and limited action on cardiometabolic risk profile (49), with no influence on end-points like all-cause mortality or cardiovascular disease (50).

Until 2020, five drugs still in use for obesity treatment: orlistat, phentermine/

topiramate, naltrexone/bupropion, liraglutide, and lorcaserin (11), while lorcaserin was withdrawn due to adverse effects, other drugs previously used for type 2 diabetes management showed promising results in obese patients (51). In addition, in June 2021, Semaglutide was approved by the FDA for the pharmacological management of obesity (52).

Orlistat is the most popular and perhaps most prescribed anti-obesity drug. It was approved by the FDA in 1999, acting at the gastrointestinal lumen by inhibiting pancreatic lipases (53), leading to a reduction of dietary fat absorption by up to 30 % (54). The recommended dose is 120 mg 3 times daily, taken with meals (53,54) with better results at higher doses (55). The beneficial effects of orlistat are weight loss, improvement in lipid profile, and insulin levels (54).

Some multicenter studies and systematic reviews with meta-analyses have shown body weight, total cholesterol, low-density lipoprotein, and systolic and diastolic blood pressure reduction by orlistat administration (56,57). In addition, Shirai (58) 2019 also demonstrated a significant loss of visceral fat (up to 13.5 %) and waist circumference (- 2.51 cm).

Most of the orlistat adverse reactions are mild (57), mainly gastrointestinal, such as increased number and frequency of bowel defecation, steatorrhea, flatulence, and abdominal pain (53,57). In addition, fat malabsorption leads to reduced absorption of fat-soluble vitamins (59) and other drugs such as warfarin, amiodarone, cyclosporine, and thyroid hormones (60), which should be evaluated to avoid complications.

Phentermine/topiramate combines a centrally acting sympathomimetic appetite suppressant and an antiepileptic that inhibits carbonic anhydrase and Na⁺ channels, enhancing GABA metabolism, which is believed to modify food taste (61). The CONQUER (62) study published in 2011, a multicentre clinical trial evaluating phentermine/topiramate weight loss efficacy in obese patients, demonstrated a loss of up to 10.2 kg with phentermine/topiramate vs 1.4 kg with placebo (p<0.0001). Another EQUIP (63) clinical trial published in 2012 showed that phentermine/topiramate resulted in a loss of up to 10.9 % of initial body weight at doses of 15/92 mg, with significant changes in blood pressure, fasting glucose, and lipid profile. An extension study of CONQUER, the SEQUEL (64) trial, in 2012 showed a weight loss of up to 20 % with the use of the drug (p<0.001), also improving cardiovascular and metabolic variables. These studies were the basis for the 2012 FDA approval of phentermine/topiramate as a treatment for obesity (61,65). In different

clinical trials, Phentermine/topiramate has been associated with mild adverse events such as dry mouth, paresthesia, constipation, insomnia, dizziness, and dysgeusia (62-65).

Liraglutide is a glucagon-like peptide 1 (GLP-1) analog initially developed for type 2 diabetes mellitus (DM2) management, which has been helpful in body weight reduction due to appetite suppression through specific brainstem nuclei activation and delayed gastric emptying (66). Liraglutide action at the central nervous system level is related to the right orbitofrontal cortex secondary to food signals to activation (67).

Astrup et al. (66) demonstrated in 2009 that liraglutide plus nutritional plan and exercise led to a 7.2 kg maximum weight loss at a 20-week follow-up compared with placebo and orlistat. In addition, other benefits such as reduced blood pressure and pre-diabetes prevalence of 84 %-96 % were another two advantages of liraglutide. Moreover, at a 2-year follow-up, liraglutide maintained a 7.8 kg weight loss with a metabolic syndrome and pre-diabetes decrease prevalence of 50 % (68). These findings led to the FDA approval as an anti-obesity treatment in 2014 (70).

Subsequent studies showed that liraglutide monotherapy produced significant weight loss compared to placebo (p<0.001) (67-70), with a fat loss as high as 12.49 % (71), corresponding at least to a BMI reduction of 5 % in 43.3 % of patients (72). In addition to physical activity, the weight loss with liraglutide was 9.5 kg (70).

The SCALE(74) trial, one of the most extended studies with liraglutide (3-year follow-up), demonstrated a 6.1 % weight loss reduction with a decrease in systolic blood pressure, CRP, and an improvement in the quality of life. In addition, the cardiovascular benefits of liraglutide were decreased death from cardiovascular causes, non-fatal myocardial infarction, or stroke (73). However, gastrointestinal adverse effects may occur in up to 64.8 % of patients (69,72,75), especially nausea and constipation (75) secondary to delayed gastric emptying of solids (69).

Naltrexone/bupropion combines an opioid antagonist with a selective noradrenaline-dopamine reuptake inhibitor that has demonstrated a synergistic effect on hypothalamic pro-

opiromelanocortin neurons, with an anorectic effect (76). Greenway et al. (76) 2009 evaluated naltrexone/bupropion vs monotherapy, plus diet and exercise as adjunctive therapy for weight loss; their results showed a significant weight loss with the combination therapy versus monotherapy. The COR-BMOD trial (77) showed an 11.5 % loss in body weight with naltrexone/bupropion ($p<0.001$); also, CONTRAVE Obesity Research-II (COR-II) (78) in 2013 showed 8.2 % weight loss at 56 follow-up weeks ($p<0.001$), with an excellent cardiometabolic safety profile and mild to moderate adverse events; so in 2014 the FDA approved naltrexone/bupropion combination as a new option for obesity management. This drug increases the risk of nausea, headache and constipation (76, 78, 79) RR = 1.11 ($p=0.0004$). However, serious adverse events have been reported at RR = 1.70 ($p <0.00001$), leading to the discontinuation of this drug combination (80).

Initially marketed as a hypoglycemic drug for type 2 Diabetes, the GLP-1 analog Semaglutide demonstrated more significant weight loss vs its comparators (51). In 2018, O'Neil et al. (81) evaluated Semaglutide in patients with obesity without diabetes versus liraglutide and placebo; results demonstrated a 10 % loss of body weight in 37 to 65 % in Semaglutide group at 0.4 mg daily when combined with dietary advice and exercise ($p<0.001$); this drug was well tolerated and demonstrated no cardiovascular safety issues.

Wilding et al. (82) in March 2021, published the results of a double-blind clinical trial involving 1961 non-diabetic patients given 2.4 mg Semaglutide weekly vs placebo, revealing a weight loss of 15.3 kg with Semaglutide vs 2.6 kg with placebo and a total body weight loss of 14.9 % with Semaglutide vs 2.4 % with placebo ($p<0.001$). The main adverse events reported were nausea and diarrhea, which stopped the treatment in 4.5 % of patients. In June 2021, the FDA approved the use of weekly Semaglutide to treat obesity, with the specification that its use must be associated with dietary management and exercise plans (52).

CONCLUSIONS

Since the 20th century multiple drugs with different mechanisms of action have been tested

for obesity treatment; however, multiple adverse neurologic and cardiovascular effects have led to the majority of these drugs being removed from the market. Due to its safety profile, the only anti-obesity drug that has remained on the market for more than 20 years is orlistat; however, its efficacy for weight loss is limited. GLP-1 agonists are the most promising of the currently available drugs due to their significant weight loss and decreased metabolic risk with few gastrointestinal adverse events.

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Psychological factors of gender dysphoria in adolescents: A systematic review

Factores psicológicos de la disforia de género en adolescentes: Una revisión sistemática

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SUMMARY

The objective of this research work was to analyze the psychological factors that are present in gender dysphoria in adolescents, due to the importance of approaching psychological clinical practice through intervention strategies.

Method: A systematic review was carried out through digital searches in scientific databases such as ProQuest, Elsevier, and PubMed, by structuring a bibliometric type design, the collection of information was based on three crossings in the three databases selected, including the primary studies and extracting the data to later be interpreted.

Results: Psychological alterations are presented due to the dissonance of sex and gender identity, finding symptomatology associated with depression, anxiety, and structuring of suicidal ideation.

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Conclusions: *It was identified that the research reports indicate that there is psychological discomfort and deterioration in the social functioning of relationships.*

Keywords: *Dysphoria, intervention, hormones, incongruity, sex.*

RESUMEN

El objetivo de este trabajo investigativo consistió en analizar los factores psicológicos que se encuentran presentes en la disforia de género en adolescentes, debido a la importancia de abordaje en la práctica clínica psicológica mediante las estrategias de intervención.

Método: Se realizó una revisión sistemática a través de búsquedas digitales en bases de datos científicas como ProQuest, Elsevier y PubMed, mediante la estructuración de un diseño de tipo bibliométrico, la recopilación de la información se basó en tres cruces en las tres bases de datos seleccionadas, incluyendo los estudios primarios y realizando la extracción de los datos para posteriormente ser interpretados.

Resultados: Se presentan alteraciones psicológicas debido a la disonancia de sexo y la identidad de género, encontrándose sintomatología asociada a la depresión, ansiedad y estructuración de ideación suicida.

Conclusiones: Se identificó que los reportes las investigaciones indican que se presenta malestar psicológico y deterioro en el funcionamiento social de las relaciones.

Palabras clave: *Disforia, intervención, hormonas, incongruencia, sexo.*

INTRODUCTION

To refer to gender dysphoria, it is necessary to understand the human being as a subject of law, which needs to be recognized and valued socially. In the adolescent population, there is a discrepancy between the established sex and the preference that is felt or expressed (1). It is also necessary to take into account the time of manifestation, the characteristics present, where they stand out, and aspects such as; pretending to belong to the other sex, cross-dressing tendencies in men, or wearing visible masculine attire in women (2). Likewise, interaction with people of the opposite sex and participation in games and social activities that do not correspond to their role, to the point of observing affectations in interpersonal, school, and family relationships. It is also possible, that the appearance of clinical discomfort, as well as, the convictions marked by detaching from the culturally assigned patterns for each sex (3).

Now, adolescence is considered the phase, where physical changes reflected in their body are evident. (4). It should be noted that these, too, show alterations of an emotional nature and in their capacity for acceptance. Which can trigger states of vulnerability and the presence of disorders when feeling misunderstood by their reality. For this reason, the present study aims to analyse the psychological factors that affect the presence of gender dysphoria in the adolescent population through a systematic review (5).

It should be noted that the theme mentioned throughout history has focused on pathology with a biological tendency, supported by medication, interested in maintaining the alignment of sex and socially established patterns. In addition, for its treatment, the participation of expert professionals required, who are involved during the proposed phases, which can be hormonal, psychological, and surgical (6). However, gender dysphoria can arise in varying degrees and intensities according to each subject and life cycle. Also, a high number of reported cases may present at an early age, showing intense discomfort (1). However, during the 20th century, this population began to become visible, through experiences and claim processes, where respect for the dignity of the other was promoted, through gender struggles

and the right to individual freedom, to finally decide on his own body (7).

Meanwhile, as support for the present study, the postmodern paradigm is considered, interested in the relationship between the individual and the world. In that order, it refers to the construction of reality from a new vision of the person and the world (8). Along the same lines, social constructionism focuses its theory on self-knowledge and what surrounds us. It is based on the relationships of human beings and communication and language processes. This is considered a movement based on the discussion of relational politics and ethics, where the importance of social relations as a space for building the world is emphasized. In this sense, the social origin of the behaviors that we manifest, of how we live our sexualities and our bodies is considered (9).

On the other hand, in this population, episodes of stress may arise, caused by personal and social conflict, triggering mental health effects. The above can be correlated with low self-esteem, anxiety, stress, depression, and avoidance when requiring support (10). In the same way, discrimination can cause a state of victimization, accompanied by emotional suffering and affectations in adequate integral functioning (8).

Research question

What associated psychological factors influence gender dysphoria in the adolescent population reported in the scientific literature?

METHOD

The methodology used in this article is a quantitative approach, of a bibliometric type associated with the scientific production carried out in the last five years in the indexed journals (11). The Boolean equations that perform the search for information with precision were used, taking into account the study variables in which the contributions were analyzed through three categories of analysis (12): Hormonization therapy and cognitive alterations; acceptance of gender identity and psychological disorders.

The sample unit is made up of 39 investigations of which, taken from primary and secondary sources, having as observation window the last five years in a period from 2018 to 2022.

The PRISMA 2020 method was used (13) where the aspects related to the intervention aspects are evaluated, taking into account medical or social aspects, being the one used in the systematic reviews that are constantly updating the scientific advances in the subject of study.

Inclusion criteria

For the inclusion of the selected data, it was taken into account that they were published in the last five years (14), additionally that the studies complied with the variables studied and adjusted to the categories of analysis which are: Hormonization therapy and cognitive alterations; acceptance of gender identity and psychological symptoms focused on the population with gender dysphoria.

Exclusion criteria

The investigations that were not in the observation window, and those that included the medical-surgical elements within the variables, were excluded because they did not correspond to the selected variables (15).

Search strategies

In the first place, the information search was carried out in the selected databases taking into account the last five years of publications, and contemplating the scientific production in Spanish and English (16). The publications were included that, within the contributions, analysis, keywords, and title, taking into account that the information on the psychological factors associated with gender dysphoria was specified (Table 1).

Information was searched in three ProQuest, Elsevier, and PubMed databases, using the search equations (Table 2) using Boolean operators that served to subsequently select the information.

Table 1
Information search terms

“Psychological factors” and “dysphoria” or = “gender” or “adolescents” not = “adults” “Job stress” and “identity” or = “gender or disorder” not = “Disease” “assignment” and “sex” or = “depression” or “irritability” not = “discrimination and “hormonal therapy” and “masculinization” or “feminization” “adolescents” and “sexual preference” or “gender stereotypes” or “Psychological factors” and “dysphoria” or = “gender” or “adolescents” not = “adults” “Job stress” and “identity” or = “gender or disorder” not = “Disease” “assignment” and “sex” or = “depression” or “irritability” not = “discrimination and “hormonal therapy” and “masculinization” or “feminization” and “adolescents” and “sexual preference” or “gender stereotypes”

Table 2
Search equations

Databases	Search equations in databases
ProQuest	“Psychological factors” and “dysphoria” or = “gender” or “adolescents” Not = “adults” “Job stress” and “identity” or = “gender or disorder” not = “Disease” “assignment” and “sex” or = “depression” or “irritability” not = “hormonal workplace accident” “Psychological factors” and “dysphoria” or = “gender” or “adolescents” not = “adults” “Job stress” and “identity” or = “gender or disorder” not = “Disease”
Elsevier	“identity” or = “gender or disorder” Not = “Disease” “assignment” and “sex” or = “depression” or “irritability” “assignment” and “sex” Or = “depression” or “irritability” not = “discrimination and “hormonal therapy” and “masculinization” or “feminization” “adolescents” and “sexual preference” or “gender stereotypes”
PubMed	“Psychological factors” and “dysphoria” Or = “gender” or “adolescents” “assignment” and “sex” or = “depression” or “irritability” not = “discrimination and “hormone therapy” “Disease” “assignment” and “sex” or = “depression” “irritability” not = “discrimination and “hormonal therapy” and “masculinization” or “feminization” “adolescents”

Data collection process

The research analysed was selected following the guidelines of the PRISMA 2020 guide (17) in which the study variables were taken into account, work was done on the registration of information, taking

into account the categories of analysis psychological factors and gender dysphoria in adolescents. Specifying the study population in which the interest is focused, the registration of the information was carried out in a documentary matrix that facilitated the compilation of the information (Table 3).

Table 3
Crossing of search terms in the databases

Crosses/ databases	ProQuest	Elservier	PubMed	Total
“Psychological factors” and “Gender dysphoria” or “Adolescents”	1 986	144	2 108	4 238
“Gender disorder” and “identity” or = “assignment or preference”	370	3 495	231	4 096
“Psychological factors” and “Hormonal therapy” Or “dysphoria gender”	70	2 872	285	3 227
Total	2 426	6 511	2 624	11 561

Selection of studies

The selection of the articles was carried out taking into account the observation window of the last five years, taking into account the fulfilment of the variables studied, later the studies that were

duplicates or that did not meet the criteria were eliminated, additionally, it was had taking into account the publications that were available in full text, eliminating abstracts and research notes (18) (Table 4).

Table 4
Process of identification, elimination, and selection of articles

Equation	Databases	Unfiltered	No access	Reviews/ incomplete/ duplicates	do not comply Criteria	Selection
“Psychological factors” and “Gender dysphoria” or “Adolescents”	ProQuest Ebsco Elservier	7 035	6 294	4 347	4 215	fifteen
“Gender disorder” and “identity” or = “assignment or preference”	ProQuest Ebsco Elservier	3 873	3 297	2 765	2 453	eleven
“Psychological factors” and “Hormonal therapy” Or “dysphoria gender”	ProQuest Elservier Ebsco	653	953	3 865	3 762	8
Total		11 561	10 544	10 977	10 430	3. 4

Data extraction

The data extraction was carried out, taking into account the authors, the year of publication, selected databases, taking into account the filters, and the articles that were found in full text and eliminating those that did not meet the criteria (19).

RESULTS

The results were obtained from the crossing of data from three Boolean equations where the

search was carried out in the selected databases, obtaining a total of 11 561 results. For the crosses in ProQuest, 2426 were obtained, likewise in Elsevier 6511 investigations were found, and later in PubMed 2624. In relation to the documents against which access was not had, a total of 10 544 articles were identified, in the following filter identified the documentation that was incomplete or that in turn was duplicated in the other databases. In the analysis of compliance with the criteria, 10 430 investigations were obtained, finally, the selection of the studies resulted in 39 references that were used for processing the information. Given the obtaining of the results, these are presented in Table 5.

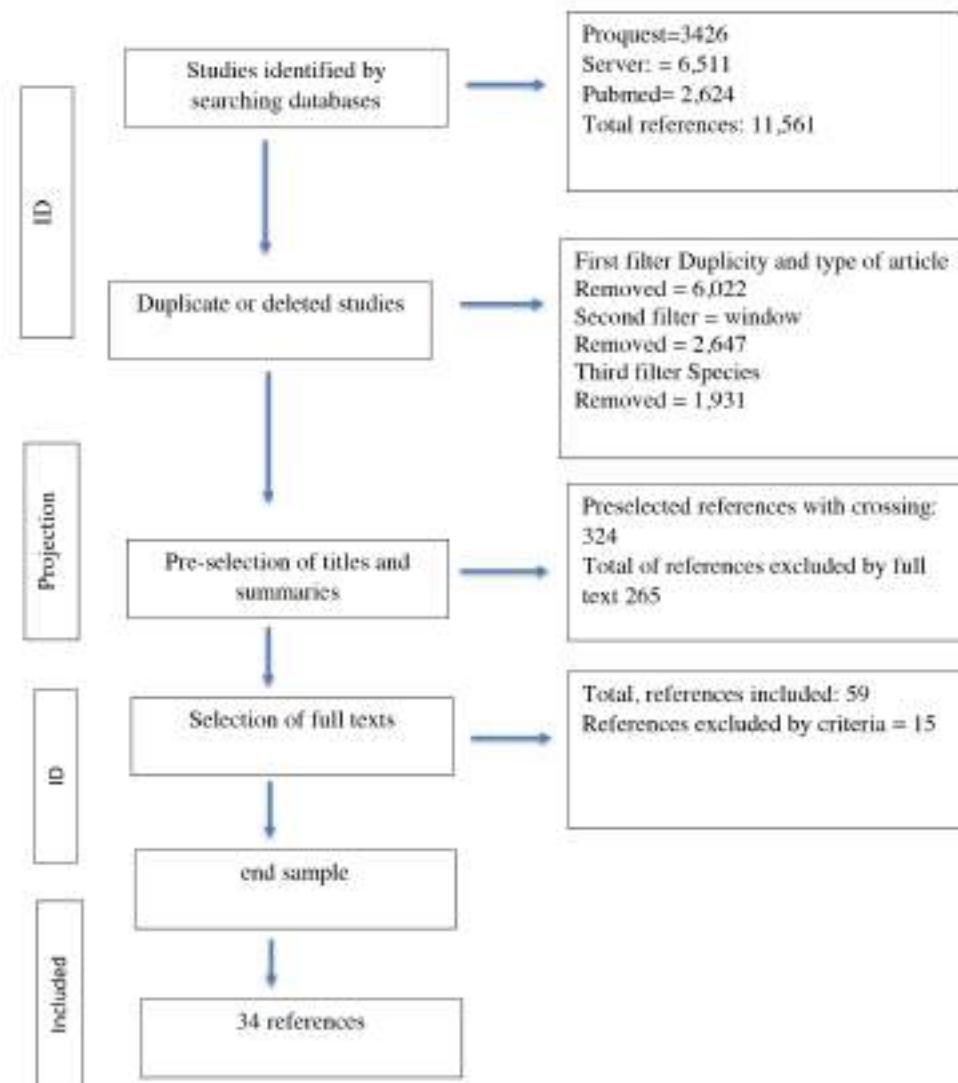


Figure 1. Flowchart of the study selection process.

PSYCHOLOGICAL FACTORS OF GENDER DYSPHORIA IN ADOLESCENTS

Table 5. Results obtained.

Nº	VARIABLE/KEYWORD MATCHES	TITLE	DOI	CONTRIBUTIONS	DATABASE	AUTHORS	YEAR
1	Hormone therapy and cognitive alterations	Gender dysphoria in children and controversies in its treatment: two different conceptions about gender identity	10.5294/pebi.2020.24.1.5	Gender dysphoria, approach in children, ways of understanding, raising awareness, and providing importance of gender identity are analysed.	ProQuest	(20)	2020
2	Psychological disorders	Gender dysphoria in trans minors: ecological niche. Gender dysphoria in trans minors: ecological niche	https://doi.org/10.1016/j.androl.2020.06.002	Minors require attention processes in help centers fundamentally during the period of childhood, in adolescence.	Elsevier	(21)	2021
3	Acceptance of gender identity	Sex/gender ratio of adolescents with gender dysphoria in the Gender Identity Treatment Unit of Asturias	DOI: 10.1016/j.endinu.2020.03.003	It is possible to determine a transformation of the sex/gender ratio, and an increase in the demands on trans men in the period of adolescence.	Elsevier	(22)	2020
4	Hormone therapy and cognitive alterations.	Gender dysphoria/gender incongruence: transition and detransition, persistence and desistance	DOI: 10.1016/j.endinu.2020.03.011	Transsexuality is the motivation to live and have acceptance as a subject of the opposite sex, hormonally intervening their body to the desired gender.	Elsevier	(23)	2020
5	Hormone therapy and cognitive alterations	Psychosocial evaluation in transgender adolescents	DOI: 10.1016/j.anpedi.2020.01.019	The psychosocial status of subjects in pediatric endocrine care due to gender incongruence and the impact of cross-hormonal intervention are highlighted.	Elsevier	(24)	2020
6	Hormone therapy and cognitive alterations	A study on transsexuality at the Forensic Medical Clinic of Madrid	DOI:10.1016/j.renme.2018.04.001	Comparison of cases of transsexuality, the appearance of the transsexual sensation, and the approach with the transsexual intervention.	PubMed	(25)	2018
7	Hormone therapy and cognitive alterations	The "best interest" of the transsexual minor	https://doi.org/10.1016/j.biote.2018.02.001	When children present with gender dysphoria, they intervene with their parents, they recommend intervention in crossed hormones or surgical intervention.	Elsevier	(26)	2018
8	Hormone therapy and cognitive alterations	Psychomedical care in gender identity dysphoria during adolescence	DOI: 10.1016/j.rpsm.2015.04.002	DIG can be the consequence of a disturbed interaction between genetic factors, the constitution of the CNS, and the operation of sexual hormones; the hormonal process reduces anxiety and depression.	Elsevier	(27)	2018
9	Hormone therapy and cognitive alterations	Gender dysphoria, presentation of a male-to-female (MTF) case at the Hospital de San José	DOI: 10.1016/j.reper.2016.11.008	Analysis of the evolution of transsexuality or (TIG) where intervention and evaluation by psychiatry are carried out, endocrinology initiates hormonal therapy for sex change.	Elsevier	(28)	2018
10	Psychological disorders	Gender Dysphoria: An Overview	https://doi.org/10.1016/j.rmu.2014.06.001	Gender dysphoria is a common diagnosis in the professional and social area, a review of the meaning of transsexuality is elaborated, and more and more treatments are requested for this.	Elsevier	(29)	2018
11	Psychological disorders	Sex reassignment treatment in transsexual patients	https://doi.org/10.1016/S0025-7733(00)71691-5	Transsexuality is a disorder based on the rejection of anatomical sex, it presents a feeling of rejection.	Elsevier	(30)	2020
12	Hormone therapy and cognitive alterations	Hormonal sex reassignment treatment in Spain: our experience in 236 cases	DOI: 10.1016/S1698-031X(07)74059-1	It is evident that the demand for sex reassignment treatment (psychological, hormonal, and surgical) has increased.	Elsevier	(31)	2018
13	Psychological disorders	Suicidal ideation and suicide attempt in people with gender dysphoria	DOI: 10.7334/psychothema2017.438	Little research on suicidal behavior in people with gender dysphoria, a higher risk of death by suicide and suicidal behavior than the general population.	Elsevier	(32)	2018

(continue on page S749).

Table 5. Results obtained. (continue from page S748).

Nº	VARIABLE/KEYWORD MATCHES	TITLE	DOI	CONTRIBUTIONS	DATABASE	AUTHORS	YEAR
14	Psychological disorders	Body dysmorphic disorder and gender dysphoria. therapeutic implications.	https://doi.org/10.34810/PsicosomPsiquiatrm0205	Body dysmorphia is excessive distress due to imaginary imperfections in physical appearance. Gender dysphoria is the incongruity felt between the gender assigned at birth.	PubMed	(33)	2018
15	Acceptance of gender identity	Satisfaction with life and psychological well-being in people with Gender Dysphoria.	https://dialnet.unirioja.es/servLET/article/5430517	The study was conducted to investigate the psychological wellbeing and satisfaction with life in individuals diagnosed with Gender Dysphoria (GD).	PubMed	(34)	2018
16	Hormone therapy and cognitive alterations	Live in the wrong body. About a case	https://doi.org/10.34810/PsicosomPsiquiatrm0106	The inclusive criteria of hormonal treatment and surgical operation that reassigned sex in gender dysphoria are highlighted.	PubMed	(35)	2018
17	Acceptance of gender identity	Gender dysphoria: care reality in child and adolescent psychiatry.	https://doi.org/10.34810/PsicosomPsiquiatrm0702	It is about specifying the situation of the health care demand for children and adolescents with GD, personal particularities, and families' perspectives on care.	PubMed	(36)	2018
18	Acceptance of gender identity	Video games and gender dysphoria: case study evidence	10.51698/aloma2016.34.2.59-66	Video games have helped people with GD or other identity disorders, they are a practical way of managing and accepting gender identity problems.	PubMed	(37)	2020
19	Psychological disorders	Male-to-female gender dysphoria: gender-specific differences in resting-state networks.	10.1002/btbt3.691	This study suggests a starting point when proceeding with research designed to clarify whether the brains of people with GD are more equivalent to their assigned or de-sired gender.	ProQuest	(38)	2018
20	Acceptance of gender identity	Navigating in the dark: Meta-synthesis of subjective experiences of gender dysphoria amongst transgender and gender non-conforming youth	https://doi.org/10.1016/j.socscimed.2021.114094	The subjective experiences of transgender and gender non-conforming youth express feelings of rejection towards themselves	ProQuest	(39)	2021
21	Hormone therapy and cognitive alterations	Evidence for a Change in the Sex Ratio of Children Referred for Gender Dysphoria: Data from the Center of Expertise on Gender Dysphoria in Amsterdam (1988–2016)	10.1080/092623X.2018.1437580	The transition from man to woman is one of the most requested interventions, considering that there are two specialized clinics, one in Toronto and the other in Amsterdam, presenting a higher prevalence of hormonal interventions	ProQuest	(40)	2018
22	Acceptance of gender identity	Re Imogen: the role of the Family Court of Australia in disputes over gender dysphoria treatment	DOI:10.1007/s40592-021-00138-0	By petition to the Australian Family Court, there is a debate about the autonomy of a parent or a doctor of a minor diagnosed with gender dysphoria, and the ability to accept or not the proposed treatment.	ProQuest	(41)	2021
23	Acceptance of gender identity	Gender corrective surgery promoting mental health in people with gender dysphoria is not supported by the data presented in the article	DOI:10.1176/ajp.2020.19111170	It cannot be established whether the decrease in mental health is directly related to surgery in relation to gender dysphoria; however, the scientific background shows that surgical procedures are beneficial for mental health in people with gender dysphoria.	ProQuest	(42)	2020
24	Psychological disorders	Gender Dysphoria, Mental Health, and Poor Sleep Quality Among Transgender and Gender Non-Conforming Individuals: A Qualitative Study in New York City	DOI:10.1093/sleep/zsz067.690	Sexual minority populations (lesbian, gay, and bisexual) experience inadequate sleep patterns, which impacts their mental health.	PubMed	(43)	2019
25	Acceptance of gender identity	One hundred twelve cases of 46, XY DSD patients after initial gender assignment: a short-term survey of gender role and gender dysphoria	DOI:10.1186/s13023-021-02039-1	There is concern among parents and doctors about gender assignment, however, there is still no uniform pattern of care in cases of dysphoria and gender role.	ProQuest	(44)	2021

(continue on page S750).

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Table 5. Results obtained. (continue from page S749).

Nº	VARIABLE/KEYWORD MATCHES	TITLE	DOI	CONTRIBUTIONS	DATABASE	AUTHORS	YEAR
26	Psychological disorders	Psychiatric disorders in individuals diag-nosed with gender dysphoria: A systematic review	doi:10.1111/penc.12947.	An increase in the population with gender dysphoria, who present high levels of emotional stress; Recognizing this type of diagnosis makes it possible to contribute to the development of public policy in mental health.	PubMed	(45)	2020
27	Psychological disorders	Risk factors for psychological functioning in German adolescents with gender dysphoria: poor peer relations and general family	doi:10.1007/s00787-019-01308-6	Adolescents with gender dysphoria frequent social and emotional difficulties and psychological problems constitute a risk factor in this population.	Elsevier	(46)	2019
28	Psychological disorders	“Certain Parts of My Body Don’t Belong to Me”: Trans Individuals’ Descriptions of Body-Specific Gender Dysphoria	DOI:10.1007/s13178-019-00423-y	Gender dysphoria from the medical point of view is identified as body dissatisfaction, which is perceived as a negative experience in relation to one’s body and appearance.	Elsevier	(47)	2020
29	Hormonal therapy and cognitive alterations.	Gender dysphoria in adolescence: current perspectives	doi: 10.2147/AHMT.S135432. eCollection 2018.	Rising numbers against gender dysphoria in adolescents seeking treatment at gender identity services	PubMed	(48)	2018
30	Hormonal therapy and cognitive alterations.	Paranoia in patients with gender dysphoria A clinical exploration	DOI:10.4103/psychiatry._433_18	Gender identity disorder such as unhappiness with the assigned gender and the desire to be the opposite gender, the desire to seek a surgical procedure for sex reassignment is identified. The profiles of the Multiphasic Personality Inventory were evaluated	PubMed	(49)	2018
31	Hormone therapy and cognitive alterations	Quality of Life, Suicidal Attempt and Satisfaction in Gender Dysphoria Individuals Undergone Sex Reassignment Surgery	https://www.annalsofrscb.ro/index.php/journal/article/view/6308	Gender dysphoria is characterized by dissatisfaction between anatomical appearance and gender identity; In this sense, sex reassignment surgery generates high levels of satisfaction and a decrease in suicide attempts.	Elsevier	(50)	2021
32	Hormone therapy and cognitive alterations	Investigation of Axis I Psychiatric Disorders in Patients with Gender Dysphoria along with Gender Reassignment Surgery: A Descriptive Cross-sectional Study in Iran	https://www.annalsofrscb.ro/index.php/journal/article/view/6309/4796	Transsexual people intend to modify their gender role from childhood, where they experience a dichotomy, and become transgender in adulthood, which has an impact on mental health.	ProQuest	(51)	2021
33	Hormone therapy and cognitive alterations	Gender dysphoria in adolescents: can adolescents or parents give valid consent to puberty blockers?	http://dx.doi.org/10.11136/medethics-2020-106999	Minors who present a variety of gender and the incidence of the family should not allow hormonal treatment, known as ‘blockers’, which prevent the development of puberty for a period of time.	Elsevier	(52)	2020
34	Hormone therapy and cognitive alterations	Children and adolescents with gender dysphoria in Israel: increasing rates of referral and fertility preservation	DOI:https://doi.org/10.4158/EP-2019-0418	The preservation of fertility in Israeli children and adolescents with gender dysphoria together with the need for medical care and the high degree of protection of their fertility given the culture in which they are immersed	PubMed	(53)	2020

Categories Analysis

Hormone therapy and cognitive alterations

Clinical evidence in the process of hormonization towards the feminine or masculine of individuals present some cognitive alterations associated with learning, thinking, language, disorientation, and confusion (54). The inadequate functioning of mental health is mainly related to the biological and psychosocial bases that prevent them from facing the internalization of both positive and negative emotions (55). Having repercussions in a search for a hormonal therapy that in many cases does not have the accompaniment of health professionals, but is referred by people who have had similar experiences, and through word of mouth, the information is conveyed, generating elements that are harmful to overall health (56).

Acceptance of gender identity

An important aspect in the formation of the self-concept is the process of acceptance, in the face of which they usually find rejection from family and friends, as well as hostile and demeaning behaviors in which self-esteem is compromised (57). Therefore, they manifest negative feelings, which affect the way they internalize thoughts. On the contrary, when the adolescent has a support network, acceptance is carried out fluidly and accompanied by family members who lay the foundations for the free development of the personality in the different areas of adjustment and functioning of life (58).

Psychological disorders

People with gender dysphoria do not present pathologies properly described, but they do show clinical indicators, associated with symptoms that alter cognitive, emotional, and social functioning (59), this is because in the stage of adolescence changes are generated in psychophysiological development that affects behavior, however, the anguish and psychological discomfort generated through dissonance in which they do not identify with the assigned biological sex, but they express well-being by having a

gender identity (60). It is worth mentioning that at this stage of the life cycle where there is a marked rejection and thus present symptoms of anxious and depressive symptoms, structuring of suicidal ideation, as well as irritability and aggressiveness that prevent them from adequate cognitive functioning (61).

DISCUSSION

Historical evolution has involved an important journey in the study of the different edges that make up the personal structure, mention has been made especially of all the factors that influence the human characteristics that constitute the human being (4). Sexuality has not been excluded from scientific interest, since the different variables that have modified it are the ones that have currently allowed the inclusion of concepts that were never contemplated for being within pathological categories or contrary to the nature of gender; without leaving aside, course, the legal framework that allows these people to be recognized as subjects of law (4,5).

Within the different investigations carried out in relation to gender dysphoria, a series of inconsistencies and little acceptance were found between the biological sex with which one is born and the identification that is constituted over time (36). Therefore, this generates a difficulty at the symptomatic level such as discomforts that produce changes in the subject's ability to adapt, in addition to this it can constitute some disorders related to anxiety, and irritability, among other cognitive affectations (8).

People who go through gender dysphoria at a certain point in the development process come to experience at some point the desire to transform their bodies to achieve real coherence to their gender identity. Regarding the adaptation to their needs, there are fundamental aspects in the development of psychological and emotional disorders that manage to reduce or increase cognitive and behavioral difficulties (38). On the other hand, it is important to point out that gender dysphoria can appear in childhood, generating changes in the child's behavior. It maintains that the intervention that is elaborated on children through different perspectives can allow an ability

to understand gender. The gender identity that is constituted, however, has been very complex when the variables between sex-gender in the subject and the awareness of gender identity are articulated (51).

It is emphasized that the treatment assigned to the diagnosis of gender dysphoria is hormone therapy and surgical interventions to reassign sex (53). In general, all human beings can from childhood to adulthood possibility of being able to experience a dichotomy related to transgender conversion. Likewise, it is pointed out that transsexual people have the intention of modifying their sexual characteristics through surgeries and aesthetic procedures that lead them to adopt changes in their behavior and their cognitive sphere, this produces an indestructible change in the gender role (3). Likewise, it is stated that sex reassignment has a positive impact, in this way, it allows individuals to obtain well-being and quality of life, thanks to this high levels of satisfaction are reflected, although many times emotional states related to depression may appear due to not having sex biologically, mood swings can appear in most cases and even cause suicidal ideation (60).

In the same way, it is evident that some male subjects who have an identification with the female gender, feel comfortable managing female skills and thus being able to obtain public documents as female subjects, trying to seek recognition that allows them to live in any scenario. like women (62). It is pointed out that other subjects have difficulties related to the way of seeing the world, fractures that are associated with states of social and family stress, accompanied by little acceptance of behaviors outside the gender discourse (54).

At present, science is trying to provide solutions to the different problems related to gender dysphoria, for this reason, there are cognitive behavioral therapeutic accompaniments and hormone management therapies, these therapies have had a good acceptance and a great impact, but on the other hand, the difficulties at the level of acceptance and elaboration of gender changes generate cognitive problems on maladaptive schemes that directly affect the subject who is going through these situations (33).

CONCLUSIONS

It can be concluded that one of the problems that are most prevalent in people with gender dysphoria is initially anxiety, which manifests itself with constant fear at the social level where they can become victims of people who are on stage, for this sometimes has a series of anguish in relation to the social because they do not want to be discriminated against or violated, at a certain moment, this can become a paranoid element of being constantly persecuted, all these anxieties and anguish also generate eating disorders due to the desire for image and body care to improve physical appearance, leading to thus to physical decompensation due to the lack of nutrients and abuse of physical training.

Other disorders that may occur in this process are sleep disturbances due to difficulty falling asleep or suffering from constant sleep during the day, clinical problems that appear due to discrimination and acceptance of others. On the other hand, People with gender dysphoria tend to struggle to be accepted as a subject opposite to the sex with which they were born or biologically assigned; for this reason they are always with the desire to be able to make significant changes to their body, this through hormonal interventions or specialized surgeries, seeking with this to have greater coherence with the felt and desired gender.

Other difficulties that appear are depressive crises, mood disorders, and post-traumatic stress. Due to all the problems of self-acceptance and that of others, for this reason, the risk of alcohol and drug consumption is always latent to reduce the sensation of emotional pain, we also find reckless behavior when they enter a crisis due to their self-acceptance problems, another of the difficulties that fractures and affects subjects suffering from gender dysphoria is related to the acceptance of family, friends, co-workers, and the context in general. Another difficulty is being used in intimidation and not being able to achieve the goals and desires due to the different prejudices that many people still have in relation to this topic.

All these rejections at the family and social level lead to damage to people's self-concept,

thus highlighting problems with the management of emotions and the ability to adapt socially. the latter is one of the triggers so that suicidal ideations can be generated.

This is due to the feeling of shame, not being accepted, and being exposed to physical and psychological abuse from others, they are forced to face difficulties such as stress generated by society. The degree of acceptance is related to the conflict about their sexual orientation. The environment and the family establish how people will present themselves and represent themselves within the family and in other places of social interaction.

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“Virtual” education in confinement: An iceberg to study

Educación “virtual” en confinamiento: un iceberg para estudiar

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SUMMARY

This article shows the results of a study that consists of analyzing the real-life stories of teachers at different educational levels, which express the challenges experienced in their work during confinement. The methodology is qualitative in nature, the autobiography method is used, and the stories collected are analyzed and categorized by means of grounded theory. Finally, the results obtained lead to delving into the subjectivities that are rarely visible in educational processes, and they are presented in a selective category named “Virtual Education” “in confinement, with three axials to support it: I) From Face-to-face.” education to Virtuality or Pseudovirtuality, II) Reality and Context, III) The family as a central axis in educational processes.

Keywords: Confinement, education, virtual education, face-to-face education.

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RESUMEN

Este artículo muestra los resultados de un estudio que consistió en analizar historias de vida de profesores de diferentes niveles educativos, que expresan los retos y desafíos vivenciados en su quehacer durante el confinamiento. La metodología es de naturaleza cualitativa, usando el método de autobiografía, los relatos acopiados se analizaron y categorizaron a través de la teoría fundamentada. Finalmente, los resultados llevan a adentrarse en las subjetividades que pocas veces son visibilizadas en los procesos educativos, ellas se exponen en una categoría selectiva denominada La Educación “Virtual” en confinamiento, con tres axiales que la sustentan: i) De la presencialidad a la “virtualidad” o seudovirtualidad, ii) Realidades y contextos y iii) La familia un eje central en los procesos educativos.

Palabras clave: Confinamiento, educación, educación virtual, educación presencial.

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INTRODUCTION

The training processes led in educational institutions, regardless of the level of training, are influenced by the pedagogical relationships that are generated between students and teachers; at the preschool and elementary levels, the caregivers are relevant agents in the learning process, since students require extracurricular support to strengthen the content-oriented in class (1). Therefore, face-to-face education dating from the fifteenth century in ancient Greece has been valid until these contemporary times, when the teacher guides and shares his knowledge from the oratory, generating direct relationships with students. However, in recent years, at the undergraduate and postgraduate levels, virtual education has been introduced, allowing shortening distances, having synchronous and asynchronous classes with students and teachers from different parts of the world, and adjusting study times to work.

This modality has been gaining strength because there are devices and connectivity to make virtual classes meaningful experiences. Without ignoring that those who choose this type of education have the means and the skills to enter the world of virtuality (2). However, the reality of confinement that is experienced today due to the COVID-19 pandemic has generated the need to migrate from face-to-face to virtuality, generating educational gaps since all students do not have the possibility of having devices to connect or if they do, they do not have connectivity, but above all, because there is no culture toward virtual education, which requires students to do their homework and be able to actively participate in the class and have the skills to manage them. ICT to go to virtual spaces and overcome the distance in the case of teachers having the pedagogical skills and management of virtual tools to plan, guide, and evaluate students. Therefore, the initiative emerged to investigate how “virtual” education is lived and the challenges entailed in times of confinement, drawing on the experiences of three Colombian teachers who work at different academic levels: preschool, elementary school, and undergraduate.

Education is a complex process whose main objective is to train people of integrity who actively contribute to the social contexts

where they interact (3); therefore, it requires the attention and commitment of government entities and people who are directly involved. (teacher-student-guardian) to achieve individual and collective objectives (4). In this sense, it is appropriate to reflect on the processes of teaching and learning that are dynamized inside and outside the classroom, since disciplinary, altruistic content and interpersonal relationships that support building projects consistent with the reality of students and social demands are promoted. Education is not synonymous with schooling and must have a political character that contributes to the formation of critical, reflective, and emancipated subjects (5).

Education is a right of every citizen and public service, whose social function is to access knowledge, science, and technology from different connotations that lead to learning, with this right being mandatory between the ages of five and fifteen (6, Article 67). However, the challenge is to promote continuity until the completion of higher education, a responsibility that falls on the State, society, and the family. Therefore, the State regulates, inspects, and monitors the quality of the educational service, guaranteeing the conditions for the access and permanence of the students and granting (6, Article 69) the guarantee of autonomy in the institutions. to create their directives and be governed by their own statutes, as long as they comply with the agreements of the National Law, whose function of the state is to provide conditions for the development of scientific research, facilitating financial mechanisms that allow access to all suitable people. for higher education. Thus, the State is responsible for promoting the quality and continuous improvement of educational services, as well as the qualification and training of educators, educational resources and methods, innovation, and educational research, as expressed in the General Law of National Education (1).

Under the principle of co-responsibility between the family, society, and the state, these entities must ensure the care, care, and protection of children and adolescents (7) and must comply with the fundamental obligations of guaranteeing and providing the optimal conditions and means for the comprehensive provision of the educational system. Educational institutions must

guarantee the permanence of students, especially in special moments, such as the health emergency due to COVID-19, which has led the Ministry of National Education (8) to generate guidelines for teaching directors and teachers for the provision of the educational service at home, clarifying that, depending on the epidemiological evolution, the continuity of the academic work sessions will be determined later. In the meantime, the training processes of the students will continue with the confinement measures, to guarantee education based on strategies thought from the context of the students, since COVID-19 has achieved the desecration of the inevitable, placing us all in the moment of the possible (9).

This pandemic has led to academic activities being contemplated from the nonpresence confined in their places of residence, improvising a “virtual” education that until recently was face-to-face, making the curriculum more flexible, creating integrative and contextualized strategies with available resources that motivate reciprocal learning and involving the family in the training of students. This does not mean that the family replaces school because schooling requires a professional who has been trained for it (8).

It is time to reflect on the need to continue providing education as a fundamental right. However, the right to life prevails over any other; therefore, receiving a distance education guarantees these rights, relying on the use of technological tools, to protect one's own life since, that which equals human beings is our fragile human condition; and it teaches us, consequently, not to lose sight of ourselves, to keep ourselves in mind to continue the endless and always renewed task of educating and educating ourselves, to better care for each other and our own world (10).

“Virtual education or” “online education” “for the MEN develops training programs that have cyberspace as a teaching and learning scenario, providing training with ICT support to establish a new way of teaching and learning.” The virtual learning environments (VLEs) of synchronous, asynchronous, and environment with online programming Scratch/SnapLas are the educational technologies used as collaborative spaces between the classroom teacher (remotely) and the students through computational

thinking (PC), highlighting innovation as the incorporation of technologies in computers with visual programming languages to solve problematic situations, called problems located in computational thinking (PC) (11).

In addition, Cabero (12) explains that some tools that are used in virtuality and that can be rescued in these times of confinement are the technical domain of email, forums, blogs, wikis, tasks, glossaries, videos, videoconferences/audioconferences, and online questionnaires., co-evaluations and consultations or surveys. All of these, driven by the PC, promote in the student the process of problem-solving that includes characteristics such as 1) Formulating problems that allow us to use a computer and other tools to help solve them; 2) Organize and logically analyzing data; 3) Represent data as models and simulations; 4) Automate solutions through algorithmic thinking; 5) Identify, analyze and implement possible solutions to achieve the most effective combination of steps and resources; and 6) Generalize and transfer this problem-solving process to a wide variety of problems.

The objective of this study is, to analyze the life stories of teachers of different educational levels, which express the challenges experienced in their work during confinement.

METHODOLOGY

Qualitative approach

For the development of this article, the qualitative approach was chosen, since its objective is to investigate intangible, perceptions, experiences, or beliefs (13). In this case, the experiences of three teachers who work at different academic levels during the “virtual” classes that have been developed in the confinement generated by COVID-19.

To study the challenges and challenges in the work of the teacher in these atypical spaces, it was necessary to opt for the qualitative approach, since it is interested in the lives of people, their subjective perspectives, stories, behaviors, experiences, interactions, actions, and senses. to interpret them in a way situated in the context (14). It is worth clarifying that it focuses on experiences to reveal the feelings and emotions that begin to be

part of their professional experience. Therefore, the biographical method was used, which uses the life trajectory and stories of the subjects to be investigated to know first-hand the object of study (15). Taking into account the flexibility of the method and the interest of the researchers who were in turn the subjects to investigate, autobiography was used. In other words, the three researchers who are classroom teachers made field journals record their experiences during their work in confinement and perform a rigorous exercise of systematization and data analysis.

Data collection techniques

The technique to collect the data was through field journals, with the records of the professional

and institutional experiences of each teacher as part of the experiences with the students and/or their guardians during the pedagogical practices from virtuality, as a reflection of the research process (15). These were systematized, coded, and categorized to fulfill the objective of the study.

Research subjects

As the method used in this research was an autobiography, the experience of three teachers who shared their experiences working with populations at the preschool, elementary and undergraduate levels was analyzed. Table 1 specifies the coding of the field journals, the level of studies, and the biographical note of each one.

Table 1
The population of teachers who carried out field journals

Coding	Educational level	Teaching level
D # Inv 1	Bachelor of Basic Education with Emphasis in Physical Education, Recreation, and Sports Master in Education with a Mention in Educational Policy and Management	Basic Primary
D # Inv 2	Bachelor of Preschool Education Master in Education from diversity Candidate for Ph.D. in Educational Sciences	Preschool
D # Inv 3	Psychologist University Teaching Specialist Master in Educational Management Ph.D. in Educational Sciences	University

Note: D Field diary; Inv: researcher. Code that is placed in the stories to identify the source and the researcher. Source: Own elaboration. The stories are accompanied by the coding found in Table 1 and are written in italics to highlight them within the text.

Analysis technique

The data were analyzed under the technique of content analysis, following the guidelines of grounded theory, a methodology that is performed through coding and categorization: open, axial, and selective categories. Subsequently, the discussion is made where the stories, the

theory, and the analysis or interpretation of the researcher are addressed (16). The results show the selective category called “virtual” education in confinement and the axial categories that support it: from face-to-face to “virtuality” or pseudovirtuality, realities and contexts, and the family as a central axis in the processes. educational.

RESULTS

“Virtual” Education in confinement

Confinement has been the strategy to counteract the contagion of COVID-19 as a preventive measure, reducing physical contact but maintaining social interactions with the use of technological tools (17). In the educational field, they have facilitated the continuity of academic processes at a distance, without ignoring that this has widened educational gaps because not all families have electronic devices, access to connectivity, or lack skills in the proper use of technological tools. To delve into this educational reality as a result of confinement, three axial categories that support this selective category are presented below.

From presence to “virtuality” or pseudovirtuality

Distance education throughout history has had a rebound in higher education institutions (HEIs), generating greater coverage, educational inclusion processes, innovation, and access to technological tools (18). “These advances of “virtual” education have been taken up by several educational institutions that offered face-to-face education, to assume the challenges that the pandemic has generated in these moments of confinement, involving the three actors of education (student, teacher, and teacher.” parents or significant adults). However, these processes are limited when there is no availability of technological resources or connectivity. “These educational processes have been harmed because the distance is widened when there are no means for all of us to connect to do an exercise of pedagogical feedback” (D # 3; Inv 1).

Another of the realities that are woven during these times of the pandemic is the interpersonal relationships between students and teachers, which have been diminished and have a negative impact on training processes.

Communication is an essential element of connection from the looks and expressions of the students in the classroom. However, it is impossible to know when a student is connected and intertwined in the learning process, so I

believe that a new concept emerges “the virtual spoken word”, which still presents a greater degree or level of complexity to understanding (D # 2; Inv 3).

University students require personal accompaniment within the classroom, fostering that communicative affinity where the need of each student is known, which generates greater concern in the scenario of virtual methodology because it is much more difficult or impossible to promote it (D # 8; Inv. 3).

This has meant that new interactions not only involve different management of time and space, changing the model where the teacher teaches and the student learns, generating virtual interactions that require reciprocal learning, from the new forms of communication (19). On the other hand, the levels of preschool and primary education should rethink their training processes by resorting to asynchronous jobs, where responsibility should be shared between managers, teachers, students, and the family (20).

The first virtual meeting with parents was planned at a time when most of them would be at home, with the directors of the institution and the teacher attending, with the expectation of meeting and greeting us through the screens. After thirty minutes of waiting, only three parents arrived from a group of twenty-five, who expressed not having access to the internet and the knowledge to enter a virtual meeting (D # 12; Inv 2).

Going from the classroom to the virtual classroom has been a challenge that brings with it circumstances to challenge, this new way of working has generated transformations, which in the words of (21) are nothing more than symptoms of changes in the process.

When the classroom methodology was implemented, I feel that it has been like a new world to which teachers and students are not accustomed; it feels like a challenge that will bring challenges and anguish, which can generate resistance in the processes of education. everything that the infrastructure of educational establishments does not comply 100 % with this process (D # 1: Inv.3).

I have connected with the students to greet them and respond to concerns of the workshops that are sent to solve at home, where they show

attention and participation that expresses the joy on their faces when seeing their friends on a screen. In the first meeting, everyone said they wanted to go back to school and wanted to talk; this caught my attention because, paradoxically, in face-to-face classes on some occasions, they shy away from exposing their ideas, something totally different from virtual meetings (D # 2; Inv 1.)

The two stories reveal two realities, the first is called “desired” by elementary school children, who experience virtual spaces as an opportunity to share with their peers and teachers, evidencing “a positive point of view of use [...]. teaching of ICT (attitude)” (22, p. 22). The second is conceived as “undo” because some university students express a lack of motivation or “boredom” during synchronous classes, and their attitude is “not present”. In a study by Torres-Rojas (23), he alludes that university students do not have the necessary responsibility, commitment, or discipline, showing conformity and discouragement, requiring a constant struggle to motivate them.

Well, in some cases, I feel that this virtual space is taken as a routine in which the student connects to the class and verifies that he or she does not have the absence (or absence), does not attend the class that in many cases is the result of an exercise. improvised situations such as the pandemic (D # 1; Inv 3).

On the other hand, there are preschool children who, through socialization, pedagogical and recreational experiences, should receive training in comprehensive development in its biological, cognitive, psychomotor, socio-emotional, and spiritual aspects (1) requiring the adaptation and accompaniment of the entire educational community team to facilitate their socio personal development, which unfortunately is restricted by an involuntary situation such as this pandemic (4).

Children who suddenly had to be explained that they would return home and the dream of sharing and growing with their new friends has to wait for now, along with the uncertainty of not knowing How to teach children between four and five years that for the first time arrived at a formal educational establishment to socialize with their peers and now, will they be at home waiting for an adult to read a learning guide? (D # 4; Inv 2).

Confinement has generated changes in training processes, and ICTs have contributed to meeting one of the objectives of UNESCO (24): “the achievement of education for all”. However, the conditions of the vulnerability of some families prevent making this use of ICT, leading the teacher to rethink and innovate in their pedagogy (although sometimes it does not have the expected success).

One of my big mistakes was to start sharing at the beginning of the quarantine, through the WhatsApp group that was agreed upon with the transition grade parents, the video links that seemed appropriate for both self-care and for daily motivation before the development of the learning guide that the children perform each week, but did not expect to receive messages where they claimed not to be able to see the videos through YouTube because their recharge of one thousand pesos (0.25 dollars) only allowed them access to social networks with limited navigation (D # 3; Inv 2).

The learning guide is an alternative resource available for students without virtual access; It has allowed me to think of a design with illustrations, explicit for each day, pleasant, and clear from my point of view. However, a mother caught my attention saying, “Professor, do you have to transfer what is there to the notebook or develop it there in the sheets? Or what is it like? The truth is, I do not understand anything about the guide you sent”. At that time, the work of several days was questioned and even more so, when listening to the voice of a worried and anguished mother without knowing what to do with her five-year-old daughter to fulfill an academic responsibility”. (D # 1; Inv 2).

Sending and receiving the workshops that are sent by email or WhatsApp as a strategy to guide the contents proposed in the classroom plan has been a titanic task because not all children or caregivers have the technological tools, connectivity, or skills they use ICT. Faced with this situation, the educational institution has assigned an item for children who cannot download and send the workshops to stationery that has agreed to provide the service at no cost (D # 1; Inv 1).

Thus, it is emphasized that in this confinement, it has been necessary to resort to the use of

several strategies in favor of compliance in the training of students, and this is revealed in equal measure at the preschool, primary, and university levels. Emphasizing the use of devices in training environments allows teachers to significantly improve motivation, support, and communication and simplify the use of time (25).

Realities and contexts

While it is true that education is a fundamental human right, situations such as those that lead to confinement today allow us to recognize the reality of different educational contexts, affected by the family and socioeconomic conditions of students, where education leads to frustration and increases educational inequalities (26), it is then when the reality of the context is reflected in the ignorance of the classrooms and begins to present complex family situations.

Juan is the son of separated parents, and only when the father can go to visit him does he take photos of the work he sends me, and thus, I can accompany his academic process by complying with the development of learning guides; other times, he makes a call. For the mother of the child to answer me (for now, it is the only thing I know about her, her voice), she expresses how they are at home, to then listen to the guidance that I consider appropriate at the time (D # 5; Inv 2)

It is evident that family dynamics were immediately affected by trying to convert a certain space of the house into the classroom, while the teacher manages how to make the family the promoter of new learning through minimal possibilities. Access to technological devices such as connectivity, a situation that exposed the technological gaps and the lack of effectiveness of government programs aimed at the digital world (2). Despite the lack of resources, teachers continue to make efforts to make their pedagogical practices more flexible in the different areas of learning and make use of basic tools that are supposed to be knowledgeable for the student and his family.

I called the mother of a student and after greeting her I asked her why her son has not sent the video, she responds that she does not know how to handle the cell phone well, that to send it she needs data and that the situation does not

allow her to recharge (D # 2; Inv 1).

These scenarios highlight the inequality and reality of socio-educational contexts, where academic support is frustrated by poor technological skills and/or pedagogical capabilities (26), replicating itself at different levels of training.

Three weeks had passed when I again had communication with one of the families of the transition grade to listen to the explanation and request of the mother of the family alluding: “Professor, only when I come to the town will I be able to have a signal to call her and to read the messages that you sent me to WhatsApp, I will try to leave on Wednesdays, so I can download the guide” (D # 2; Inv 2).

At the beginning of the confinement, a student calls me and says that she does not have a computer or data and that she does not know how she will be able to carry out her semester, which she wants to complete successfully. However, days later, she thanks the university for having included her in the support plan, taking a computer to her home, she says that it is a fortune that life gives her to continue with this process (D # 4; Inv 3).

The educational communities have had to find in different ways the strategies to continue the educational processes; these are times in which, despite the circumstances, the new challenges are transformed to see from another perspective the fulfillment of goals and strategies, both teachers and students. strive for the implementation of online learning, which must be broad and effective (12).

It is wonderful to see the qualities and potential that students develop when they construct activity exercises with the help of ICT as a result of their curiosity, creativity, and innovation (videos, timelines, puzzles, word searches, etc.) allow one as a teacher to rethink pedagogical strategies using ICT (D # 5; Inv 3).

This reality of confinement has generated new competencies, contributing to the critique of the social imaginary that has been created regarding digital transient teachers, who, by being born at a certain historical moment, would become less experts in technology in relation to digital native students (12). Therefore, teachers require

a number of pedagogical tools that require the updating of technological skills for the use of audiovisual learning environments.

Students as teachers experience the impact of confinement that forces them to learn and/or enhance the use of ICT tools to meet academic expectations and needs. Families, according to their possibilities, accompany and guide their children (27), but there are those who, due to their vulnerability, find it difficult to fulfill the academic commitments of their children “I work in a public school, and it is evident that the economic situation of the vast majority of children is precarious, which directly or indirectly influences their ability to connect, teaching and learning” (D # 2; Inv 1).

The assumptions of ICT as mentioned by Teruel and Teruel (27) have led teachers who did not know or make adequate use of ICT to have to update themselves in a minimum time, as well as students who do not have such tools for internet connection. have fewer learning opportunities than those who have such devices.

There is a case that I have in mind, I ask the child why he has not sent the workshops? To which he responded: “my dad is the only one who has WhatsApp and he goes to work and comes every fifteen days, and when he is at home I take the opportunity to review the workshops sent, does the teacher give me a little wait for my dad to come? catch up? (D # 1; Inv 1).

A reality that changes according to the particular context of the families for many with the desire to continue their studies satisfactorily, but perhaps for others, only to survive this health emergency.

The family is a central axis of educational processes

Thinking about distance education as a result of the confinement generated by the COVID-19 pandemic is a daunting task that requires the commitment of the entire educational community and government entities. Leaving responsibility exclusively to the teacher and the student, as has been done historically (28), is an act of irresponsibility that affects the teaching and learning processes.

Although I work with fifth-grade children aged 10 to 12 years, it is evident that the accompaniment of parents in the learning process is necessary, which is confirmed in the resolution of the workshops; most of them send them with failures that are committed due to a lack of reading comprehension. This leads me to question, do parents accompany them in their academic tasks? The answer is in the words of some parents when they say I have not studied, I do not know the subject, and/or I do not have time because I spend it working (D # 3; Inv 1).

This story demonstrates the importance of the accompaniment of parents (29, p. 15) and how their level of training is decisive to help carry out the workshops. This reality shows that distance education is relevant for families that have the technological means and knowledge to guide their children (26), showing that there are educational gaps that affect the learning of children and young people, which is corroborated by the testimony of a transitional teacher:

When trying to communicate with a mother, I am struck by the fact that her adolescent daughter, who works daily in a marketplace, always answers the phone, when she asks her to contact the girl's mother to know how she is doing, she explains. that the mother does not have a telephone, so she gave me hers and ends by saying “teacher, I want to tell you the truth, what happens is that my mother does not worry about helping my sister, she has not done anything, now when “I finished working, I will try to help him because I truly love my siblings but I know they are alone” “, while some live a family sharing, others experience abandonment” (D # 8; Inv 2)

It is difficult to think about how to help do homework and dedicate time to their children when there are primary needs to be satisfied; this is more evident in vulnerable families who live day to day and who must challenge the dangers of COVID-19 to find something to eat. Romagnoli and Cortese (30) state that many times the long working hours make it difficult for families to be involved in the education and training of their children. To this is added the absence of knowledge of parents to perform teaching tasks that were previously in charge of teachers, in the words of Rogero (26) the isolation that protects us from COVID-19 is, paradoxically, what exposes

the most vulnerable students to another disease: educational asphyxia, writing analogically in these cases educational ventilators are required

Sara is a 5-year-old girl who in time of confinement learned to take coffee and weed with her grandfather; now the grandmother says that: “the girl is happy because she had never been here on the farm, but I have no education and I understand nothing of what to do, sometimes the brother explains but the girl does not want to study, she only likes to go with her grandfather to the garden, I have told her that if she does not learn when she has to go to sell coffee for not knowing, they will steal it” (D # 9; Inv 2).

However, it must be recognized that some parents in the company of teachers have sought ways and means to support their children in this new educational challenge (26).

We must highlight the work of some parents, who are counted on the fingers of the hand because, in the resolution of the workshops, it is possible to observe that the children have accompaniment in their homes. The tasks are ordered, are delivered in the stipulated times, and are solved well; in this sense, it is appropriate to state that in the learning process, there is a triad that must be in constant synergy so that everything goes well; this triad is made up of teachers. student-guardian (D # 1; Inv 1).

The time that parents dedicate to their children to respond academically is essential for them to feel supported and respond to their commitments as students (31). In the analysis carried out by Rogero (26) of distance education as a result of COVID-19, he concludes that “teachers and families have made (and continue to do so) a great effort: the former to adapt the contents and methodologies to the confinement of their students. and the latter to respond to school demands” (p.175), some families have taken advantage of confinement to share and dedicate more time to their children because in “normal” times work or other commitments rob them of the possibility of being at home with loved ones.

As soon as the mandatory preventive isolation began, José’s mother had to remain at home, leaving no other option than to accompany him in the development of the learning guide, as evidence of his work he shares photos and videos, where

the child is observed. calm and happy, in one of his videos, he says “teacher, when I go back to school, I will be the most judicious”. Seeing the face of this child accompanied by his mother allowed me to understand that the only thing he needed was attention, his mother became visible and his son today presents academic advances of which both are proud (D # 7; Inv 2)

In “normal” times, it was difficult to perceive the accompaniment of families in the training processes of their children, especially of the most disadvantaged social classes (26). Just as confinement has been traumatic for many households, others have taken advantage of it to share more with the family and realize that they are an important agent in the educational process of their children and that their motivation and academic performance depend to some extent (32-34).

In a meeting with parents, to which only 3 out of 25 people came, a mother expressed “from a very young age I have left my son in the care of other people, there were many things that I did not know that he knew them. I truly liked having to be at home and be able to dedicate myself to him” (D # 10; Inv 2).

This account allows us to glimpse the families that have made processes of resilience in the face of the adversities generated by confinement, creating formative processes that contribute to the learning of their children. This motivates teachers to continue with the arduous task of teaching at a distance because they are aware of the families who care about the education of their children and recognize the work that teachers do:

During the isolation, I have performed catharsis, and I corroborate that the teacher is thanks to the students, they and the school are missing, and when I communicate with the children, I realize that the teachers also miss the children, and the parents of family recognize the role of the teacher who is so criticized for their actions. Therefore, I am not able to dimension a virtual education at the primary level, especially when they say that virtuality is here to stay (D # 3; Inv 1).

Families that are linked to the school and have good relationships with teachers improve the self-esteem of children and their school

performance (28), hence the importance of articulating solid processes between the teacher and the student. family, a triad that must work synchronously to advance educational processes that contribute to the integral formation of the student.

In higher education, the topic of virtuality is not far from the questions and needs to be satisfied to provide an education that meets the expectations of teachers and students:

After a process of training, preparing, and rethinking the classes from the virtual methodology, which would allow the transformation of the didactics, as a university professor, she asked the students how they felt with this new methodology and with the pedagogical strategies used. They respond that they do not like it at all, that they feel "stolen" justifying that they have not acquired the same knowledge of the face-to-face methodology and that it is very difficult to learn in this way (D # 8; Inv 3).

This leads us to reflect that there are two scenarios to analyze. The first is the perspective of the student, who ignores the work of the teacher to rethink the methodology because he does not know that this new process requires self-learning by relying to a greater extent on his commitment to the agency of their learning processes. The second is the perspective of the teacher, who, due to his inexperience in the management of ICT, improvises in his classes, leading him to feel ethically responsible for the teaching of his students, as if it were the face-to-face methodology. In this regard, Domínguez et al. (3) suggest that bringing changes in training processes generates resistance in some groups because they must accommodate situations to which they were not accustomed and that require efforts to acquire skills that allow them to perform well.

CONCLUSIONS

It is appropriate to expose what has generated the confinement in the educational field; it was not known or was prepared to lose physical contact with the other, the freedom to move to different places, being prevented from going to the classrooms and seeing the students. students

by a screen. This health catastrophe forces us to learn, explore and manage new training processes to overcome obstacles that allow us to envision a new education that is available to all without distinction of social class and that articulates the triad of teacher-student-family, in favor of inclusive and quality education.

In distance education, the most disadvantaged families or families lacking the skills to work with technological tools have been the main victims who are left without oxygen to fulfill their academic obligations, which suggests that despite living in the 21st century, there are many educational gaps, especially in the technological field; therefore, one of the main challenges after the pandemic is to seek strategies to counteract this gap that restrict training processes and leave quality education in limbo. Along with the above, it is important to highlight that families have been and continue to be an indispensable agent in the educational processes of their children, although many of them were unaware of their role, distance education has allowed them to question and reflect that the educational processes they do not fall exclusively on teachers and students. The family is undoubtedly the first and main formative nucleus, which today is affected and perhaps has the need to unlearn to be able to participate in the educational transformations related to a new digital generation, while the different government entities and educational spaces are in the obligation to recognize the different socio-economic contexts that mark national inequality.

Distance education has generated traumas without distinction of educational level and sector (public or private); however, in preschool and elementary school, the educational gaps are more notable because students require family support and most lack skills for the management of communication devices. Without ignoring that, university students have found it difficult to adapt to the challenges of virtual education.

To understand the educational vicissitudes that confinement has generated, it is necessary to study the life histories of the people who are involved in this process, since they become visible when they are heard and highlighted, but above all, because they allow knowing the unknown, revealing what is that fog hides on cold and dark days. This is because the iceberg

of “virtual” education has not been studied in depth to understand the realities generated by this pandemic that leave the educational community without oxygen and waiting for fans to educate.

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A theoretical approach to early childhood education and its relation to the emotional development in early childhood

Una aproximación teórica de la educación infantil y su relación con el desarrollo emocional en la primera infancia

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SUMMARY

This research is the result of a doctoral thesis in Education Sciences, to conduct a documentary review on child and emotional development, based on the selection of scientific documents at an international and national level (Colombia) that address this topic. The methodology is qualitative documentary analysis, using a comparative matrix that contains information from the processing and searches for standards, studies, and research into 2016 or 2021 in academic and indexed databases (Scopus, Dialnet, Google Academic, and Scielo). The findings show a central category “Early childhood education and its relationship with emotional development”, supported by two subcategories “the family as an influence on child development” and “emotional development”, which emerge from the analysis of 52 academic documents. Among the conclusions, it is highlighted that the family is a central axis in the development and learning processes to guarantee emotional well-being

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and, therefore, the educational quality of children in early childhood.

Keywords: Early childhood, child development, emotional development, education, family

RESUMEN

Esta investigación es el resultado de una tesis doctoral en Ciencias de la Educación, con el objetivo de realizar una revisión documental sobre el desarrollo infantil y emocional, a partir de la selección de documentos científicos a nivel internacional y nacional (Colombia) que abordan este tópico. La metodología es cualitativa de análisis documental, utilizando una matriz comparativa que contiene información a partir del procesamiento y búsqueda de normatividad, estudios e investigaciones encontradas desde 2016 a 2021, en bases de datos académicas e indexadas (Scopus, Dialnet, GoogleAcadémico y Scielo). En los hallazgos se evidencia como categoría central “La educación infantil y su relación con el desarrollo emocional”, sustentada por dos subcategorías “la familia como

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influencia en el desarrollo infantil” y “el desarrollo emocional”, las cuales surgen del análisis de 52 documentos académicos. Entre las conclusiones se resalta que la familia es un eje central en los procesos de desarrollo y aprendizaje para garantizar el bienestar emocional y por ende, la calidad educativa en los niños y niñas de la primera infancia.

Palabras clave: *Primera infancia, desarrollo del niño, desarrollo emocional, educación, familia*

INTRODUCTION

According to the United Nations Fund, early childhood development comprises three phases: from conception to birth; from zero to three years of age; and from three years of age to school entry. These phases are characterized by the need to guarantee children's health, nutrition, protection, and positive stimulation through family support and quality learning spaces in educational establishments, which should have a timely impact on children's comprehensive development. In this understanding, development is multidimensional since it deals with physical, mental, and emotional well-being, which differs from the context and culture of family upbringing. Consequently, this process mobilizes humanity, the state, and organizations to reflect on how to improve their conditions (1).

On the other hand, the United Nations Educational, Scientific and Cultural Organization UNESCO (2) defines early childhood as the period from birth to eight years of age, a unique process of brain growth in which children are influenced by their environments and contexts. In terms of education, it should be noted that the United Nations (3) states in the fourth goal of sustainable development are the quality of education, which seeks to ensure equity and inclusion from early childhood. Therefore, one of the goals of this objective for the year 2030 is to certify that all children receive quality service in care and development during this stage, as stated in one of the main objectives of UNICEF (1), where the comprehensive development of the child should prevail. In this sense, it is necessary to think and create suitable and timely learning environments for the development of this population, being essential to reflect on the conceptions that are

held, in child and emotional development, so that the guiding actions towards these processes have the expected results.

In relation to the above, the initiative arises to develop the present research that aims to conduct a documentary review on child and emotional development, from the selection of scientific documents at the national (Colombia) and international levels that address this topic. In accordance with the objective, this article is relevant to the extent that it is appropriate to analyze the different studies that have been conducted in various contexts, to identify, analyze and reflect on how child and emotional development have an impact on the integral formation of early childhood. Therefore, the findings of this research will reveal the needs, problems, challenges, and challenges that teachers, parents, and infants must face during the formative process of students that is built in the classroom and the family. In this sense, this research would be a great contribution to people, organizations, and researchers committed to this topic, since it is a documentary x-ray that allows seeing reality more comprehensively.

Not reflecting on the research work developed in recent times on the subject in question would prevent counteracting the social gaps and, therefore, the conditions of vulnerability in which the most disadvantaged children in society are immersed (4). His research states that political, economic, and social problems generate poverty, which leads to the fact that many children do not receive adequate support and prevents them from reaching conditions similar to those of their peers, whose basic needs are met (5).

Juxtaposing this stage of development can have repercussions on future problems such as low academic performance, absenteeism, school dropout (6), and low developmental potential (7). Therefore, the family and the school play an important role in this process. Bisquerra et al. (8) state that the family context is the ideal space for the development of emotional competencies. And the family socio-demographic conditions, the educational level, and the economic income of the parents indicate unfavorable actions for the development of children (9). Therefore, it is essential to rethink the importance of the family and the influence of emotional development in early childhood

education. In this sense, the school context, as Gómez (10) considers in his research on early childhood and emotional education, is a guiding space capable of contributing to the development of students' capacities; therefore, the programs are projected from the emotional formation to train in competencies for life, building a balance between the cognitive and emotional aspects (11). Likewise, Nikkola (12) refers to the analysis of the Finnish educational system, highlighting the importance of educational planning, which is routed from the central objective of pedagogy, i.e. from the emotionality, capabilities, needs, and interests of children, therefore, it is the teacher's responsibility to know the fundamental objectives of early childhood education.

CHILD AND EMOTIONAL DEVELOPMENT

Referring to the term development entails understanding a process of constant reconstructions and reorganizations that children experience, considering the different variables that may occur in their performance over time, and showing possible advances and/or setbacks. The development comprises three characteristics: the first refers to a non-linear social, affective, linguistic, and cognitive development, referring to an irregular process, where children may or may not advance; the second characteristic denotes that development does not have a definitive beginning, therefore, it does not start from zero; and third, development does not conclude or does not have an end (13).

Child development is the result of the integration between genetics and the stimuli that children receive from the social and family context, significantly affecting socializing experiences, stimulating abilities, parenting patterns, and affection, where adequate development will favor children's skills and competencies (14). Therefore, development can be integral and interrelated between the psyche and consciousness to reorganize and benefit the physical and emotional growth of the child (15).

On the other hand, emotional development is a process in which the child builds aspects related to his or her identity, security, self-esteem, and confidence in himself or herself and the

environment, through meaningful relationships established with peers (16). In this process, emotions are identified to manage them and to know how to express and control them, which implies a conscious and unconscious exercise of the self. As reflected in the following concept: Emotional education is a process that permanently occurs throughout life. Its objective is to highlight/emphasize the development of emotional competencies as a basic model of personal development, to prepare/skill them for life to improve their well-being, both personally and socially (17).

Likewise, emotional competencies as the set of knowledge, abilities, skills, and attitudes necessary to become aware of, understand, express, and appropriately regulate emotional phenomena (18), thus constructing a pentagonal model of emotional competencies made up of five blocks: emotional awareness - emotional regulation - emotional autonomy - social competence - life skills and well-being (19). These competencies must be formed in the same order to ensure that the person develops a complete process in emotional education.

METHODOLOGY

The present research is of qualitative approach and documentary type since the procedure involved search, systematization, and analysis of electronic documents published from 2016 to 2021. The units of analysis were all those documents that address two groups of categories (family as an influence on child development, and emotional development), found in the Scopus, Dialnet, Google Scholar, and Scielo databases. The search considered descriptors in English (child development, emotional development, early childhood) and Spanish (desarrollo del niño, desarrollo emocional, primera infancia), using the UNESCO thesaurus as a reference. In order to broaden the document search, the descriptors are combined in different ways. In the first exploration, a total of 14 224 documents written in the form of articles were found among the four databases, which were preselected according to the inclusion and exclusion criteria, finally choosing 13 articles from each database, as shown in Table 1.

Table 1
Classification of articles

Database	Initial screening	Pre-selection	Final selection
Scopus	3 580	38	13
Dialnet	2 456	62	13
Scielo	3 928	56	13
Google Scholar	4 260	78	13

The inclusion and exclusion criteria were selected according to the need and convenience of achieving the analysis pursued by the literature review (20), understanding by these criteria the opportunity to help strengthen the academic and methodological quality of the studies, identify the

required population, and analyze the applicability of the results (21). In this sense, Table 2 describes the inclusion of criteria necessary for the topic of this research and, at the same time, the exclusion of some criteria that allow delimiting the intentionality of this literature review.

Table 2
Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Academic articles published in indexed journals.	Academic articles published in indexed journals.
Studies resulting from early childhood research involving educational agents.	Studies, results of papers in non-indexed journals.
Published between 2016 and 2021	Papers that do not address the topic of early childhood.
Be part of the databases researched Papers in non-indexed journals.	Published before 2016
Papers that do not address the topic of early childhood.	Papers that require payment to access them
Published before 2016	
Documents that require payment to access them	

Source: Own elaboration

To systematize the documents, a database was created in Excel, with the following sections: title of the article, author, year, journal, journal information, keywords, research problem, objectives, research methodology, description and sample size, instruments used, results, and thematic core. Subsequently, the documents were grouped, and two categories emerged: family as

an influence on child development and emotional development. This allowed meta-analysis from the thematic nuclei, common and divergent aspects among the selected documents, through a rigorous and constant comparison exercise. Finally, recommendations, hypotheses, and conclusions were made that invite investigation and reflection on child and emotional development in early childhood.

RESULTS

The research articles show important results on the need to contribute to child and emotional education, showing in different contexts the recognition of children as subjects of rights who

require timely and intentional accompaniment to fully develop their vital needs (22). Figure 1 describes the total (n=52) of selected articles, where 25 % (n=14) are national (Colombia) and 75 % (n=38) are international, including 23 % (n=12) of articles published in a language other than Spanish.

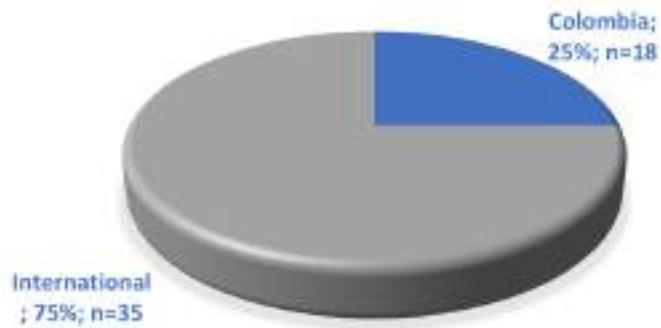


Figure 1. Classification of items according to location.

Note: Percentage of articles selected at national (Colombia) and international levels.

Regarding research approaches, it was found that 69.2 % (n=36) used the qualitative type, 26.9 % (n=14) corresponded to quantitative studies, and 3.8 % (n=2) to mixed studies. In relation to population groups, six studies with a large sample of children stand out: i) analysis of the Early Childhood Development-DIT module in the national health and nutrition survey of 3 892 Mexican children aged 0-59 months with respect to the topic of health, development, and well-being (23); ii) the evaluation of the early childhood development index and the level of language development of 2 937 Mexican children (24); iii) use of data from the Early Childhood Development Index-ECDI from the last ten years, collecting information from 99. 222 four-year-old children, in the topics of cognition and socioemotional in 35 low-income sample countries (7); iv) evaluation of the results of the implementation of the Pisotón program in the psycho-affective development in 6.08 Colombian children aged three to seven years, through Düss' fables (25); v) how early childcare affects the development of German children marginalized by

social and family circumstances, using a sample of 61 625 children (26) and vi) evaluation of the level of learning and development of 5 005 Chilean children in the dimensions of cognition, motor skills, language and socioemotional (14).

A high percentage of investigations used samples of 106-307 subjects from 0 to 6 years of age, among which the following stand out: i) surveys of 171 Russian children from 5 to 6 years of age with their respective parents to analyze the theories of parenthood and the understanding of children's emotions (27); ii) evaluation of a diagnostic test on child development in which 224 Colombian children from 2 months to 5 years of age participated together with their parents (28); analysis of emotional competencies and comparison of the influence of the child's sex on the emotional development of 123 Spanish children (29).

A smaller percentage of investigations made use of samples of 8 to 44 subjects of note are: i) the application of the qualitative assessment scale of child development and the socio-family

characterization card to analyze the child and emotional development of 21 Colombian 5-year-old children (30); ii) analysis of the self-regulation processes of learning of 8 participants between 4 and 6 years of age (31). Finally, other studies refer to bibliographic reviews with searches of scientific articles related to the topic of child and emotional development in early childhood. On

the other hand, to carry out the content analysis of the studies, the synthesis of the 52 articles was taken up again and then taken to a word cloud (generated by the Atlas.ti 9 program), finding prevalence in early childhood education, emotional development, children, childhood, learning, competencies, and skills, as reflected in Figure 2.



Figure 2. Word cloud from the synthesis of the articles studied.

Note: Words that emerge from the Atlas.ti 9 software and that stand out from the syntheses in each article analyzed.

The above is related to the analysis of the documents, which allowed identifying as the main category "Early childhood education and its relationship with emotional development" which is supported by two subcategories: "the

family as an influence on child development" and "emotional development" these, in turn, are implicit in the similar areas of study with the number of articles that support the bibliographic exercise, as shown in Table 3.

Table 3
Analysis of categories and subcategories of the documents

Main category	Secondary categories	Areas	#Art
Early childhood education and its relationship to emotional development.	The family as an influence on child development	Unfavorable conditions for early childhood development.	8
	Emotional development in early childhood education	Family, contexts, and early childhood	16
		Assessment of early childhood development	11
		Educational quality in comprehensive early childhood development	17

Source: Own elaboration

DISCUSSION

The main findings of the studies showed a correlation between early childhood education and emotional development, evidencing the

importance of the family as the first educational agent in these processes, and the need to generate an effective alliance between the family and the school as a formative space in the integral development of the child (Figure 3).



Figure 3. Correlation of categories of analysis.

Note: The above graph shows the close relationship between emotional development and the family as an influence on child development, where the referents: socioeconomic factors, development, assessment, education, school, and socio-family factors, coexist to articulate the areas: unfavorable conditions for early childhood development; family, contexts and early childhood; evaluation of early childhood development and educational quality in comprehensive development. The above, allows us to glimpse that in the research the topic that stands out is the family, perceived as the main socializing agent, where the academic training of the parents, the type of family, and the socioeconomic factor influence the favorable or unfavorable life trajectory of the children.

Different studies have shown that the use of applications, scales, and surveys aimed at children and their caregivers have made it possible to evaluate cognitive, motor, socioemotional and communicative development, and alterations in child development (14,23,28,32,33), resulting in new pedagogical proposals, innovative learning tools and targeted and intentional educational material for early childhood.

Child development is a dynamic process that generates physical and emotional changes, which are reflected in children's experiences according to the context in which they develop. For Astudillo and Leppe (34) it is a continuous process that allows the acquisition of skills in the motor, cognitive, linguistic, and socioemotional areas. In addition, it is a stage of special care that must guarantee the quality of the educational

service in the first years of life (35). For this reason, it is a central axis of public policies for early childhood (36), where children have been recognized as an essential stage to contribute to their well-being, as well as to the present and future of society. However, some conditions do not favor the expected child development, which generates notable social differences among them.

According to the above, among the unfavorable conditions for early childhood development, the following are highlighted: (i) influence of parenting on early cognitive and emotional development, attributing that parents who are not involved in the upbringing of their children, cause in them less competencies in the understanding of emotions (27); (ii) parents who assume authoritarian or permissive parenting styles, which have repercussions in inappropriate social and educational consequences (37,38); (iii) family dysfunctionality, with low levels of parental education and precarious socioeconomic conditions that affect the socioemotional skills of children (26) the disconnection between the family and the school, the lack of time and dedication to children and family violence imply the development of unhealthy behaviors, as well as poverty and malnutrition, leading to child stunting (7,40); this last aspect is a human suffering due to the abandonment in which many children find themselves, who do not have the option of choosing where and with whom to grow up in healthy and affective spaces.

In line with the above, the Regional Observatory of Early Childhood in Colombia has found that the quality of pedagogical processes is deficient and out of step with the processes of child development. In addition, the role of the family has been delegated in many cases to educational establishments (41), situations that today are reflected in the insistence on the link between the protective environments for early childhood known as the family, the state and society, who are obliged to guarantee harmonious transitions, initially from home to school (42). Paradoxically, a year and a half ago (due to the COVID-19 health emergency), the home was forced to become a school learning environment, demonstrating the possibility of overcoming barriers in teaching, if not also an emotional and social crisis within the family (43). However, the levels of inequality became more visible,

since not all families have had the minimum conditions to cope with the situation of learning at home because of the pandemic, this situation has caused the family to resignify and readjust to the new circumstances, where this: It is the scene of the most important relationships and fundamental experiences of life. Hence, we need a united family, that together shares the daily joys or afflictions, that the difficulties, achievements, and criteria of some are shared by all members, and that does not impose conditions, where respect prevails for family growth (44).

The socio-family factor plays a fundamental role in the integral formation of the child since interpersonal relationships dynamize transformation processes in their personal growth. In this way, the socioeconomic aspect is not a determining factor, because the main task of the family is the commitment to accompany, care for and protect the integral development of children, assuming the changes that occur in social and cultural contexts, which require generating an alliance with the school, through assertive communication, to carry out principles such as empathy, otherness, solidarity and especially the practice of socioemotional competencies.

The implementation of programs for psycho-affective and emotional development has shown that after the interventions with children and their families, proposals are made to reorganize the training in emotional education, considering tools that allow resolving emotional conflicts in childhood (25). Thus, the proposals that arise from emotional education for the first years of life are mainly advantageous and necessary because it is a stage that is naturally socializing with their peers (45), hence the importance of allowing childhood interactions where they can recognize themselves as participatory subjects of society, and that from their individuality they begin to recognize the other.

Likewise, evaluations of maturational development in preschool children are fundamental (46) and have led to the conclusion that the greater the socio-affective development of a child, the greater the exploration skills and adaptive faculties will also be, providing tools for a free, spontaneous, safe and open to learning development (47). Therefore, valuing child development leads to reflecting on how, from

the task of being parents, it is possible to provide affection and security so that their child can then go to school and find in this new space learning opportunities with pedagogical intentionality that contributes to the aforementioned equivalence.

Regarding the quality of education in the integral development of early childhood, the importance of the protective environment of the family is reiterated to the extent that it provides children with appropriate verbal and emotional interactions so that the lag in their development is lower (14). When moving on to the school environment, a teacher is required who can intentionally provoke the learning of socioemotional competencies, facilitating the formation of secure and independent human beings. Thus, the link between the triad of students, teachers, and family must be solid to leave a mark in the formation process (48). Because students express a wealth of emotions that need to be intervened in the coexistence with others. Therefore, the teacher should not focus only on the cognitive aspect, since juxtaposing the socioemotional aspect (49) would be sowing in arid lands, limiting the possibility of the new generations to actively participate in this indolent society, which needs people with affective competencies to reduce the inequality gaps, and to make otherness a universal principle (50).

CONCLUSION

It is found that a large percentage of the research addresses the issue of the family as a transversal axis in the processes of infant and emotional development of children, which has repercussions in the subsequent stages of the life cycle. Therefore, educational processes should be rethought in favor of an integral education that contributes to the biopsychosocial transformation of the human being. Requires that both the family and teachers are trained in the acquisition of competencies that transcend from the cognitive to the emotional. To the extent that every human being should have the opportunities to develop to the fullest, regardless of their social, economic, physical, cognitive, religious, or political, among others; leading the school to be a potentializing agent that counteracts the gaps of inequality,

educating from love, gratitude, and happiness.

The documentary review reveals some gaps, among the most relevant of which is the absence of public policies in some countries that promote comprehensive training in the development of emotional competencies, a problem that is most prevalent in the early childhood education stage. In this sense, it is important to continue researching this topic that involves governmental and non-governmental entities.

Likewise, the analysis of the documents highlights the importance of studying the different social, family, and educational contexts in which early childhood develops, since the level of affection is proportional to the favorable social conditions, the protective environments, and the pedagogical spaces, which should be appropriately designed for the integral development of children; In this sense, it is necessary to think about the construction of support networks that allow the different early childhood promoters to strengthen cooperative work to safeguard the growth and development of this population in their first years of life.

The findings found make visible the problems of early childhood education and the affection on their emotional development, being submerged in social and economic inequalities, which alter the welfare and life project of each child, affecting in the medium and long term their development of personal, emotional, social and physical dimensions.

Finally, this documentary review presents a social and educational reality, which invites us to rethink the challenges of early childhood education, since, despite the existing international and national legislations in written form, it is necessary to reflect on the real transformations that require these spaces where children are immersed, such as family and school, to generate strategies that strengthen this alliance to improve living conditions in early childhood in every corner of the world.

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Development of an M-Learning application for early childhood education in emotional consciousness

Desarrollo de una aplicación M-Learning para educar en conciencia emocional a la primera infancia

Ingrid Selene Torres-Rojas*, Yuli Sidney Garcés-Bolaños , Daniel Antonio León Blanco

SUMMARY

Mobile Learning (M-Learning) is an educational innovation strategy with the potential to contribute to the development of emotional awareness competencies in early childhood. For this reason, an application prototype was built with gamification elements aimed at preschool students, in four vulnerable educational contexts in the city of Popayán (Colombia). The design methodology followed an iterative process in four phases - Analysis, Design, Testing, Delivery - and resulted in the validation of the visual design of the application by the endusers, as well as a registration of the software. Additionally, the validation tests allowed us to conclude that the application in development facilitates the reflection, recognition, and management of their own emotions for infants.

Keywords: *Educational game, Mobil app, ICT, emotional development, early childhood education, mobile learning (Thesaurus IEEE y Unesco)*

RESUMEN

El Aprendizaje Móvil (M-Learning) es una estrategia de innovación educativa con el potencial de contribuir al desarrollo de competencias de conciencia emocional en la primera infancia. Por ello, se construyó un prototipo de aplicación con elementos de gamificación orientada a estudiantes de prescolar, en cuatro contextos educativos vulnerables de la ciudad de Popayán (Colombia). La metodología de diseño siguió un proceso iterativo en cuatro fases - Análisis, Diseño, Pruebas, Entrega - y arrojó como resultado la validación del diseño visual de la aplicación por

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Author's note - Information on the research from which it derives

derives: This article arises from an interdisciplinary research process with three research groups from two university contexts; it began on December 21, 2018 with the approval of Resolution 0239 of the Corporación Universitaria Autónoma del Cauca (through which projects and activities of Science, Technology and Innovation are formalized), and culminated in June 2021 with the final validation phase. In addition, this project was submitted to a call for internal research at the Institución Universitaria Colegio Mayor del Cauca, being financed by this entity.

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parte de los usuarios finales, además de un registro del software. Adicionalmente, las pruebas de validación permitieron concluir que la aplicación en desarrollo les facilita a los infantes la reflexión, el reconocimiento y el manejo de las propias emociones.

Palabras clave: Juego educativo, aplicaciones móviles, TIC, desarrollo afectivo, educación de la primera infancia, aprendizaje móvil (Tesauros IEEE y Unesco)

INTRODUCTION

In Latin America in 2019, 69 % of the population has a smartphone with a partial or constant internet connection, according to the report “The mobile economy 2020” by 2025 79 % of the population will have adopted this technology. Within this category of smartphones are tablets, touchscreen devices that allow through touch, usually the index finger, to open a world of interactivity and communication that can be used for learning (1).

The inclusion of these devices from an early age can enrich the learning of transversal and specific competencies. Although research on the influence of mobile devices on learning outcomes is incipient, reports show that these devices affect learning determinants such as motivation and attention, while improving the classroom climate, if they are used under the supervision of teachers and are integrated into classroom activities and dynamics (2). As indicated in (3), in a study on the perception of the impact that the use of tablets has on the learning of children in grades 5 and 6 of primary school in Spain, these devices favor the development of transversal competencies such as autonomy, initiative, collaborative work, and critical spirit, as well as the promotion of digital competencies and those specific to the subject or the content of applications or resources used.

For this reason, in this study, the design of an M-Learning application seeks to educate this inherent need of the human being “emotional education”; which presents a very little approach in educational institutions, especially because priority is given to the development of other areas (mathematics and language), instead of developing in continuous programs this type of

learning that is required from early education (4). The importance of working on the control of emotions allows for a healthier environment for children and a better learning process, especially because the designed strategy seeks to be implemented in children at high risk of vulnerability, since the students of the Educational Institutions where this strategy is intended to be implemented are displaced by violence, live in conditions of poverty (settlements) and present high school absenteeism, leading many of the children who start their studies to be unable to finish them. This is also another high-risk factor because by not attending classes, they miss the opportunity to intervene in their emotional world in time, resulting in emotional disorders in adolescence or adulthood (5). In studies with similar populations (aboriginal children), a double risk of vulnerability for social development (RR = 2.00; 95 % CI, 1.89-2.12) and 89 % risk of emotional vulnerability (RR = 1.89; 95 % CI, 1.77-2.02) were found (6).

Working on the control of emotions allows for a healthier environment for children and therefore a better learning process. In a study they found through a multilevel analysis, how the cumulative stress of teachers and their assistants is associated with feelings of aggression, anger, anxiety, and lack of social competence in their students, therefore, transformation is required in the classroom with tools such as the one developed in this research that contributes to the transformation of the human being in the infant stage (7).

Therefore, the purpose of this application is to provide support to early childhood teachers in the education of emotional awareness through ICT tools provided by the Colombian National Government, through strategies such as “Computadores Para Educar - CPE, a program of greater social impact that generates equity through ICT, promoting the quality of education under a sustainable model”. This program encourages the use of ICT tools by delivering devices such as computers, tablets, and training to different teachers in public schools. Considering that only in the department of Cauca, as of December 31, 2019, 86 170 tablets and 80 304 computers have been delivered, thus guaranteeing a terminal for at least 4 students (8).

In addition, emotional education currently shows greater importance in training and it is stated that this process should be continuous and permanent, as it requires training at all stages of the life cycle: birth, early childhood education, primary basic education, basic secondary education, higher education and throughout adult life (9), thus generating a transformation in the classroom and learning, which can be understood as an approach to train life skills, leading to prevent social problems in the future of human beings (10). Thus, have analyzed several studies that show how training in EI (Emotional Intelligence) or this type of skills in children and adolescents obtains relevant benefits in the school context, such as better physical and mental health, greater well-being, lower risk of substance abuse, less aggressive behavior and better academic performance (11,12).

This project is carried out through mobile learning or M-Learning, which is defined as a learning methodology different from the traditional one that includes specific and simple tasks that allow promoting non-formal education to obtain skills and knowledge such as emotional intelligence (13). It is thus supported by the benefits of education on digital platforms that make use of the network, without the need for direct physical contact with the teacher, where self-taught learning stands out (14). Used for mobile devices with the Android operating system, it is supported by gamification elements that manage to capture the attention of children between 5 and 7 years old. Using Gamification (15) allows incorporating dynamics, mechanics, and game components in virtual learning environments, such as reward, competition, and solidarity; mechanics that invite the student to continue playing while achieving a final goal in an altruistic way.

METHOD

Methodological design

The design was based on the construction of the M-Learning strategy based on elements of gamification and development methodology. The construction of the research prototype was based on the ADPE (Analysis, Design, Testing, Delivery) methodology for the development

of mobile applications based on M-learning proposed by Garrido and Chiza (16), proposing the following phases: Phase I Scope, Phase II Testing and Phase IV Delivery.

The activities were designed and analyzed by an interdisciplinary team made up of a psychologist, an electronics and telecommunications engineer, a visual designer, and students from research groups who are part of three research groups in Higher Education Institutions (IES) (Bachelor's Degree in Early Childhood Education at Uniautónoma, Systems Engineering at Uniautónoma and Visual Design at Unimayor).

This process is associated with gamification, which transfers the mechanics of games to the educational environment, improves the user's experience, makes the user become committed, and motivated, and acquires a better spirit of improvement at the time of learning (15). In this case, we sought to educate emotional awareness, which is proposed as the first step to addressing the pentagonal model suggested by (17,18). The activities proposed in the work with the children are taken up again in a didactic and creative way using pedagogical strategies with the body (dance, situations, and expression of gestures), didactic activities (coloring, work with plasticine, slogans, alphabet soup, building words) and classroom games (sounds, puzzles, emoticons, forming pairs) that favor significant learning in the student (19).

Population

As part of these comprehensive care mechanisms, the project seeks to support emotional education processes, taking advantage of the fact that the institutions were beneficiaries of the "Computers to Educate" program, a Colombian government initiative implemented through the Ministry of Technology and Communications, MinTic, which encourages the use of ICT tools in educational institutions in vulnerable areas through the delivery of devices such as computers and tablets, as well as training for teachers in public schools. Only in the department of Cauca, as of December 31, 2019, 86,170 tablets and 80,304 computers have been delivered, thus guaranteeing a terminal for at least 4 students (8). However, in the absence of

educational software, there is an underutilization of the devices that do not correspond to the enthusiasm aroused in students by the use of the equipment during class sessions.

The research population was preschool children (transition grade) in a range of 5 to 7 years, who are part of public sector educational

institutions in the city of Popayán - Cauca (Table 1), who are in vulnerable situations, because they have high levels of poverty (being of strata 0 and 1), forced displacement by armed conflict, discrimination of inequality, unemployment, overcrowding, drug addiction, absence of one of the two parents, early pregnancy, domestic violence, among others.

Table 1
Project population

Educational Institution	Number of Courses	Students	Boys	Girls
Institución Educativa Niño Jesús de Praga	2	43	33	15
Institución Educativa Gabriela Mistral - Sede El Uvo	1	21	13	8
Institución Educativa Gabriela Mistral – Sede Bella Vista	1	23	13	9
Institución Educativa Gabriela Mistral – Sede Mixta Cauca	1	24	14	10
Institución Educativa Normal de Popayán	3	84	48	36
Institución Educativa La Pamba	1	22	13	9
Totales	9	222	135	87

Source: Own elaboration

RESULTS

Results of Phase 1. Scope

In this phase, requirements engineering is applied to elicit requirements to avoid critical points in the development of the application. For each requirement, the analysis, specification, and validation are done through techniques such as interviews, brainstorming, observation, social analysis, and prototyping. Techniques proposed in the SWBook 3.0 (Guide to the Software Engineering Body of Knowledge). Within the scope of the application, it is established for the education of emotional awareness in children of the selected population, the teaching of the emotion's happiness, sadness, fear, joy, love, gratitude, and anger, designed as shown in Figure 1, through one of the strategies.

The application is developed through levels, each level is a module oriented to the learning of emotions mediated by game mechanics or playfulness (20), the child who starts the



Figure 1. Emotional Emoticons. Note: With the same functions and characteristics as the table notes.

application must feel at all times that he/she is playing. All the modules have the avatar shown in Figure 2, identified as the tutor of the application; this avatar teaches the child about emotions and guides him/her on the use of the application and the progress of the game as he/she goes through each level.



Figure 2. Avatar of the prototype. Source: Own elaboration.

Gamification is defined as a learning technique that aims to bring game mechanics to

the educational and professional environment, through the implicit structure of the game known as dynamics, the basic components that cause the development of the game, its rules, its engine, and operation (mechanics) and its components as resources available to design the activity (21). Its main objective is to enhance motivation, concentration, effort, and other common values developed among the players, through elements such as points, progress bars, avatars, and rankings that involve the user's feelings of autonomy, commitment, competitiveness, and social relations (22). Some levels proposed for the delivery of the prototype are presented in Table 2.

Table 2
Levels of the learning methodology proposed for the delivery of the prototype

How to quote	Name	Description	Gamification Technique
0	Identification	In this level, the student starts the session with the help of the teacher and identifies himself with his name throughout the application.	Individual or group missions or challenges, customization.
1	The dance of emotional awareness	In this level, the student listens to a series of sounds and chooses the face of what makes him/her feel the sound, finally, he/she draws what he/she feels. A diagnostic impression is made about the student's knowledge of emotions.	Reward, Levels
2	Emotional emoticons	At this level, the application explains to the student the meaning of each emotion and finally asks the student to select how he/she feels and shares with peers the feeling. This application will be played whenever the child logs in regardless of their progress in the application. The selected information is stored in the database for further analysis.	Reward, solidarity, levels
3	Sounds and emotions	In this level, the student listens to the sounds of bottles with some element inside them and chooses the feeling it produces.	Reward, competition, levels
4	Touch and emotions	At this level, the student must have his eyes covered and touch different shapes with his hand, finally selecting how he feels after the process.	Reward, levels
5	Expressing emotions	In this level, the student makes groups of 4 students, closes his eyes, and remembers a moment suggested by the application, finally, a picture is taken to represent the feeling. The image is stored in a database for later analysis.	Reward, solidarity, levels
6	Painting Emotions	At this level, the student draws on a canvas of what the music that is playing at that moment provokes in him/her. The idea is to get him/her to represent the emotion associated with the type of music that is playing. The drawn image is finally stored in the database for later analysis.	Reward, Levels, Challenge
7	Forming Emotional Faces	In this level the student must build the face corresponding to the one selected on the screen according to his current feeling, he must drag to the main avatar the eyebrows, the eyes, the mouth, and the hands of the correct face.	Personification, challenge, levels, reward, levels, reward, competition
8	How do cartoons feel?	The student must associate the emotion felt by the cartoon shown through a video, the idea is to identify the emotions through the identified expressions.	Challenge, levels, reward
9	Finding emotional partners	At this level, the student must relate the emotional face represented by a real person with the avatar selected for that emotion, the idea is that he/she makes all the complete relations.	Challenge, levels, reward

Source: Own elaboration.

With the objective of the subsequent analysis of results, the most important elements of the student's journey in the interaction with the application are stored, such as the score obtained, the emotion of each day, the photos of their faces in a particular situation, among others (which can be visualized by the teacher through the web platform). That is why each student must be previously characterized within the application associated with each teacher who will be the administrator of the platform where the information is displayed.

Results of Phase 2. Development

The proposed architecture for the System is shown in Figure 3 Client - Server, where the clients are the students accessing from mobile devices/tablets to the application or computers for the administration of the web platform, they

Regarding the technological considerations and for the development of the strategy (some specifications are explained in detail in Table 3), totally free tools are selected for the implementation of the web application, and the database space is purchased in the Hostinger application server. The starting point was NTS,

are in charge of making requests; the server is located in the cloud and is in charge of storing and processing the information (23). Communication over the Internet is done through REST APIs, since it is known as a logical and efficient standard for creating services (24).

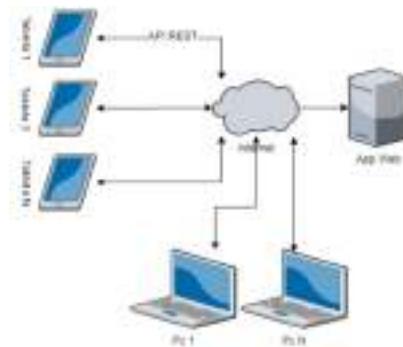


Figure 3. Client Server architecture of the learning methodology. Source: Own elaboration.

a leading technology company in consulting, development, and implementation of mobility information systems, since the Android operating system was present in 85 % of the world's smartphones, it was decided that the prototype would be developed only for this type of device (25).

Table 3
Specific technological considerations for the application

	Item	Description
Mobile Application	Native Language	Android
	Programming Language	JAVA
	Build Version	28
	Build Tool Version	29.0.2
	Minimum Supported Version	15
	Maximum Supported Version	28
	Development IDE	Android Studio 3.5.3
Application Web	Version	APK v13
	Programming Language	HTML5, CCS3, Javascript, PHP
Application server	Development IDE	Visual Studio Code 1.43.2
	Disk space	20Gb
	Bandwidth	Unlimited
	RAM memory	512 1CPU
	Database	Mysql 5.0.12
	Owner	Hostinger
	Address	https://conciencia.educarenemociones.com/index.php

The prototype development process was based on the SCRUM agile methodology (Figure 4), a complete process that adapts to the software life cycle, from design to implementation (26).

For each module defined within the group of requirements of phase 1, the respective sprint was carried out: planning, design, construction, testing, and review.



Figure 4. Sprint: Planning, design, construction, testing, and revision. Source: Taken from Learning Agile Scrum Methodology Using the Gouware Tool Trello.

The result obtained from the process was a fully functional module shown to the client for its passage to the testing phase and then, some images of the application are shown, which are

saved on the web page as shown in Figure 5, for pedagogical use, analysis and support of the children's teacher.



Figure 5. Report of a student's drawing from the web platform. Source: own elaboration.

Results of Phase 3. Tests

In this phase, students of the transition grade of the Institución Educativa Niño Jesús de Praga aged between 4 and 6 years old were tested. The application was installed on several tablets of the program Computers to educate ProFuturo project with the following characteristics:

- RAM memory: 2GB
- CPU: Snapdragon 425
- Android version: 7.0
- Resolution: 1280x800

In the Educational Institution, the internet connection for downloading the installation file on the tablets was precarious; however, the operation of the application was successful, since the requests generated to the server do not occupy large bandwidth. The group of 4 thesis students from the research group Development of Socio-affective Skills DHASA, registered as teachers (administrators) in the web application, developed the test. Each one worked with groups of 6 children (Figure 6).



Figure 6. Prototype testing activities. Source: Photograph taken by the work team.

The test consisted of applying informed consent to the parents of the children who participated in the process, then the development of the first 5 activities of the EmotionApp application was carried out, while the participants used the devices, the testers asked about the development of the activity, inquired about the understanding of the activities, the appearance of the interface and its ease or difficulty of use. Each kept a field diary in which they recorded the children's statements.

The participants' comments or observations were grouped into three categories: functional, ergonomic, and visual/interactive. Among the

functional recommendations, the need to prevent a student from leaving the application by mistake and to store the login (to avoid inconveniences when logging in again) stood out. In terms of ergonomics, there was a need to place the tablet on a base or support for better handling by the students and to control the volume of some songs and sound resources of the application, on this point, for some activities it was necessary to use headphones, which made some participants uncomfortable, as they dropped them or were not used to them.

Regarding the visual and interactive elements, the character seemed "nice", "funny", "fun" and "friendly", since his first appearance in the app, they called him "little friend". Also, it could be noted that there was confusion in some of the character's emotions, the children mentioned that the face of fear and sadness "looked very similar", while the other emotions (joy, anger, love, and gratitude) were identified without major problems. For some children the character's voice was pleasant, others said it seemed very "childish". The students identified the buttons and related them to their functionality since most of them said they knew them from other applications or games installed on their parents' or relatives' cell phones.

Results of Phase 4. Delivery

In this phase and after validating the application in the testing phase, the software registration request is made to the National Directorate of Copyright, Special Administrative Unit of the Ministry of the Interior through the online registration (<http://www.registroenlinea.gov.co/index.htm>), delivering the installation file of the EmotionApp strategy, user manual, and documentation of the same, obtaining software support registration Number 13-78-443 in March 2020, as shown in Figure 7 (27).



Figure 7. Software registration initial phase.

DISCUSSION

The Ministry of Education in Colombia has been forceful in determining the necessary mechanisms to promote the development of boys and girls in early childhood, through quality educational services, education being a right of the people where the State, society, and the family, who are co-responsible for its guarantee (28). However, the socioeconomic environment in which some of the children who participated in this project are excluded, delaying their educational processes (especially in times of pandemic where they study from home). This situation is explained by the limited accessibility resources they have to access the Internet or technologies.

However, the validation of M-Learning allowed the education of emotional awareness in transitional children, since only they recognized the emotions of joy and sadness with little knowledge, having averages between 3 and 3.25 to end with the knowledge of the six emotions proposed in the project (surprise, fear, sadness, joy, love, anger). This leads to highlighting how ICTs have become an essential tool for learning in the classroom and also in the home, establishing new models of communication and generating spaces for training and information for the family (29). One of the stories expressed by a mother of a child says “the APK, it was very fun, very interesting, this little game, my son had fun taking pictures and making gestures and he was waiting for the other activities to continue working” (DC:10/ N: IENS79/R:05), as shown in Figure 8.

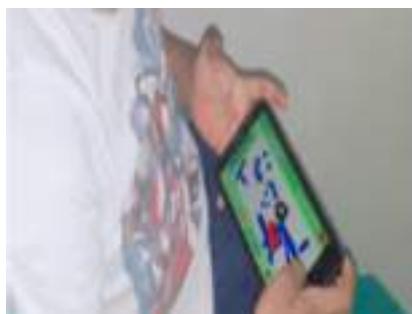


Figure 8. Students are in comfort with accessibility to technological devices. Source: Photo taken by a family member of the students.

Also with the use of this technological tool, some pedagogical strategies (emotional emoticons, bottle sounds, drawing emotions from songs, and looking for emotional pairs) were of great contribution to learning about emotional awareness, reflecting on the sounds presented in the application (Figure 10), the emotions felt with phrases such as “...this bottle sounds like Kellogg’s, the one in love, and this one sounds weird, it is the emotion of joy” (GF. CUA#6) and from their behavior by drawing the way they understand emotions in this process (Figure 9). This diversity of pedagogical strategies allows influencing the student, from the internalization of the contents and from the function of developing motor, cognitive, communicative, and aesthetic skills (30) and even more when ICTs are used (31).



Figure 9. Drawings made by a student from a technological device. Source. Report retrieved from the application’s web platform.



Figure 10. Activity screen 3 “Sounds and emotions.

On the other hand, the process allowed strengthening communication bonds between parents and students, increasing their self-esteem and contrasting the theory that affirms

the importance of the family as a process that generates significant learning of emotions, “when mom and dad go out holding hands, it is a way of showing or manifesting the emotion of love” (DC2-N2-R4) (DC2-N2-R4). The family is the most appropriate context for the child from the very beginning to start living in society, requiring a climate of affection, trust, communication, and mutual respect to facilitate the construction of personal identity (32,33), although in some models of subsistence this responsibility is left to third parties (34).

CONCLUSIONS

The development of the M-Learning application for the education of emotional awareness in transition children is an iterative process of continuous improvement, and the first stage of application, which concluded with the software registration, showed that there is interest on their part for the content and appearance of the application. In terms of visuals and interaction, the activities are understandable and attract the attention of the participants. The emoticons and avatars are identified by the students so that students recognize the emotions associated with each representation.

The pedagogical experiences with applications do not describe much evidence on the construction of competencies in emotional awareness, and the fact that the children of the Institutions associate an emotion with a visual representation, and also express with words the name of it, is an indication of the construction of learning and the development of skills for the recognition of emotions, a fundamental element for them to be aware of them.

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