ORIGINAL ARTICLE

Psychosocial work factors and anxiety and depression symptoms in the intensive care unit of a public hospital in Nuevo Chimbote

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This study is part of the doctoral thesis *Factores psicosociales laborales y sintomatología ansiosa y depresiva en Cuidados Intensivos de un Hospital Público de Nuevo Chimbote* [Psychosocial work factors and anxiety and depression symptoms in the Intensive Care of a Public Hospital in Nuevo Chimbote] [Graduate thesis]. Trujillo: Universidad César Vallejo; 2003.

ABSTRACT

Objective: To determine the association between psychosocial work factors and anxiety or depression symptoms among health workers of the Intensive Care Unit (ICU) at Hospital Regional Eleazar Guzmán Barrón in Nuevo Chimbote.
Materials and methods: The study used a quantitative, observational, non-experimental, cross-sectional and descriptive-correlational research design. The population consisted of 70 workers of the hospital's ICU. A census sampling and survey technique were employed. The instruments were the following: Questionnaire on Psychosocial Work Factors Administered to Peruvian Workers, validated with a Cronbach's alpha coefficient of 0.9; Lima Anxiety Scale (EAL-20), validated with a Cronbach's alpha coefficient of 0.89; and Psychopathology Scale for Depressive Disorders (EPD-6), validated with a Cronbach's alpha coefficient of 0.7359. By applying descriptive statistics, IBM SPSS Statistics V26 was used for data collection, processing and analysis, and the chi-square test for the association of variables.
Results: The lowest psychosocial work factor was *work role and career development* (57.10 %), with the nursing staff being the most affected one (27.10 %). The highest psychosocial work factor was *performance-based remuneration* (40.00 %), with the technical nursing staff being the most affected one (30.00 %).
Conclusions: *Working conditions*, *workload*, *work demands* and *content and characteristics of the task* were the work dimensions associated with the occurrence of anxiety symptoms; likewise, *content and characteristics of the task*, *work demands*, and *work role and career development* were the dimensions associated with the occurrence of depression symptoms.

Keywords: Occupational Risks; Anxiety; Depression (Source: MeSH NLM).

INTRODUCTION

Depression and anxiety were globally prevalent psychiatric conditions worldwide [1] that deeply affected social relations, functional and professional performance, and their effects imposed an economic and social burden when impacting on the quality of life of workers who were part of healthcare staff, thereby changing their work and social life. This type of staff was highly exposed to infection since they needed to be in direct contact with patients with COVID-19 during the pandemic, which demanded a forced adaptative effort. Precisely in this process, it was important to optimize the psychosocial aspects to ensure workplace safety of healthcare workers, who, when affected by these factors, became a potential risk in their work environment as well at the family level [2,3].

This situation of emotional stress resulting from the pandemic, coupled with a lack of knowledge and changes caused a reactive physiological response to the work environment since it was a new setting, under different conditions and with a biological risk that could potentially compromise work conditions [4,5].

According to the World Health Organization (WHO), anxiety has become the most prevalent psychiatric disorder worldwide, affecting over 264 million people. In 2021, the Mexican adult population had an incidence of depression of 15.40 %, with 19.30 % suffering severe anxiety and 31.30 % mild anxiety. In addition, by 2023, the prevalence of anxiety and depression in the world increased by 25 % [6,7]. Furthermore, the WHO has reported that about 280 million people worldwide suffer from depression. It ranks as the third health issue in Peru, following the coronavirus and cancer [8]. According to the Ministry of Health (Minsa), 247,171 cases of depression were reported in 2022. Among these, 17.27 % were minors and 75.24 % were females [9].

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The psychological and social risks factors are considered to be occupational risk factors in accordance with Law No. 29783 "Occupational Safety and Health Law" [9]. On the other hand, employers are obliged to prevent this exposure to risks from adversely affecting the health of their workers [8,10]. The coronavirus pandemic resulted in new psychosocial risks: increased level of stress, the requirement to work with personal protection equipment (PPE), greater professional demands, the availability of resources necessary for the work in the Intensive Care Unit (ICU) and the responsibility for the unavoidable workload distribution with this type of critical patients [11]. Work is fundamental in human development in both the economic and social aspects since it allows individuals to meet their personal needs and create job satisfaction [12,13]. In addition, we should also mention the potential disastrous consequences for both workers and the institution resulting from the inefficient use of medical supplies and materials [14]. Based on the foregoing, it is required to assess the presence of psychosocial work factors, identify anxiety and depression symptoms, and determine the association between these psychosocial work factors and the occurrence of anxiety and/or depression symptoms among health workers of the ICU.

MATERIALS AND METHODS

Study design and population

The study used basic research aimed to search for knowledge, thereby generating information to better understand a phenomenon [15]. Its design is non-experimental, quantitative, observational, cross-sectional, descriptive and correlational.

The design is non-experimental because it is based on variables that occur without direct intervention by the researcher. It is quantitative because the results are expressed in numbers or graphs [16]. It is observational because it aims to observe and record events without intervening in their natural course. It is cross-sectional because a group of people was observed at a specific moment. It is descriptive-correlational because it measures two variables and establishes a statistical relationship between both without the need to include external variables to reach relevant conclusions [17,18].

The population was made up of 70 health workers (physicians, nurses and nursing technicians) from the ICU of a public hospital in Nuevo Chimbote [19].

The inclusion criteria included personnel who worked in the ICU for at least three months, were not diagnosed with or treated for mental disorders, did not hold a chief position and did not use addictive substances.

The exclusion criteria included individuals who invalidated the research instruments or did not complete them properly.

The sample was census-based, and included the 70 health professionals, out of whom 34 were nurses (5 males and 29 females, age range: 28 to 60 years), 16 physicians (11 males and 5 females, age range: 30 to 46 years) and 20 nursing technicians (2 males and 18 females, age range: 24 to 53 years) who worked in the ICU of a public hospital in Nuevo Chimbote. Sampling was not employed because the sampling framework was probabilistic.

Variables and measurements

The independent variable included psychosocial work factors, defined as aspects of work related to organization, tasks and job performance, with the potential to affect workers' mental or social health as well as their performance [20,21]. It is presented as an ordinal quantitative variable. This instrument was the Questionnaire on Psychosocial Work Factors, which comprises 46 questions similar to a 1-4-point Likert scale with options such as never, rarely, sometimes, often and always. It includes seven dimensions: working conditions (9 items), workload (5 items), content and characteristics of the task (7 items), work demands (7 items), work role and career development (6 items), social interaction and organizational aspects (9 items) and satisfaction with performance-based remuneration (3 items). The interpretation is that lower scores indicate lower psychosocial work factors, with cut-off points allowing for the determination of low, medium and high risks, according to the evaluated dimensions: working conditions (low ≤ 13, medium 14-26, high 27-40), workload (low ≤ 8, medium 9-16, high 17-24), content and characteristics of the task (low: ≤ 10, medium 11-21, high 22-32), work demands (low ≤ 9, medium 10-18,high 18-28), academic role and career development (low ≤ 9, medium 10-18, high 19-28), social interaction and organizational aspects (low ≤ 12, medium 13-24, high 25-36) and performance-based remuneration (low ≤ 4, medium 5-8, low 9-12). The Cronbach's alpha coefficient was 0.9.

The dependent variable consisted of anxiety symptoms, defined as the feeling of fear and uneasiness, which may be a normal reaction to stressful situations; however, under certain conditions, it can exacerbate [22,23]; it is presented as a nominal variable. The instrument used was Lima Anxiety Scale (EAL-20), which consists of 20 dichotomic questions. A score ≥ 10 points is associated with the occurrence of anxiety symptoms. The Cronbach's alpha coefficient was 0.89.

Another dependent variable was depression symptoms, defined as mood fluctuations characterized by anxiety, changes in feelings, sleep and appetite, which lead individuals to isolate themselves from relatives, friends and coworkers [24,25]. It was presented as a nominal variable. The

instrument used was the Depressive Psychopathology Scale (DPS-6), which comprises six Likert-type questions ranging from 0 to 3. The interpretation is that a score ≥ 8 points is associated with the occurrence of depression symptoms. The Cronbach's alpha coefficient was 0.73.

Statistical analysis

The study used descriptive statistics, such as the frequency analysis for the psychosocial risk factors variable, in order to assess the dimensions according to subscales. This same statistical analysis was used for individuals with anxiety and without anxiety and similarly to evaluate the frequency of individuals with depression.

The relationship between the social risk factor variables (subscales) and the states of anxiety and depression was determined using the chi-squared test of independence, and a value under 0.05 was accepted. IBM SPSS Statistics Software V26 was employed to process the information.

Ethical considerations

Ethical principles were adhered to during the enrollment of research participants. Data were collected and analyzed with prior authorization, and the anonymity of the provided information was ensured. The following aspects were taken into account: confidentiality (i.e., the information provided by study participants cannot be made public), credibility (related to the veracity of the information provided, which was derived from the description of the problem), confirmability, by assessing the degree to which the results are determined by the informants rather than the researcher's biases [26]. The process involved the acceptance and signing of the informed consent, which was obtained both verbally and in writing.

Likewise, the present research complied with the four principles of bioethics, which are accepted across all ideological platforms: non-maleficence, justice, autonomy and beneficence.

RESULTS

The dimension of *work role and career development* dimension (57.10 %) was a low psychosocial factor, a finding that was supported by the fact that they had the lowest percentage as a high-risk factor. The same happened with *social interaction and organizational aspects* (55.70 %). Nurses were the most affected professionals, with 27.10 %. *Performance-based remuneration* was the psychosocial work risk factor classified as high (40.00 %), with nursing technicians being the most affected (30 %), which was supported by the lowest percentage as a low-risk factor (24.30 %). *Workload* and *content and characteristics of the task* were distributed almost evenly as low/medium/high-risk factors, contrasting with *work demands*, in which it prevails as a high-risk factor (Table 1).

Table 1. Distribution of psychosocial factors in the ICU of a public hospital in Chimbote, by dimension

Dimension	Psychosocial work factors					
	Low		Medium		High	
Working conditions	28	40.00 %	18	25.70 %	24	34.30 %
Workload	22	31.40 %	30	42.90 %	18	25.70 %
Content and characteristics of the task	33	47.10 %	29	41.40 %	8	11.40 %
Work demands	29	41.40 %	16	22.90 %	25	35.70 %
Work role and career development	40	57.10 %	26	37.10 %	4	5.70 %
Social interaction and organizational aspects	39	55.70 %	21	30.00 %	10	14.30 %
Performance-based remuneration	17	24.30 %	25	35.70 %	28	40.00 %

As to anxiety symptoms, 22.90 % of health workers exhibited symptoms, with the nursing staff being the most affected (15.70 %). Conversely, the medical staff had minimum symptoms (1.40 %). A total of 77.10 % of the ICU staff did not have anxiety symptoms, with a nearly equal distribution among all health workers (Table 2).

Table 2. Distribution of anxiety symptoms among health workers in the ICU of a public hospital in Chimbote, by profession

Profession	Anxiety		No anxiety	
	n	%	*n*	%
Nurse	11	15.70	23	32.90
Physician	1	1.40	15	21.40
Nursing technician	4	5.70	16	22.90
Total	16	22.90	54	77.10

Depression symptoms were less frequent compared to anxiety (17.10 %), with the nursing staff being the most affected (12.90 %); conversely, the medical staff exhibited symptoms (1.40 %). A total of 82.90 % of the ICU staff did not have depression symptoms, which were more frequent among the nursing staff (35.70 %) (Table 3).

Tabla 3. Distribution of depression symptoms among health workers in the ICU of a public hospital in Chimbote, by profession

Profession	Depression		No depression	
	n	%	*n*	%
Nurse	9	12.90	25	35.70
Physician	1	1.40	15	21.40
Nursing technician	2	2.90	18	25.70
Total	12	17.10	58	82.90

Working conditions, as a low-risk factor, was associated with the absence of anxiety (38.60 %). *Workload* also was associated with anxiety as a medium-risk factor for the absence of anxiety (37.10 %). *Content and characteristics of the task* (38.60 %) as well as *work demands* (38.60 %) as low-risk factors were associated with the non-occurrence of anxiety symptoms (Table 4).

Table 4. Association between psychosocial work factors and the occurrence of anxiety symptoms among health workers in the ICU of a public hospital in Chimbote

Psychosocial work factors		Anxiety					
		Moderate-severe		No anxiety		*X^2	*P*
		n	%	*n*	%		
Working conditions	Low	1	1.40	27	38.60		
	Medium	6	8.60	12	17.10	9.455	0.0088
	High	9	12.90	15	21.40		
Workload	Low	2	2.90	20	28.60		
	Medium	4	5.70	26	37.10	10.082	0.0065
	High	10	14.30	8	11.40		
Content and characteristics of the task	Low	6	8.60	27	38.60		
	Medium	5	7.10	24	34.30	9.624	0.0081
	High	5	7.10	3	4.30		
Work demands	Low	2	2.90	27	38.60		
	Medium	4	5.70	12	17.10	8.608	0.0135
	High	10	14.30	15	21.40		
Work role and career development	Low	10	14.30	30	42.90		
	Medium	5	7.10	21	30.00	4.468	0.1071
	High	1	1.40	3	4.30		
Social interaction and organizational aspects	Low	9	12.90	30	42.90		
	Medium	3	4.30	18	25.70	1.313	0.5172
	High	4	5.70	6	8.60		
Performance-based remuneration	Low	3	4.30	14	20.00		
	Medium	6	8.60	19	27.10	0.331	0.8475
	High	7	10.00	21	30.00		

Content and characteristics of the task, as a low (41.40 %) and medium (35.70 %) risk factor, was associated with the absence of depression. *Work demands* as a low-risk factor was associated with the absence of depression (40 %). *Work role and career development* as a low (48.60 %) and medium (30 %) risk factor was associated with the occurrence of depression symptoms (Table 5).

Table 5. Association between psychosocial work factors and the occurrence of depression symptoms among workers in the ICU of a public hospital in Chimbote

Psychosocial work factors		Depression					
		Yes		No		*X²	*P*
		n	%	*n*	%		
Working conditions	Low	1	1.40	27	38.60		
	Medium	5	7.10	13	18.60	5.228	0.0732
	High	6	8.60	18	25.70		
Workload	Low	2	2.90	20	28.60		
	Medium	4	5.70	26	37.10	3.625	0.1631
	High	6	8.60	12	17.10		
Content and characteristics	Low	4	5.70	29	41.40		
of the task	Medium	4	5.70	25	35.70	8.361	0.0153
	High	4	5.70	4	5.70		
Work demands	Low	1	1.40	28	40.00		
	Medium	4	5.70	12	17.10	6.220	0.0446
	High	7	10.00	18	25.70		
Work role and career	Low	6	8.60	34	48.60		
development	Medium	5	7.10	21	30.00	8.483	0.0144
	High	1	1.40	3	4.30		
Social interaction and	Low	6	8.60	33	47.10		
organizational aspects	Medium	3	4.30	18	25.70	1.743	0.4183
	High	3	4.30	7	10.00		
Performance-based	Low	2	2.90	15	21.40		
remuneration	Medium	5	7.10	20	28.60	0.352	0.838
	High	5	7.10	23	32.90		

DISCUSSION

Health workers, including those who work in the ICU, develop professional skills under certain work and emotional demands [27] due to biological, physical, ergonomic and mechanical risks. This study focuses on psychosocial risks, which are characterized by workers experiencing various deficiencies related to infrastructure, remuneration and working conditions, among others [28].

This study, applied to health workers of the ICU, evidenced that performance-based remuneration (40 %) and work demands (35.70 %) are recognized as high psychosocial risk factors. In addition, it reported that 22.90 % of health workers experienced anxiety, with the nursing staff being the most affected. A systematic review by Li et al. in 2021 found that 28.90 % of health workers experienced anxiety during COVID-19 [29]. Furthermore, a study conducted by Morawa et al. in 2021 in Germany, through a telephone survey, yield similar results to this research, with prevalence of anxiety ranging between 17.80 % and 19.00 % [30]. In turn, Liang et al. in 2020 used the Generalized Anxiety Disorder 7-item (GAD-7) scale and reported that 22.90 % of health workers experienced anxiety in different regions in China [31]. Wilson et al. in 2020 administered Public Health Questionnaire-9, and found that 17.70 % of health workers had anxiety symptoms [32]. A study conducted by Lozano in 2020 reported that 23.04 % of health workers suffered anxiety, with 53.80 % of them experiencing moderate to severe levels [33]. The present study revealed that 22.90 % of health workers had anxiety, a figure close aligned to those reported in international studies. In addition, it evidenced that working conditions (38.60 %), content and characteristics of the task (38.60 %) as well as work

demands (38.60 %), when associated with the occurrence of anxiety, behaved as low-risk factors. Conversely, workload, when associated with anxiety, behaved as a medium-risk factor (37.10 %).

Our study found that 17.10 % of health workers experienced depression, with the nursing staff being the most affected (12.90 %). Internationally, a multicenter study conducted by Chew et al. in 2020 attempted to associate psychological outcomes and physical symptoms among health workers during the COVID-19 pandemic. They used the Depression and Anxiety Stress Scale (DASS-21), and reported that 5.30 % of health workers experienced moderate to very severe depression and 2.20 % moderate to extremely severe depression [34]. The study conducted by Awano et al. in 2020 in Japan used the Center for Epidemiologic Studies-Depression (CES-D) scale in 848 health workers, and reported that 27 % of them had depression, with the nursing staff being the most affected [35]. The study conducted by Wilson et al. in 2020 used the GAD-7 scale, and revealed 11.40 % of depression cases [32]. In 2020 in China, Lozano determined the impact of the coronavirus pandemic among healthcare workers and the general population, reporting that 16.50 % of workers had depression [33]. In 2021, Li et al. conducted a meta-analysis, and reported a prevalence of depression of 21.70 % [29]. On the other hand, Liang et al. assessed depression symptoms in 89 COVID-19 frontline physicians using the Patient Health Questionnaire (PHQ-9), and found depression in 13.14 % of them [31]. These studies conducted in China showed similar results to our study on the prevalence of depression (17.10 %) among workers of the ICU at Hospital Regional Eleazar Guzmán Barrón.

When assessing the association between psychosocial work factors and the occurrence of anxiety and depression symptoms, this research study found a significant association for certain dimensions. When compared to background research, the study conducted by Morawa et al. in 2021 in Germany revealed depression rates ranging between 17.40 % and 21.60 %. In addition, they found an association between depression and insufficient recovery during leisure time, higher alcohol consumption and lower trust in colleagues in difficult work situations. Although our study did not address this variable, it is relatively analogous to the social interaction and organizational aspects dimension of psychosocial work factors [30].

In conclusion, one of the reasons for the high levels of anxiety and depression was the strict political measures of social isolation determined by our health authorities aimed at preventing the spread of the disease. This fact might have contributed to high rates of depression among the population due to isolation measures, not solely due to the disease itself. This study also evidenced that content and characteristics of the task (41.40 %), work demands (40 %), as well as work role and career development (48.60 %), when associated with the occurrence of anxiety, behaved as low-risk factors. On the other hand, these two variables (*content and characteristics of the task* and *work role and career development*), when associated with anxiety, behaved as medium-risk factors (35.70 % and 30 %) in a lower percentage. In addition, it should be mentioned that healthcare staff is exposed to high levels of post-traumatic stress, anxiety and exhaustion, which may persist over time. In extreme cases, there may be reports on feelings such as anger, fear, frustration, guilt, helplessness, isolation, nervousness and worry. Moreover, there may be fewer episodes of satisfaction with the work demand involved in caring for critical patients in the ICU.

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