Validation and standardization of the Plutchik suicide risk scale in the civil population and active police in Colombia

Validación y estandarización de la escala de riesgo de suicidio de Plutchik en la población civil y policía activa en Colombia

Giselle Olivella-López[1]*, Diana Carolina Ramírez Ospina[2], Bertha Lucía Avendaño[3], Lorena Cudris-Torres[4], Pedro L. Medina-Pulido[5]

SUMMARY

Instrumental type study, whose objective was to determine and describe the psychometric characteristics of the Plutchik Suicide Risk Scale (PSRS) (1), in the version translated and validated in Spain (2).
Method: *Instrumental type study (3), aimed at analyzing the psychometric properties of the Scale.*

ORCID: 0000-0002-4809-9092[1]*
ORCID: 0000-0003-0663-5368[2]
ORCID: 0000-0002-8136-5380[3]
ORCID: 0000-0002-3120-4757[4]
ORCID: 0000-0002-5192-193X[5]

[1]*Universidad Popular del Cesar, Valledupar-Colombia.*
    E-mail: giselleolivella@unicesar.edu.co
[2]*Fundación Universitaria Konrad Lorenz, Bogotá, Colombia.*
    E-mail: dianac.ramirezo@konradlorenz.edu.co
[3]*Universidad Católica de Colombia, Bogotá, Colombia.*
    E-mail: blavendano@ucatolica.edu.co
[4]*Universidad Popular del Cesar, Valledupar-Colombia.*
    E-mail: lorenacudris@unicesar.edu.co
[5]*Universidad Popular del Cesar, Valledupar-Colombia.*
    E-mail: pedroluismedina@unicesar.edu.co

Corresponding author: Giselle Olivella-López, Programa de Psicología – Universidad Popular del Cesar, Diagonal 21 No. 29-56 Sabanas del Valle –Valledupar- Cesar -Colombia. E-mail: giselleolivella@unicesar.edu.co

The sample size was divided between civilians and active police, of which 419 were civilians and 224 Colombian uniformed officers, of legal age residing in six areas of the country.
Results: *The reliability index was determined using Cronbach's alpha (0.772), content validity through 7 experts, construct validity through factor analysis, predictive validity through specificity and sensitivity analysis, and convergent validity through the correlation between the Reasons to Live Inventory (RFL) scores (4) and the risk scale.*
Conclusions: *The PSRS has adequate psychometric characteristics, and its use is recommended in the assessment of suicide risk in the Colombian civil population and police. More investigations of the scale are required in relation to the clinical sample and in Latin American contexts.*

Keywords: *Suicide, depression, validation studies, psychiatric rating scales.*

RESUMEN

Estudio de tipo instrumental, cuyo objetivo: fue determinar y describir las características psicométricas de la Escala de Riesgo de Suicidio de Plutchik (PSRS) (1), en la versión traducida y validada en España (2).
Método: *Estudio de tipo instrumental (3), dirigido a analizar las propiedades psicométricas de la Escala. El tamaño de la muestra se dividió entre civiles y policías en activo, de los cuales 419 eran civiles y 224 uniformados colombianos, mayores de edad residentes en seis zonas del país.*
Resultados: *El índice de confiabilidad se determinó mediante el alfa de Cronbach (0,772), la validez de contenido a través de 7 expertos, la validez de*

constructo mediante análisis factorial, la validez predictiva mediante análisis de especificidad y sensibilidad y la validez convergente mediante la correlación entre los puntajes del Inventario de Razones para Vivir (RFL) (4) y la escala de riesgo.
Conclusiones: *El PSRS tiene características psicométricas adecuadas y se recomienda su uso en la evaluación del riesgo de suicidio en la población civil y policial colombiana. Se requieren más investigaciones de la escala en relación a la muestra clínica y en contextos latinoamericanos.*
Palabras clave: *Suicidio, depresión, estudios de validación, escalas de calificación psiquiátrica.*

INTRODUCTION

According to the World Health Organization (WHO) (5,6), suicide has become the third leading cause of death among the young population (youth mortality) between 15 and 34 years of age worldwide. In addition, in the world, deaths from this cause are almost one million victims a year and estimates indicate that, in 2020, they could amount to 1.5 million. In the last 4 decades, suicide rates have increased by 60 %. Likewise, these authors estimate that for each case that ends in death, there are 10 previous attempts (7).

The increase in the statistics that have been presented around suicidal behavior in recent times shows that it becomes imperative to adopt strategies that allow reducing the incidence of suicide in Colombia and the world; For this reason, the World Health Organization (5) created in 2000 the International Association for Suicide Prevention (International for Suicide Prevention) whose main objective is to expand the field of prevention against this scourge that plagues the world population; considering it as a cause of premature and preventable death. Within the guidelines proposed by this association, is the improvement and study of psychometric tools that allow effective attention to this problem; to promote a reliable evaluation process in accordance with the population, carrying out the identification of the causes, risk factors, protective factors, warning signs, as well as the preparation and implementation of the pertinent actions before the detection of suicidal potential, that is, crisis intervention, psychological first aid and treatment for the person who is at risk of suicide (8).

It can be stated that around 80 % of the people who have attempted suicide in Colombia consulted the health services (9), however, the health professionals who provided primary care did not determine any trait that identified suicidal risk. For this reason, it is possible to affirm that a validated assessment tool and appropriate training are necessary for the proper management of the population that could be at risk. The problem may be more serious than the statistics show and is amplified by the lack of instruments and measurement and evaluation methodologies aimed at identifying risk in a timely manner. Therefore, it is important that in Colombia there are valid psychometric instruments for clinical and research purposes, therefore, the need to establish whether the Plutchik Suicidal Risk Scale (PSRS) has the appropriate psychometric characteristics to determine suicide risk in a civilian and uniformed population in Colombia. It is considered urgent and timely to carry out preventive and risk identification efforts regarding this condition, because it has become a problem of such importance for the population that it is considered a public health problem. The value and repercussion of this research were that a validated test in the Colombian context becomes a useful clinical tool within the social context, which will allow responsible inferences and with psychometric criteria, as suggested by experts and It is required by Law 1090 of 2006, which ethically regulates and frames the professional practice of psychology in Colombia, and which in its Chapter VI establishes the use of psychometric tests (12).

Since the 1950s, the study of some variables present in patients who have committed suicide began, and the identification of various factors that are related to completed suicide was established (13,14), among which the following are identified: age, gender, marital status, relatives with whom they live, consumption of alcohol and psychoactive substances, significant losses in the last six months, medical and/or clinical diagnosis, history of suicide, unemployment, migration, and environmental factors. On the other hand, when addressing the uninformed population, the aforementioned factors continue to be prevalent, but in the same way, others are added, associated with the occupation, various investigations frame them within the stressors at the organizational

level: Inherent to the job, derivatives of the organization's function, those associated with the development of a professional career, those derived from the work structure and atmosphere, those associated with labor relations and factors outside work (15). All the stressors described can be generated from novel situations for the official that can be both positive and negative such as promotions, transfers from the workplace, disciplinary processes, rapid changes in family structure and composition, death of a loved one, Work overload, unsatisfactory relationships with peers or dysfunctional relationships that predispose the subject to the acquisition of mental and physical illnesses and the deterioration of their quality of life. Therefore, it is considered that this profession is of high stress because they are frequently exposed to the most violent, harmful, and untrustworthy elements of society, in the same way, they are exposed to high demands of the work environment, including the carrying of weapons, and in parallel, in the first instance, they must abide by the law, on the other hand, ensure compliance with it, in addition to satisfying the service of the community, maintaining order and guaranteeing the safety of citizens (15).

In conclusion, interest in the development of evaluation instruments analyzed in light of the particular characteristics of each population should be promoted and thus establish that the results contribute from empirical evidence as an element of judgment for making correct decisions about the procedures with which health professionals would address suicidal behavior and that these procedures are reflected in epidemiological indicators (9).

METHODS

Design

Instrumental type study (3), aimed at analyzing the psychometric properties of the PSRS (1).

Participants

The sample size of civilians was 419 people and 224 Colombian uniformed persons, of legal age, residing in six areas of the country: Bogotá, Cali, Cesar, Cundinamarca, Tolima, and Villavicencio.

The finite population proportion formula (16) was used to determine the sample size and, considering the Second Mental Health Study in active uniformed personnel of the National Police (17), the prevalence of suicidal ideation was identified. The total sample is made up of 643 people from different areas of the country. 38.70 % (n = 249) are from Bogotá, 29.20 % (n = 188) from the Metropolitan of Cali, 5.10 % (n = 33) from Cesar, 13.20 % (n = 85) from the department of Cundinamarca, 6.70 % (n = 43) from Tolima, and the remaining 7.10 % (n = 45), made up the Villavicencio group. Considering that in this research the applications were made in different parts of the country and with two populations: civilians and police, it is observed that 65 % (n = 419) is civilian population and the remaining 35 % (n = 224) are actively uniformed. The age ranges of the total sample, the inclusion criteria within the research were the age of 20 to 44 years.

Instruments

Three instruments were used: the socio-demographic data questionnaire, one for each population (civilians, policemen) in the civilian one, the information on the identification of the general data is recorded, for the uninformed population in this section the question is added of the range of which it is part of the institution, the other components of the questionnaire are similar. The two questionnaires address the medical history (hospitalizations for mental health, previous suicide attempts, participation in previous and current psychological treatment; use in the past or present of psychiatric medication; the presence of previous diagnoses of affective disorder bipolar, depression, and anxiety disorder; and the presence of some other psychological difficulty).

The second instrument was the Plutchik Suicidal Risk Scale (PSRS) (1), it is a self-administered questionnaire that initially consisted of 26 items with dichotomous responses (Yes, No). The test was designed to discriminate suicidal subjects from those who are not. The original version proposed a cut-off point of 8 points with a reliability of 0.84, sensitivity and specificity above 68 %, and they also argue that the Spanish translation of the scale was authorized

by the authors of the original version. The test object of this study is the version validated in Spain (2) composed of 15 items, which has a cut-off point of 6 where it is established that suicide risk is identified for values equal to and above 6; and below 6, it does not establish risk. In Colombia, the PSRS, whose objective is to differentiate between individuals who have not attempted suicide and those who have, has been used in different investigations (18-21) and with different populations, considering the psychometric characteristics of the test with Spanish population. The third instrument was the Inventory of reasons to live RFL (4), which has a cut-off point of 3.8; and values equal to this and below, indicate that no reasons for living are identified. In the results found in the validation of the RFL (4), it is identified that the factorial structure has six domains that explain 63.5 % of the variance: "Belief in life and coping capacity", (24 items), "Fear of death and social disapproval" (6 items), "Responsibility with the family" (7 items), "Concern for children" (3 items), "Perception of incapacity for suicide" (4 items) and "Moral objections" (3 items).

Procedure

The research was carried out in three phases, Phase 1. Establishment of content validity, based on the evaluation of seven expert judges with masters or doctorates. Phase 2. Piloting, in which a sample of 50 civilians and 30 police officers was selected, in compliance with ethical considerations, the three instruments were applied. After the application, the psychometric analyzes of reliability and validity were made, finding a coefficient of .844, which indicates a good level of internal consistency. Phase 3. Application of the total sample was made to a sample of 419 civilians of legal age from various educational institutions, private institutions, commercial sector companies, and the general population not linked to institutions, and 224 active police officers, the two populations residing in six areas of the country. When the application of the total sample was completed, the database was prepared and the corresponding psychometric analyzes of reliability and validity were carried out.

Ethical considerations

Before starting the research and as a primary ethical component, the authors of the validation of the PSRS in Spain were requested authorization for the use and/or adaptation of the scale, and authorization was obtained. The implementation of this research was limited to the provisions of Law 1090 issued by the Congress of the Republic and by which the exercise of the profession of Psychology is regulated, which dictates the Code of Ethics and Bioethics and other provisions (11). The research process was based on the ethical parameters of confidentiality, respect for individuality, and the right to participate in the study only voluntarily without restricting the freedom and decision of the person.

RESULTS

The results of the research corresponding to the statistical and psychometric analyzes carried out with the data obtained by the Sociodemographic Data Questionnaire, the Inventory of Reasons to Live and the Plutchik Suicide Risk Scale (1) are presented below. applied to the 643 participants in this study, made up of 419 civilians and 224 policemen.

Content validity

The content validity analysis of the Suicidal Risk Scale was made according to the evaluation of 7 experts, the group of expert judges was composed of: a psychologist specializing in evaluation and measurement in social sciences, a psychologist specialized in methodology and evaluation, two specialist clinical evaluation psychologists, a psychologist specializing in educational evaluation, a psychologist doctor in educational research, and a specialist in suicide issues; and finally, a psychologist specializing in the psychological and clinical evaluation of health and illness. The experts were given a report which contained an introduction, the etiology of suicide, the description of the research project, the Suicide Risk Scale, and the evaluation format of expert judges, Table 1, evidences the experts' suggestions.

Table 1

Modification of items Suicide Risk Scale

Original item	Modified item
1. Do you regularly take any medications such as aspirin or sleeping pills?	Do you take any medication to sleep constantly?
2. Are you having difficulty falling asleep?	Do you often have a hard time falling asleep?
3. Do you sometimes notice that you might lose control of yourself?	Do you often feel like you might lose control?
4. Do you have little interest in relating to people?	Do you have little interest in relating to people?
5. Do you see your future with more pessimism than optimism?	Do you see your future with pessimism?
6. Have you ever felt worthless or worthless?	Have you ever felt worthless?
7. Do you see your future without any hope?	Do you see your future without any hope?
8. Have you ever felt such a failure that you just wanted to get into bed and leave everything behind?	Have you felt like a failure that you wanted to abandon everything?
9. Are you depressed now?	Are you feeling sad or depressed right now?
10. Are you separated, divorced, or widowed?	Are you going through relationship problems?
11. Do you know if anyone in your family has ever attempted suicide?	Has anyone in your family tried to commit suicide?
12. Have you ever been so angry that you would have been able to kill someone?	Have you been so angry that you could kill someone?
13. Have you ever thought about committing suicide?	Have you thought about committing suicide?
14. Have you ever told someone you wanted to commit suicide?	Have you told someone you wanted to commit suicide?
15. Have you ever tried to kill yourself?	Have you tried to kill yourself?

Source: self-made

Sociodemographic data analysis

The total sample was made up of 643 people from different areas of the country, as follows: 38.70 % (n = 249) from Bogotá, 29.20 % (n = 188) from the metropolitan area of Cali, 5, 10 % (n = 33) from the department of Cesar, 13.20 % (n = 85) from the department of Cundinamarca, 6.70 % (n = 43) from Tolima, and the remaining 7.10 % (n = 45), formed the group from the city of Villavicencio. Considering that, in this research, the applications were made in different parts of the country and with two populations: civilians and police, it is observed that 65 % (n = 419) are civilians and the remaining 35 % (n = 224) are active uniformed members of the National Police of Colombia. The distribution of the two populations, the age ranges of the total sample, were considered as inclusion criteria that had ages between 20 and 44 years. Table 2 shows a summary of the sociodemographic characteristics of the population.

Psychometric Analysis Plutchik Suicide Risk Scale

Reliability

Internal consistency of the total test and the items

To identify the internal consistency of the scale, the coefficient for the total test was calculated, finding a Cronbach's Alpha 0.772, which indicates a good level of internal consistency.

Construct validity

To evaluate the construct validity of the Plutchik Suicide Risk Scale (1), the exploratory factor analysis (EFA) procedure was used to determine the grouping of the items in each of the proposed factors. In this way, the assumptions for the adequate application of the EFA were checked, for which the Kaiser-Meyer-Olkin test was carried out, from which a coefficient of 0.828 greater than 0.70 and the sphericity test was obtained Bartlett's which was significant with the following data (Chi^2 = 1805.245; gl =

Table 2

General distribution of sociodemographic data

Sociodemographic distribution of the total sample		
	Civiles	Policías
Sex		
Women	52 %	24 %
Men	48 %	76 %
Socioeconomic		
1	5 %	7 %
2	9 %	7 %
3	14 %	20 %
4	19 %	27 %
5	24 %	33 %
6	29 %	0 %
Resides with		
Family of origin	50.4 %	17.9 %
Couple	30.3 %	49.6 %
Friends	2.9 %	10.7 %
Only	6.7 %	12.9 %
Family	0 %	4 %
Home	1.0 %	0.9 %
Sons	0 %	0 %
Others	0 %	4 %
Marital status		
Married	11.7 %	29.5 %
Single	62.8 %	45.1%
Free Union	21.7 %	23.2 %
Divorced	3.1 %	1.8 %
Widower	0.7 %	0.4 %
Sons		
Yes	30.8 %	46.9 %
Do not	69.2 %	53.1 %
Ages		
20 to 26 years	55.1 %	-
27 to 33 years	-	45.5 %
Degree at the Institution		
Patrolman	-	76.3 %
Subintendent	-	11.2 %
Mayor	-	10.3 %
Chief quartermaster	-	1.30 %
Presence of personal history		
Periods of deep sadness	51.1 %	42.4 %
Periods of nervousness, distress, or panic	45.6 %	29.5 %
Periods of alcohol abuse	13.8 %	12.9 %
Periods of drug abuse	3.3 %	1.8 %
Medical history		
Hospitalization	2.1 %	3.6 %
Previous suicide attempts	7.6 %	4.9 %
Bipolar affective disorder	1.9 %	1.8 %
Depression	6.2 %	6.2 %
Anxiety disorder	5.5 %	5.8 %

Source: self-made

105; P <0.001). The above results show that the statistical conditions exist to perform the factor analysis. When performing the EFA with the principal components technique, an oblique rotation was carried out by the Varimax technique with Kaiser Normalization, said rotation converged in 5 iterations and yielding a 4-factor structure, as observed in Table 3.

Convergent validity

Because the Reasons to Live Inventory (4) and the PSRS (1) scores have different ranges, their scores are standardized to make them comparable for statistical analyzes. On the other hand, the Kolmogorov –Smirnov statistic was applied to establish the normality of the scores, finding, as shown in Table 4, that the Reasons to Live Inventory has a normal distribution (P>0.05) and the Suicide Risk Scale presents an asymmetric distribution (P <0.001).

Regarding the convergent validity index, it is observed that the correlation between the total scores of the Plutchik test and the Inventory for Living (RFL) is inversely proportional (-0.153) and significant (P<0.001), allowing to affirm that There are the psychometric conditions required to establish the convergent validity of the Plutchik Suicide Risk Scale (1), as shown in Table 5.

Predictive validity

To obtain data on predictive validity, the sensitivity and specificity of the Plutchick Suicide Risk Scale (1) in the civilian population are analyzed.

In Table 6 it can be identified that the Scale recognizes the 49 civilians who, with the total score of the test, identify themselves as being at risk of suicide and who answered affirmatively in the presence of psychological disorders or psychiatric antecedents, which are called as true positives; The false negatives, which are 261 civilians, refer to the proportion of people that the test does not identify as being at risk of suicide and who report the presence of psychological disorders or psychiatric history.

Table 3

Factors-items relationship

Factors	Items	Factor load
Factor 1:	13. Have you thought about committing suicide?	0.808
	14. Have you told someone that you wanted to commit suicide?	0.768
	15. Have you tried to kill yourself?	0.779
Factor 2:	1. Do you frequently take any medication to sleep?	0.659
	2. Do you have difficulty falling asleep?	0.739
	4. Do you have little interest in relating to people?	0.403
	9. Do you feel sad or depressed?	0.578
	10. Are you going through relationship problems?	0.516
Factor 3:	3. Do you often feel like you might lose control?	0.565
	6. Have you ever felt worthless?	0.737
	8. Have you ever felt so unsuccessful that you wanted to give it all up?	0.615
	12. Have you ever been so angry that you could have killed someone?	0.426
Factor 4:	5. Do you see your future with pessimism?	0.669
	7. Do you see your future without any hope?	0.660

Source: self-made

Table 4

Total sample normality analysis

Kolmogorov-Smirnov test		Z score (Plutchik)	Z score (RFL)
N		643	643
Normal parameters	Half	216.37	2.04
	Typical deviation	37.556	2.501
More extreme differences	Absolute	0.029	0.207
	Positive	0.028	0.205
	Negative	-0.029	-0.207
Kolmogorov-Smirnov Z		5.247	0.748
Sig. asintót. (bilateral)		0.001	0.631

Source: self-made

Table 5

Spearman correlations total sample

	PLUTCHIK	RFL
Correlation coefficient	-0.153**	1.000
Sig. (bilateral)	0.001	.
N	643	643

Source: self-made

Table 6

Psychological or psychiatric history and cut-off point Plutchik scale civilian population

TOTAL PLUTCHIK OR SCALE CIVILIAN	PSYCHOLOGICAL DISORDERS PSYCHIATRIC-CIVIL ANTECEDENTS	
	Yes	Do not
Equal to or greater than 6	True Positives (VP) 49	False positives (FP) 0
Less than 6	False negatives (FN) 261	True negatives (VN) 109

Source: self-made

Table 7

Sensitivity, specificity, and predictive values of the Plutchik Scale in civilian's presence of psychological disorders

PSYCHOLOGICAL DISORDERS OR PSYCHIATRIC-CIVIL BACKGROUND	
Sensitivity	22.2 %
Specificity	100 %
Positive Predictive Value (PPV)	100 %
Negative Predictive Value (NPV)	29.4 %
Positive Likelihood Ratio (PVR)	0
Negative Likelihood Ratio (RVN)	0.778

Source: self-made

Table 7 shows that the scale has a 22.2 % sensitivity to the identification of the civilian population with the presence of psychological disorders or psychiatric antecedents; specificity and positive predictive value refer to the ability to detect civilians who do not present risk and in turn, do not report having psychological disorders or psychiatric antecedents; as well as the probability that someone with a suicide risk result has a psychological disorder or a psychiatric history; the closer they are to 100 %, the greater the sensitivity and specificity. The positive likelihood ratio with value 0 shows the probability of a result in which suicidal risk is identified, its actual presence; on the contrary, the Negative Likelihood ratio, with a value of 0.778, indicating the probability of a result in which suicidal risk is identified, in its actual absence, in the civilian population.

Table 8 shows the results of the analysis against the sensitivity and specificity of the Plutchick Suicidal Risk Scale (1) in relation to the results obtained in the Inventory of Reasons to Live in the civilian population.

The previous table refers to the results of the predictive potential, and the results obtained in the Inventory of Reasons to Live are used as a gold standard to determine the absence or presence of suicidal risk. The Scale identifies 49 civilians as at risk, but from the gold standard (RFL) they are not identified with suicidal risk, these results are false positives. The true negatives are 370, indicating that the RFL does not identify them with risk and the Scale also shows these results, not indicating risk in them.

Table 9 shows that the Scale has 88 % specificity, generating the proportion of civilians without risk with a negative result on the Scale among the total civilians without risk: and a sensitivity of 0 %. The negative predictive value of 100 % refers to the ability to detect civilians who do not present risk among the total of subjects who have been tested negative. The positive likelihood ratio with value 0 shows the probability of a result in which suicidal risk is identified, its actual presence; on the contrary, the Negative Likelihood ratio, with a value of 1.13 indicating the probability of a result in which suicidal risk is identified, in the real absence thereof, in the civilian population.

Table 8

Results of the Reasons to Live Inventory as a civil gold standard

TOTAL PLUTCHIK SCALE CIVILIAN	INVENTORY REASONS TO LIVERFL CIVILIAN	
	YES	DO NOT
	Equal to or less than 3.8	Greater than 3.8
Equal to or greater than 6	True Positives (VP) 0	False positives (FP) 49
Less than 6	False negatives (FN) 0	True negatives (VN) 370

Source: self-made

Table 9

Sensitivity, specificity, and predictive values of the Plutchik Scale in civilian Reasons to Live Inventory results

INVENTORY REASONS TO LIVE RFL CIVILIAN	
Sensitivity	0 %
Specificity	88 %
Positive Predictive Value (PPV)	0 %
Negative Predictive Value (NPV)	100 %
Positive Likelihood Ratio (PVR)	0
Negative Likelihood Ratio (RVN)	1.13

Table 10 shows the results of the analysis against the sensitivity and specificity of the Plutchick Suicide Risk Scale (1) in the police population.

When reviewing Table 10 of the police population, it is found that 20 uniformed persons identified with suicide risk report the presence of psychological disorders or psychiatric antecedents, denominated as true positives; The false negatives, which are 103 police officers, denote a proportion of uniformed officers who, with the total score of the test, do not identify themselves as having a suicide risk, but do report the presence of psychological disorders or psychiatric antecedents and those that the test did not identify.

Table 10

Psychological or psychiatric history and cut-off point Plutchik scale police population

TOTAL PLUTCHIK SCALE POLICE	PSYCHOLOGICAL DISORDERS OR PSYCHIATRIC-POLICE BACKGROUND	
	YES	DO NOT
Equal to or greater than 6	True Positives (VP) 20	False positives (FP) 0
Less than 6	False negatives (FN) 103	True negatives (VN) 101

Source: self-made

Table 11

Sensitivity, specificity, and predictive values of the Plutchik Scale in police officers

PSYCHOLOGICAL DISORDERS OR PSYCHIATRIC-POLICE BACKGROUND	
	16.2 %
Sensitivity	100 %
Specificity	100 %
Positive Predictive Value (PPV)	49.5 %
Negative Predictive Value (NPV)	0
Positive Likelihood Ratio (PVR)	0.838

Source: self-made

When analyzing the sensitivity, specificity, and predictive values of the Plutchick Suicide Risk Scale (1) in police officers, it is found that it presents a 16.2 % sensitivity to the identification of police officers with the presence of psychological disorders or psychiatric antecedents. The specificity and the 100 % positive predictive value refer to the capacity of detention of uniformed men who do not present risk and in turn, do not report having psychological disorders or psychiatric antecedents; as well as the probability that a police officer with a suicide risk result has psychological disorders or psychiatric history. The positive likelihood ratio with a value of 0 shows the probability of a result in which suicidal risk is identified, its actual presence; on the contrary, the Negative Likelihood ratio shows a value of 0.838, indicating the probability of a result in which suicidal risk is identified, in the actual absence thereof, in the police population.

Table 12

Results Inventory Reasons to Live as a gold standard police officers

TOTAL PLUTCHIK SCALE POLICE	INVENTORY REASONS TO LIVE RFL POLICE	
	YES Equal to or less than 3.8	DO NOT Greater than 3.8
Equal to or greater than 6	True Positives (VP) 0	False positives (FP) 20
Less than 6	False negatives (FN) 0	True negatives (VN) 204

Source: self-made

Table 12 shows the results of the predictive potential, and the results obtained in the Inventory of Reasons to Live are used as the gold standard to determine the absence or presence of suicide risk in the police population. It can be seen that the Scale identifies 20 uniformed individuals as at risk but based on the gold standard (RFL) they are not identified with suicidal risk; these results are false positives. The true negatives are 204 indicating that the RFL does not identify them with risk and the Scale also shows these results, not indicating risk in them.

Table 13 shows that the Scale has a sensitivity of 0 % and a 91 % specificity, generating the proportion of civilians without risk with a negative result on the Scale among the total civilians without risk. The negative predictive value of 100 % refers to the ability to detect police officers who do not present risk among the total number of subjects who have had a negative test result. The positive likelihood ratio with value 0 shows the probability of a result in which suicidal risk is identified, its actual presence; on the contrary, the Negative Likelihood ratio, with a value of 1.09 indicating the probability of a result in which suicidal risk is identified, in its actual absence, in a uniformed population.

Table 13

Sensitivity, specificity, and predictive values of the Plutchik Scale in police officers Reasons to Live Inventory results

	INVENTORY REASONS TO LIVE RFL POLICE
Sensitivity	0 %
Specificity	91 %
Positive Predictive Value (PPV)	0 %
Negative Predictive Value (NPV)	100 %
Positive Likelihood Ratio (PVR)	0
Negative Likelihood Ratio (RVN)	1.09

Source: self-made

DISCUSSION

The study carried out under the presentation of this document is based on the validation of the Plutchik Suicide Risk Scale carried out by Rubio (2) in the Spanish population; whose main topic are suicide and the identification of suicide risk. To meet the objectives proposed at the beginning of the study, the following results related to the psychometric analysis are addressed.

It was established that the Suicide Risk Scale presents good reliability, a Cronbach's Alpha Coefficient of 0.772; In relation to the results obtained in the validation in Spain (2), the reliability was 0.90. These discrepancies are probably due to the differences between the populations and the modifications made in the semantic and syntactic part during the content validity carried out by the 7 experts, however, although these results differ, it is found that it is reliable within the It was applied to two populations (civilians and police).

The psychometric results found to allow us to affirm that each item contributes the value to the reliability of the instrument, therefore, none of the items contemplated by in the previous research carried out in Spain was deleted (2), preserving the relationship of 15 items. It is then established, according to the results obtained in the analysis carried out, that the Suicide Risk Scale is a measuring instrument with adequate internal consistency. In the validation carried out in Spain (2), the distribution of the items was not

clearly related to the factors, because in this study a factor analysis was not carried out, but instead, it was mentioned that the items were related to self-harm attempts. previous experiences, the intensity of current suicidal ideation, feelings of depression and hopelessness, and other aspects related to the attempts. Taking this into account, the theoretical support and the empirical results of research related to risk factors for suicide are used, and an initial grouping of factors was made, naming 5 factors: sleep cycle, impulsivity, feelings of depression and hopelessness, family history, and previous attempts.

The results of the factorial analysis in the piloting show a relationship with the five factors, but it is observed that the grouping of the items is not clear, nor is it coherent between the aspects addressed by the items; Also, it presents dissonance with respect to what is supported by the authors who were considered in the development of the research.

By identifying these diffuse aspects in the results, it is possible to propose the exact conformation of 3 factors that the scale evaluates, taking into account the previous study (2). An important result and clinical contribution of the research is considered the approach of the factors in the Scale and the factor analysis carried out, being an added value with respect to the validation carried out (1).

The predictive validity is analyzed, which contributes to identifying the specificity and sensitivity of the Scale through the total scores obtained on the Suicide Risk Scale in relation to

the presence of psychiatric history, the sensitivity values of the test in the two populations indicates the capacity of the scale to identify subjects who have a psychological or psychiatric background in relation to the presence of suicide risk, and the percentage of specificity of 100 % reveals that in the Plutchik Suicidal Risk Scale (1) shows that the Scale identifies subjects who do not present risk and in turn do not report having psychological disorders or psychiatric antecedents, these values are of importance in the development and use of the scale; since it is related to the validity of the diagnostic test, and the ability to detect the presence or not of the evaluated aspect (16).

The results that were found in this research in relation to the total sample establish differences with respect to the data obtained between the two populations; For example, it was possible to collect information on personal antecedents such as the presence of periods of deep sadness, nervousness, anguish or panic, where it is identified that 48.1 % of the general population (n = 309) have presented such periods; percentages related to the results identified by the WHO (5) in the survey conducted at the national level, in which it is identified that the prevalence in the general population regarding depressive episodes is 10 %; results that are also associated with what was proposed in the development of the national mental health study carried out with the Colombian population (25), that 15 % of the population is related to the presence of mood disorders, 12.1 % associated with the disorder major depressive, 1.8 % for minor depressive disorder, and 0.7 % for dysthymia. Figures that support the results obtained in the research, also verify that the Colombian population presents predisposing variables for low mood. Taking into account the results obtained, it is also possible to observe differences regarding personal history and sex, concluding that in periods of deep sadness the results are equivalent, with 49.8 % and 50.2 % for the female and male sex respectively.

CONCLUSIONS

As the main result of the research, it is found that the Plutchik Suicidal Risk Scale (PSRS) presents good reliability, and from the results, it is identified that it has adequate psychometric

characteristics for the identification of suicide risk. It is also established that the antecedents related to the presence of periods of sadness present a higher prevalence in the general population and both sexes, compared to the presence of periods of nervousness, anguish, or panic; factors that may be related to the appearance of suicidal risk, it is confirmed that the presence of periods of nervousness, anguish or panic, has a higher prevalence in the female population, and together with the abuse of alcohol and drugs they constitute a personal history with a greater presence in the civilian population compared to the results obtained in the police population; although alcohol and drug abuse is reported to a greater extent by men.

The implementation and development of this project sought to generate approaches to psychological knowledge through applied research, creating approaches to responses and offering problem-solving within the field of clinical action, taking into account that suicide should be considered as an object of study, not only from the theoretical and conceptual part but as an object of clinical evaluation and research, for the real objective and clear application within public and private settings; specifically correcting the need to validate instruments for the evaluation of specific problems that contribute to the benefit of the consultants and the adequate and ethical application of clinical work, based on the use of empirical studies within the epistemological logic of the objectivist tradition (13). Therefore, the instrumental type studies are aimed at the development of tests and psychometric analysis of the same.

It should be noted that in clinical psychology it is of great importance to use instruments that are validated for their use and implementation, since the large number of instruments that are used to collect information on suicide risk in Colombia have been used with the Spanish translation, however, in some cases, these do not have the psychometric analysis of the instrument in relation to the characteristics of the Colombian population; taking into account that it is different from any other population in the world, especially with the Spanish population. The Colombian and Spanish populations differ on various points: they state that the Colombian population is faced with variables such as low

state presence, lack of public services, low-quality education, unemployment in some areas of the country, lack of development programs and that allow access to formal support networks to meet needs (9,22). On the contrary, they state that the Spanish culture has formal support systems where it is possible to access more easily, the presence of financial resources that allow a greater offer of services, as well as optimal living conditions, and conclude by stating that the needs are met supply individually without the support of other entities, while in the case of Colombia the conditions are not the same (9). Then, by establishing that the Plutchik Suicide Risk Scale has adequate psychometric properties to be used in the Colombian population, the proposed objective is achieved and a screening instrument for suicide risk is delivered to the clinical field. It should be noted that the speed in the application of the suicide risk screening scales provides easy-to-use tools for health professionals, clinical support, and the establishment of conditions for suicide prevention and promotion of mental health. As a limitation of the study, the participation of a non-clinical sample is established, recommending that the PSRS be analyzed with the clinical population for future investigations and achieving a comparison of results with the validation carried out.

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