



ORIGINAL ARTICLE

Emotional perception of COVID-19 in Mexico: Comparative study between phase 1, phase 2 and the communication media

Percepción emocional del COVID-19 en México: Estudio comparación entre la fase 1, fase 2 y medios de información

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ABSTRACT

Background: Since the first COVID-19 cases in Mexico there have been a variety of emotional responses which have in common fear and stress. The emotional impact of COVID-19 is builded in some way because the information flooding parallel to the pandemic phases, the transition between them and illness perception. The aim of the present work was to compare the perception of COVID-19 between phase 1 and 2 of the pandemic and between the information media used to inform themselves in the Mexican population. **Methods:** Considering a chain sampling, a comparative study was carried out in which an evaluation battery was disseminated through email and social networks, which was answered by 1560 participants. **Results:** The concern about the consequences of COVID-19 and its emotional impact increased when going from phase 1 to phase 2 of the pandemic. In addition, it was identified that the emotional impact was greater in those who reported through Facebook® and television. **Conclusions:** The pandemic will have a progressive emotional impact as its phases progress and the importance of informing oneself in adequate means to prevent emotional consequences.

Key words: COVID-19; Illness perception; Emotional perception; Common Sense Model.

RESUMEN

Introducción: Desde el registro de los primeros casos de COVID-19 en México, se han derivado una serie de respuestas emocionales caracterizadas por miedo y estrés. Dicho impacto emocional se debe en gran medida a la inundación de información paralela a las fases de la pandemia y la transición entre ellas y la percepción que los individuos tienen de la enfermedad. El objetivo del presente trabajo fue comparar la percepción del COVID-19 entre la fase 1 y 2 de la pandemia y entre los medios de información usados para informarse en población mexicana. **Método:** Considerando un

muestreo en cadena, se realizó un estudio comparativo en el que se diseminó por medio de correo electrónico y redes sociales una batería de evaluación que respondieron 1560 participantes. **Resultados:** La preocupación por las consecuencias del COVID-19 y su impacto emocional incrementaron al pasar de la fase 1 a la fase 2 de la pandemia. Además, se identificó que el impacto emocional fue mayor en quienes se informaron a través de Facebook® y televisión. **Conclusiones:** La pandemia tendrá un impacto emocional progresivo en medida en que avancen sus fases y en la importancia de informarse en medios adecuados para prevenir consecuencias emocionales.

Palabras clave: COVID-19; Percepción de enfermedad; Percepción emocional; Modelo de Sentido Común.

BACKGROUND

In December 2019, an increase in the number of pneumonia cases was reported in China, which spread locally to other parts of the region and subsequently to other parts of the world (Dong et al., 2020; Gandhi, Lynch, & del Rio, 2020; Veity et al., 2020). A new coronavirus was identified from the analysis of patients presenting with pneumonia, which was later named SARS-CoV-2 causing COVID-19 disease (World Health Organization [WHO], 2020). The main symptoms of this new virus are fever, cough, dyspnea, loss of taste or smell and in some cases muscle, head and throat pain, and more severely, hyperinflammation, cytokine storm and elevated biomarkers of cardiac injury (Cascella, Rajnik, Cuomo, Dulebohn, & Di Napoli, 2020; Centers for Disease Control and Prevention [CDC], 2020a; Dong et al., 2020; Veity et al., 2020).

COVID-19 disease, both in Mexico and in other countries, has represented a challenge at different levels and dimensions, for example; health, medical, educational, social, economic and of course emotional (Douglas, Katikireddi, Taulbut, McKee, & McCartney, 2020; Holmes et al., 2020; Lai et al., 2020; Lazcano-Ponce & Alpuche-Aranda, 2020; Mukhtar, 2020).

In relation to this last aspect, it is known that the emotional impact of a pandemic such as COVID-19 will be determined by the evaluation made of the event, in other words, it will be a function of the way in which the threat faced is perceived (Leventhal, Meyer, & Nerenz, 1980; Taylor, 2019). Authors such as Rubin, Potts, and Michie (2010) suggest that the perception of a pandemic varies over time, mainly because of the concern generated by its consequences and evidently the fear of contracting the disease. In addition, it is known that there are groups with a higher risk of perceiving the pandemic as more threatening, among which are: women, people who are responsible for the care of others (such as children or older adults) and individuals with a lower level of education (Molero-Jurado, Herrera-Peco, Pérez-Fuentes, & Gázquez-Linares, 2020).

Another element that favors an adverse emotional impact and excessive concern about the consequences of the pandemic is the exposure to various sources of information (Rubin et al., 2010; Taylor, 2019) that are often erroneous, uncorroborated and favor misinformation, as well as a poorly functioning perception of the disease (Garfin, Silver, & Holman, 2020; Taylor, 2019). An individual who is exposed to such information on television and social networks can change their way of perceiving the disease or the situation they are living (e.g., social confinement) or orient them to perform risky or maladaptive behaviors and consequently to experience negative emotions (Sweeny, Melnyk, Miller, & Shepperd, 2010), hence the relevance of being in contact with reliable sources of information.

Thus, considering that the illness perception, the exposure to

information and the experiences of individuals are paramount in the process of adaptation to a pandemic, the Common Sense Model of Illness Perception (CSM) (Leventhal et al., 1980) can explain how COVID-19 is perceived, what it represents, and the emotional impact it is having on people.

According to the CSM, an individual perceives a health threat in two dimensions, cognitive and emotional perception (Broadbent et al., 2006; Leventhal et al., 1980; Moss-Morris et al., 2002), these are further divided into: 1) Identity: perceptual experience of the illness, type, place and amount of symptoms or somatic sensations associated with it; 2) Timeline: perceived duration of the illness (acute, chronic or cyclical); 3) Causes: perceived reasons as to what caused the illness; 4) Consequences: perceived and experienced repercussions in different areas of life; 5) Personal control: perceived ability to control the illness; 6) Treatment control: perceived impact that the treatment will have on the condition; 7) Coherence: clarity with which the illness is understood; and 8) Emotional perception: perception of emotional repercussions associated with the illness.

In order to evaluate each of the elements of the perceptual stage of the CSM, in the context of COVID-19, measurement instruments are available such as the Brief Illness Perception Questionnaire (BIPQ, Broadbent et al., 2006), recently adapted in Spanish (Molero-Jurado et al., 2020; Pérez-Fuentes et al., 2020) and the Illness Perception Questionnaire-Revised (IPQ-R, Moss-Morris et al., 2002), used in Mexico, with reliability and validity data (Lugo-González, Fernández-Vega, Reynoso-Erazo, Becerra-Gálvez, & Pérez-Bautista, 2020).

Given the psychosocial impact that the COVID-19 pandemic is generating in Mexico and other parts of the world, as well as its correlation with exposure to various media outlets (Brooks et al., 2020; Douglas et al., 2020; Holmes et al., 2020; Lai et al., 2020; Pérez-Gay Juárez et al., 2020), an assessment of the perception of COVID-19 and its emotional impact is necessary; therefore, the aim of the present study was to compare the perception of COVID-19 disease between phase 1 and 2 of the pandemic and depending on the media outlets used by Mexican adolescents and adults.

METHOD

Design

In accordance with Méndez, Namihira, Moreno and Sosa (2001), a descriptive and comparative study was carried out.

Participants

Considering a chain or network sampling (Hernández-Sampieri, Fernández-Collado, & Baptista-Lucio, 2014), 1,560 adolescents and adults from different states of the Mexican Republic with an average age of 31.88 years (SD=11.045, Range= 15-77 years)

were invited to participate on a voluntary basis. Most of the participants were from Mexico City, 597 (38.3%) and from the State of Mexico, 553 (35.4%), with 410 (26.3%) from different states of central, southern and northern Mexico. Of the total, 885 (37.5%) were single, 340 (31.1%) were married, 239 (15.3%) lived in free union, the rest 96 (16.1%) in different forms of cohabitation. Regarding educational level, 1106 (70.9%) had a bachelor's degree, 207 (13.3%) a high school, 156 (10%) a post-graduate degree and the rest, 91 (5.8%), a technical, secondary or elementary school career. Regarding their occupation, 535 (34.3%) reported being professionals, 382 (24.5%) students, 359 (23%) employed, 93 (6%) unemployed, 70 (4.5%) traders, 69 (4.4%) working at home and 52 (3.3%) engaged in another activity.

Regarding other characteristics, 728 (46.7%) reported being informed about COVID-19 via Facebook® and television, 317 (20.3%) only via television, 306 (19.6%) only via Facebook® and 209 (13.4%) via other media such as Twitter®, WhatsApp®, YouTube® or newspaper.

Instruments

Sociodemographic data questionnaire: Set of items to gather information on residence, family, educational, occupational and media use data, among others.

Illness Perception Questionnaire Revised-COVID-19 (IPQ-R; Lugo-González et al., 2020): instrument to assess the cognitive and emotional perception of COVID-19 in Mexico, which consists of an identity assessment with a list of 12 symptoms associated with COVID-19, as well as 16 items corresponding to the subdimensions of consequences (seven items), personal control (three items) and emotional perception (six items). The scale has a four-point Likert-type response format ranging from strongly disagree to strongly agree, and has a Cronbach's alpha reliability of 0.88.

Procedure

The assessment instrument was developed in Google-Forms Online® and was disseminated via email and social networks such as Facebook® and WhatsApp® from March 22 through April 4, one day prior to the official start of the National Healthy Distance Day determined by the Mexican Ministry of Health (SSa). This evaluation was active during the last week of phase 1 and the first week of phase 2 of the COVID-19 pandemic decreed by the SSa in Mexico.

Analysis of results

The statistical program SPSS version 24 for Windows was used and normality analyses of the data were performed to determine the type of statistic to be used for comparison of the variables. Given the sample size and the analysis program, the Shapiro-Wilk (W) test was used in accordance with the recommendations of Pedrosa, Juarros, Robles, Basteiro and García (2015). Subsequently, descriptive analyses (measures of dispersion and central tendency) were performed for the sociodemographic and COVID-19 perception variables.

The comparative analysis was carried out by grouping the participants who responded to the evaluation in phase 1 and those

who responded in phase 2, in addition, variables were constructed according to the media through which the participants reported being informed, being: Facebook®, Television, Facebook® and Television and other media (Twitter®, WhatsApp®, YouTube® or newspaper). The Mann-Whitney U test was used for the first contrast and the Kruskal-Wallis analysis of variance test with post hoc analysis for the second, considering a $p < .05$ for significant differences between groups. In addition, the effect size (Rosenthal's r) was calculated with the following cut-off points: small effect (0.1 to < 0.3); moderate effect (0.3 to < 0.5); and large effect (≥ 0.5) (Cohen, 1988), carrying out the following equation: $(r = z / \sqrt{n_1 + n_2})$ (Field, 2009).

Ethical aspects

Participants could answer the form after accepting the information under their consent and due to the global problem of the COVID-19 pandemic, no elements of inclusion or exclusion were considered. The project was evaluated and accepted by the research ethics committee of the National Institute of Respiratory Diseases (INER) in Mexico City, under the following registration number assigned by the committee: S02-20.

RESULTS

Descriptive analysis

The data in the normality tests showed that the subdimensions of illness perception did not behave normally ($W = 0.860$ and 0.976 , $gI = 1560$; $p < 0.01$). Regarding the perception of illness, it was observed that participants identified on average 7 out of 12 main symptoms associated with COVID-19, which were: fever, dyspnea, dry cough, headache, sore throat, tiredness, and muscle and joint pain.

Perceived consequences is one of the areas where most discomfort is being generated, since the evaluation focuses on the perceived impact that the disease will have in terms of time, problems in understanding and controlling COVID-19, as well as the effects on the life of the individuals in general (family, economy and emotional stability); regarding this last aspect, the impact is linked to experiences of worry, anxiety, anger and changes in mood (depression) (see Table 1). However, despite the emotional impact and perceived consequences of COVID-19, participants consider that they have a high degree of personal control to avoid becoming infected with the disease.

Comparative analysis

Once the participants who responded during each phase were grouped together, 972 participants who responded during the first phase and 580 during the second phase were identified (see Table 2).

When contrasts were made between the phase of the pandemic and the subdimensions of perception of the COVID-19, it was identified that the persons who responded to the evaluation during phase 2 (first week) scored higher in the subscales of perceived consequences and emotional perception, finding statistically significant differences, although with a fairly small effect size.

Regarding the emotional impact derived from exposure to different media (see Table 3), it was identified that in each of the

media categories there is a variation in the emotional perception, but not in the other subdimensions of the CSM. However, statistically significant differences are only found between participants who reported being informed via Facebook[®] and television and other media (Twitter[®], WhatsApp[®], YouTube[®] or newspaper). Despite this, the effect of the medium of information on emotional perception is very small.

DISCUSSION

It was corroborated that the perception of consequences, of various kinds, associated with COVID-19 and the emotional impact tend to increase progressively and in function of the pandemic's progress. In addition, the effect of exposure to media and social networks upon the experience of worry, anxiety, sadness and anger was evidenced.

In the case of the perception of consequences, it is known that this is one of the elements that has the greatest impact on people's concerns, since the greater the social distancing, the greater the emotional impact and the greater the concerns, and prevention measures will tend not to be applied as the pandemic continues to advance (Cava, Fay, Beanlands, McCay, & Wignall, 2005; Day, Park, Madras, Gumel, & Wu, 2006; Sandín, Valiente, García-Escalera, & Chorot, 2020). In this context, it should be mentioned that in Mexico the recommendations of social dis-

tancing were advanced in order to favor a gradual transmission, which resulted in an increase in the number of days determined for quarantine.

As mentioned in the description of the procedure, the present evaluation was conducted during the initial stages of the pandemic in Mexico (one week for each phase of the pandemic) and despite this, the evaluation was able to identify changes in the perceived consequences and emotional impact of COVID-19 (emotional perception). Data consistent with the present results are provided by Wang et al. (2020) who identified that in the initial phase of COVID-19 in China, a significant number of people considered the psychological impact of the pandemic to have been moderate to severe, in addition to reporting significant symptoms of anxiety and worry about the consequences of COVID-19.

Similarly, a negative evolution (after pandemic and social distancing time phases) of worries and emotional impact had already been identified during the SARS virus outbreak in 2003 (Cava et al., 2005; Day et al., 2006) and the 2009 H1N1 influenza outbreak (Rubin et al., 2010) in studies of emotional appraisal and COVID-19 (Alyami, Henning, Krägeloh, & Alyami, 2020; Lee, 2020; Pérez-Fuentes et al., 2020; Pérez-Gay Juárez et al., 2020; Sandín et al., 2020) and is reported in the various reviews currently conducted on the psychological effects of COVID-19 and

Table 1. Descriptive results on perception of COVID-19.

Instrument	CSM subdimensions	Avg	Mdn	IR	Minimum	Máximum
IPQ-R-COVID19	Identity	7.08	7	3	0	12
	Consequences	19.14	20	5	7	28
	Personal control	9.08	9	3	3	12
	Emotional perception	14.38	14	7	6	24

Note: Avg: Average, Mdn: Median. IR: Interquartile range.

Table 2. Comparison of COVID-19 perception between pandemic phase 1 and 2.

Instrument	CSM subdimensions	Phase 1 (n= 972)		Phase 2 (n= 588)		Z	p	r
		Mdn	IR	Mdn	IR			
IPQ-R-COVID19	Identity	7	2	7	3	-0.282	0.778	0.02
	Consequences	19	5	20	6	-2.709	0.007	0.06
	Personal control	9	3	9	3	-0.41	0.682	0.24
	Emotional perception	14	6	15	7	-2.056	0.04	0.05

Note: Mdn: Median. IR: Interquartile range. r: Rosenthal r effect size

Table 3. Comparison of the perception of COVID-19 and media outlets.

Variable	Media outlets	Mdn	IR	X ²	gl	p	Post hoc	Z	r
Emotional perception	1. Facebook [®]	14.5	7	8.009	3	.046*	3 > 4**	-2.8	0.09
	2. Television	14	6						
	3. Facebook [®] and television	15	7						
	4. Others	13	7						

Note: Mdn: Median. IR: Interquartile range. r: Rosenthal r effect size. ** additional significance: .029

other infectious diseases (Brooks et al., 2020; Mukhtar, 2020; Taylor, 2019).

Another element to discuss is the influence of the mass media and social networks on the emotional impact of the disease. In the present investigation it was identified that exposure to Facebook® and television had effects on the emotional perception of COVID-19 and given that the effect was very small, it can be hypothesized that as the pandemic progresses, the impact will be greater, not only because of the fear of what may happen but also because as the pandemic progresses, its after-effects are gradually experienced. Similarly, during the H1N1 influenza outbreak of 2009 (Rubin et al., 2010), the Ebola outbreak of 2014 and other traumatic events experienced in the United States (Garfin et al., 2020) have shown that the report of concerns and emotional impact was increasing as people were more exposed to the media and the news had adverse content (pandemic declaration and resurgence). More recently, it was found that in the Spanish population, mass media exposure is one of the most important predictors of experiencing a negative emotional impact, in addition to concern about getting sick and dying from COVID-19, lack of basic commodities, social distancing, as well as work and economic stability (Sandín et al., 2020). As mentioned above, excessive exposure to mass media can encourage people to come into contact with misinformation, which negatively impacts people's attitudes and perceptions towards the disease, decreases the perception of vulnerability of contracting the disease, favors non-functional behaviors such as excessive purchase of commodities, practice of exposure behaviors, among others (Brooks et al., 2020; Garfi et al., 2020; Holmes et al., 2020; Mukhtar, 2020; Sweeny et al., 2010; Zarocostas, 2020); hence the importance of information fasting and the practice of behaviors incompatible with excessive exposure to mass media and social networks.

The results also found that the participants had a high perception of self-control to prevent the spread of COVID-19, a variable that may also function as a protective element at the time of the pandemic. In fact, current evidence suggests that variables of this type are linked to positive emotional effects and the strengthening of these perceptual aspects is central to the psychological and psychiatric treatments proposed during the COVID-19 pandemic (Douglas et al., 2020; Duan & Zhu, 2020; Holmes et al., 2020; Mukhtar, 2020; Sandín et al., 2020; Wang et al., 2020).

Finally, it is clear that the interphase transition processes in a pandemic, by its simple domination, due to the lack of information or the use of erroneous information will favor its perception as serious and will have repercussions at an emotional level. It is important to remember that not everything is negative regarding exposure to social networks and television. In the context of Mexico, educational and outreach activities were programmed; in fact, specialized information and recommendations for dealing with the pandemic in a functional manner were disseminated through social networks. Therefore, the problem is not the information channel but the use given to the channel and, of course, the type of information consulted.

In addition, since phase 1 of the pandemic, the SSa of Mexico gave daily informative conferences at seven o'clock at night,

where decision-makers reported on the progress of the disease, number of infected, number of deaths, and various socio-demographic and clinical risk characteristics of the people who became ill and died. In this context, it will be important to have evidence of the effect of this type of communications, of the role of health experts as models offering information and of the preference of information sources by people (official or unofficial).

On the other hand, the relevance and usefulness of the MSCPE as a theoretical constitution to describe and explain the perception that people have about COVID-19 is taken up again. It is important to remember that the way of perceiving the threat will be different for each person and not necessarily linked to the criteria of specialists (Diefenbach & Leventhal, 1996; Leventhal et al., 1980). From the MSCPE it is considered that each person is in a continuous process of adaptation since each individual will understand the disease based on his or her perception, this perception will be modified over time, so it will influence in a constant and changing way the emotional repercussions experienced (Diefenbach & Leventhal, 1996).

The main limitations of the study would be linked, on one side, with the evaluation by digital means since they can be considered inaccurate or methods where the self-report of the evaluated variables is overestimated, despite this, there is also evidence about their usefulness, functionality and equivalence with traditional forms of evaluation (Stirratt et al. 2015; Pérez-Bautista & Lugo-González, 2017; Weigold, Weigold, & Russell, 2013).

Another important issue is the type of sampling, given the distribution of the sample, where the majority of the participants were women, with a high level of education. However, these data correspond with several studies worldwide regarding COVID-19, where women participating in the studies correspond to the largest proportion (Dai, Hu, Xiong, Qiu, & Yuan., 2020; Molero-Jurado et al., 2020; Shacham et al., 2020).

Finally, it is suggested for future research to account for the transition between phase two, three and the possibility of a resurgence, regarding the impact at the emotional level, incorporating what the information implies in the process of adaptation to the new normality.

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Isaías Vicente Lugo-González: Research, Formal analysis, Draft-original writing and Project management.

Yuma Yoaly Pérez-Bautista: Conceptualization, Research, Formal analysis and Draft-original writing.

Ana Leticia Becerra-Gálvez: Research, Revision-editing writing.

Margarita Fernández-Vega: Research and Resources.

Leonardo Reynoso-Erazo: Research, Revision-Editing Writing.

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CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest.

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REVIEW PROCESS

This study has been peer-reviewed and double-blinded.

DATA AVAILABILITY STATEMENT

The database is attached to the article as a supplementary material 1.

DISCLAIMER

The authors are responsible for all statements made in this article.

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