



ORIGINALES

Fear of COVID-19 infection, as a mediator between exposure to news and mental health, in the Peruvian population

El miedo al contagio de covid-19, como mediador entre la exposición a las noticias y la salud mental, en población peruana

Henry Santa-Cruz-Espinoza¹
Gina Chávez-Ventura¹
Julio Domínguez-Vergara²
Elizabeth Dany Araujo-Robles³
Haydee Mercedes Aguilar-Armas⁴
Velia Vera-Calmet⁴

¹ Research professor attached to the Institute of Science and Technology of the César Vallejo University, Peru. hsantacruz@gmail.com

² Research Professor at the Technological University of Peru. Peru.

³ Graduate School, Universidad Peruana Cayetano Heredia, Peru.

⁴ Professor at the School of Psychology of the César Vallejo University, Peru.

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ABSTRACT:

Introduction: In this COVID-19 pandemic, protective measures against the disease and government-imposed policies should be known. However, the media also report on deaths and health service shortages, but their impact on the mental health of the population is ignored.

Objective: To determine whether fear of COVID-19 infection acts as a mediator between exposure to news about the pandemic and mental health in the Peruvian population.

Method: Explanatory study with observable variables in which 541 persons selected by non-probabilistic sampling participated. They responded to a sociodemographic file and the following scales: Mental Health Inventory-5 (MHI-5) and Fear of COVID-19 Scale. Data were processed using IBM SPSS Statistics 25 and Macro PROCESS for SPSS programs; linear regression and bootstrapping of 10 000 simulations were used.

Results: The number of hours watching and/or listening to covid-19 information is a good predictor of the COVID-19 fear mediator variable ($\beta = .75$; $t = 3.77$, $p < .001^{**}$). In turn, this has a predictor effect on mental health ($\beta = -.24$; $t = -13.57$, $p < .001^{**}$). However, the number of hours of exposure to COVID-19 information had no direct positive effect on mental health ($\beta = -.10$; $t = -1.184$, $p = .23$).

Conclusion: Fear of COVID-19 has a total mediating effect between exposure to pandemic news and mental health in the Peruvian population.

Keywords: Pandemic, Coronavirus, Media, Psychological health.

RESUMEN:

Introducción: En esta pandemia por covid-19 se deben conocer las medidas de protección contra la enfermedad y las políticas impuestas por el gobierno; empero, los medios de comunicación también informan sobre las muertes y el desabastecimiento de los servicios de salud, pero se ignora su impacto en la salud mental de la población.

Objetivo: Determinar si el miedo al contagio de la covid-19 actúa como mediador entre la exposición a las noticias sobre la pandemia y la salud mental en población peruana.

Método: Estudio explicativo con variables observables, donde participaron 541 personas seleccionadas con un muestreo no probabilístico. Respondieron una ficha sociodemográfica y las escalas: Mental Health Inventory-5 (MHI-5) y Fear of Covid-19 Scale. Los datos fueron procesados mediante los programas IBM SPSS Statistics 25 y Macro PROCESS para SPSS; se utilizó la regresión lineal y bootstrapping de 10 000 simulaciones.

Resultados: El número de horas viendo y/o escuchando información de la covid-19 es un buen predictor de la variable mediadora de miedo a la covid-19 ($\beta = ,75$; $t = 3,77$, $p < ,001^{**}$); a su vez, esta tiene un efecto predictor sobre la salud mental ($\beta = -,24$; $t = -13,57$, $p < ,001^{**}$); sin embargo, el número de horas de exposición a la información de la covid-19 no tuvo un efecto directo positivo en la salud mental ($\beta = -,10$; $t = -1,184$, $p = ,23$).

Conclusión: El miedo a la covid-19 tiene un efecto mediador total entre la exposición a las noticias sobre la pandemia y la salud mental en la población peruana.

Palabras clave: Pandemia, Coronavirus, Medios de comunicación, Salud psicológica.

INTRODUCTION

In December 2019, the world population was informed that a new virus called SARS-COV-2 (Severe Acute Respiratory Syndrome Coronavirus), was giving rise to a new pandemic, originating in the Wuhan region of China, catalogued as the Coronavirus disease, COVID-19 ⁽¹⁾. Three months later, WHO reported that this virus had spread to 159 countries, causing more than 8,000 deaths ⁽¹⁾. The aggressive and accelerated onset of this disease is considered an international public health emergency, as a result of the excessive presence of positive cases and deaths due to infection, a situation that continues at present ⁽²⁾.

The emergence of SARS-COV-2, its rapid spread and mutations have had a strong impact on the health system, the economy, academic progress and lifestyles in general ⁽³⁾, so that several countries had to adopt social isolation as a preventive measure, which had consequences on the mental health of their population ⁽⁴⁾.

The different emotional reactions of the population in general during the pandemic of COVID-19 disease were depression, anxiety, stress ⁽⁵⁾, fear and other negative affective reactions ⁽⁶⁾. In addition, the symptoms of those with a psychological history have worsened, aggravating their situation ⁽⁶⁾.

Furthermore, patients infected with COVID-19 presented psychopathological problems of anxiety, depression and post-traumatic stress disorder ⁽⁷⁾. Similarly, health professionals, who provide first-line care to covid-19 patients, experienced fear, anxiety and depression ⁽⁸⁾, but also experienced post-traumatic stress disorder ⁽⁹⁾, exhaustion, fear of spreading the disease, and increased substance dependence ⁽⁹⁾.

An important predictor of anxiety and depression is intolerance to uncertainty ⁽¹⁰⁾; and the three variables, together with stress, mediate the relationship between the fear of COVID-19 and the optimistic attitude ⁽¹⁾. Definitely, ambiguity influences the emotion of fear. However, having information that offers credibility favors adaptive behaviors, reduces anxiety ⁽¹¹⁾ and allows timely decisions to be made, minimizing the risk of

contagion ⁽¹²⁾. Thus, the information received from health personnel contributes to experiencing less fear ⁽¹³⁾ and better mental health ⁽¹⁴⁾.

However, the main source of information that the general public consumes about COVID-19 is television and social networks ⁽¹²⁾, which occasionally disseminate information on new discoveries about the disease, guidelines for prevention and, more regularly, government measures to contain the infection, as well as information about deaths, the number of people infected, disregard for control measures, the precariousness of health services and their lack of supply for the timely care of cases.

Parallel to this, an overabundance of information has arisen on the Internet, which is sometimes correct, but also unfounded, lacking in rational support or imprecise, called infodemia ⁽¹⁵⁾. It is marked by dubious intentionality, and by the dissemination of unverified information that spreads very easily, creating confusion and deception among those who do not have informational skills ⁽¹⁶⁾. Information associated with fear, speculation and rumors is disseminated, transmitted through new information technologies and the media, which can cause panic, refusal to comply with government measures to control infection ⁽¹⁷⁾ and the lack of reliable guidance when people need it ⁽¹⁵⁾.

The media are important drivers in the spread of fear of SARS-COV-2 ⁽¹²⁾. These findings confirmed those of a previous study where it was found that the frequency of exposure to stimuli presented both in the media and in interpersonal communications facilitated memory of the stimuli and instigated, rather than attenuated, fear of Zika ⁽¹⁸⁾. Likewise, another experimental investigation reported that the media contributed to exacerbate fears in college students ⁽¹⁹⁾.

In summary, some evidence on the impact that the media have on fear is available, and the effect that this may have on mental health is unknown, which is of utmost importance because it is an integral and essential aspect of health, referring to bio-psycho-social well-being and not only to the absence of disease ⁽²⁰⁾. In the current context of the pandemic, according to a systematic review, 1 in 5 people is at risk of developing major psychological problems ⁽⁴⁾.

Therefore, in the current scenario of uncertainty, self-observation of one's emotions, including fear, is necessary ⁽²¹⁾. Studies report that fear of COVID-19 is linked to the presentation of symptoms such as depression and anxiety ^(22, 23), insomnia ⁽²²⁾, internet addiction disorder ⁽²³⁾, as well as a negative relationship with quality of life in pregnant women ⁽²⁴⁾. For this reason, the need arises to develop a study aimed at determining whether the fear of COVID-19 infection acts as a mediator between exposure to the news and mental health in the Peruvian population.

In the present study, three hypotheses are proposed: (H₁) fear of COVID-19 is directly related to exposure to COVID-19 news ^(12, 18, 19) and negatively related to mental health ^(22, 23, 24); (H₂) exposure to COVID-19 news is negatively related to mental health ⁽²⁵⁾; and (H₃) fear of COVID-19 exerts a mediating effect between exposure to COVID-19 news and mental health.

The findings will contribute to guide decision making, especially in favor of vulnerable groups and, at the same time, will serve as a basis for strategic planning of psychological interventions and for awareness of the social responsibility that should

be inherent in the dissemination of information, both in the media and in social networks and interactions as well.

METHOD

Participants and procedure

This is an explanatory study with observable variables developed in a general population of six departments of Peru (La Libertad, Lima, Lambayeque, Piura, Tumbes and Cajamarca). Non-probabilistic convenience sampling was used and the following inclusion criteria were considered: 1) people over 18 years of age; 2) residence in Peru; and 3) voluntary acceptance to participate in the study. The information was gathered through online survey data via social networks from June 15 to October 2, 2020.

The sample consisted of 541 persons, 31.6% of whom were male and 68.4% female, with an average age of 30.13 years (SD = 10.31). Most participants were single (n = 354; 65.4%), followed by married (n = 105; 19.4%), live-in partners (n = 64; 11.8%) and divorced (n = 18; 3.3%). Most of the participants have not had a COVID-19 diagnosis (n = 530; 98%) and most participants are informed by COVID-19 news 1 to 3 hours per day (51.2%). Table 1 details the sociodemographic characteristics of the sample.

Table 1. Sociodemographic data of the sample

Characteristics	n=517	%
Sex		
Male	171	31,6
Female	370	68,4
Marital Status		
Single	354	65,4
Married	105	19,4
Live-in partner	64	11,8
Divorced	18	3,3
Exposure to COVID-19 news		
1 to 3 hours	277	51,2
3 to 5 hours	114	21,1
5 to 7 hours	55	10,2
More than 7 hours	95	17,6
Infection by COVID-19		
Yes	11	2
No	530	98
Diagnosis of COVID-19 in a family member		
No	320	59,1
I have distant relatives infected with covid-19	118	21,8
I have close relatives infected with covid-19	103	19
Diagnosis of COVID-19 in friends		
No	317	58,6

Yes	224	41,4
Employment situation		
Permanent job	158	29,2
Temporary job	108	20
Unemployed	275	50,8

Instruments and measurement

Sociodemographic file

This file gathers sociodemographic information on the participants such as sex, age, marital status, COVID-19 infection, diagnosis of COVID -19 in a family member, diagnosis of COVID -19 in friends, and employment status. Exposure to news about COVID -19 was measured by the question: "During the last few weeks, how many hours have you thought about, seen and/or heard information about the coronavirus?" on a 4-point scale ranging from 1 (1 to 3 hours), 2 (3 to 5 hours), 3 (5 to 7 hours) and 4 (more than 7 hours).

Mental Health Inventory-5 (MHI-5)

The instrument was created by Veit and Ware in 1983 to be used in the general population. The scale has five items and uses a 4-point Likert scale (never = 1, sometimes = 2, many times = 3 and always = 4), the score ranges from 5 to 20. The instrument assesses the presence of well-being and distress. It presents a two-dimensional solution with factor loadings above 0.57, an internal consistency alpha of 0.83 and is applicable in the general adult and adolescent population ⁽²⁶⁾.

For this study, the reliability estimation of the MHI-5 instrument was performed using the omega coefficient ($\omega = 0.82$; 95%CI - 0.80 - 0.85), whose evidence of internal consistency was adequate in the measure scores used in the study.

Fear of COVID-19 Scale

The COVID-19 fear scale was created by Ahorsu, Chung-Ying, Imani, Saffari, Griffiths and Pakpour in 2020. It is a seven-item one-dimensional instrument. It assesses fears of COVID-19 in the general population and uses a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). The score ranges from 7 to 35, where higher scores indicate greater fear of COVID-19. The psychometric properties of the fear of COVID-19 scale in a Peruvian sample were obtained by Huarcaya-Victoria, Villarreal-Zegarra, Podesta and Luna-Cuadros ⁽²⁷⁾ who reported a bifactor model consisting of a general factor and two specific factors.

The first factor was labeled, emotional fear reactions and the second, somatic expressions of fear of COVID-19. The model presented adequate values in several fit indices (CFI = 0.988; TLI = 0.964; RMSEA = 0.075 [0.054-0.098]). For internal consistency reliability, the omega coefficient was calculated, obtaining 0.94 for the total scale and 0.91 and 0.89 for the scales of fear reactions and somatic expressions, respectively ⁽⁴⁴⁾. In the present study, the reliability of the COVID-19 fear scale was

calculated using the omega coefficient, ($\omega = 0.85$; CI 95% - 0.83 - 0.87), indicating a good level of internal consistency.

Data analysis

Data processing was done using the statistical program IBM SPSS Statistics 25 by which the minimum, maximum, mean (M) and standard deviation (SD) were calculated. Mediation analysis was done using the Macro PROCESS program for SPSS to test the mediation effects of fear of COVID-19 between exposure to COVID-19 news and mental health. For this analysis, the calculation of the indirect mediator effect was taken into account. Statistical significance of the mediator variable was obtained by bootstrapping 10 000 simulations ($p < 0.05$). Confidence intervals (CI) at 95% that were not on either side of zero were considered statistically significant.

Ethical aspects

This study was approved by the Ethics Committee of the Universidad César Vallejo. Informed consent was requested from each participant, who did so voluntarily and were aware of the anonymity of the information provided.

RESULTS

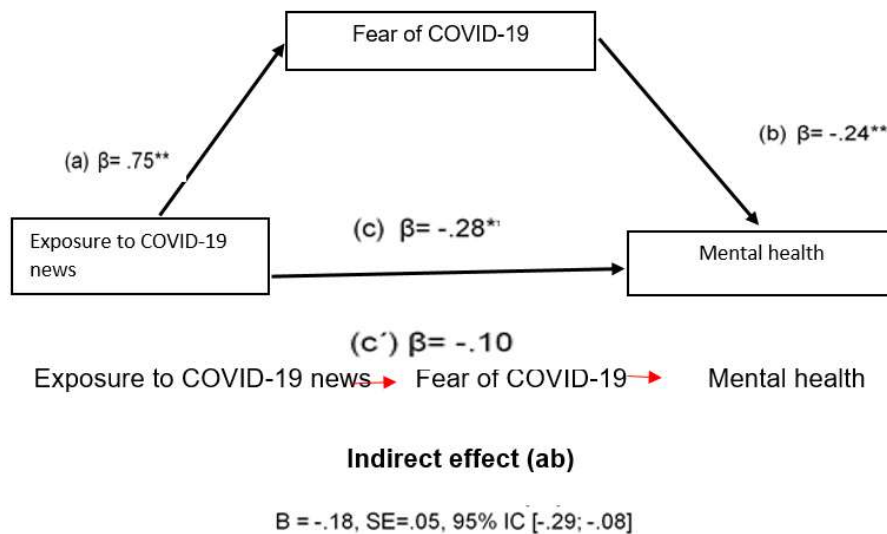
Table 2 shows the descriptive statistics for the total sample, as well as the correlations between the three variables. Only the correlation between fear of COVID-19 was significant and showed a large effect.

Table 2. Descriptive statistics and bivariate correlations of the study variables

N°	Study variables	Min	Max	M	SD	2	3
1	Fear of COVID-19	7	35	17,8	5,4	-0,515**	0,16
2	Mental health	5	19	14,9	2,6	-	-0,126
3	Exposure to covid-19 news	1	4	1,94	1,2		-

** Significant at the 0.01 level (two-tailed); Min = Minimum value, Max = Maximum value, M = Mean, SD = Standard deviation.

Figure 1: Fear of COVID-19 mediation model in relation to exposure to COVID-19 news and mental health.



Mediation analysis

Linear regression revealed that fear of COVID-19 plays a mediating role in relation to the number of hours watching and/or listening to COVID-19 information and mental health. The amount of time watching and/or listening to COVID-19 information (VI) is a good predictor of the mediating variable of fear of COVID-19 ($\beta = 0.75$; $t = 3.77$, $p < 0.001^{**}$); in turn, this has a predictive effect on mental health ($\beta = -0.24$; $t = -13.57$, $p < 0.001^{**}$). As for the indirect effect, it is shown that in the confidence interval zero is not included ($B = -0.18$, $SE = 0.05$; 95% CI [-0.29, -0.08]), so it can be argued that fear of COVID-19 has a mediating role on the number of hours watching and/or listening to COVID-19 information and mental health.

On the other hand, it was observed that the number of hours watching and/or listening to COVID-19 information did not have a direct positive effect upon mental health ($\beta = -0.10$; $t = -1.184$, $p = 0.23$). However, the total effect of the mediator on the independent and dependent variables was considered ($\beta = -0.24$; $t = -13.57$, $p < 0.001^{**}$).

DISCUSSION

Mental health has been affected by the COVID-19 pandemic ^(4,5), a situation that deserves the design of public policies to guarantee mental health as one of the rights of every human being. Its attention implies gathering scientific evidence regarding its predictor variables. For this reason, we investigated the mediating role of fear of COVID-19 in the relationship between exposure to news about COVID-19 and mental health in the Peruvian population.

The most relevant finding of the study allowed testing the hypothesis that fear of COVID-19 acts as a mediator between exposure to news about COVID-19 and mental health. This indicates that watching or listening to news about COVID-19 in the

media activates fear of COVID -19 at the emotional level and somatic expressions, which in turn is a negative predictor of mental health; that is, it affects overall well-being and may manifest psychopathological symptoms. However, according to an antecedent, fear and perceived knowledge about COVID -19 mediate the relationship between media exposure and preventive behaviors against COVID -19 ⁽¹⁷⁾. This indicates that fear prepares the organism for protection ⁽²⁸⁾ through preventive behaviors; although constant negative affection can generate complications ⁽²¹⁾, which would explain the reported finding.

In the present study, the effect found of fear as a mediator was total. Therefore, less exposure to the media may be favorable in a scenario of death and suffering in dramatic conditions with an important emotional charge ⁽²¹⁾. Besides, the following factors are added to this scenario: the presence of psychopathological symptoms, as a result of social distancing and confinement, ⁽⁴⁾ one's own state of health or that of family or friends, being in charge of family members infected by covid-19, the uncertainty of not knowing how long the pandemic will last ⁽²⁹⁾ and the economic crisis experienced as a consequence of the pandemic, especially in a country with high informality.

Therefore, exposure to news that generates anxiety and fear increases indirect victimization, referring to the possibility of being the next victim of the virus ⁽²⁹⁾. Thus, fear of covid-19 is negatively related to mental health with a large effect size. Fear is linked to uncertainty and the perceived risk of disease transmission -not exclusive to older people or those with previous illnesses- as well as to the experience of having lost a family member or other related persons ⁽³⁰⁾. The presence of this emotional reaction, which is one of the most closely linked to the pandemic ^(6, 8), is directly related to the presence of mental health problems ⁽²³⁾ and inversely to the quality of life ⁽²⁴⁾.

Although previous research indicates that the media not only play an informative role, but are also capable of instilling fear in people exposed to news about COVID -19 ^(12, 19) by disseminating inaccurate and unfounded information ⁽¹⁷⁾. In the present study, the relationship between exposure to news about COVID-19 and fear of COVID-19 was of small effect size. This finding can be explained based on the fact that the emotional state upon exposure to news depends on the content that is disseminated⁽²⁵⁾ as well as on the development of informational competences, which involve critically analyze the content of the information as well as the source from which it originates ⁽¹⁶⁾.

The study did not find sufficient evidence for a relationship between exposure to COVID-19 news and mental health. As previously mentioned, the relationship between the two variables is entirely mediated by fear of COVID-19. Although there is evidence that those who share information about COVID-19 experience greater negative affect, anxiety, and stress ⁽²⁵⁾ and that those who follow news about the pandemic are more vulnerable to mental health conditions ⁽¹³⁾, the effects vary according to the content of the information disseminated ⁽²⁵⁾.

The dissemination of information about the seriousness of the disease and hospital reports was associated with greater negative affect and depression, whereas the information provided by specialists on knowledge of the disease and prevention measures was associated with less depression, positive affectivity ⁽²⁵⁾ and better mental health ⁽¹⁴⁾. This aspect is of relevance to be considered in the design of public

policies to address mental health problems, especially in a country -such as Peru- where the low investment in health and the pandemic have revealed the individual and collective vulnerability of the population.

One of the limitations of the study refers to the non-experimental explanatory design, which lacks the control of all the strange variables that guarantee the internal validity of the investigation. In addition, as it was cross-sectional, it was not possible to record changes over time, from the time when COVID-19 was an outbreak and then a pandemic, in a first, second or beginning of a third wave.

Another aspect of interest is the time of data gathering, where the absolute majority of the participants had not been infected with COVID-19. However, it would be important to replicate the study considering that the scenario is changing after an alarming increase in the number of infections and deaths.

A limiting aspect of the study is that the sample was not representative of the three geographic regions of Peru. While it is true that it came from 6 departments of Peru (out of a total of 24), 5 of them were from the coast, 1 from the highlands and none from the jungle. In addition, the average age of the participants was 30.13 years (SD = 10.31). Therefore, future studies could consider the analysis by age group and carry out the study with a representative sample of the entire Peruvian population.

Another limitation was not having analyzed the sex variable, considering that most of the participants were women. The analysis by sex would be relevant in future research, considering the antecedent that refers to women being the ones who regulate their fear better, compared to men ⁽¹²⁾.

CONCLUSIONS

In conclusion, it is worth highlighting the importance of the traditional media and the Internet in the dissemination of information that not only contributes to the knowledge of the disease and the adoption of measures to prevent its infection, but also has an impact on the generation of fear, which affects the mental health of the population, which is affected by the consequences of the virus on themselves or their families or by the quarantine measures imposed. Therefore, it would be advisable to avoid infodemia by implementing public policies that articulate the participation of educational, scientific and cultural institutions to achieve information literacy ⁽¹⁶⁾, as well as to promote the critical reception of information, recognize reliable sources and educate the public on the importance of avoiding the dissemination of questionable information on the Internet that affects the community.

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