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Effect of Resilience, Well-Being, Happiness, and Social Support on the Levels of Perceived Negative Emotions of Colombian People During the COVID-19 pandemic

Efectos de la Resiliencia, el Bienestar, la Felicidad y el Apoyo Social Sobre el Nivel de Percepción de Emociones Negativas de Personas Colombianas Durante la Pandemia por COVID-19

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SUMMARY

The research established the relationships between resilient coping, subjective well-being, subjective happiness, and social support on anxiety levels, depression, and perceived stress among Colombians during the COVID-19 pandemic in the department of Córdoba, Colombia. Participants were 997 elderly people of both genders with literacy skills and without the presence of cognitive impairment. The Brief Resilient Coping Scale (BRCS), the Happiness Scale (SHS), the Subjective Wellness Scale (SWLS), the Duke-UNC 12 social support scale, the PHQ-4 scale (anxiety-depression), and the Perceived Stress Scale (PSS-14) were used as measuring instruments. We worked with a nonexperimental cross-sectional design and a correlative scope. The results of the binary logistic regression model indicate, on the one hand, that resilience and coping, together with social support, were inversely and significantly related to anxiety and depression, and on the other, that at the level of

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sociodemographic variables, being a woman with lower levels of education and a low sociodemographic stratum was related to higher levels of anxiety. Subjective happiness and subjective well-being were not significantly related to anxiety and depression, nor was there an association with age, area of residence, health system, or occupation.

Keywords: *Resilient coping, subjective happiness, subjective well-being, social support, anxiety, stress, and depression.*

RESUMEN

La investigación consistió en establecer relaciones entre el afrontamiento resiliente, el bienestar subjetivo, la felicidad subjetiva y apoyo social sobre niveles de ansiedad, depresión y estrés percibido de personas colombianas durante la pandemia por COVID-19 de una población residente en el departamento de Córdoba, Colombia. Los participantes fueron 997 personas de mayores edades de ambos géneros, con capacidades de lectoescritura, sin presencia de deterioro cognitivo. Como instrumentos de medición se utilizaron, la escala de afrontamiento resiliente (BRCS), la escala de la Felicidad (SHS), la escala de bienestar subjetivo (SWLS), la escala Duke UNC 12 de apoyo social, la escala PHQ-4 (ansiedad- depresión) y la Escala de Estrés percibido (PSS-14). Se trabajó con un diseño no experimental de corte transversal y un alcance correlacional. Los resultados del modelo de regresión logística binaria indican por un lado que la resiliencia y el afrontamiento, junto con el apoyo social, se relacionaron inversa y significativamente con la ansiedad y la depresión y por otro que a nivel de variables sociodemográficas ser mujer con menores niveles de educación y de estrato sociodemográfico bajo se relacionaron con mayores niveles de ansiedad. La felicidad y el bienestar subjetivos no se relacionaron significativamente con la ansiedad y la depresión como tampoco se registró una asociación con la edad, zona de residencia, sistema de salud y ocupación.

Palabras clave: *Afrontamiento resiliente, felicidad subjetiva, bienestar subjetivo, apoyo social, ansiedad, estrés y depresión.*

INTRODUCTION

In December 2019, the World Health Organization (WHO) identified a new coronavirus, first reported in Wuhan (China), as a cause of pneumonia. Later, the International Committee on Virus Taxonomy named the new virus "severe acute respiratory syndrome coronavirus-2" (SARS-CoV-2). WHO designated the disease it caused as "COVID-19" (coronavirus disease 2019). On January 31, 2020, WHO issued a Global Health Emergency (1).

The COVID-19 pandemic was first reported in Colombia on March 6, 2020, and the first confirmed case in the country was that of a 19-year-old woman. On March 20, 2020, a total of 19 days of quarantine were declared in the country to prevent the spread of the virus. Later, there were extensions of the quarantine until August 31 of that year. On March 26, 2023, Colombia had 6 361 810 people confirmed by a coronavirus, 813 active cases, and 142 665 deaths (2-3). Specifically in the Colombian Department of Cordoba, there have been some 122 677 cases and 3 990 deaths in the same period (2). Worldwide, by March 2023, there was an estimated 676 609 million cases and more than 6 881 915 million deaths, according to the independent count of Johns Hopkins University, which monitors the situation of the coronavirus (4).

The presence of this unknown pandemic-type disease such as the Coronavirus and the subsequent isolation quarantine periods of a large part of the world population for long periods has produced an increase in the sources of negative emotions such as anxiety, depression, and stress in the general population (5-10).

Increased levels of negative emotions can affect people's mental and physical health and trigger various problems, including chronic fatigue, affective symptoms (low mood and anxiety), cognitive dysfunctions, and sleep disturbances, along with somatic manifestations such as autonomic symptoms, muscle pain, muscle tension, headache, general flu-like discomfort, gastrointestinal symptoms (GI), breathing difficulty, persistent cough, and chest pain (11-17).

All this can lead to a deterioration of their well-being and quality of life, which leads to inadequate control of their disturbances and, therefore, the appearance of episodes of negative emotions (11,18,19).

The literature has consistently shown an inverse relationship between psychological resilience and distress, especially in the case

of stressful life events, defining it as the ability of people to maintain health and psychological well-being in a dynamic and challenging environment (20). Evidence-based research has been conclusive in stating that resilience is a protective variable of physical and mental health in times of strong levels of negative emotions (21-24).

On the other hand, in recent years, several studies have been developed where the relevance of subjective well-being has been investigated since it is the set of strategies that allow people to acquire a state of well-being with themselves and with others (25). Subjective well-being is conceptualized as evaluation and judgment and involves two fundamental dimensions, which are positive and negative affective and cognitive vital satisfaction (26,27). Numerous studies have found how subjective well-being has been affected in its different dimensions by the coronavirus pandemic (27).

In this regard, Dhiengra and Dhiengra (28) developed research to find out the mediating effect of subjective happiness in the relationship between perceived stress and the psychological well-being of 231 health workers who perform COVID-19 hospital functions. The results show that there is a significant effect of perceived stress on psychological well-being, with a mediating role for subjective happiness. Perceived stress diminishes subjective happiness, which in turn affects the psychological well-being of doctors and health professionals. The higher the level of subjective happiness, the lower the impact or delayed impact of perceived stress on psychological well-being.

Similarly, some studies refer to the role of social support in the coronavirus pandemic. Higher ratings of perceived family social support have been reported to be associated with lower levels of depression and insomnia (29,30). In addition, low levels of social support have been associated during the pandemic among university students with high levels of anxiety, depression, and stress (31). On the other hand, it has been observed that health workers with higher levels of social support are more likely to show higher levels of health.

Finally, negative emotions such as stress, anxiety, and depression have played a fundamental role in the pandemic since its inception in China at the end of the year 2019. The mysterious origin of the disease that to date has not been clarified yet, the initial hesitation of WHO to declare it a pandemic, the quarantine that left millions of people unprepared, the panic associated with millions of infected and hundreds of thousands of dead, and the role of social networks about vaccination, among others, were the causes of a negative news epidemic. In this regard, systematic reviews and meta-analyses have identified a high prevalence of moderate depression, anxiety, and Post-Traumatic Stress Disorder (PTSD) among health workers during the COVID-19 pandemic, which was the first to face it (32).

On the other hand, studies at a more advanced stage of the pandemic with the general population found that psychological distress, including depression, anxiety, worry, perceived stress, and loneliness, was associated with an increased risk of prolonged COVID-19. To determine the effects of psychological distress before COVID-19 infection on the development of long-term COVID-19, researchers from the nutrition department of Harvard University enrolled more than 54 000 people in April 2020. At the beginning of the study, researchers asked participants about their psychological distress. Over the next year, more than 3 000 participants contracted COVID-19, and researchers asked participants about their COVID-19 symptoms and the duration of symptoms. After analyzing the responses and comparing those who developed prolonged COVID-19 with those who did not, it was determined that pre-infection distress from COVID-19, including depression, anxiety, worry, perceived stress, and loneliness, was associated with an increased risk of prolonged COVID-19 between 32 % and 46 %. These types of psychological distress were also associated with a 15-51 percent higher risk of impairment of daily life due to long-term COVID-19 (33).

However, starting from the broad idea that social and psychological factors are risk factors associated with COVID-19 infection and considering the impact of the coronavirus pandemic in the department of Córdoba and the lack of more empirical studies in Colombia in the field of positive constructs protective of the threat of the presence of negative emotions, it was intended in this study to analyze and compare the

relationship between resilient coping, happiness, subjective well-being, and social support on anxiety, depression, and stress perceived in Colombian people in the department of Córdoba during the coronavirus epidemic.

MATERIALS AND METHODS

Design

This is quantitative, nonexperimental, cross-sectional research of correlative scope with a model of data collection type survey (34).

Population and sample

The population of the department of Cordoba was 1 075 participants, of whom 77 did not accept informed consent or did not meet the inclusion criteria. (a) be of legal age; (b) have or have had COVID-19; and/or (c) have cared for a patient with COVID-19. There were 998 participants: 306 men, 691 women, and one participant identified as another.

Instruments

The Life Satisfaction Scale (SWLS) by Diener et al. (35) is a short five-element Likert 7-point rating instrument, from 1 as "strongly disagree" to 7 as "strongly agree", with scores between 5 and 35, that assesses the general satisfaction that the individual has with his life, understanding that a higher score reflects greater satisfaction. For this research, the Colombian version was used with its respective scale (36).

The Brief Resilient Coping Scale (BRCS)%(37) is another short, one-dimensional, four-item measure that is easy to apply and interpret. BRCS assesses the ability of individuals to cope with stress adaptively. It is a short, four-element instrument. The items score on a Likert scale from 1 (not describing me at all) to 5 (describing me very well), where the scores range between 4 and 20. The Colombian version of Trejos et al. (38) was used for this research.

Subjective Happiness Scale (39): It is a global measure of subjective happiness that evaluates a molar category of well-being as a global psychological phenomenon, considering the definition of happiness from the perspective of the respondent. It consists of four items with a Likert response that respond using a Likert scale with seven possible response alternatives ranging from not very happy to very happy (item 1), from less happy to happier (item 2), or from almost nothing to very much (items 3 and 4). The correction is made by summing up the scores obtained and dividing the total number of items. The Chilean version of Vera et al. (40) was used for this research.

The Patient Health Questionnaire 4, or PHQ-4, is the result of merging the ultrashort questionnaire for the evaluation of depression. PHQ-2 had 2 items, and the ultrashort questionnaire of 2 items known as GAD-2 obtained a very short questionnaire of 4 items to evaluate two factors with excellent values of validity and reliability (41). The questionnaire has been validated and standardized in several places, such as the United States, Germany, some parts of Asia, and some African countries (42-45). In the Colombian case, PHQ-4 has also been validated and standardized, and the model of two factors that were independent of age and gender was confirmed using confirmatory factor analysis. Likewise, the questionnaire obtained a high degree of reliability in both factors. This study also obtained normative data for both genders and different age groups (46).

The Perceived Stress Scale (PSS) used the Spanish version of the EEP-14 validated with adults in Spain (47). This scale measures the perception of psychological stress—the extent to which everyday situations are perceived as stressful. The scale includes a series of direct consultations that explore the level of stress experienced during the last month. The subparagraphs are easily understood. The scale provides five response options: 'never', 'rarely', 'from time to time', 'many times', and 'always', which are classified from zero to four. Questionnaire Duke-UNC 11 evaluates two dimensions of social support with a Cronbach alpha reliability level of 0.93 (48). The dimensions are confidential support, which

refers to the possibility of communicating, and emotional support, which deals with the possibility of having manifestations of love and affection. In the Colombian case, it was found that the questionnaire has construct validity and internal consistency (49).

Procedure

The proposal was discussed and approved by the Research Committee of Sinú University. Then the scales were digitized in a single online format through Google Forms, accompanied by the questionnaire of sociodemographic data and informed consent, which was applied in a single moment and in a virtual way. Participants agreed to respond to the scales after reading the informed consent, explaining the confidential nature of the results.

The study was carried out with the considerations referred to in Article 2 (paragraphs 5, 6, and 8) of Law 1 090 of 2006 on the professional practice of psychologists in Colombia, thus guaranteeing the principles of privacy, anonymity, and full knowledge by the participants. The implementation of this project did not include invasive actions that put at risk the physical, mental, or moral integrity of the participants, consistent with the provisions of Resolution 8430 of the Ministry of Health of Colombia (paragraph 11). The project was approved by the Research Ethics Committee of the Faculty of Health Sciences of Sinú University.

Statistical analysis

First, the database was examined to identify possible transcription errors without finding inconsistencies. Subsequently, the analysis of lost values revealed that there was no loss of information at the level of variables, cases, or cells. As a result, no records were deleted and no imputation techniques were used, which allowed the full database to work. The parametric assumptions of multiple linear regression were then evaluated. In this sense, linearity was weighed with residual diagrams against predicted values, while residual normality was studied with the Shapiro-Wilk and Kolmogorov-Smirnov tests as well as with the Q-Q graph. The homogeneity of variances was inspected with the modified Levene test, while the heteroscedasticity was evaluated with the standardized Breusch-Pagan test. Residual autocorrelation was revised with the Durbin-Watson statistic, while multicollinearity was discarded using variance inflation factors. The existence of atypical data or points of influence was corroborated with standardized residuals, Mahalanobis distances, and Cook distances (50,51).

The previous phase exposed the violation of several assumptions. Linearity was not satisfied in the regression models proposed for anxiety and depression, and the premise of homoscedasticity could not be corroborated either. Likewise, the model built for perceived stress exhibited residuals that significantly departed from normal. Therefore, binary logistic regression was used, establishing the dichotomy of dependent variables from the cut-off points of each instrument. To avoid further loss of information and given that logistic regression supports any type of regressor, psychological constructs were included as continuous variables, whereas sociodemographic conditions were incorporated as nominal or ordinal aspects. Thus, three regression models were built for anxiety, depression, and perceived stress. For each, the main regressors were resilience and coping, subjective well-being, subjective happiness, and social support. The covariates introduced were gender, age, area of residence, health system, occupation, educational level, and socioeconomic stratum.

Logistic regression assumptions were also verified. In this sense, the Box-Tidwell test was used to verify that the relationship between the logarithm of the dependent variables and the continuous independent variables was linear. On this occasion, no significant deviations were found that would invalidate this assumption. Likewise, the inflation factors of the variance were close to the unit, so multicollinearity was discarded. Neither a high fraction of atypical data nor points of influence were found (50,51). As for the description of the results, the categorical variables were presented in the form of counts and percentages. Likewise, continuous variables were characterized using measures such as the minimum, 5th percentile, lower quartile, median, upper quartile, 95th percentile, maximum, range, interquartile range, average, fashion, variance,

standard deviation, coefficient of variation, standard error, and confidence interval. The data processing and analysis were done with the IBM SPSS statistical package version 27 for 64-bit Windows. The significance of the results was established for levels lower than 0.05.

RESULTS

Sociodemographic characteristics of the participants

The sociodemographic aspects of the participants are presented in Table 1. It is shown that most of the people were women; they were aged between 18 and 25 years, lived in urban areas, had health systems through Health Providing Entities (EPS), were students, had a university degree, were pursuing a professional career, or were in the first socioeconomic stratum.

Psychological constructs are used as independent variables

The description of the psychological constructs used as independent variables is shown in Table 2. Resilient coping will be used as an example in this section. In this sense, the scores ranged from 4 to 20 points, with lower and upper quartiles of 14 and 18 points, respectively. The range was 16, while the interquartile range was 4. The median was 16, revealing that 50 % of participants showed levels of resilience and coping equal to or lower than this value. The average was located at 15.68, with a fashion of 16 and a standard deviation of 3.02 points, implying a coefficient of variation of 19.25 %. Based on the interval estimate, it can be believed with a 95 % confidence level that the resilience coping scores of this Colombian population range from 15.50 to 15.87. The description of the rest of the psychological constructs is omitted to gain conciseness and practicality. An inspection of Table 2 will allow a similar characterization of subjective well-being, subjective happiness, and social support

Table 1

Sociodemographic characteristics of the participants

Feature	Rank	Recount	Rec. accu.	Percentage	Perc. Accu.
Gender	Women	691	691	69.31	69.31
	Men	306	997	30.69	100.00
Age	From 18 to 25 years	728	728	72.95	72.95
	From 26 to 40 years	168	896	16.83	89.78
	From 41 years forward	102	998	10.22	100.00
Residential area	Urban	874	874	87.58	87.58
	Countryside	124	998	12.42	100.00
Health System	Sisbén[a]	199	199	19.94	19.94
	EPS[b]	711	910	71.24	91.18
	Prepaid or particular	88	998	8.82	100.00
Occupation	Employee[c]	300	300	30.06	30.06
	Student	663	963	66.43	96.49
	Unemployed	23	986	2.30	98.79
	Retired	12	998	1.21	100.00
Education	baccalaureate	353	353	35.37	35.37
	Technical or Technology	162	515	16.23	51.60
	Professional career	483	998	48.40	100.00
Social Class	Stratum 1	570	570	57.11	57.11
	Stratum 2	295	865	29.56	86.67
	Stratum 3 or upper	133	998	13.33	100.00

[a]System of identification of potential beneficiaries of social programs, [b]EPS: health-promoting entity. [c]This category includes employees, self-employed workers, domestic workers, and working students.

Table 2

Description of the psychological constructs used as independent variables

Statistical	Resilient Coping	Subjective Happiness	Subjective Well-being	Social Support
Minimum	4	4	5	11
Percentile 5	11	13	16	26
Under Quartile	14	17	22	36
Median	16	20	26	43
Upper Quartile	18	22	30	50
Percentile 95	20	27	35	55
Maximum	20	28	35	55
Rank	16	24	30	44
Interquartile Rank	4	5	8	14
Median	15.68	19.77	25.73	42.17
Mode	16	20	30	55
Variance	9.12	16.73	34.34	86.12
Standard Deviation	3.02	4.09	5.86	9.28
Coefficient of variation (%)	19.25	20.70	22.76	22.01
Standard Error	0.10	0.13	0.19	0.29
Lower Confidence Limit 95 %	15.50	19.52	25.37	41.59
Upper confidence limit 95 %	15.87	20.02	26.10	42.75

Psychological constructs are used as dependent variables

The characterization of anxiety, depression, and perceived stress is indicated in Table 3. On this occasion, stress will be used as an example for the description of the results. Thus, scores ranging from 1 to 56 were observed, involving a range of 55 points. Also, the lower and upper quartiles were 30 and 39 points, which generated an interquartile range of 9 points. On the other hand, the average score amounted to 34.62, with a fashion of 34 and a standard deviation of 7.64 points, assuming a coefficient of variation of 22.07 %. The median was 34 points, meaning that 50 % of the people who participated in the research showed perceived stress with values lower than or equal to this amount. The confidence interval suggests that the stress scores perceived by people in this population are between 34.14 and 35.09 points, an assertion that can be made with a safety margin of 95 %. The description of the findings linked to anxiety and depression can be obtained in the same way by a thorough review of Table 3.

Relationship between anxiety, psychological constructs, and socio-demographic characteristics

This section presents the results of the binary logistic regression model to explain the relationship between anxiety and the psychological constructs that functioned as major independent variables, while also considering the effect of sociodemographic covariates. As can be seen in Table 4, resilient coping, along with social support, is inversely and significantly related to anxiety. Note that higher scores of resilient coping involve lower values in this construct. The probability ratio (OR) indicates that, if the other factors remain constant, the unit increase in resilience and coping decreases the probability of being classified as anxious by 10 % (OR = 0.90, p= 0.001, 95 % BCI: 0.84-0.96). Social support also exhibited a negative and significant association but of a lesser magnitude. In this case, point increases imply a 3 % reduction in the probability of being classified as a person with anxiety if the other terms remain unchanged (OR = 0.97, p= 0.001, BCI 95 %: 0.95-0.98).

Table 3

Description of the psychological constructs used as independent variables

Statistical	Anxiety	Depression	Perceived Stress
Minimum	0	0	1
Percentile 5	0	0	22
Under Quartile	2	1	30
Median	3	3	34
Upper Quartile	4	4	39
Percentile 95	6	6	47
Maximum	6	6	56
Rank	6	6	55
Interquartile Rank	2	3	9
Median	3.29	2.65	34.62
Mode	4	4	34
Variance	2.62	2.96	58.37
Standard Deviation	1.62	1.72	7.64
Coefficient of variation (%)	49.27	65.00	22.07
Standard Error	0.05	0.05	0.24
Lower Confidence Limit 95 %	3.19	2.54	34.14
Upper confidence limit 95 %	3.39	2.76	35.09

In terms of socio-demographic characteristics, women were more likely than men to have high scores on the anxiety scale. Specifically, female participants had a 44 % higher probability of being classified as persons with anxiety than men, provided that the other coefficients of the model remain unchanged (OR = 1.44, p = 0.019, BCI 95 %: 1.06–1.96). A similar result was found at the educational level. Note that people with a high school degree had a 47 % higher probability than their university peers of being identified with anxiety under the premise of not modifying the other factors (OR = 1.47, p = 0.021, BCI 95 %: 1.06-2.05). The socioeconomic stratum was also significantly linked to anxiety. On this occasion, individuals in stratum 1 were 49 % less likely to reflect anxiety than those in stratum 3 or higher if the other elements of the model remained constant (OR = 0.51; p = 0.006; BCI 95 %: 0.31-0.82). Subjective happiness and subjective well-being were not significantly related to anxiety. There was also no association with age, area of residence, health system, or occupation. Table 4 sets out in detail the results of this phase and makes it possible to supplement the interpretation provided in this section.

Relationship between depression, psychological constructs, and socio-demographic characteristics

The findings of this stage are shown in Table 5. Note that both resilience coping, subjective well-being, and social support were inversely and significantly associated with depression, also showing similar values in terms of the magnitude of that relationship. Specifically, it was found that unit increases in resilient coping cause a 9 % decrease in the probability of generating high depression scores, provided the other coefficients of the model remain fixed (OR = 0.91, p = 0.001, 95 % BCI: 0.86-0.96). Concerning subjective well-being, it was evidenced that increases of a point in this construct would imply a 6 % reduction in the probability of being classified as someone with depression, assuming that no other term of the model is modified (OR = 0.94, p<0.001, 95 % BCI: 0.90-0.97).

Similarly, one-off growth in social support values was associated with a 4 % percentage decrease in the probability of generating high depression scores, provided no other coefficient is altered in the logistic regression equation

Table 4

Relationship between anxiety, psychological constructs, and socio-demographic characteristics

Model coefficients	Coef. beta no Stand.	Standard Error	Odds ratio (OR)	Valor-p of OR	ICB 95 % by OR
Intercept	4.99	0.91	146.68	<0.001	Does not apply
Resilient Coping	–0.11	0.03	0.90	0.001	[0.84, 0.96]
Subjective Happiness	–0.03	0.03	0.97	0.241	[0.92, 1.02]
Subjective Well-being	–0.03	0.02	0.97	0.167	[0.94, 1.01]
Social Support	–0.04	0.01	0.97	<0.001	[0.95, 0.98]
Women (between men)	0.37	0.16	1.44	0.019	[1.06, 1.96]
From 18 to 25 years (between 41 years forward)	0.33	0.31	1.39	0.290	[0.76, 2.54]
From 26 to 40 years (between 41 years forward)	–0.01	0.30	0.99	0.966	[0.55, 1.77]
Urban area (between Countryside area)	–0.14	0.23	0.87	0.540	[0.56, 1.36]
Sisbén (between prepaid or particular)	0.12	0.29	1.12	0.690	[0.63, 2.01]
EPS (between prepaid or particular)	0.16	0.26	1.18	0.520	[0.71, 1.95]
Employee (between Retired)	0.12	0.67	1.12	0.861	[0.30, 4.21]
Student (between Retired)	0.17	0.71	1.19	0.805	[0.30, 4.78]
Unemployed (between Retired)	–0.49	0.82	0.61	0.547	[0.12, 3.05]
Baccalaureate (between Professional career)	0.39	0.17	1.47	0.021	[1.06, 2.05]
Technical (between Professional career)	0.24	0.21	1.27	0.268	[0.83, 1.92]
Stratum 1 (between Stratum 3 or upper)	–0.68	0.25	0.51	0.006	[0.31, 0.82]
Stratum 2 (between Stratum 3 or upper)	–0.37	0.26	0.69	0.150	[0.42, 1.14]

(OR = 0.96, p= 0.001, 95 % BCI: 0.94-0.98). However, of the sociodemographic aspects, only the educational level showed a significant association with depression. Thus, individuals who achieved high school or lower studies had a 46 % higher probability of reflecting depression than those who reached university levels, under the assumption that the other factors remained constant (OR = 1.46, p = 0.015, BCI 95 %: 1.08–1.99). There was no evidence of a relationship between subjective happiness and depression, nor was there evidence of an association between this construct and gender, age, area of residence, health system, occupation, or socioeconomic stratum. Table 5 provides a review of these results.

Relationship between perceived stress, psychological constructs, and socio-demographic characteristics

Table 6 provides the relationship between perceived stress, psychological constructs, and sociodemographic characteristics of participants. Unlike what was observed in anxiety and depression, no statistically significant association was found between the level of stress experienced by these people and variables such as resilient coping, subjective happiness, subjective well-being, and social support. Note in Table 6 that no probability ratio (OR) was significantly different from the unit.

On the contrary, several social and economic aspects showed an important relationship with stress. In terms of gender, it could be evidenced that women had a 44 % higher probability than men of generating high scores in this variable, provided that the other terms of the model remain fixed (OR = 1.44, p = 0.020, BCI 95 %: 1.06–1.95). Also, those who have a health system based on EPS demonstrated a 40 % lower probability of manifesting stress than those who must resort to a prepaid or particular medicine, assuming that the other coefficients of the regression equation are not modified (OR = 0.60, p = 0.035, BCI 95 %: 0.37-0.96). The economic stratum was also significantly linked to stress. In this case, those in the first stratum showed a 53 % lower probability of experiencing this emotion than people in the middle or high strata, if the other factors remain unchanged (OR = 0.47, p<0.001, 95 % BCI: 0.31-0.71). Similarly, participants at the second socioeconomic level reflected a 40 %

Table 5

Relationship between depression, psychological constructs, and socio-demographic characteristics

Model coefficients	Coef. beta no Stand.	Standard Error	Odds ratio (OR)	Value-p of OR	ICB 95 % by OR
Intercept	5.00	0.88	148.43	<0.001	No aplica
Resilient Coping	–0.10	0.03	0.91	0.001	[0.86, 0.96]
Subjective Happiness	0.01	0.02	1.01	0.563	[0.97, 1.06]
Subjective Well-being	–0.07	0.02	0.94	<0.001	[0.90, 0.97]
Social Support	–0.04	0.01	0.96	<0.001	[0.94, 0.98]
Women (between men)	0.04	0.15	1.04	0.814	[0.77, 1.40]
From 18 to 25 years (between 41 years forward)	0.23	0.30	1.26	0.447	[0.70, 2.28]
From 26 to 40 years (between 41 years forward)	–0.04	0.30	0.96	0.887	[0.53, 1.73]
Urban area (between Countryside area)	–0.37	0.21	0.69	0.081	[0.45, 1.05]
Sisbén (between prepaid or particular)	–0.01	0.29	0.99	0.985	[0.56, 1.76]
EPS (between prepaid or particular)	–0.03	0.25	0.97	0.895	[0.59, 1.59]
Employee (between Retired)	–0.29	0.68	0.75	0.664	[0.20, 2.81]
Student (between Retired)	0.05	0.71	1.06	0.940	[0.26, 4.23]
Unemployed (between Retired)	–0.22	0.83	0.80	0.788	[0.16, 4.07]
Baccalaureate (between Professional career)	0.38	0.16	1.46	0.015	[1.08, 1.99]
Technical (between Professional career)	0.20	0.21	1.22	0.338	[0.81, 1.84]
Stratum 1 (between Stratum 3 or upper)	–0.21	0.22	0.81	0.354	[0.53, 1.26]
Stratum 2(between Stratum 3 or upper)	–0.03	0.23	0.97	0.893	[0.62, 1.53]

lower probability of generating high perceived stress scores than those at stratum 3 or higher, under the premise that no other coefficient of the regression equation is altered (OR = 0.60, p = 0.023, 95 % BCI: 0.39-0.93).

Table 6

Relationship between perceived stress, psychological constructs, and socio-demographic characteristics

Model coefficients	Coef. beta no Stand.	Standard Error	Odds ratio (OR)	Value-p of OR	ICB 95 % By OR
Intercept	–2.74	0.79	0.06	0.001	[0.00, 0.00]
Resilient Coping	0.05	0.03	1.05	0.121	[0.99, 1.11]
Subjective Happiness	0.00	0.02	1.00	0.893	[0.96, 1.05]
Subjective Well-being	0.00	0.02	1.00	0.974	[0.96, 1.04]
Social Support	0.01	0.01	1.01	0.160	[0.99, 1.03]
Women (between men)	0.36	0.16	1.44	0.020	[1.06, 1.95]
From 18 to 25 years (between 41 years forward)	0.51	0.31	1.67	0.097	[0.91, 3.04]
From 26 to 40 years (between 41 years forward)	0.17	0.31	1.18	0.579	[0.65, 2.15]
Urban area (between Countryside area)	–0.02	0.21	0.98	0.916	[0.64, 1.49]
Intercept	–0.01	0.28	0.99	0.957	[0.57, 1.70]
EPS (between prepaid or particular)	–0.51	0.24	0.60	0.035	[0.37, 0.96]
Employee (between Retired)[a]	0.87	0.51	2.39	0.088	[0.88, 6.53]
Student (between Retired)[a]	0.92	0.53	2.51	0.080	[0.90, 7.02]
Baccalaureate (between Professional career)	0.29	0.16	1.34	0.063	[0.98, 1.82]
Technical (between Professional career)	0.03	0.21	1.03	0.880	[0.68, 1.57]
Stratum 1 (between Stratum 3 or upper)	–0.76	0.21	0.47	<0.001	[0.31, 0.71]
Stratum 2(between Stratum 3 or upper)	–0.51	0.22	0.60	0.023	[0.39, 0.93]

[a]In this analysis, it was necessary to group the unemployed and pensioners into one category to avoid problems in the estimation process due to the low count observed.

DISCUSSION

This study involved 997 inhabitants of 30 municipalities of the department of Cordoba on the Colombian Atlantic coast, mostly female, of a range of ages between 18 and 41 years, with bachelor's and university studies mostly among low socioeconomic strata. It should be noted that most of the instruments used had validation in the Colombian context and had high alpha Cronbach indices. In terms of the results achieved in the studio, the levels of resilient coping had an average of 15, 68, close to the criteria of high resilient frontiers of Sinclair and Walston (37), conceptualizing resilient coping behavior as a tendency to effectively use cognitive assessment skills in a flexible, active problem-solving approach, despite stressful circumstances. People who support these four items would be expected to be more goal-oriented, believe in their ability to cope with adverse situations, and often succeed in selected challenges (38). Limonero et al. (52) have observed in young people that those with high scores in the BRCS had higher levels of emotional regulation and better levels of vital satisfaction. On the other hand, concerning those found on the Happiness scale, their scores are close to the average scores of the validation in Spanish in Chile by Vera et al. (40), where, from the perspective of the respondent, it is assumed that even when there are various reasons to be happy, most people have their own idea of what it is to be happy, and when they are happy or not, they can report it.

On the subjective welfare scale, the average scores were 25.73, which implies from the criteria of Diener (26) in the USA, Vazquez et al. (53) in Spain, and Vinaccia et al. (36) in Colombia that our sample has good satisfaction with life. In general terms, satisfaction with life is the personal perception of well-being or happiness, that is, the valuation of life based on one's own goals, expectations, or interests mediated by the cultural context. Concerning the total scale of social support at Duke University, our sample reached an average level of 42.17. The test measures social support in both its confidential and affective dimensions. Social support is an essential factor in the well-being of individuals, associated with health, and generates a significant factor in the well-being of individuals, associated with health (54).

On the results for negative emotions, we found insignificant levels of anxiety and depression with respective averages of 3.29 and 2.65, which is considered a population at medium risk (43). In relation to this, the average score was 34.62. The concept of perceived stress comes from the transactional theory of stress, which defines it as a particular relationship between the individual and his environment when the latter is assessed by the subject as threatening or overflowing with his resources and capable of endangering his welfare (55).

However, resilient coping, along with social support, were inversely and significantly related to anxiety. Labrague and Santos (20), with a sample of 325 health personnel, found that anxiety related to the COVID-19 pandemic is frequent in health personnel, which can affect their well-being and work performance. They found the influence of resilience and social support in reducing anxiety from COVID-19.

In addition, women were more likely than men to have high scores on the anxiety scale. Specifically, female participants had a 44 % higher chance of being classified as anxious than men. The socioeconomic stratum was also significantly linked to anxiety. On this occasion, individuals in stratum 1 were 49 % less likely to reflect anxiety than those in stratum 3 or higher.

These results are like those found in Mexico according to the COVID-19 follow-up survey on the welfare of Mexican households (ENCOVID-19), corresponding to the year 2020, when women and people of low socioeconomic level were those who presented severe symptoms of anxiety (ENCOVID, 2021). We found an association between sociodemographic factors such as sex, age, and economic income and depressive symptoms, stress level, and anxiety at the time of COVID-19 results like those found in different parts of Latin America (56,57).

Finally, subjective happiness and subjective well-being were not significantly related to anxiety and depression, nor was there an association with age, area of residence, health system, or occupation. These results are different from the research carried out in the US

by Serrao et al. (58) using data collected from 1366 older adults residing in a western US state, where they found that higher levels of anxiety and depressive symptoms were related to lower levels of happiness. Consistently, mental health symptoms have been associated with lower levels of happiness and life satisfaction, even among older adults (59,60). These differences may be due to the differences in the age range of this research.

This study has some limitations. First, although we captured anxiety and depression using a short-established measure, these self-reported mental health symptoms did not specifically capture "pandemic stress". Stress caused by the pandemic itself should be further explored, as the COVID-19 pandemic continues to affect many vulnerable populations. Secondly, the exploratory cross-sectional nature of the study prevented the search for better explanations for the causal relationships found. Future research could assess a more complex and complete picture of positive and negative variables among adults around impactful events and explore the challenges experienced by adults who contracted COVID-19 or cared for relatives with COVID-19.

In conclusion, despite the challenges that people have experienced because of the COVID-19 pandemic, some may have experienced positive benefits and even resilience during this time, thus providing a glimmer of hope in what has been a difficult time for most of the world. In particular, the results of this study show that some adults with anxiety and self-declared depressive symptoms demonstrated high levels of resilience and social support. The results of this study suggest that resilience can occur in vulnerable populations, such as those suffering from anxiety and depressive symptoms and those in difficult times of life. With greater knowledge and perspective, adults may experience less distress and more hope in coping with future natural disasters such as the coronavirus. It also shows that positive dimensions are protective factors against anxiety and depression, so including strengthening these factors in individual and community interventions can become a protective factor against anxiety and depression.

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