



Artículo de investigación científica y tecnológica

Risk of a major depressive episode in Colombian adults: Frequency and some associated variables during the COVID-19 pandemic

Riesgo de un episodio depresivo mayor: prevalencia y algunas variables asociadas en durante la epidemia de la COVID-19

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ABSTRACT

Introduction: The risk of a major depressive episode is a public health problem; however, the frequency during the coronavirus pandemic is unknown. Objective: To determine the frequency of the risk of a major depressive episode and its association with sociodemographic variables and cognitive social capital in Colombian adults during COVID-19 confinement. **Method:** A cross-sectional analytical study was conducted using an online questionnaire that explored demographic variables, cognitive social capital, and risk of a major depressive episode (General Well-being Index, WHO-5). **Results:** Seven hundred adults answered the questionnaire. They were between 18 and 76 years old (M= 37.1, SD=12.7), 32.1% were between 18 and 28 years old, 68% were women, 24.0% scored for low social capital, and 61.1% were categorized as high risk of a major depressive episode. Female gender (aOR=1.58, 95%CI 1.12-2.22), young age (18-29 years, aOR=3.82; 95%CI 2.56-5.72), and low social capital (aOR=2.05, 95%CI 1.37-3.07) were associated with risk of a major depressive episode. **Conclusions:** The frequency of risk of the major depressive episode was high and was associated with the female gender, young age (18 to 28 years), and low social capital. It is necessary to corroborate these findings in a probabilistic sample of Colombians and, more frequently, to quantify social capital in research.

Keywords: COVID-19; depression; risk factors; social capital; cross-sectional studies.

RESUMEN

Introducción: El riesgo depresivo mayor es un problema de salud pública; sin embargo, se desconoce la frecuencia durante la pandemia por coronavirus. **Objetivo:** Conocer la prevalencia y algunas variables asociadas a riesgo de

episodio depresivo mayor en adultos colombianos. Método: Se realizó un estudio transversal mediante un cuestionario en línea que exploró variables demográficas, riesgo de episodio depresivo mayor (Índice de Bienestar General, WHO-5) y capital social (cinco ítems). Respondieron 700 adultos entre 18 a 76 años ($M=37,1$; $DE=12,7$), 32,1% en edades entre 18 y 28 años y 68% fueron mujeres. **Resultados:** el 24,0% de los participantes puntuaron para bajo capital social y 61,1% se categorizaron como riesgo de episodio depresivo mayor. El género femenino ($aOR=1,58$; $IC95\% 1,12-2,22$), edad joven (18-29 años, $aOR=3,82$; $IC95\% 2,56-5,72$) y bajo capital social ($aOR=2,05$; $IC95\% 1,37-3,07$) se asociaron a riesgo de episodio depresivo mayor. **Conclusión:** La prevalencia de riesgo de episodio depresivo mayor fue alta y se asoció a género femenino, edad joven (18 a 28 años) y bajo capital social. Es necesario corroborar estos hallazgos en una muestra probabilística de colombianos y cuantificar con más frecuencia el capital social en las investigaciones.

Palabras clave: COVID-19; depresión; factores de riesgo; capital social; estudios transversales.

INTRODUCTION

Humanity has experienced different pandemics that constituted what are now called public health crises^{1,2}. However, only recently has attention been paid to the emotional effects of pandemics beyond the fear of infection. The restriction of mobility, confinement, or quarantine to contain infection spread can have adverse psychological effects in the short and long term³. Among these psychological problems, symptoms may be severe and persistent enough to meet the criteria for a mental disorder⁴. Depressive disorders are common during pandemics⁵.

In 2020, during confinement for the coronavirus outbreak (COVID-19), high prevalences of clinically important depressive symptoms or risk of a major depressive episode were observed in Asian and European countries. For example, in China, 16.5% was found⁵, Spain 22.1%⁶, the United Kingdom 22.1%⁷, Ireland 22.7%⁸, and Colombia 27%⁹.

Diagnosis is a process that involves clinical judgment and consideration of other criteria, such as the duration and severity of symptoms. The risk of a major depressive episode is the probability of meeting the criteria for a major depressive episode, given that it scored high on a screening scale. It is considered that these measurement scales only identify possible cases and never make a diagnosis¹⁰. Depressive disorder cannot be explained by illnesses, medication intake or substance use, and the deterioration in the different areas of functioning due to symptoms of depression¹¹. Consequently, major depressive disorder is

a complex clinical event related to a diverse set of biological, psychological, and sociocultural factors^{12,13}.

In theory, the risk of a major depressive episode can be increased during a pandemic due to confinement, restricted mobility, or a change in normal lifestyle¹⁴. These particular situations, or in groups, can be configured as a stressor and mediate the frequency of risk of a major depressive episode in vulnerable people¹⁵. Generally, during the regular period, the risk of a major depressive episode is higher in women than in men¹⁶. However, this association is inconclusive for the current coronavirus disease (COVID-19) pandemic. In Ireland, a higher frequency was observed in women⁸. However, in China, the frequency of depressive symptoms was higher in men⁵. In China and the United Kingdom, the prevalence was similar to gender¹⁷. This way, gender is not a consensual variable in different countries or cultures.

Another study highlights age as a variable to analyze the risk of a major depressive episode during the COVID-19 pandemic. They observed that the risk of a major depressive episode is inversely proportional to age in Spain⁸, the United Kingdom⁷, and Ireland⁸. However, independence was observed in China between age and the presence of symptoms⁵. Similarly, parental status, marital status⁵, income level, living alone, and pre-existing health conditions have not been associated with the risk of major depressive episode^{7,8}. Research has explored some proximal variables associated with the risk of a major depressive episode during the COVID-19 pandemic and distal and medial variables, such as social capital, which may play a relevant role in the risk of a

major depressive episode. For example, in Japan, among⁸, 291 participants, it was found a negative association between social capital and depression during the COVID-19 lockdown¹⁷.

Similar data reveal that in 10,500 older adult participants in Shanghai, researchers reported a negative association between social capital and depressive symptoms¹⁸.

The present study addresses the relationship between social capital and the risk of a major depressive episode. Social capital is understood as the community's attribute that overlaps with trust, norms, and networks that facilitate harmony, development, and group support¹⁹. Social capital encompasses the individual perception of trust and reciprocity with community members and social support networks²⁰. Cognitive capital emphasizes perceptual and emotional aspects, such as trust in neighbors, and structural capital group's objective behavioral attributes, such as participation in community actions, social activities, and volunteering²¹. High social capital is related to positive psychological states that help to better cope with stressors, and consequently, it is configured as a protective factor of physical and emotional health²⁰. In regular times, high social capital was negatively related to depressive symptoms²¹.

It is necessary to make visible the medial and distal variables associated with the risk of a major depressive episode as social capital, both in times of "normality" and crisis, that contribute to the global understanding of the collective's role in mental health beyond the summation of individual factors²². The lack of information and ignorance of the COVID-19 virus, fear of contagion, confinement, and restrictions on social and community activities during a health crisis constitute a critical psychosocial stressor that can explain the risk of major depression. These findings are an input for the design of long-term programs, strategies, and public policies that reaffirm community actions that favor self-care habits and, with it, the promotion of mental health and the prevention of emotional problems in regular times and crises. Promoting social capital in the territories and groups must be adjusted to sociocultural conditions and, thus, reaffirm cohesion and trust that optimize community resources^{22,23}.

This study aims to determine the frequency of the risk of a major depressive episode and its association with sociodemographic variables and social capital in Colombian adults during COVID-19 confinement.

METHOD

Type of Research

A cross-sectional analytical observational study was designed.

Participants

Non-probability sampling was followed for convenience. It was expected to have a sample of at least 384 participants. This number is necessary for an estimated frequency of the risk of a major depressive episode from 10% (error of 3%) to 50% (error of 5%), with a confidence level of 95%. This number of participants allowed the frequency estimation and explored some associated variables with sufficiently narrow confidence intervals.

Instruments

The research questionnaire inquired about age, sex or gender, marital status, socioeconomic status, education level, chronic disease (such as diabetes or high blood pressure), social capital, and risk of a major depressive episode.

Risk of a major depressive episode. The World Health Organization General Well-being Index (WHO-5)²⁴. The WHO-5 explores the frequency of five symptoms associated with a major depressive episode during the last two weeks. Each question offers four answer options that are scored from zero to three. Total scores can be between zero and fifteen; the lower the score, the greater the depression. The WHO-5 has been used previously with Colombia, with acceptable psychometric performance, Cronbach's alpha of 0.85²⁵. The presence of the risk of a major depressive episode was considered for scores equal to or less than nine. The WHO-5 showed high internal

consistency in the present sample, with Cronbach's alpha of 0.86.

Cognitive social capital. It was quantified with five of the seven items on the cognitive social capital scale (CSCS)²⁶. The CSCS explores social cohesion and trust in close neighbors and communities. The ECSC items offer four response options: strongly disagree, disagree, agree, and strongly agree, which are scored from zero to three; the higher the score, the higher the social capital. The items were headed with the phrase 'in the block, complex, building, or neighborhood where I live':

1. People are close and generally know each other.
2. If you had to borrow \$50,000 (US\$20), you could borrow it from a neighbor in an emergency.
3. People can be trusted.
4. If I was sick, I could count on my neighbors to do some shopping for me.
5. People share the same values.

The initial study should have reported the internal consistency of the CSCS²⁶. However, this instrument was preferred due to its face validity, clarity of questions, and ease of rating the responses. In the present sample, the internal consistency of the CSCS was high, with Cronbach's alpha of 0.79. The present study categorized total scores less than or equal to five as low social capital.

Procedure

Information was collected through an electronic or online questionnaire. The questionnaire was available for eight days, between March 30th to April 8th, 2020, two weeks after the first cases of COVID-19 in Colombia and the declaration of preventive confinement for most citizens. The questionnaire was sent in Google Forms to adults over 18 years of age, of Colombian nationality, and capable of completing the questionnaire online. Being a minor and residing abroad were considered criteria for exclusion. One week was considered sufficient given that it is the period in which online questionnaires are usually answered if there is a new request or reinforce-

ment²⁶. The questionnaire was shared by email and through the social networks of the research group and the university institution. Likewise, the participants were informed of the possibility of sending the questionnaire to another acquaintance. In the descriptive analysis, frequencies, and percentages were observed for categorical variables. In the bivariate analysis, the risk of a major depressive episode was considered the dependent variable, and the demographic variables were taken as independent variables. Odds ratios (OR) with 95% confidence intervals (95%CI) were calculated. Greenland's recommendations were followed for the variables to be considered in the adjustment: those that showed probability values less than 0.20. Variables that showed significant 95%CIs or induced a variation greater than 10% in the highest OR were left in the final model²⁷. The adjustment of the model was tested using the Hosmer-Lemeshow test. The data analysis was completed in version 23.0 of the IBM-SPSS program.

Ethical considerations

This project had the endorsement of an institutional ethics committee of a Colombian higher education institution (Minutes 002 of March 26th, 2020, extraordinary session). Participants gave informed consent (online) after knowing the project's objectives and confidential handling that would be given to the information, in compliance with the national provisions in Resolution 8340 of 1993 of the Ministry of Health of Colombia and the Declaration of Helsinki of the World Medical Association.

RESULTS

A total of 714 questionnaires were received; 14 (2.0%) were eliminated for being people residing abroad during the pandemic. The ages of the participants were observed to be between 18 to 76 years ($M = 37.1$, $SD = 12.7$). These were categorized into ages 18 and 28, 29 and 44, and 45 or more. Table 1 shows frequencies and percentages for demographic characteristics, social capital, and risk of a major depressive episode.

Table 1. Frequencies and percentages of the quantified variables.

Variable	Categories	n	%
Age (years)	Younger than 28	225	32.1
	Between 29 and 44	284	40.6
	Older than 45	191	27.3
Gender	Female	476	68.0
	Male	224	32.0
Marital status	Single, separated, or widowed	364	52.0
	Free union or married	336	48.0
Income level	Low or low middle	420	60.0
	High middle or high	280	40.0
University education	Yes	628	89.7
	No	72	10.3
Chronic disease history	Yes	114	16.3
	No	586	83.7
Low cognitive social capital	Yes	168	24.0
	No	532	76.0
Major depression risk	Yes	428	61.1
	No	272	38.9

Table 2. Multivariate model for variables associated with the risk of a major depressive episode.

Variable	Crude OR (95%CI)	Adjusted OR (95%CI)
Age between 18 and 28 year	4.83 (3.16-7.39)	3.82 (2.56-5.72)
Age between 29 and 44 year	2.27 (1.56-3.31)	1.98 (1.36-2.89)
Low cognitive social capital	2.19 (1.49-3.23)	2.05 (1.37-3.07)
Female gender	1.63 (1.18-2.25)	1.58 (1.12-2.22)

^aOlder than 45 was taken as the reference.

Hosmer-Lemeshow test, $X^2 = 3.81$, $df=7$, $p=0.80$.

Nagelkerke R square=0.15

In the bivariate analysis, the variables that showed probability values less than 0.20 were: age, gender, socioeconomic status, and social capital. In the adjusted multivariate model, ages between 18 and

44 years (distributed in two groups), female sex, and low social capital were associated with the risk of a major depressive episode; the socioeconomic stratum did not meet Greenland's second criterion,

and the adjustment did not modify the OR for age by more than 10%. Table 2 shows the crude and adjusted ORs included in the final model.

DISCUSSION

In the present study, it is observed that 61.1% of the participants reported symptoms of risk of a major depressive episode. The younger age groups, women, and low social capital were associated with the risk of a major depressive episode after fifteen days of confinement due to the COVID-19 pandemic in Colombia.

The present study observed a high frequency (61.1%) of risk of a major depressive episode during the COVID-19 pandemic. This frequency is higher than 16.5%, quantified with the Depression, Anxiety, and Stress Scale (DASS -21), found in 1,210 people in China in the first days of the COVID-19 outbreak 2019⁵. Similarly, the frequency was higher than 22.1%, measured with the Patient Health Questionnaire-9 (PHQ-9), found in 2070 individuals in Spain⁶, and at 22.7%, quantified with PHQ-9, in 2025 participants from Ireland⁸. In Colombia, during the beginning of confinement for COVID-19, lower frequencies measured with other different instruments have been observed; in 1,735 national respondents, a frequency of 27% was found through a questionnaire of symptoms⁹. Among 189 residents in a metropolitan area was 32.8%, with the Self Reporting Questionnaire²⁸; and in 292 patients with asthma or chronic obstructive pulmonary disease was 31.5%, measured with PHQ-9²⁹.

The vast difference in prevalence observed could be explained by the instruments used to measure depressive symptoms and social and cultural differences between countries^{10,11,15,16}. No Colombian studies show the risk of major depressive episode, measured with WHO-5 and the same cut-off point, at regular times. Nevertheless, 30.5% of the adolescents from Santa Marta, Colombia, presented risk of a major depressive episode, quantified with the same parameters as in the present investigation²⁹. This higher prevalence of risk of a major depressive episode is possibly explained by the confinement that implies physical isolation and distance from daily life, besides uncertainty about the future or concerns about financial problems^{30,31}. The risk of a major depressive episode may be more sensitive

than other instruments or may not correspond to psychopathological symptoms but clinical signs.

Women were more likely to report the risk of a major depressive episode in the present investigation. This result is similar to other findings observed during confinement for COVID-19 in Ireland, where women showed a higher risk of a major depressive episode (26.3% vs. 18.9%; OR = 1.53; 95%CI 1.14-2.05) compared to men⁸. However, the finding differs from that observed in China and the United Kingdom, where the risk of major depressive episode frequency was independent of gender^{1,5,7}. Women are considered more vulnerable to psychological abuse, violence, and exclusion. During the confinement due to COVID-19, violence and psychological suffering among women increased, becoming a predisposing factor for the risk of a major depressive episode³². In addition, the care burden increased in women, increasing their probability of presenting depressive symptoms. The association between sex and the risk of major depression regularly explains biological, social, and cultural factors^{16,17}. Nevertheless, in times of crisis, such as the COVID-19 pandemic, the role of gender needs further investigation.

The present study observed that the risk of a major depressive episode was significantly lower in the age group over 45. This finding is consistent with others found in Ireland and the United Kingdom's lockdown; the frequency of the risk of a major depressive episode was high, measured with PHQ-9, in three age groups between 18 and 44 years old and groups over 45 years old⁷; older people were considered a population at risk of becoming seriously ill from COVID-19, in addition, comorbidities were better known after 40 years of age, which also increases the risk of major depressive episode⁸. Greater access to online information and limited coping strategies in younger cohorts may increase the risk of a major depressive episode³⁰.

Sociodemographic variables' role in the risk of a major depressive episode is inconclusive during a pandemic crisis. The variables socioeconomic level, marital status, level of education, and previous health condition were independent of the risk of a major depressive episode in the present investigation. This observation coincides with studies in other countries during COVID-19 confinement, which did not observe an association between these variables and the risk of a major depressive episode^{5,7}. However, it differs from what was found in 1,441 Americans:

lower family income, being single, widowed, divorced, or separated, and higher education were associated with the risk of a major depressive episode during the COVID outbreak^{18,33}. Other biological, cultural, and contextual differences between participants and the studies' design explain the differences³¹.

Consistently, some studies at regular times show that low social capital increases the risk of depressive symptoms and disorders²¹. In the present study, low social capital was significantly associated with the risk of a major depressive episode. This finding is consistent with the negative association between social capital and risk of a major depressive episode in participants from Japan (OR=147, 95%CI 1.35-1.60)¹⁷ and Shanghai (OR=-0.524, $p < 0,05$)¹⁸ during the COVID-19 lockdown. Community resources such as trust, cohesion, and neighborhood support, configured as social capital, reduce the risk of a major depressive episode by promoting collective actions favoring coping in adverse situations typical of a pandemic³³. Consequently, low social capital weakens community resources, counting on less potential benefit for collective action, making it challenging to overcome adverse situations, indirectly affecting the risk of depression^{21,26}.

Cognitive and structural social capital can be associated with the risk of a major depressive episode^{21,23}. However, the relationship is more robust with cognitive social capital than structural social capital because the cognitive aspects show a closer, direct, and closer relationship with the emotional state^{22,23}. During a crisis, people who maintain trust and social cohesion generally report low stress or negative emotions and, consequently, better coping²³.

This study contributes to the knowledge given that the present study results show the emotional impact of a pandemic and the importance of social capital in coping with associated mitigation measures in a sample of Colombian people³⁴. Likewise, it is an approach to understanding the interaction of psychological and social processes that can condition groups' well-being during pandemic periods³⁵⁻³⁸.

However, this research has three limitations: the first, the non-probabilistic sampling, with a high percentage of participants with a university education, prevents the generalization of the findings^{34,39}.

Second, it only estimated the risk of a major depressive episode and not a major depressive episode^{10,11}. The diagnosis of a major depressive episode is a more complex clinical matter that considers other aspects, for example, if the symptoms produce a significant deterioration in activities of daily life and if the symptoms are better explained by a medical condition or the taking of medications or the use of substances that are susceptible to abuse or that can cause dependence³⁹. Furthermore, finally, the design' study does not allow for establishing cause-effect relationships, nor were the presence of a diagnosis of risk of major depressive episode prior to the pandemic and other social determinants in health considered³⁹. Third, other variables not considered in the present binary regression model are related to the risk of a major depressive episode since depression is a multifactorial problem; therefore, for future research, it is necessary to include other sociodemographic and social variables.

It is concluded that the risk of a major depressive episode is high in a non-probabilistic sample of Colombian adults during preventive confinement by COVID-19. The risk of a major depressive episode is higher in younger groups, women, and people with low social capital. These findings need to be corroborated by a representative sample of Colombians. In future studies, it is necessary to study the characteristics of the structural category of social capital with internalized and externalized variables through repeated measures during and after the pandemic. Actions are needed to strengthen the groups' social capital and favor assertive coping in future crises.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

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