

Perception and food consumption frequency due to the Covid-19 pandemic among University students in Trujillo City, Perú

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Abstract: Perception and food consumption frequency due to the COVID-19 pandemic among University students in Trujillo City, Perú. **Introduction:** The confinement due to COVID-19 significantly affected people's food consumption, especially university students who had to adapt to virtual education. **Objective:** To determine the perception and food consumption frequency due to the COVID-19 pandemic among Peruvian students from a private university in Trujillo City, Peru. **Materials and method:** The research design was non-experimental, descriptive, and cross-sectional. The non-probabilistic sample consisted of 169 students and the instrument used was a virtual survey (Cronbach's alpha = 0.846). **Results:** It is shown that there is a higher frequency of young people (n = 116) and adolescents (n = 45) who participated in the study, and that the average age was 22.15 ± 3.77 years. Likewise, the Frequency of Consumption dimension, it showed a higher frequency in the "Sometimes" scale, where it is related to whether it exceeded the number of meals per day (34.9%), eating out of control (38.5%), desires to eat unhealthy food (32.0%) and whether it influenced eating (30.8%). Similarly, it was shown that the majority of respondents consumed fruits (68.6%) and vegetables (58.0%) and considered water consumption essential (98.3%). On the other hand, there was a higher frequency regarding the consumption of ultra-processed foods (n = 95, 56.2%). **Conclusion:** The population of a private university made up mostly of young people and adolescents perceives that there was a change in their diet during the COVID-19 pandemic. **Arch Latinoam Nutr 2024; 74(1): 51-57.**

Keywords: Perception, eating habits, universities, pandemic, COVID-19, SARS-CoV-2.

Resumen: Percepción y frecuencia del consumo de alimentos debido a la pandemia del COVID-19 entre estudiantes universitarios de la ciudad de Trujillo, Perú. **Introducción:** El confinamiento por COVID-19 afectó notablemente el consumo de alimentos de las personas, sobre todo de los universitarios quienes tuvieron que adaptarse a una educación virtual. **Objetivo:** Determinar la percepción y la frecuencia del consumo de alimentos a causa de la pandemia por COVID-19 en estudiantes de una universidad privada de la ciudad de Trujillo (Perú). **Materiales y métodos:** El diseño de la investigación fue no experimental de tipo descriptivo, y de corte transversal. La muestra no probabilística estuvo conformada por 169 estudiantes y el instrumento utilizado fue una encuesta virtual (Alfa de Cronbach = 0,846). **Resultados:** Se muestra que hay una mayor frecuencia de jóvenes (n = 116) y adolescentes (n = 45) que participaron en el estudio, y que la edad promedio fue de 22,15 ± 3,77 años. Así mismo, en la dimensión Frecuencia de Consumo, tuvo una mayor frecuencia en la escala "A veces", donde se relaciona a sí excedió el número de comidas al día (34,9%), comer fuera de control (38,5%), deseos de comer comida poco saludable (32,0%) y si influyó en la alimentación (30,8%). De la misma manera, se mostró que la mayoría de encuestados consumió frutas (68,6%) y verduras (58,0) y consideró imprescindible el consumo de agua (98,3%), por otro lado, hubo una mayor frecuencia respecto al consumo de alimentos ultraprocesados (n = 95, 56,2%). **Conclusiones:** La población de una universidad privada conformada mayoritariamente por jóvenes y adolescentes percibe que si hubo un cambio en su alimentación durante la pandemia del COVID-19. **Arch Latinoam Nutr 2024; 74(1): 51-57.**

Palabras clave: Percepción, hábitos alimentarios, universidades, pandemia, COVID-19, SARS-Cov-2.

Introduction

The world went through a health crisis due to SARS-Cov-2, which is a coronavirus responsible for the infectious disease called COVID-19. This virus spread rapidly, causing a large number of deaths worldwide (1-4). For this reason, confinement or quarantine, designed to reduce the interactions

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and movements of people in order to contain the spread of the disease, was introduced in many countries. It is also useful in preventing the collapse of hospitals and a nation's healthcare system (5,6,7).

Confinement affected the quality of life of people of different age groups belonging to different sociodemographic and cultural backgrounds (6). However, confinement can generate stress and depression, and leads to unhealthy diets and reduced physical activity. As a result, people end up adopting sedentary lifestyles, which may be influenced by other social aspects (4,8). In an unhealthy diet there may be a high consumption of sugary foods and even a lack of control in eating schedules causing obesity and mood disorders (4).

Adolescents and young people have eating habits determined by their lifestyle and physiological changes, which can be influenced by Information and Communication Technologies (ICT) (5,9,10). On the other hand, eating habits are characterized by individual and group behaviors that affect the way people select, prepare and eat certain foods. In addition, these behaviors must be in accordance with a dietary intake that allows the body to obtain sufficient energy for the development of daily activities (11). It is necessary to consider all the nutrients that the body needs in the daily diet, otherwise it will mean health problems related to nutritional status, such as overweight, obesity or underweight (12).

Quarantine implied spending more time at home without any type of outdoor activity, which generated boredom and a higher caloric intake of foods rich in saturated fats, sugars and refined carbohydrates (13). The consumption of this type of food is justified by the production of serotonin in the organism, generating a favorable effect on the mood. The production of this neurotransmitter is influenced by the desire to ingest carbohydrates, so that these foods can alleviate the symptoms of stress (13). On the other hand, virtual education during the

pandemic also had negative effects on the mental health and quality of life of young people and, in some cases, influenced their eating habits, especially in middle- and low-income countries (14,15).

The diets of young college students are typically characterized by a lack of variety and low nutritional ratios, in addition to not meeting daily activity requirements. However, of all the changes facing young people, food may not be the most noticeable, but it can cause short-, medium-, or long-term conflicts. In addition, fast food products with low nutritional value are often found in educational institutions, further increasing the risk of disease transmission (16). Therefore, post-pandemic actions must be taken to support healthy eating worldwide and physical activity so that people can return to a good healthy lifestyle (8).

Several studies related to food in times of pandemic have been conducted in order to assess the impact of food choice, processing and consumption among populations according to their needs (6). A study conducted in the United States found that the population's interest in healthy food and nutrition has declined because the pandemic has negatively affected the economy (5). Factors related to food consumption behavior have been studied in terms of restrictions, emotions, and lack of control over food (7). These eating behaviors are the result of the isolation experienced by the population, causing changes in their daily lifestyle and affecting their emotions (4). In Spain, it was found that during the pandemic, changes in eating habits were associated with a tendency to eat healthier foods, the habit of cooking at home, and reduced consumption of foods considered unhealthy, such as sweets, salty foods, sugar, and alcoholic beverages (3).

Due to the great havoc that confinement has caused on the nutrition of various age groups, further research is needed on the influence of the nutrition of the university population during the pandemic. This is important because it would be possible to understand current behaviors and implement nutrition programs in those adolescents who present health problems associated with the type of food they eat. For this reason, the present research work aims to determine the perception of nutrition during the covid-19 pandemic in students of a private university in the city of Trujillo (Peru).

Materials and methods

The research is basic, with a non-experimental, descriptive, and cross-sectional design. The sample size was determined by a non-probabilistic method by convenience, and was made up of 169 students from a private university in Trujillo City, Peru.

The data collection technique was carried out by means of a survey created through Google Forms, which was validated by expert judgment. There was a total of 3 experts, to whom the survey was sent via email, to evaluate each of the questions. The form consisted of 12 questions related to two dimensions: frequency of consumption (three questions, see Table 2) and type of consumption (eight questions, see Table 3). The first dimension assessed the frequency of food consumption, while the second considered questions to evaluate some types of foods they consumed and their perception of aspects of the pandemic and its influence on food consumption. The Cronbach's alpha index of the global instrument had "high reliability" (Cronbach's alpha = 0.846). The survey was administered in June 2023. The students who made up the sample were surveyed through the virtual form, where they voluntarily agreed to participate in the research by marking "agree" on the informed consent. Furthermore, personal data were kept anonymous, taking into account the ethical principles.

The data obtained were organized in a Microsoft Excel matrix, and then the frequencies and percentages were analyzed using the SPSS v. 22 statistical software. Regarding age, the mean age \pm standard deviation (SD) was obtained. Likewise, the ages were grouped according to the age range of each stage of life according to the World Health Organization.

Results

Table 1 shows that there was a higher frequency of young people ($n = 116$) participating in the study, and that the mean age of the total respondents was 22.15 ± 3.77 years. Similarly, of the total respondents, there was a higher prevalence of females ($n = 105$) than males ($n = 64$).

Table 2 shows the distribution of frequencies and percentages according to the evaluated dimension "Frequency of consumption". Regarding the frequency of eating three meals a day during the pandemic,

Table 1. General characteristics of the surveyed university students.

General Characteristics	Frequency	%	Mean \pm SD
Age			
Adolescent (10 -19 years)	45	26.6	
Young adults (20 – 29 years)	116	68.6	22.15 \pm 3.77
Adult (30 – 59 years)	8	4.7	
Total	169	100.0	
Gender			
Female	105	62.13	
Male	64	37.87	-----
Total	169	100.0	

34.98% of the students responded that they sometimes exceeded the three meals, 32.0% stated that they sometimes felt the desire to eat unhealthy food. In contrast, only 10.7% always felt the desire to eat this type of food. On the other hand, only 5.9% of the students considered that they ate out of control during confinement, and 38.5% considered that they sometimes had no control over their meals during confinement, although 10.1% of the students considered that their eating was influenced by the confinement.

Table 3 shows the distribution of frequencies and percentages according to the dimension evaluated: type of consumption. There was a higher percentage of students who did consume fruits and vegetables, with values of 68.6% and 58.0%, respectively, while 56.2% of the students stated that they increased the consumption of ultra-processed foods. 60.9% of the students considered that they had a correct diet. Similarly, 60.4% of the students believe that the pandemic confinement influenced their food purchases. In addition, more than half (61.65%) of the students considered that the video consultations to receive guidance on healthy eating habits

Table 2. Frequency distribution and percentages of the dimension Frequency of Food Consumption in the COVID-19 pandemic in students of a private university in the city of Trujillo, 2023.

Indicator	Scale					Total n (%)
	Always	Almost always	Sometimes	Almost never	Never	
	n (%)	n (%)	n (%)	n (%)	n (%)	
How often did you exceed here meals a day (breakfast, lunch, and dinner) during isolation?	17 (10.1)	31 (18.3)	59 (34.9)	41 (24.1)	21(12.4)	169 (100.0)
How often did you feel like eating unhealthy food during the isolation period?	18 (10.7)	35 (20.7)	54 (32.0)	30 (17.8)	32 (18.9)	169 (100.0)
How often do you consider that you ate compulsively during confinement?	10 (5.9)	21 (12.4)	65 (38.5)	39 (23.1)	34 (20.1)	169 (100.0)
Was your diet influenced during the confinement time by COVID-19?	17 (10.1)	41 (24.3)	52 (30.8)	33 (19.5)	26 (15.4)	169 (100.0)

Table 3. General characteristics of the surveyed university students.

Indicator	Scale		
	Yes	No	Total
	n (%)	n (%)	n (%)
Did you consume fruit during confinement?	116 (68.6)	53 (31.4)	169 (100.0)
Did you increase your consumption of ultra-processed foods during the period of confinement?	95 (56.2)	74 (43.8)	169 (100.0)
Did you consume vegetables during the confinement period?	98 (58.0)	71 (42.0)	169 (100.0)
Did you consider your feeding before isolation to be correct?	103 (60.9)	66 (39.1)	169 (100.0)
Do you consider that confinement by COVID-19 influenced your food purchases?	102 (60.4)	67 (39.6)	169 (100.0)
Do you consider that during the confinement for the COVID-19 pandemic, video consultations were important to receive guidance on healthy eating habits?	65 (38.5)	104 (61.6)	169 (100.0)
Do you consider that your diet was healthy during the COVID-19 pandemic confinement?	101 (59.8)	68 (40.2)	169 (100.0)
Do you consider that water consumption was essential for adequate nutrition during the COVID-19 pandemic confinement?	151 (89.3)	18 (10.7)	169 (100.0)

were not important. Finally, 59.8% of the students considered that their diet was healthy. Likewise, 89.3% of the students considered that the consumption of water was essential to have an adequate diet during the confinement.

Discussion

The population that participated the most was young people with an average age of 22.15 ± 3.77 years. Likewise, women were the majority participants in the study ($n = 105, 62.13\%$), identifying a young population between 20-29 years of age. It should be noted that adolescents and young people may respond differently to the stress and anxiety generated by the pandemic (17), which could influence their eating habits. According to Cisterneet *al.* (18) adolescents and young people were the most stressed during the pandemic, having difficulties in academic activities and spending more time on social networks, less time playing video games, as well as a deterioration in their eating habits. Another study shows that social isolation or quarantine did have a significant impact on the eating habits of Brazilian adolescents (19). With respect to gender, there is probably no relationship with dietary patterns during the pandemic, as shown in the study by Martin-Rodriguez *et al* (20).

During the COVID-19 pandemic, food was a key factor for people due to its close relationship with health, being aware that having a low-quality diet increased the risk of developing a severe symptomatological

picture related to the COVID-19 disease (21). The results obtained in the present study (Table 2) show that more than 60% of the respondents reported having felt between "sometimes" and "never" little desire to eat unhealthy food and that the pandemic had influenced their diet. Excessive consumption of food more than 3 times per day and out-of-control consumption, reported by 34.9% and 38.5% of respondents respectively, reflect the changes in lifestyle generated by the pandemic, mainly in nutritional and mental factors, when facing a new virus (22). Similarly, another study mentions that the closure of universities during the pandemic significantly affected students' lifestyles, increasing the frequency of meals and the consumption of almost all food groups (23). It is suggested that anxiety and stress are the mental factors that may have led to excessive consumption of fast food, sugary drinks, and pastries. On the other hand, 18.9% and 20.1% of the respondents who reported that they "never" consumed excessive food may have been affected by the information widely disseminated in the media, which stated that the consumption of fruits, vegetables, and greens strengthened the immunessystem, while products made with refined sugars such as pasta, pastries, and bread reduced the response capacity of leukocytes and predisposed the organism to be infected by the virus (24, 25). In a study conducted in Ecuador, it was reported that during confinement the consumption of cereals, dairy products, and meats decreased between 1 - 2 servings per day, evidenced in 50% of the participants. However, in Mexico, food consumption due to anxiety, depression, or boredom increased during confinement, being evidenced in 37.8% of Mexicans.

Water consumption was considered essential for a healthy diet in more than 80% of the study population and more than 55% reported having consumed fruits and vegetables and considered having an adequate diet despite consuming ultra-processed foods (56.2%). These results were similar to those obtained by Riveros *et al.* (26) in Ibero-America, but different from the results found by Hajipur *et al.* (27) in Iran. In Ibero-America, 44.5% of women presented a healthier dietary profile reflected in a higher consumption of vegetables and fruits than men (28.7%). Additionally, this consumption increased by 17.4% due to the pandemic. However, the overall analysis showed a low consumption of fruits and vegetables, and a high consumption of ultra-processed foods (junk

food, fried foods, and sugary drinks). These results are similar to those of Pourghazi *et al.* (28), who showed an increase in the consumption of snacks and sweets, as well as a decrease in the consumption of fruits and vegetables. On the other hand, in rural and urban households in Iran, mostly composed of men (83.5%), a significant increase in vegetables was observed, but a decrease in the consumption of fruits and some ultra-processed foods (sweets). The consumption of ultra-processed foods can be explained by the association with economic status and place of residence. For example, people living in the central and southern regions are less likely to consume soft drinks, but more likely to consume cookies or sweet bread (29). In these contexts, it is inferred that the effects on the consumption of these food groups are due to possible changes in eating patterns caused by the pandemic and influenced by the excess of information shared by various media such as social networks so 38.5% of respondents consider important video consultations to receive guidance on how to eat.

The pandemic has generated different perceptions related to food and health among the population. They may also be influenced by social networks (30). In this study, there is a high frequency that considers that they did change their consumption of fruits, vegetables, water, and even ultra-processed foods, including that sometimes the number of times they ate per day was more than three times, possibly due to anxiety and stress generated by social confinement. However, when studying populations of adolescents and young adults, it should be considered that this is a stage with many emotional and social conflicts, which can modulate their eating behaviors. Therefore, long-term studies will be necessary to understand these changes in their eating behavior.

In terms of limitations, it would be advisable to contrast this study with studies where the sample is considered by probabilistic methods, as it would be more representative, and the results cannot be generalized.

Similarly, to consider possible factors and emphasize the influence of social networks, which was not addressed by this study, and which could improve the understanding of the eating behaviors of adolescents and young people.

Conclusions

It is concluded that among adolescents and young students of a private university in the city of Trujillo (Peru) surveyed (n = 169), it is perceived that there was a change in their food during the COVID-19 pandemic. Likewise, part of the population studied consumed fruits and vegetables more frequently, as well as water consumption, which was considered essential. The consumption of ultra-processed foods is an important aspect to address from a health perspective in the adolescent and young population. In addition, it should be taken into account that there are limitations of this type of study due to the veracity of the responses by adolescents, which could influence the perception of their food. Finally, more in-depth studies are needed to better understand how adolescents and young people behave concerning their diet, considering their ways of responding to stress and anxiety, as well as the long-term effects of the pandemic on the most vulnerable populations. Likewise, it should be considered to evaluate the nutritional aspect of what they consume since eating fruits and vegetables does not ensure adequate nutrition.

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Declaration of conflict of interest

The authors declare that they have no conflicts of interest.

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