



“Burnout syndrome and association with work stress in nursing staff in public hospital of the northern border of Mexico”

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ABSTRACT

Currently in Mexico, there is a lack of published research assessing nursing burnout in a consistent manner. The pressure of having to provide quality care to low income patients can be a serious factor triggering work stress in the nursing professional. The aim of this study was to establish the connection between burnout, work stress and both demographic and labor factors in nursing staff. A sample of 424 nurses participated in the descriptive and cross-sectional study. Each of the participants answered a questionnaire with two validated instruments, the Maslach Burnout Inventory-Human Services Survey and the Nursing Stress Scale, both in their Spanish version, as well as a demographic and labor survey of the authors' own creation. A bivariate logistic regression analysis was used to determine any significant association between the variables. We found a prevalence of 65.09% in mid-level burnout syndrome among the female sex. Men, on the other hand, featured a high level of emotional exhaustion and depersonalization, whereas the female sex showed significantly lower levels of depersonalization. Most of the staff showed acute stress levels. Some factors found in the potential development of burnout were work shift, position, department and gender.

Introduction

According to the literature, burnout syndrome results from failure to adapt to work, and is associated with physical symptoms (fatigue, malaise), demotivation and emotional exhaustion regardless of sex, age or marital status. Maslach's Burnout model (Maslach et al., 1996) holds that prolonged exposure to environmental and situational stressors results in burnout, generating emotional exhaustion, depersonalization and lack of personal achievement (Khamisa et al., 2016). Likewise, burnout has been defined as experiencing of long-term exhaustion and decreased interest, usually within the work context. It occurs as a result of spending too much effort on the job and having too little recovery over a period of time. Burnout can affect any type of worker; however, high stress work is more likely to generate greater burnout than lower stress jobs (Elshaer et al., 2018).

Epidemiological data on burnout syndrome reflect the severity of the problem and its negative impact both at home and at work, which explains why research on burnout has skyrocketed in the last forty years

(Vargas et al., 2014).

In recent years, it has been shown that of all workers susceptible to burnout syndrome, health professionals experience it the most. This is attributed mainly to the frequency with which they face stressors such as the interaction with patients and family, lack of support, work overload and working hours among other aspects. Within health professionals, nurses hold the highest risk of suffering from burnout due to their direct exposure to patients, illness, death and work overload, as well as to other common stressors in a hospital setting. The situation in today's world is also highly conducive to the growth of this phenomenon. Internal Medicine, Emergency and the Adult and Neonatal Intensive Care Unit services are considered to have the greatest impact on staff in this regard (Gómez Urquiza et al., 2017; Khamisa et al., 2017; Pradas Hernández et al., 2018). Additionally, burnout is considered a common problem among mental health professionals as figures between 21% and 67% of personnel experiencing this problem have been reported (Foster et al., 2018).

According to previous studies, burnout potential factors include age,

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gender, marital status, income, level of education, years of experience, work department, shift pattern, number of patients per nurse, and job category. Burnout among nurses is associated with different personal and situational factors affecting nurses' turnover rates and shortage and, ultimately, the quality of care provided (Alenezi et al., 2019).

Nursing is considered a high risk and high stress profession, given the fast-paced work environment and the constant need to handle emergencies. That is why nurses are considered susceptible to psychological stress and mental health problems and, thus, more vulnerable to exhaustion over other health professionals. Currently, work stress accounts for 50–80% of psychosomatic or stress-related illnesses among employees (Luan et al., 2017).

Work stress is defined as a harmful psychobiological response which appears when the requirements of a job do not match the worker's capabilities, resources or needs. It may be related to the work itself (work load, poor decision-making ability) and also to the organizational context or the work environment (poor communication, interpersonal conflicts), as well as to difficulty balancing family life with the job. In addition, each worker's personality traits and different coping styles explain the considerable individual variation with which workers perceive or respond to work demands or their work environment. Work-related stress has been associated to numerous negative effects on physical and mental health, and it has become a growing problem for workers, businesses, occupational health departments and for the health system in general, with a considerable relationship with absence from work and high health costs (Amarneh, 2017; Chou et al., 2014; Montero Marin et al., 2014; Nakao, 2010).

Work stress is considered a health problem that impacts both employees and organizations as it tends to cause exhaustion, absenteeism and is even thought to trigger some metabolic diseases. Some of the literature regarding stress and burnout establishes that this is due to work situations that impose high demands on workers; the inability of nursing staff to meet the exercise demands imposed can lead to physical problems or psychological disorders. To date, research has mainly focused on work stress, nurses' general health, burnout, work-related injuries, and job satisfaction (Khamisa et al., 2017; Nowrouzi et al., 2015). While there is a great deal of research related to burnout, there is a shortage of studies focusing on the impact of burnout prevention programs on those experiencing high levels of work stress (Alenezi et al., 2019).

In modern society, work stress and burnout syndrome are important issues for health professionals. The expectation of providing quality care to low-income patients can trigger serious work stress among nursing staff. This type of stress entails both physical and mental conditions which affect productivity, effectiveness, job satisfaction and the quality of care provided (Ezenwaji et al., 2019).

In connection to this, females have a greater presence in the field at an international level; thus, their predisposition to exhibit burnout at any of the levels and dimensions prevails, whereas the male staff tends to present higher rates of work stress, emotional exhaustion and depersonalization than the female sex. In addition, married women have greater emotional exhaustion than single women. On the other hand, the results refer to positive relationships between work stress, emotional exhaustion and depersonalization (Abarghouei et al., 2016; Zhang et al., 2018).

Objectives

The intention of this study is to analyze the association between burnout syndrome, work stress and the sociodemographic factors involved in the presence and risk of burnout among the nursing personnel. The hypothesis was to determine the significant association between Burnout syndrome, work stress and the sociodemographic factors in the Nursing staff of a Public Regional Hospital on the Northern border of Mexico.

Methodology

Design

A descriptive, cross-sectional study was carried out with nursing personnel from the different categories established in the IMSS; General Nurse, Specialist Nurse, Head of Floor Nurse and Deputy Head of Nursing. The surveys were conducted during working hours. Nurses with an indefinite contract with at least one year of seniority were included. Nurses with a history or diagnosis of mental illness, medical leave and temporary or vacation contract were excluded from the study.

Ethical considerations

The study was carried out according to guidelines for ethical research conduct. Research permission was obtained from the 801 Local Health Research Committee of the IMSS (Mexican Institute of Social Security, for its Spanish acronym) with protocol authorization number R-2019-801-005. The nurses received a letter with the information about the study objectives and methodology, as well as a statement clarifying the anonymous and voluntary nature of the participation.

Sample and population

The IMSS is a Public Health Institution in Mexico that provides primary health care services and specialized medical care. For specialized medical care there are second and third level hospitals, and regional hospitals which assist the user population. The study was carried out in a regional hospital located on the northern border of Mexico. The study population is the Nursing staff working in this hospital. The sample size is 424 nurses, which was measured with a significant level of 0.05% and a confidence level of 95% with a proportion of 0.45%, based on previous studies (Foster et al., 2018; Luan et al., 2017; Pradas Hernández et al., 2018). The sample was obtained by a simple random sampling of the workers' database of the nursing area, broken down by category and work shift, provided by the human resources department. The selected nurses who were working in the different services of the hospital were invited to participate. The response rate was 90%.

Instruments

Two validated data-collection instruments were used: one to measure burnout and a different scale to determine work stress in nursing, as well as a demographic and labor survey of the researchers' own creation. It elicited information such as age, gender, seniority, department, category, academic level, shift, marital status and type of contract.

Burnout

In the burnout evaluation, the Maslach Burnout Inventory-Human Services Survey (MBI-HSS) was used (Maslach & Jackson, 1981) in its Spanish version (Córdoba et al., 2011), which specifically addressed human service professionals. This instrument consists of 22 items and classifies burnout into three dimensions: Emotional exhaustion (EE), which refers to the absence of feeling or to an impersonal response towards those who receive the professional's service, eventually resulting in the depletion of strength or emotional capital; Depersonalization (DP), which manifests itself through the emergence of negative, cynical, cold and impersonal feelings and attitudes towards the subject with which they work; and, Personal Realization (PR), which implies the tendency to evaluate oneself negatively and which surfaces especially when working with people. In these cases, professionals may feel discontented and unhappy with themselves and their work. Each question is scored with a frequency ranging from 0 (never) to 6 (daily). High levels in the dimensions of emotional exhaustion and depersonalization and low levels in personal achievement suggest the presence of burnout

syndrome. This tool is habitually and reliably used to measure burnout among nurses, and it normally features Cronbach's alpha internal consistency values of 0.76 with a lower consistency in DP ($\alpha = 0.51$). In this study, the values obtained were of 0.81 for internal consistency and 0.58 for DP, which are consistent with those found in the international literature.

Work stress

To assess the level of stress, the study employed the **Nursing Stress Scale (NSS)** (Gray Toft & Anderson, 1981; Lee et al., 2007), in its Spanish version, as it allows for the measurement of the frequency with which certain situations are perceived as stressful by hospital nursing staff. It consists of 34 items that have been divided into four groups: 1) work efficiency, which implies the perception of stressors related to the nursing role within a hospital, to patient care and to nurses' training in therapeutic management; 2) death / suffering, which consists of stressors associated with patients' death and suffering; 3) professional relationship, refers to their supervisors and doctors' criticisms of their function or service; and 4) emotional interaction, since it involves stressors related to feelings towards to patients and other staff working in their environment. The possible answers range from 0 (never) to 3 (very frequently). By adding the scores obtained in each of them, it is possible to obtain a global index ranging between 0 and 102. For the evaluation and classification of stress among the population studied, additions with values from 14 to 70 were considered acute, and results with values between 71 and 102 were considered chronic. The assessment of the scale's internal consistency according to Gray-Toft and Anderson (Gray Toft & Anderson, 1981) through the Cronbach Alpha coefficient, was 0.89. In this study, the values were $\alpha = 0.92$.

Data analysis

Basic descriptive statistics were obtained; in addition, the variables were expressed in percentages and absolute frequencies. Inferential statistics was used to determine the relationship between them, and variable transformation was performed to complement the inferential analysis and to verify their association. In order to reduce bias and confounding variables, the study used the binomial logistic regression model (Shao et al., 2018), with an Odds Ratio greater than one and a 95% confidence interval; a $p < 0.05$ and Pearson's Ch2 were considered using the SPSS 22.0 program.

Results

The sample consisted of 424 nursing professionals: 79.7% were women, the average age was 38 years, 57.1% of participants were married and 26.2% were single; the average seniority in the profession was 11 years. Regarding the category, participants were distributed as follows: general nurses 67.9%, specialized nurses 21.7%, heads of unit 8% and deputy heads of nurses 2.4%. As for the distribution of the working day, the morning shift represented 38.4%, the evening shift 29.7% and the night shift 31.8%. Regarding the medical departments, 47.64% of the participants belonged to Internal Medicine, 28.8% to Gynecology-Pediatrics and 23.6% to Surgery. Finally, as far as working conditions and schooling, 90.6% of personnel were permanently hired; 43.6% had taken a Post-technical course, 26.2% held a Bachelor's Degree and only 1.9% a Master's degree.

Regarding the relationship between the burnout syndrome, stress and socio demographic variables, we found that 30–39 year-old female staff, married, and with a 10–19 year seniority, working the morning shift in the Department of Internal Medicine, in the category of general nurse and a full time contract, who also hold a specialization course, are considered prone to suffer from burnout and stress since they are the ones featuring the highest levels in both cases (Table 1).

Concerning the association between gender and the risk of suffering

Table 1
Burnout and stress sociodemographic variables.

		Burnout		Stress	
		f	%	f	%
Age	22–29	39	9.20	55	12.97
	30–39	165	38.92	195	45.99
	40–49	112	26.42	140	33.02
	50–58	28	6.60	31	7.31
Gender	Female	276	65.09	335	79.01
	Male	68	16.04	86	20.28
Work department	Internal medicine	158	37.26	201	47.41
	Surgery	82	19.34	99	23.35
	Pediatric gynecology	104	24.53	121	28.54
Seniority	1–9	108	25.47	135	31.84
	10–19	196	46.23	239	56.37
	20–28	40	9.43	47	11.08
Marital status	Married	198	46.70	241	56.84
	Single	90	21.23	110	25.94
	Divorced	28	6.60	40	9.43
	Widow(er)	7	1.65	8	1.89
Work category	Free union	21	4.95	22	5.19
	General nurse	229	54.01	285	67.22
	Specialist nurse	79	18.63	92	21.70
	Nurse (or) unit head	29	6.84	34	8.02
Hiring conditions	Deputy head nurse	7	1.65	10	2.36
	Full time	315	74.29	381	89.86
	Management	7	1.65	10	2.36
	Substitute	22	5.19	30	7.08
Academic level	Jr. highschool	26	6.13	35	8.25
	High school	65	15.33	84	19.81
	Post-technical studies	157	37.03	185	43.63
	Bachelor's degree	91	21.46	109	25.71
Work shift	Master's degree	5	1.18	8	1.89
	Morning	132	31.13	162	38.21
	Afternoon	101	23.82	124	29.25
	Night	111	26.18	135	31.84

Source: Directly from Database.

burnout in its three dimensions, we found a prevalence of burnout syndrome at the mid-level, with 65.09% among the female sex. Men, however, featured a high EE ($p < 0.06$) and a high-level of DP ($p < 0.02$); in contrast, the female sex showed a significantly lower level of PD ($p < 0.04$). The study did find Burnout Syndrome in the medium-high levels although there are no differences in its dimensions. There is no significance in work stress stemming from gender. Regarding the NSS stress scale, it was found that 99.29% of the personnel surveyed had an acute stress level, and only 0.70% had chronic stress. Finally, females featured 79% of acute stress, while males showed 20.28 (Table 2).

According to the Nursing stress scale analysis with percentages and absolute frequencies, among the groups in which this scale is

Table 2
Burnout and stress level in nursing by gender.

		Women		Men		p < 0.05
		No.	%	No.	%	
Burnout	High	42	9.91	9	2.12	0.71
	Medium	276	65.09	68	16.04	0.64
	Low	20	4.72	9	2.12	0.15
Emotional exhaustion	High	186	43.86	57	13.44 *	0.06
	Medium	86	20.28	18	4.24	0.48
	Low	66	15.56	11	2.59	0.16
Depersonalization	High	41	9.66	19	4.48 *	0.02
	Medium	105	24.76	29	6.83	0.69
	Low	192	45.28 *	38	8.96	0.04
Personal Fulfillment	Low	172	40.56	40	9.43	0.54
	Medium	69	16.27	18	4.24	0.88
	High	97	22.87	28	6.60	0.50
Stress	Acute	335	79.00	86	20.28	NS
	Chronic	3	0.70	0	0.00	NS

Source: Directly from Database. NS = not significant * = $p < 0.05$.

subdivided, the one with the highest index was that of emotional interaction, which involves stressors related to feelings towards patients and other staff working in their environment, with 77.6% in a low level. And according to this same scale, the stressor most frequently affecting staff is the lack of personnel to adequately cover the unit's work, with 21.6%. Observing the suffering of a patient often generates stress levels of 34.19%. Also, the staff which has a higher rate of acute stress is that in the Internal Medicine area, with 47.4% (Table 3).

In the logistic regression on burnout, the most significant dimensions were: high depersonalization and low personal fulfillment ($p < 0.0001$). High depersonalization in the female gender and low personal accomplishment were the variables with the highest risk of burnout (Table 4).

Discussion

According to the international literature, the burnout syndrome is associated with countless demographic, labor, personal, health and performance variables in the Mexican working population. Nurses appear to constantly undergo high work pressure, thus becoming vulnerable to burnout (Zhao et al., 2019). The findings of this research allowed us to know that burnout syndrome can be rated in a universal way since the results are consistent with several studies carried out around the world.

This study reveals that in terms of gender, female staff are most likely to suffer from burnout, a result which is consistent with other studies. Brazilian nurses working a morning shift, married and childless, Australian and New Zealand women with high academic degree and work in hemodialysis, and women working Iranian hospitals, have a higher degree of burnout than their male colleagues (Alharbi et al., 2016; Hayes et al., 2015; Ribeiro et al., 2014; Vidotti et al., 2018). In contrast, there are studies that establish the absence of significant differences related to gender (Cañadas De la Fuente et al., 2015; Munnangi et al., 2018; Rizo Baeza et al., 2018), reporting variability in the results. Likewise, a systematic review carried out in Spain (Cañadas De la Fuente et al., 2018) and taking gender and marital status as some of the variables and risk factors for burnout, establishes that women have a greater tendency to develop negative attitudes and carry a significant risk of developing burnout.

Meanwhile of the remaining demographic variables like: the age of 30–39 years, marital status, and seniority between 10 and 19 years, stands out the most. It may also be that the nurses started working at an early age, then as responsibilities such as marriage or family began to add up, it is possible that more seniority in the work area may have the greater the risk of burnout. While it is true that just as in gender, age, and marital status, it turns out that such variables were of little significance in similar studies (Deklava et al., 2014; Portero de la Cruz & Vaquero Abellán, 2015), this studies have identified marriage, younger age, higher levels of education, and seniority as a predictor of burnout (Adriaenssens et al., 2015).

The study also shows that work shift and the department play a significant role as risk factors for burnout syndrome, as the staff working in the morning shift and the Department of Internal Medicine are the

Table 3
Stress scale in nursing.

	f	%
Dimensions		
Low efficiency	231	54.5%
Death and low suffering	287	67.7%
Low working relationships	299	70.5%
Low emotional interaction	329	77.6%
Stressors		
Lack of personnel to adequately cover the unit	92	21.6%
Watching a patient's suffering	145	34.19%

Source: Directly from Database.

Table 4
Burnout logistic regression.

	B	Standard error	Wald	gl	Sig.	Exp (B)
Burnout						
High depersonalization	2.92	0.591	24.578	1	0.0001	18.69
Low personal fulfillment	2.51	0.584	18.613	1	0.0001	12.41
High depersonalization						
Female gender	-0.88	0.344	6.578	1	0.01	0.41
High emotional exhaustion						
Female gender	-0.49	0.278	3.190	1	0.07	0.60
Low personal fulfillment						
Level of studies: Jr. high school	-2.56	1.254	4.178	1	0.04	0.07

Source: Directly from Database.

most likely to develop burnout. This department includes five hospital areas: Emergency, Internal Medicine, Hospitalization, Chemotherapy, Hemodialysis and the Adult Intensive Care Unit. The ideas shown regarding shift and department are also consistent with the results obtained at an international level, where the morning or day shift, as well as the Emergency Services and the Intensive Care Unit, are the most conducive to burnout (Li et al., 2018; Malaquin et al., 2017; Vargas et al., 2014; Zhang et al., 2014).

It is important to note the prevalence of the burnout dimensions, since the staff refers to themselves as having positive burnout levels; however, the results give an average level of 81%; in regards to each of the burnout dimensions. We have a high EE of 57.3%, a low DP of 54.24% and a low RP of 49.9% (Table 2). When comparing these results with those found in the literature review, we find similarities in the high EE and low DP plus a low RP (Dimunova et al., 2017). In general, the trend leans towards moderate and high results (Arrogante & Aparicio-Zaldivar, 2017; Li et al., 2018; Setyowati et al., 2019; Yang et al., 2018). Latin America shows a similar phenomenon, with medium and low EE and DP levels as well as medium high levels of RP (Rocha Hernandez et al., 2019; Torre et al., 2019).

The predictive model of logistic regression revealed that the academic level is a determining factor in developing burnout, since in cases with less educational background there seems to be a greater risk of suffering from low RP-associated burnout and the presence of stress in the professional worker (Cao et al., 2015).

The results of the association between burnout and gender yield a high significance in EE and DP in men in contrast to women; and in regards to logistic regression, we find DP as the main predictor of burnout, such results being consistent with studies conducted in other countries (Abarghouei et al., 2016).

According to several studies, the intensive care unit is considered a fast-paced, demanding environment with a different tension load from that of the other hospital services. Staff working in these departments are prone to suffer stress and consequent burnout (Alharbi et al., 2016; Lima Da Silva et al., 2015; Lu et al., 2019; Rocha Hernandez et al., 2019).

Although it is true that in several studies the association and correlation between burnout and work stress is consistent (De la Fuente Solana et al., 2019; Ezenwaji et al., 2019; Khamisa et al., 2015; Lu et al., 2019), in this study we did not find a significant relationship between burnout and work stress. Acute stress is present in 99.29% of the staff studied, yet there is no significance in the association of gender with work stress. On the other hand, the main stressors are those that involve feelings related to patients and other personnel working in their environment, insufficient staff to adequately cover the unit's work, which itself generates work overload, and watching the suffering of a patient frequently. All of the above are considered as main stressors in the

existing literature (Dobnik et al., 2018).

Conclusions

This research allowed for the determining of factors associated with burnout and work stress in this population group. The result obtained confirms the research hypothesis “determine the significant association between Burnout syndrome, work stress and the sociodemographic factors in the Nursing staff of a Public Regional Hospital on the Northern border of Mexico”. It found a presence of Burnout Syndrome in the medium-high levels although there were no differences in its dimensions.

On the other hand, most of the staff was found to suffer from acute stress, which generates some concern because despite this, there is an alteration in at least one of the dimensions of burnout. Regarding gender, when making a comparison males show high levels of EE and DP, while females feature only low levels of DP. In addition, in the logistic regression a prevalence of the female sex was found in the EE and DP dimensions. It is noteworthy that despite the absence of chronic stress considered by the literature as one of the main factors in the development of burnout, according to the above mentioned results there is a presence of this even at low levels, a situation which leads us to look for care strategies that can reduce stress in staff in order to prevent its progression to a serious stage of burnout.

Relevance for clinical practice

It is important that public health institutions consider strategies to reduce and contain the occupational risk factors, in order to minimize the exposure to burnout and stress, with an innovative plan that each public health institution would create to address the needs for training and communication in interpersonal relations, in order to prevent the risk of burnout, with intervention workshops and management of personal conflict in the work areas.

The current research also showed that the higher the hierarchy, the greater the stress and exhaustion, with a higher level of depersonalization. Therefore, it is essential that nursing staff be aware of the importance of maintaining their mental health when providing nursing care, avoiding the development of burnout, and preventing possible complications, because work stress tends to cause exhaustion, absenteeism and can trigger some metabolic diseases (Table 2).

Implications for future research

It is necessary to identify the risk of burnout, and how to reduce and treat it. Future research should be carried out with educational interventions in the management and control of occupational stress. There should also be research on treatment and psychological interventions in nurses with occupational mental health problems, which allow them to live in better conditions.

Declaration of completing interest

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