

Work stress level and burnout syndrome in resident doctors and nurses: a cross-sectional study in a public institution in Michoacán, México

Abstract

Background: Burnout syndrome and work-related stress are on the rise among healthcare workers, affecting their mental health and job performance.

Objective: To determine the level of work-related stress and burnout syndrome among primary care physicians and nurses.

Materials and methods: Descriptive cross-sectional study. The study included healthcare workers from the General Hospital of Zone with Family Medicine No. 2, from January to June 2024, who agreed to participate. The Work Stress Test and the Maslach Burnout Inventory (MBI) for Burnout Syndrome were used. Descriptive statistics and Chi2 were used to determine associations between categorical variables with a p value <0.05.

Results: A total of 90 workers were studied, with a mean age of 39.3±6 years, 17 (18.9%) family physicians, 22 (24.4%) non-family physicians, 5 (5.6%) general practitioners and 46 (51.1%) nurses. Work-related stress was present in 49 (54.4%): mild 30 (33.3%), medium 15 (16.7%) and high 4 (4.4%). Burnout was present in 54 (60.0%) health workers, low personal fulfillment 29 (32.2%), high emotional exhaustion 61 (67.8%) and high depersonalization 39 (43.3%). Female workers, those with married marital status, nursing staff, morning shift staff, those with 1 to 5 years of seniority and those from hospital areas were the most affected.

Conclusion: There is a high prevalence of work-related stress and burnout among healthcare workers, with the emotional exhaustion domain being most frequently affected. Therefore, mental health care is considered essential to providing improved quality medical care.

Keywords: work stress, burnout, health personnel

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Introduction

Burnout syndrome has been defined as a response to chronic work-related stress,¹ leading to negative feelings and physical and mental ailments such as headaches or pain in other parts of the body, gastric discomfort, difficulty sleeping or appetite disturbances, as well as anxiety and depression that, in turn, affect the worker's job performance. It is estimated that 12 billion work days are lost each year due to these ailments, costing the global economy almost a trillion dollars.^{2,3}

The WHO World Mental Health Report, published in June 2022, showed that of the one billion people living with a mental disorder in 2019, 15.0% of working-age adults experienced a mental disorder.⁴ In Mexico, an estimated 75.0% of the population suffers from work-related stress, surpassing countries such as the United States and China.⁵

Burnout syndrome not only affects active workers, but also has a high prevalence in medical students, who are exposed to long academic and work hours, as well as a great emotional burden.⁶

The term burnout syndrome was introduced by Freudenberg in the mid-1960s. In 1981, Maslach and Jackson developed a questionnaire to assess workers' responses and evaluate the three basic dimensions of burnout.⁷

I. Emotional exhaustion (EE): lack of emotional resources, with a feeling of not being able to offer emotional support to others.

II. Depersonalization (DP): The person shows little empathy towards others, becomes insensitive, stops seeing them as people and treats them as objects.

III. Personal Achievement (PA): the person presents negative feelings towards themselves, affects their interpersonal relationships, low productivity, low self-esteem and low tolerance to stress and pressure.

Healthcare professionals are at high risk of developing occupational stress and burnout syndrome due to chronic exposure to stressors inherent to healthcare work, personal problems, inadequate infrastructure, lack of medical supplies and equipment, insufficient staffing, and patient abuse.⁸⁻¹¹

Both work-related stress and burnout syndrome have direct consequences for healthcare, including absenteeism, decreased satisfaction among both healthcare professionals and patients, the risk of addictive behaviors, excessive job mobility, disruptions in family dynamics, and the risk of patients receiving substandard care. This includes errors in medical prescriptions, with the resulting negative repercussions.¹²⁻¹⁵

Stress, therefore, is related to the perception of threatening stimuli that cause the patient to feel a sense of survival. A stressor is a situation that disrupts homeostasis, producing activation of the autonomic nervous system and some parts of the central nervous system related to emotions, such as the amygdala, hypothalamus, hippocampus, septum, and prefrontal cortex.¹⁶

There are some strategies created for the prevention of work-related stress in health personnel, for which it is important that all institutions carry out detection, prevention and intervention programs for the risks detected as stressors in workers and based on this, carry out training, support programs, activities that increase job satisfaction, interpersonal relationships of staff, promotion of teamwork, recognition and reward programs and the promotion of non-consumption of toxic substances.¹⁷

Therefore, the objective of this study is to determine the levels of occupational stress among healthcare personnel at this hospital unit, with the aim of promoting preventive strategies for the mental health of healthcare workers, which will improve the quality of care for patients and the work environment.

Materials and methods

A descriptive cross-sectional study was conducted in the different surgical and non-surgical areas of the General Hospital of the Family Medicine Zone No. 2 of the Mexican Social Security Institute. Healthcare workers, such as medical and nursing staff, assigned to said hospital unit in Zacapu, Michoacán, were invited to participate from January to June 2024.

The study included family physicians, non-family physicians, general practitioners, and regular nursing staff, both male and female, from different shifts and areas assigned to the hospital unit. They agreed to participate in the study and signed the informed consent form. Staff with less than one year of experience were excluded, and patients with incomplete questionnaires or who did not wish to continue were excluded.

Sociodemographic variables such as age, sex, and marital status were collected, as well as employment variables such as category, work shift, work experience in other health institutions, seniority, daily working hours, and job title.

The Work Stress Test adapted by the Mexican Social Security Institute of the Psychosomatic Problems Questionnaire (or CPP) was applied,³ which consists of 12 items, with a Likert-type response from 1 to 6 points, to know the degree of stress the total score obtained was added and classified as follows: No stress: 12 to 24, mild stress from 25 to 36, medium stress from 37 to 48, high stress from 49 to 60 and severe stress from 61 to 72 points.

Likewise, the Maslach Burnout Inventory Questionnaire (MBI Test)¹⁸⁻²⁰ was applied to determine whether or not they presented Burnout Syndrome, consisting of 22 items, with Likert-type responses where 0 = never, 1 = a few times a year, 2 = once a month or less, 3 = a few times a month, 4 = once a week, 5 = a few times a week and 6 = every day. This questionnaire evaluates three dimensions: emotional exhaustion, depersonalization and personal accomplishment. Someone is considered to have Burnout Syndrome when they have low personal accomplishment, high emotional exhaustion and high depersonalization. Each of the dimensions is evaluated simultaneously at high, medium or low level according to the following scores:

- I. Emotional exhaustion (E):** It consists of items 1, 2, 3, 6, 8, 13, 14, 16 and 20. Its score directly proportionally assesses the degree of intensity of the syndrome. High: 27-54, medium: 19-26, low: 0-18.
- II. Depersonalization (DP):** Items 5, 10, 11, 15, and 22. Scores are directly proportional to the degree to which individuals recognize coldness and detachment. High: 10-30; Medium: 6-9; Low: 0-5.

III. Personal accomplishment (PA): Items 4, 7, 9, 12, 17, 18, 19, and 21. Scores are directly proportional to the degree of feelings of self-efficacy and personal accomplishment. High: 0-33; Medium: 34-39; Low: 40-48.

The interviewer conducted the questionnaire, giving them sufficient time to complete it and assisting them in clarifying any questions they might have about the items if they arose.

The sample size was calculated using the formula for a finite population, taking into account the total number of healthcare personnel, including physicians and nurses with one year of seniority or more, assigned to HGZ/MF No. 2. The sample size was calculated using a 95% confidence interval, a 5% margin of error, and an expected proportion of 50%. This resulted in a finite population of 90 participants. Non-probability convenience sampling was used.

This project was authorized by the Local Committee on Ethics and Health Research, under registration number R-2019-1603-009. It was classified as low risk, given that the procedures performed were noninvasive and consisted solely of administering questionnaires to healthcare workers. All participants were aware of the research objective and freely participated in the study.

Statistical analysis

Descriptive statistics were applied. The Kolmogorov-Smirnov test was used to estimate the normality of the data distribution. Continuous numerical data were expressed as mean \pm standard deviation (SD). Categorical data were reported as frequencies and percentages (%). The nonparametric Chi2 (X2) test was calculated to determine the association between categorical variables. Statistical significance was established with a p value < 0.05 . Data were analyzed using the SPSS statistical package, version 23.

Results

A total of 90 male and female health care workers were surveyed, with a mean age of 39.3 ± 6 years; 95% CI: 21-59. They included family physicians, non-family physicians, and nursing staff. Married status and morning shift work predominated (Table 1).

Table 1 Sociodemographic characteristics of health workers at the General Hospital of the Family Medicine Zone No. 2 (n=90)

		F	(%)
Sex	Male	38	(42.2)
	Female	52	(57.8)
Marital Status	Single	32	(35.6)
	Married	51	(56.7)
	Free union	3	(3.3)
	Divorced	3	(3.3)
	Widower	1	(1.1)
Category	Family Doctor	17	(18.9)
	Non-family physician	22	(24.4)
	General practitioner	5	(5.6)
	Nursing	46	(51.1)
Turn	Morning	51	(56.7)
	Evening	21	(23.3)
	Night	12	(13.3)
	Accumulated working day	5	(5.6)
	Mobile	1	(1.1)

F = Frequency; (%) = (Percentage).

54.4% (n=49) of the surveyed population presented some degree of work-related stress, with mild stress being the most prevalent at 33.3% (n=30), followed by medium stress at 16.7% (n=15) and high stress at 4.4% (n=4). The results were reliable, with an internal consistency of 0.792 using Cronbach's alpha for the Work-Related Stress Test.

While 60.0% (n=54) of the population studied presented some degree of burnout, the dimension of high emotional exhaustion being the most affected with a frequency of 67.8% (n=61), followed by a high level of depersonalization in 37.8% (n=34) and low personal achievement in 32.2% (n=29), with reliable results presenting an internal consistency with Cronbach's alpha of the Maslach Burnout Inventory (MBI) test of 0.775 (Table 2).

Table 2 Distribution of health workers assigned to the General Hospital of the Family Medicine Zone No. 2 according to dimensions of Burnout Syndrome (n=90)

Dimension	Level	N	%
Emotional Exhaustion	Low	18	20
	Half	11	12.2
	High	61	67.8
Depersonalization	Low	20	22.2
	Half	31	34.4
	High	39	43.4
Personal Realization	Low	29	32.2
	Half	27	30
	High	34	37.8
Burnout Syndrome	Yes	54	60
	No	36	40

N = Frequency; % = Percentage

Regarding the sociodemographic and clinical characteristics of the health care personnel, it was found that 35.5% of the female staff (n=32) and 28.9% of the married staff (n=26) presented some degree

of work-related stress. It was determined that there is an association between smoking and work-related stress (p=0.011) (Table 3).

Table 3 Sociodemographic and clinical characteristics of health workers at HGZ/MF No. 2 based on the degree of work stress (n=90)

	Stress-free F (%)	Mild F (%)	Half F (%)	High F (%)	gl	p Value
Sex					3	0.283
Male	21(23.3%)	9(10.0)	7(7.8%)	1(1.1%)		
Female	20(22.3)	21(23.3)	8(8.9%)	3(3.3%)		
Marital status					12	0.335
Single	12(13.4)	11(12.2)	6(6.7)	3(3.3)		
Married	25(27.8)	17(18.9)	8(8.9)	1(1.1)		
Free union	3(3.3)	-	-	-		
Divorced	1(1.1)	2(2.2)	-	-		
Widower	-	-	1(1.1)	-		
Smoking					3	.011*
Yes	4(4.4)	6(6.7)	4(4.4)	3(3.3)		
No	37(41.2)	24(26.6)	11(12.3)	1(1.1)		
Alcoholism					3	0.103
Yes	4(4.4)	10(11.1)	4(4.4)	1(1.1)		
No	37(41.2)	20(22.2)	11(12.3)	3(3.3)		

Chi2; *Statistically significant value (p <0.005); F = Frequency; (%) = (Percentage).

The nursing staff most frequently presented some degree of work stress 31.0% (n=28), as well as the morning shift 32.2% (n=29), with

seniority of 1 to 5 years 22.3% (n=20), 7 to 12 working hours 44.5% (n=40) and the hospital area 22.2% (n=20) (Table 4).

Table 4 Work characteristics based on the degree of work stress of health workers assigned to HGZ/MF No. 2 (n=90)

	Stress-free F (%)	Mild F (%)	Half F (%)	High F (%)	gl	p Value
Category					9	0.129
Family doctor	10(11.1)	6(6.7)	1(1.1)	-		
Non-family doctor	13(14.4)	6(6.7)	2(2.2)	1(1.1)		
General doctor	-	2(2.2)	3(3.4)	-		
Nursing	18(20.1)	16(17.7)	9(10.0)	3(3.3)		
Turn					12	0.706

Table 4 Continued...

Morning	22(24.5)	18(20.0)	7(7.8)	4(4.4)		
Evening	10(11.1)	5(5.6)	6(6.7)	-		
Night	6(6.7)	4(4.4)	2(2.2)	-		
Accumulated working day	2(2.2)	3(3.3)	-	-		
Mobile	1(1.1)	-	-	-		
Work experience (years)					9	0.337
1-5	14(15.6)	10(11.1)	7(7.9)	3(3.3)		
6-10	17(18.9)	7(7.8)	4(4.4)	-		
11-15	4(4.4)	8(8.8)	2(2.2)	-		
More than 16	6(6.7)	5(5.6)	2(2.2)	1(1.1)		
Working hours					6	0.905
1-6	6(6.7)	2(2.2)	2(2.2)	1(1.1)		
7-12	31(34.5)	25(27.8)	12(13.4)	3(3.3)		
More than 12	4(4.4)	3(3.3)	1(1.1)	-		
Works in other institutions					3	0.222
Yes	7(7.8)	1(1.1)	1(1.1)	-		
No	34(37.8)	29(32.2)	14(15.6)	4(4.4)		
Work area					12	0.446
Administrative	3(3.3)	3(3.3)	-	-		
Surgical	1(1.1)	2(2.2)	2(2.2)	-		
Outpatient Clinic	8(8.9)	5(5.6)	5(5.6)	1(1.1)		
Emergencies	18(20.1)	7(7.8)	2(2.2)	2(2.2)		
Hospital	11(12.2)	13(14.4)	6(6.7)	1(1.1)		

Chi2; *Statistically significant value (p <0.005); F = Frequency; (%) = (Percentage).

Regarding Burnout Syndrome, it was more frequently present in females 34.4% (n=31), with married marital status 33.4% (n=30), without finding any association with smoking or alcoholism (p > 0.05) (Table 5).

Table 5 Sociodemographic and clinical characteristics of the health personnel of HGZ/MF No.2 based on Burnout Syndrome (n=90)

		Yes F (%)	No F (%)	gl	p value
Sex	Male	23(25.6)	15(16.7)	1	0.931
	Female	31(34.4)	21(23.3)		
Marital Status	Single	20(22.2)	12(13.4)	4	0.786
	Married	30(33.4)	21(23.3)		
	Common-law	2(2.2)	1(1.1)		
	Divorced	2(2.2)	1(1.1)		
	Widowed	-	1(1.1)		
Smoking	Yes	12(13.3)	5(5.6)	1	0.322
	No	42(46.7)	31(34.4)		
Alcoholism	Yes	8(8.9)	11(12.2)	1	0.073
	No	46(51.1)	25(27.8)		

Chi2; *Statistically significant value (p <0.005); F = Frequency; (%) = (Percentage).

Table 6 shows the work characteristics of health workers at HGZ/MF No.2, based on the degree of Burnout Syndrome, finding a higher frequency of said syndrome in nursing staff 26.7% (n=24), morning shift staff 35.6% (n=32), with seniority from 1 to 5 years 24.4% (n=22), working hours from 7 to 12 hours 44.4% (n=40) and in the emergency area 17.8% (n=16).

Table 6 Occupational characteristics of health personnel at the General Hospital of the Family Medicine Zone No. 2 based on Burnout Syndrome (n=90)

		Yes F (%)	No F (%)	gl	p value
Category	FD	12(13.3)	5(5.6)	3	0.151
	NFD	13(14.4)	9(10.0)		
	GD	5(5.6)	22(24.4)		
Turno	Nursing	24(26.7)		4	0.845
	Morning	32(35.6)	19(21.1)		
	Evening	12(13.3)	9(10.0)		
	Night	6(6.7)	6(6.7)		
	AWD	3(3.3)	2(2.2)		
	Mobile	1(1.1)	-		
Work experience (years)	1-5	22(24.4)	12(13.3)	3	0.514
	6-10	14(15.6)	14(15.6)		
	11-15	10(11.1)	4(4.4)		
	More than 16	8(8.9)	6(6.7)		
Working hours	1-6	10(11.1)	1(1.1)	2	0.078
	7-12	40(44.4)	31(34.4)		
	More 12	4(4.5)	4(4.5)		
Works in other institutions	Yes	6(6.7)	3(3.3)	1	0.667
	No	48(53.3)	33(36.7)		
Work area	Administrative	4(4.5)	2(2.2)	4	0.803
	Surgical	3(3.3)	2(2.2)		
	OC	13(14.4)	6(6.7)		
	Emergencies	18(20.0)	11(12.2)		
	Hospital	16(17.8)	15(16.7)		

Chi2; *Statistically significant value (p <0.005); F = Frequency; (%) = (Percentage); FD = Family Doctor; NFD = Non-Family Doctor; GD = General Doctor; OC = Outpatient Clinic; AWD = Accumulated Working Day.

Discussion

Work-related stress is an occupational health problem that has led to a decrease in workers' productivity and quality of care, impacting their biopsychosocial well-being. Burnout syndrome is considered a consequence of chronic stress, characterized by emotional exhaustion, depersonalization, and low personal fulfillment. Therefore, the study of these comorbidities is essential to identify areas of opportunity for healthcare workers and address not only their physical but also their emotional well-being.

This research was conducted on health personnel of HGZ / MF No. 2 in Zacapu, Michoacán, both men and women, with seniority greater than one year, general practitioners, family members, non-family members and nursing staff, mainly married and in the morning shift, finding that work stress occurred in 54.4% of the population, prevailing the mild level in 33.3% followed by medium in 16.7% and high only in 4.4%, being more frequent in females and married people, while Burnout Syndrome was identified in 60.0% of health workers, predominating the affectation of the emotional exhaustion domain at a high level in 20.0%, especially in female workers, with married marital status, nursing, morning shift and emergency and hospital areas.

Results partially different from those found by Arrogante O et al.,¹⁴ who conducted a study of medical and nursing staff in intensive care, who reports that personal fulfillment was the most affected, followed by emotional exhaustion, with a greater impact on female nursing staff, aged 31-40, with a permanent contract for the majority. However, their study population was mainly made up of nursing staff, concluding that the affectation of the three dimensions of burnout were associated with poor physical, mental health and psychological well-being. While Rendón MS et al.¹⁹ found a prevalence of medium Burnout in 82.2%, with the personal fulfillment domain being the most affected, without finding a relationship with sex or marital status, results partially similar to those of the present study, despite the fact that it was conducted on nursing staff since they used the Maslach Burnout Inventory Questionnaire for healthcare personnel (MBI-HSS), a different version from the one used in that research.

Regarding work-related stress, Cortez-González LC et al.²² established a prevalence of medium-level stress at 18.3% and high-level stress at 10.4%, with almost half of the workers free of work-related stress. It occurred mainly in females and married individuals, with no association found between these variables. These results were different from ours, probably due to the fact that the study was conducted among nursing staff at a tertiary care facility. However, there are authors who have found an association between the prevalence of work-related stress and category, as is the case of Alvarado-Chacón RE et al.²³ in a study conducted in Ecuador in 2024, where a higher prevalence of work-related stress was established in nursing staff (61.1%), as opposed to medical staff (38.9%). However, no association was established with sociodemographic variables.

With respect to smoking, it was found that there is an association with work stress, but not with alcoholism, while with burnout no relationship was found, results similar to those of Gómez-Aranda C et al.,²⁴ who reports a prevalence of work stress of 72.2%, as well as a statistically significant relationship with nicotine dependence, commenting that men tend to smoke more in social situations, while women do so as a psychological coping mechanism when they experience stress, anger or depression, resulting in that as work stress increases, so does nicotine dependence, so people with a high level of work stress have a greater dependence on this substance.

Contrary to what Ávila ML et al.,²⁵ reported, no relationship was found with chronic alcohol consumption, but there was a relationship with work-related factors, negatively relating to workload and morale. On the other hand, Villa-Galindo VH et al.,²⁶ mention that personnel working in the COVID area presented higher alcohol consumption. They also found a positive and significant correlation with harmful consumption in personnel who had greater emotional exhaustion. Results probably differed from those presented in that research, due to the sample size and characteristics of the study population.

Regarding work-related variables, nursing staff, morning shift workers, with 1 to 5 years' seniority, working 7 to 12 hours per day, and those in the hospital and emergency department were found to be the most likely to experience work-related stress and burnout syndrome. These results may be supported by those reported by some authors, such as Serna DS et al.²⁷ in 2020, who reported that various work-related risk factors have been linked to burnout syndrome as a chronic consequence of work-related stress in workers. They also mentioned that medical residents are the most vulnerable group to burnout, with the highest incidence rate occurring in the first year. These factors also indicate the interaction between the work environment, work management, and employee needs, which can be detrimental and affect workers' quality of life and productivity.

Romero-González AR et al.,²⁸ in a study conducted on Mexican health professionals, found an overall prevalence of Burnout Syndrome of 52.0%, mainly in the group of medical residents (68.9%), followed by professionals with postgraduate degrees (52.20%), geriatricians (50.0%) and internists (49.6%), with a greater impact on women, commenting that it is directly proportional to the years of medical practice, being higher in those with 4 to 6 years and less in those with 26 to 30 years of practice, in doctors who were dedicated to teaching, in those who worked in hospitalization areas as opposed to those who were exclusively in consultations, and in those who worked in more than two hospitals. Agreeing in this way that the working hours per day and the greater number of places where they work, especially hospitalization, negatively impact the mental health of the worker, generating various symptoms such as fatigue, exhaustion attributable to work activity and anxiety, however, they used a different evaluation instrument than the one in this study.

Results contrary to those issued by Rea JK et al.,²⁹ who commented that 51.0% of workers presented Burnout Syndrome, with male health professionals presenting high levels of emotional exhaustion and low levels of personal fulfillment, however, this study was conducted during a pandemic in a surgical hospital.

With the aforementioned, it is undoubtedly clear to us that all these factors have increased in one way or another with the arrival of the pandemic, and even other stressors that are typical of epidemic situations have been added, coupled with the problems of lack of human and material resources with which we live day to day in the different medical units, work-related stress increases in workers. The International Labor Organization (ILO) itself points out that common reactions to these factors translate into negative stress, low mood, low motivation, increased fatigue and repercussions on depression, anxiety and other serious effects on mental health,³⁰ which is why it is important to carry out this type of research studies, in order to timely identify areas of opportunity in which we can work to improve the work environment of the worker and with it the efficiency and resolution of their medical care.

Regarding limitations, we found the sample size, as well as the lack of tools to assess intrinsic, environmental, and work-related risk factors, in order to more accurately determine the stressor and create

more focused and precise preventive strategies. We also found a lack of tools to help assess the levels of depression, anxiety, and stress in physicians and nurses to understand their relationship with burnout syndrome and work-related stress.

Conclusion

Work-related stress is present in more than half of the health workers assigned to HGZ/MF No.2, with mild stress being the most frequent, while more than half of the population surveyed presented Burnout Syndrome, with the predominant affectation being the emotional exhaustion domain followed by depersonalization, especially in nursing staff assigned to the hospital and emergency areas, areas that serve a greater number of patients and who require quality medical care from the health personnel assigned to these work areas, for which mental health in them is considered necessary. Hence the importance of mental health care for healthcare workers, who are affected by work overload and the many labor disputes that exist, thus avoiding future physical and mental health problems and providing better care to their patients.

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Conflict of interest

The authors declare that they have no conflicts of interest.

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