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Concern about COVID-19 infection and workload as predictors of psychological distress during the health emergency in Peruvian healthcare personnel



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ABSTRACT

Introduction: During the health emergency, there is concern about the mental health repercussions that Peruvian health workers, who represent the front line of care for COVID-19, may be experiencing.

Objective: To determine whether concern about COVID-19 and workloads predict psychological distress in healthcare workers.

Methods: Predictive study in which 367 workers (nurses, doctors, nursing assistants, obstetricians, dentists, psychologists, nutritionists, among others) from 12 health networks in the Puno region participated, selected through intentional non-probabilistic sampling. The data were collected via the Kessler Psychological Distress Scale, the COVID-19 Scale of Concern and the Workload Scale.

Results: It was found that there are no significant differences between men and women in psychological discomfort and concern about COVID-19 infection and workload. Furthermore, highly significant correlations were found between the study variables ($P < .01$). Multiple regression analysis showed an adequate adjustment for the model ($F = 94.834$; $P < .001$), where concern about COVID-19 ($\beta = -0.436$; $P < .01$) and workload ($\beta = 0.239$; $P < .01$) are variables that significantly predict psychological discomfort (adjusted $R^2 = 0.33$).

Conclusions: Concern about COVID-19 and work overload predict psychological distress in health personnel in the Puno region.

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Preocupación por el contagio de la COVID-19 y carga laboral como predictores del malestar psicológico durante la emergencia sanitaria en personal de salud de Perú

R E S U M E N

Palabras clave:

Infección por coronavirus
Salud laboral
Agotamiento psicológico
Trabajo
Expresión de preocupación

Introducción: Durante la emergencia sanitaria, preocupan las repercusiones en la salud mental que pudieran estar experimentando los trabajadores sanitarios peruanos, quienes representan la primera línea de atención contra la COVID-19.

Objetivo: Determinar si la preocupación por la COVID-19 y la carga laboral predicen el malestar psicológico en personal de salud.

Métodos: Estudio predictivo en 367 trabajadores (enfermeros, médicos, técnicos en enfermería, obstetras, odontólogos, psicólogos, nutricionistas, entre otros) de ambos sexos en 12 redes de salud de la región de Puno, seleccionados a través de un muestreo no probabilístico intencional. Los datos se recogieron a través de la Escala de malestar psicológico de Kessler, la Escala de preocupación por el contagio de la COVID-19 y la Escala de carga de trabajo (ECT).

Resultados: Se encontró que no hay diferencias significativas entre varones y mujeres en el malestar psicológico, la preocupación por el contagio de la COVID-19 y la carga laboral; además, se hallaron correlaciones muy significativas entre las variables de estudio ($P < .01$). El análisis de regresión múltiple demostró un ajuste adecuado para el modelo ($F = 94,834$; $P < .001$), en el que la preocupación por la COVID-19 ($\beta = -0,436$; $P < .01$) y la carga laboral ($\beta = 0,239$; $P < .01$) son variables que predicen significativamente el malestar psicológico (R^2 ajustado = 0,33).

Conclusiones: La preocupación por la COVID-19 y la sobrecarga de trabajo predicen el malestar psicológico en el personal sanitario de la región de Puno.

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Introduction

During the first weeks of 2020, cases of people infected with COVID-19 outside of China came to light, resulting in a rapid increase in deaths all over the world. In Latin America, its impact was gradual and lethal: first in Brazil, later in Ecuador; while, in the case of Peru, the first infections were recorded as of 6 March 2020.¹

Now, nobody can deny that the most valuable human resource² for containing the spread of COVID-19 is healthcare personnel. Thanks to them, necessary care can be provided to the infected patients; nonetheless, this population, like those coming to hospitals seeking help, are also in a situation of risk owing to various factors.³

Indeed, it has been identified that the lack of personal protective equipment, work overload, poor infection control and pre-existing conditions⁴ are risk factors; in addition, the psychological distress involved in not wanting to place their relatives and family members in jeopardy raises concerns about the contagion of COVID-19.⁵

Up to this point, there are three key concepts that can be deduced from the evidence shown: concern about COVID-19, work overload, and psychological distress. With regard to the first, it can be defined as state in which the person feels a concern or fear about the consequences of contracting the virus, which goes as far as affecting their mood and everyday personal and professional activities.⁶ In rela-

tion to the second, work load involves an interaction between the demands of the job and the subject's capacity to fulfil their duties, so work overload is characterised by being an intense and constant physical and psychological demand occurring in the worker-job interaction.⁷ Lastly, psychological distress is a state in which a series of symptoms that indicate a psychological disturbance are evident, such as concern about emotional overload, unease, unrest, anxiety and depression; thus, this concept makes it possible to obtain information on the self-perception of thoughts, feelings and behaviours that could constitute a mental health problem.⁸

The scientific literature provides evidence of the interaction between these variables, above all in the healthcare professional population. By way of example, a study conducted by Muller et al.⁹ showed that the mental health problems of workers in this sector correlate with organisational factors, such as workload and exposure to patients with COVID-19. Other reports in China concluded by stressing the existence of fear, concern and stigma among front-line workers,¹⁰ and that the lack of response from the health system is one of the risk factors.¹¹ Also in China, Kang et al.¹² reported that, in the initial phase of contagion, it was detected that 12.2% of the worker population had presented mild symptoms of anxiety, and 4.3%, severe symptoms of depression,¹³ and that the group which suffered most in the area was nurses.¹⁴

In the case of the Peruvian setting, the pandemic has laid bare the country's healthcare situation in a stark and real manner. What has become evident throughout these months is the precariousness of the health system, the lack of materials, specialised laboratories, ventilators, specialists, poorly paid doctors, lack of medical insurance, and more than ever, the lack of biosafety equipment.¹⁵ All of this despite it being one of the first countries to enter into a forced lockdown with social distancing measures. Despite this, until August 2020 it was considered the country with the highest mortality rate among those most affected by the pandemic.¹⁶

Taking all these data into account, it is assumed that a high level of workload for front-line health workers is a source of stress and a psycho-social risk that can have a negative impact on their health and work.⁷ Additionally, considering that psychological reactions to situations of intense stress, such as that which arose owing to the pandemic, entail feeling fear, anger, and sadness, summarised in the concern about the contagion of the virus,¹⁷ the need arises to study the factors that are associated with the mental health of healthcare workers.

Given the paucity of data on the impact of COVID-19 on healthcare personnel,¹⁸ the aim of this study is to determine whether concern about the contagion of COVID-19 and the workload predict psychological distress among healthcare personnel in Peru.

Methods

Design and participants

A cross-sectional, predictive study was conducted.¹⁹ Through a non-probabilistic purposive sampling, a total of 367 workers from 12 healthcare networks in the Puno region participated voluntarily. The sample is somewhat homogeneous, as 75.7% are females ($n = 278$) and 24.3%, males ($n = 89$) aged between 24 and 60 years (mean, 37.48 ± 8.90), of whom 28.3% are nurses; 13.6%, doctors; 16.9%, nursing technicians; 12.5%, obstetricians; 6.8% dentists; 2.5%, psychologists; 2.2%, nutritionists, and 17.2% professionals from other health fields. With regard to employment status, 64.6% are contracted and 35.4% permanent staff.

Instruments

The Kessler Psychological Distress Scale (K6)⁸ was adapted to the Peruvian setting by Dominguez-Lara y Alarcón and evaluates psychological distress. It comprises six items with five response options (0, none of the time; 1, a little of the time; 2, some of the time; 3, most of the time, and 4, all of the time). In the study, Cronbach's alpha value for estimating reliability was 0.73 (95% confidence interval [95% CI], 0.7–0.76). The Concern about the Contagion of COVID-19 Scale (EPPC-Cov19)²⁰ was designed and validated on Peruvian citizens, and measures the emotional state involving fear, unease, anguish and immobility that are triggered by unknown and negative events, constructed by the cognitive system. The scale comprises six items based on a scale with five response options (1, not at all; 2, slightly; 3, moderately; 4, very; 5, extremely). In this study, the EPPC-Cov19 showed good internal consistency ($\alpha = 0.91$;

95% CI, 0.89–0.92). The Workload Scale (WLS), validated in the Peruvian setting, comprises six items in a 5-point Likert-like scale with five response options (0, never; 1, rarely; 2, sometimes; 3, frequently; 4, very frequently). The reliability of the WLS for this study showed adequate internal consistency ($\alpha = 0.81$; 95% CI, 0.77–0.83).

Procedures

During the period of the healthcare emergency, the questionnaires were designed in digital format using Google Forms. The link was sent by the healthcare professionals' emails and via the WhatsApp social network. The information covers the period from 28 August to 21 September 2020. In the first part of the form, informed consent was requested, emphasising that the survey was completely voluntary, and the aims of the study and the confidential treatment of data were clarified. The procedures adhered to the indications of the Declaration of Helsinki; the study was also approved by the Puno Regional Health Authority ethics committee.

Data analysis

Firstly, the descriptive statistics of the study variables were analysed (mean $\pm$ standard deviation, skewness and kurtosis). Secondly, the Student's test was used for independent samples, allowing for an analysis of the differences between the scores for men and women. Thirdly, a Pearson correlation analysis between the variables was carried out, and finally, a multiple linear regression analysis. Statistical significance was set at 5%.

Results

Descriptive analyses

Table 1 shows the calculation of the descriptive statistics of the study variables. The coefficients of skewness and kurtosis of the variables are adequate as they are within the interval ± 1.5 .²¹

Differences between psychological distress, concern about COVID-19, and workload

Table 2 shows the results of the comparison of means. There were found to be no differences in psychological distress, concern about the contagion of COVID-19, and workload among males and females ($t = -1.989$; $P = .059$; $t = -1.342$; $P = .180$, and $t = -0.983$; $P = .326$).

Table 3 shows the results of the correlation analysis. There is a direct and statistically significant correlation between the study variables. It is clear that the high scores for psychological distress correlate directly with the scores for concern about the spread of COVID-19 and workload ($r = 0.508$ and $r = 0.449$).

Prediction of psychological distress

Table 4 presents the multiple regression analysis, which shows an adequate fit of the model ($F = 94.834$; $P < .001$), in which

Table 1 – Descriptive analyses of psychological distress, concern about COVID-19 and workload.

Variables	Mean	Standard deviation	Skewness	Kurtosis
Psychological distress	11.36	4.098	0.990	0.897
Concern about COVID-19	22.75	7.124	0.352	–0.558
Workload	16.17	3.662	0.874	1.328

Table 2 – Difference between males and females with respect to self-efficacy for academic writing, reading comprehension, and reading self-efficacy.

	Males	Females	t	P
Psychological distress	10.89 ± 4.292	11.51 ± 4.030	–1.257	.210
Concern about COVID-19	21.94 ± 8.091	23.01 ± 6.782	–1.226	.221
Workload	15.97 ± 3.719	16.24 ± 3.647	–0.616	.539

Table 3 – Correlation between psychological distress, concern about COVID-19, and workload.

	Psychological distress	Concern about COVID-19	Workload
Psychological distress	1		
Concern about COVID-19	0.545*	1	
Workload	0.439*	0.458*	1

* Significant at the level 0.01 (bilateral).

Table 4 – Predictors of psychological distress in healthcare personnel.

Predictors	B	SE	β	t	P
(Constant)	1.333	0.821		1.623	.106
Concern about COVID-19	0.251	0.028	0.436	9.119	<.001
Workload	0.267	0.054	0.239	4.996	<.001

β: standardised coefficient of regression; B: non-standardised coefficient; SE: standard error.

Dependent variable: psychological distress (F = 94.834; P < .001; Adjusted R squared = 0.339).

concern about COVID-19 ($\beta = -0.436$; $P < .01$) and workload ($\beta = 0.239$; $P < .01$) are variables that significantly predict psychological distress among healthcare personnel in the region of Puno (Adjusted $R^2 = 0.33$). Also highly significant are the t-values of the beta-regression coefficients of the predictor variables ($P < .01$).

Discussion

The studies carried out on healthcare personnel during the COVID-19 pandemic reveal the extent to which the emotional stability of doctors, nurses, technicians, and other similar professionals was affected, owing to a chronic exposure to work-related stressors, among other factors.^{22,23} This group of professionals has been working under enormous pressure, with a high risk of infection, excess workload, frustration, discrimination, isolation, care for patients with negative emotions, lack of contact with their families and exhaustion, aspects which could leave a lasting effect on their general well-being.²⁴

In all cities in Peru, the precarious nature of the public health system and the lack of specialised facilities and equipment increased the occupational risk conditions for this group of professionals²⁵ and generated high levels of concern and distress, resulting in anxiety and depression.²⁶ In this context, this study sought to determine whether concern about

COVID-19 and workload were predictors of psychological distress among healthcare personnel.

With regard to the results of the comparison by sex, there were found to be no statistically significant differences in concern about COVID-19, work overload, and psychological distress; although there are studies that are consistent with these results,²⁷ when analysing the magnitude of the effect, it was observed that there would be a greater perception of psychological distress among women. Other studies confirm this trend; for example, in Brazil, in an analysis of 2259 participants, it became evident that women perceive themselves to be more concerned with contracting COVID-19, probably owing to a greater sense of self-protection. In addition to this, a large number of women are involved in professional health-care work.²⁸

In China, a study conducted with 70 physicians and 160 nurses found that stress and anxiety were higher in women,²⁹ and in 376 healthcare workers who had been infected by COVID-19, the group with the highest levels of depression, anxiety, insomnia and anguish was found to be nurses, female professionals, and frontline healthcare workers.³⁰ In Spain, another study with 546 radiologists showed that women had a higher level of perceived threat of spread of infection among patients and co-workers³¹; and in Italy, in a population of 1153 healthcare professionals, a primary effect of sex on emotional exhaustion was found, and women showed higher levels than men, and physicians less frequently than nurses.³²

With regard to the correlation analyses, it was found that the higher the level of psychological distress, the greater the perception of the workload and concern about the contagion of COVID-19 was among healthcare workers in the region of Puno. On the basis thereof, it is inferred that feeling overwhelmed by the responsibilities and the amount of attention to be given are linked to an increase in manifestations such as unease, nervousness, sadness or depression, states which give rise to emotional disturbance. In this regard, Serrano-Ripoll et al.³³ evaluated 117 studies focused on workers in the healthcare sector in a situation of healthcare emergency, identifying that work in a high-risk setting, scant specialised training, and limited work experience were factors related with acute stress, anxiety, depression, exhaustion and post-traumatic stress. Other findings associate the perception of the healthcare personnel's work load with *burnout*, a syndrome which has also been related with psychological distress, anxiety and depression in various studies.^{27,34}

Also concern with or unease about contracting COVID-19 or of spreading the disease to the immediate environment was linked to an increase in the emotional distress of those assessed. Similar results were obtained in studies on healthcare professionals in Italy and Cameroon^{35,36}: the fear of contracting and spreading COVID-19 and the fear of dying increased the probability of suffering from emotional disorders.

The multiple regression analysis showed an adequate fit for the model of concern about COVID-19 and workload as predictors of psychological distress among healthcare personnel in the region of Puno. Pre-pandemic studies already hinted at the link between occupational exhaustion and emotional distress in health care workers.^{37,38} Amutio et al.³⁹ explained that occupational burnout syndrome predicts negative physical, psychological, socio-familial and occupational consequences, and that psychological well-being and emotional toughness mitigate their impact. This study adds a further factor to this dynamic: concern about the contagion of COVID 19.

As was seen, the psychological distress evaluated represents common, everyday mental health problems, a range of mood disorders that affect quality of life and the ability to relate, work and experience well-being.²⁶ The findings of this study indicate that concern about contagion and work overload mean everyday demands that explain the depletion of personal coping resources and the generation of distress, anxiety, and depression. In the state described, responding efficiently to the current work demands of health sector workers becomes a significant challenge, considering that, in the medium term, the healthcare emergency will continue. Recent studies concur; for example, in a study on 6854 adults in Canada and the United States, where beliefs about the danger of COVID-19 were the strongest predictor of general anguish and anguish during the lockdown; age and the pre-existing mental health condition had lesser effects.⁴⁰ Another study analysed 608 visits to adult patients by 31 physicians, and identified that the mean number of health problems per patient was 3.3 and that mental demands, time demands, and effort explained the perception of occupational burnout; the activities of teaching, research and administration could increase the perception of this burnout.⁴¹

The practical implications derived from this study focus attention on fatigue or workload, and concern about spreading COVID 19 as experiences that need to be addressed urgently, with a view to reducing their impact on the mental well-being of health sector workers in the region of Puno. The degree of concern and exhaustion identified reveals the possible shortcomings in the management of health services in terms of the number of staff providing direct care to infected patients, specific training, the provision of protective equipment, hygiene protocols, and disengagement, among others.

As regards the limitations of the study, we find the lack of predictive studies on concern about the contagion of COVID 19, occupational burnout and psychological distress, and even more so in the Latin American and Peruvian settings. Another has to do with the lack of randomness in the call for participants; as this was virtual and voluntary, those who had the required technology and motivation had a greater opportunity to participate. Lastly, the generalisation of the results is limited to the healthcare professionals in the region of Puno; in this regard, in subsequent studies, probabilistic sampling could be carried out to allow for the generalisation of the results.

It is recommended that the understanding of the interaction of the variables studied be broadened to include other healthcare professionals in other Peruvian and Latin American cities with a view to providing a better contrast with findings from other countries around the world.

Future studies could analyse the effect of other constructs, such as the stigmatisation or discrimination of healthcare personnel, time spent on the frontline of care and the locus or the perceived degree of control over the challenges of the pandemic. Recommendations are also addressed to the health sector management on regional and national levels, for the promotion of health in the workplace, as well as the monitoring of the risks and stressors, and ongoing specialised training for the employees thereof. Lastly, it is recommended that vigilance be maintained for mental health problems in physicians, nurses, technicians and other related professionals, with a view to preventing and treating these conditions in a timely manner, and avoiding permanent consequences for their overall well-being.

It is concluded that the concern about COVID 19 and the perception of occupational burnout significantly predicted psychological distress in the healthcare personnel working in the region of Puno. Moreover, the variables studied were directly and significantly related to each other, and when compared by sex, the effect size, although small, indicated a higher level of psychological stress in women.

Conflicts of interest

The authors have no conflicts of interest to declare.

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