Fear of COVID-19 Scale for Hospital Staff in Regional Hospitals in Mexico: A Survey Study

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Abstract

The presence of COVID-19 has had psychological consequences among health personnel; these include fear, anxiety, and depression. In the current study, we used the Fear of COVID-19 Scale (FCV-19S) to assess the response to fear within health staff in Mexico. This was a cross-sectional survey study in which we administered the FCV-19S to hospital staff. A total of 2,860 participants—1,641 female and 1,218 male personnel from three hospitals—were included in the study. We found a global FCV-19S mean score of 19.3 ± 6.9, with a significant difference in scores for women and men. There was a high correlation between items 3, 5, 6, and 7, suggesting that these items could indicate the physiological responses to fear, and a high correlation between items 1, 2, and 4, suggesting these items could represent the emotional responses to fear. Our survey shows a significantly higher level of fear in nursing and administrative personnel, which may be explained by the nursing staff being in close contact with infected patients and the administrative staff lacking understanding of the possible implications of the infection, compared with non-clinical hospital personnel. The FCV-19S showed validity and reliability in our population to assess fear in response to COVID-19. Our results are consistent with those of other researchers.

Introduction

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV–2) virus is responsible for the current coronavirus pandemic, named COVID–19 by the WHO. A pandemic changes the entire environment of a population, creating psychological issues of stigmatization, fear, and discrimination, fueled by a lack of accurate and comprehensive information for the entire population (Rajkumar, 2020).

One of the most critical challenges in dealing with the pandemic is controlling the social response—the fear caused by the pandemic—because it exacerbates the damage caused by the disease itself (Guan et al., 2020). The first research on the effect of this outbreak on the population is from China. Wang and collaborators published a study of 1,210 people, using the DASS–21 scale to identify and screen for symptoms of depression, anxiety and stress, and the IES-R scale, which evaluates the impact of catastrophic events on the population and the development of post-traumatic stress syndrome. Among its results, the prevalence of 6.5% of moderate to severe depressive symptoms, 28.8% mild to severe anxiety symptoms, and 8.1% mild to severe stress stand out (Forbes, 2020). In China, this effect has also been studied in patients in isolation, medical and nursing personnel, and the general public, with the presence of high levels of stress and anxiety being the common denominator (Li et al., 2020; Lu, Wang, Lin, & Li, 2020; Xiao, Zhang, Kong, Li, & Yang, 2020).

While the general population is affected by fear, mandatory confinement, and the stress that accompanies this pandemic, health personnel in the front line of care also have challenges to face. The absence of protective equipment, long working hours, the isolation of their families and loved ones, and the fear of contagion has translated into a high frequency of depression, suicidal ideation, suicide attempts, anxiety, substance abuse, and labor burnout (Lai et al., 2020; Mamun & Griffiths, 2020; Pfefferbaum & North, 2020).

In response to the current contingency and its emotional repercussions, medical researchers around the world have devised ways to measure the impact using scales. One example is Kwasi et al., who, in a study of 717 Iranians, developed the Fear of COVID–19 Scale (FCV–19S). This scale was based on an extensive review of existing fear scales, expert evaluations, and interviews with participants. Numerous psychometric tests were carried out to determine its validity and reliability properties. After panel review and the corrected item-total correlation test, seven items with acceptable corrected item-total correlations were retained and further confirmed by significant and strong factor loads. The FCV–19S is a seven-item scale with robust psychometric properties. It is reliable and valid in

assessing fear of COVID–19 among the general population, and will also be useful in calming COVID–19 fears among individuals (John Hopkins University, 2020; Zhou et al., 2020).

Because the pandemic is an emerging problem, specific data on the impact on the mental health of health workers, and how it could affect the care and management of patients with COVID–19, is not yet available in our community. We believe it is essential to analyze the different attitudes of health personnel working in these conditions.

Methods

Aims

The aims were to identify the level of fear of COVID–19 in hospital staff working in the region of Guadalajara, and determine any difference in level according to gender, age group, working category, hospital unit, and work shift.

Design

This was a cross-sectional survey study that evaluated the fear of COVID–19 using the FCV–19S (Ahorsu et al., 2020). In addition, we asked about the participants' gender, age, working category, hospital unit, and work shift.

Instrument

The FCV–19S is a questionnaire that evaluates fear of the global pandemic caused by the SARS-CoV–2. The translation method described by the WHO was employed (Reznik, Gritsenko, Konstantinov, Khamenka, & Isralowitz, 2020; World Health Organization, 2010). The instrument consists of seven items, each with a five-point Likert scale of options. The participant must choose the options that best represent their perception about the statements presented. The maximum possible total is 35 points.

Participants

A total of 2,930 participants were surveyed during April and May 2020. Physical copies of the survey were distributed to hospital staff of three different hospitals. Inclusion criteria were being at least 18 years old and willing to participate in the study. The surveys were answered anonymously.

Sample Size

The sample size was calculated using StatCalc from Epi-info (CDC, Atlanta, GA, USA), based on the total number of employees in the state delegation (34, 327). The hospitals surveyed had a total population of 9,720. Inferring that the fear prevalence perceived by the hospital staff would be 20%, with an error of 5% and a confidence level of 99.99%, we calculated the minimum necessary number of surveys to be 942. Our final sample included 2,930 employees.

Data Analysis

The data were analyzed using SPSS software (version 23.0 for Windows; IBM SPSS, Armonk, NY, USA). Descriptive analyses included proportions, means, and standard deviations. The inferential analysis of categorical variables was performed using the chi-squared test, Fisher's exact probability test or variance analysis as appropriate. Student's *t* test was used to analyze continuous variables. The internal reliability of the scale was good, with Cronbach's alpha of 0.902. The FCV–19S items were analyzed using an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA) to determine the adequacy of the model within the sample. A probability level of $p < .05$ was considered significant.

Results

Of the 2,930 surveys, 70 were excluded for being incomplete. A total of 2,860 participants were included in the study. The sample's demographic information can be found in Table I.

The global FCV–19S mean score was 19.3 6.9 (median = 19). An independent-samples *t* test was conducted to compare the SC–19S scores between women (19.81 6.77) and men (18.71 7.19), and found a significant difference ($t(2858) = -4.20$, $p < .001$). Additionally, an independent-samples *t* test was conducted to compare the fear scores in both sexes by each of the scale's items; the mean scores and differences can be found in Table II.

Across work categories, the group with the highest fear score was Nursing Personnel (NP) (19.5 6.8), followed by Administrative Personnel (AP) (19.39 7.5), Medical Personnel (MP) (19.35 6.8), and Hospital personnel in direct contact with COVID–19 (HP) (18.9 6.9). A one-way between-groups ANOVA was conducted to compare the fear scores, but did not find any significant effect of the four work categories on fear ($F(3, 2856) = .866$, $p > 0.5$). Each scale item's individual score by work category can be found in Table III.

Finally, one-way between-groups ANOVA were conducted to compare the fear scores across work shifts and hospital units. There was no significant effect of work shift on fear score ($F(3, 2856) = .400$, $p > 0.5$). However, there was a significant effect of hospital units on fear score ($F(2, 2856) = 10.40$, $p < 0.001$). Post hoc comparisons using the Tukey honestly significant difference (HSD) test indicated that the mean scores for HGR 110 (19.67 6.95) were significantly different from those of CMNO (18.29 6.99). However, the scores of HGR 46 (18.19 5.34) did not significantly differ from those of other hospital units.

EFA was conducted for the seven items using principal components extraction and varimax rotation. The model showed a Kaiser-Meyer-Olkin test (KMO) measure of sampling adequacy of.904. We found a high correlation between items 3, 5, 6, and 7, suggesting that these items could represent the physiological responses to fear, and a high correlation between items 1, 2, and 4, suggesting these items could represent the emotional responses to fear.

CFA was conducted on the seven items of the FCV–19S. The item loadings ranged from.64 to.88. The model fit indexes were: ² (7) = 29.40, $p < .001$; CFI =.99; TLI =.99; RMSEA =.03; SRMR =.010; AIC = 71.40. We performed a model dividing the items into two factors: physical and emotional responses. The item loadings for the physical responses ranged from.79 to.92, while the emotional responses item loadings ranged from.72 to.80. The fit indexes of the model were: ² (6) = 75.5, $p < .001$; CFI =.99; TLI =.97; RMSEA =.06; SRMR =.013; AIC = 119.52. The EFA and CFA component correlations and factor loadings can be found in Table IV. Analyzing these new categories, we found that the mean physiological response score of the sample was 2.52 1.06, while the mean score for emotional responses was 3.08 1.07.

An independent samples *t* test was conducted to compare the physiological responses to fear between women (3.14 1.04) and men (2.99 1.10), and found a significant difference (t(2858) = −3.78, p <.001). A significant difference between women (2.59 1.03) and men (2.43 1.10) was also found for psychological reactions to fear (t(2858) = −4.01, p <.001).

Similar to the results previously presented, one-way between-groups ANOVA tests were conducted to compare the fear reactions between work categories, hospital units, and work shifts. There were no significant effects of the four work categories and working shifts on fear, but we found statistical differences in the physiological (F(2, 2856) = 13.96, p <.001) and emotional (F(2, 2856) = 4.50, p <.05) response to fear scores within the hospital units.

Post hoc comparisons using the Tukey HSD test indicated that the mean scores for physiological responses to fear from HGR 110 (2.58 1.07) were significantly different from CMNO (2.34 1.05), but the scores of HGR 46 (2.19.84) did not significantly differ from those of other hospital units. For the emotional responses to fear, the mean scores from HGR 110 (3.11 1.06) were significantly different from CMNO (2.97 1.09), but the HGR 46 scores (3.14.75) did not significantly differ from those of other hospital units.

Discussion

Currently, the COVID–19 pandemic is arguably the most significant health problem we are facing globally. Most of the efforts that have been made in research to date, by both public and private organizations, have explored the pathophysiological effects of the virus on health or sought therapeutic alternatives so that the health personnel at the forefront of the epidemic have the best tools to face the problem. The effects of the virus on the mental health of our workers should not be overlooked, yet comparatively few authors have addressed the problem that the pandemic represents for public health and the mental health of our workers.

Ahorsu et al. developed a scale to evaluate fear towards the COVID–19 pandemic and its effects on the psychological mental state of the Iranian population. As this inventory showed a good internal consistency, it was used in multiple studies to explore fear in different cultures and countries (Ahorsu et al., 2020; Reznik et al., 2020; Sakib et al., 2020; Satici, Gocet-Tekin, Deniz, & Satici, 2020; Soraci et al., 2020), although the problem has not yet been addressed in Mexico.

Soraci et al.'s online survey in Italy, one of the most affected countries, administered the Italian versions of the FCV–19S, the Hospital Anxiety and Depression Scale (HADS), and the Severity Measure for Specific Phobia–Adult (SMSP-A) to 249 participants (Soraci et al., 2020). Our results differ considerably from Soraci et al.'s; however, Soraci et al.'s sample did not represent an equal distribution of population—92% (229 out of 249) of their participants were female—while our sample comprised 57.4% (1,641) females and 42.6% (1,219) males. Although no formal diagnoses concerning mood disorders were obtained in Soraci et al.'s study, scores on the FCV–19S were significantly and positively related to scores assessing depression and anxiety (HADS) and the severity of the specific phobia (SMSP-A). The validity of the FCV–19S was supported by significant and positive correlations with the HADS and SMSP-A (Soraci et al., 2020).

Like Soraci et al., Satici et al. adapted the FCV–19S to Turkish and applied it to 1,304 participants using online surveys. Data analysis revealed significant positive correlations between the FCV–19S and depression, anxiety, and stress. The fear of COVID–19 was found to be associated with psychological distress and life satisfaction (Satici et al., 2020). Correspondingly, Reznik et al. (2020) applied the FCV–19S to a sample of 850 participants from Russia

and Belarus. Their reported mean fear score was lower than in our sample (17.2 vs. 19.2), but both studies reported higher levels of fear in female than male participants.

Our study had the second biggest population, with a total sample of 2,860 participants, and as far as we know, this is the first time the FCV–19S has been applied in a hospital setting and as a direct personal questionnaire, unlike other studies where online-based surveys were used. Furthermore, we decided to analyze the relationship between the different job categories and their levels of fear. Reznik et al. (2020) proposed a division of factors within the scale, and found items 3, 6, and 7 were highly correlated and could represent the physiological responses to COVID–19, while items 1, 2, 4, and 5 described the emotional responses to COVID–19. We found slightly different correlations within factors: Items 3, 5, 6, and 7 showed higher correlation values, which could represent the physiological responses to fear as described by Reznik, and items 1, 2, and 4 were highly correlated, representing the emotional responses to fear. The single factor model proves that the inventory is useful when exploring the fear prevalence in the general and medical population. Our analysis presented similar fitness to the overall fitness described by Sakib et al. (2020) and Satici et al. (2020). However, our proposed 2-factor model analysis, although presenting a lower model of fitness than the single-factor model, showed higher item loadings. We recommend that further studies be conducted to explore this model utility.

Fear can alter the cognitive function of those who suffer it, by affecting memory, focus, attention, and decision making (McEwen & Morrison, 2013). After the SARS pandemic of 2003, reports show that survivors were diagnosed with post-traumatic stress disorder, depression, anxiety disorders, and in some cases, obsessive-compulsive disorder up to four years later (Lam et al., 2009). In the COVID–19 crisis, health care professionals are expected to perceive a high amount of stress due to the overall lack of preparation, infrastructure, and personal protective equipment (Chua et al., 2004; Maunder et al., 2003; Pfefferbaum & North, 2020). In 2003, the stress of the pandemic caused abandonment of work and a staff deficit in many hospitals. Many health care professionals opted not to stay in their houses, so they did not transmit the disease to their families and loved ones, or in some extreme cases, their families physically blocked them from leaving their houses (Chan, 2003; Tzeng, 2003).

It is interesting to note that the hospitals' administrative personnel, while not interacting directly with COVID–19 patients, still presented higher scores than medical staff and other personnel who interacted directly with infected patients. It could be theorized that medical personnel have a more in-depth knowledge of the disease and the outcomes than the general population. These results are similar to those found by Li et al., where there were higher levels of vicarious traumatization in the general population than in front-line nursing personnel (Li et al., 2020).

As expected, the nursing personnel presented the highest scores of fear of COVID–19, as their role as primary front-line personnel includes direct interaction with patients in a wide range of activities and areas. Nonetheless, our medical and nursing staff still did not present high scores in the FCV–19S. This could be due to a low incidence of COVID–19 in our region (Secretaría de Salud, 2020).

Although the country has 78,023 confirmed cases, the study's region had registered 1,355 cases. (Mapa Interactivo COVID–19 en México, 2020). However, if the number of confirmed cases increases, the health care staff could start to show a higher prevalence of depression, suicide ideation, suicide attempts, substance abuse, and burnout syndrome (Lai et al., 2020; Lam et al., 2009; Pfefferbaum & North, 2020).

One of the study limitations is that there were no other studies on the prevalence of fear in health care professionals using this scale, so comparison was not possible. This may also be a strength, as this study may now provide a

stepping stone for further studies on how fear in hospital staff changes in response to pandemic changes, and for the development of coping and prevention tools to keep health care personnel physically and mentally healthy.

Conclusion

Although the fear levels in our study were lower than in other populations, it has already had effects on the health staff. Our findings show significantly higher levels of fear in females and in nursing and administrative personnel, which may be explained by the nursing staff being in closer contact with infected patients and by administrative staff lacking understanding of the possible implications of the infection compared with health care personnel. The FCV–19S is a scale that showed validity and reliability in assessing fear of COVID–19 in our population. Our results are consistent with those of other researchers.

Declarations

Informed Consent

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study. The National Ethics Committee authorized the study protocol with the registration number: R-2020-785-006.

Conflict of Interest

All authors declare that they have no conflict of interest.

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Tables

Tables I-IV were not provided with this version.