MEDDOCS Open Access Publisher

ISSN: 2639-4391

Annals of Epidemiology & Public Health

Open Access | Research Article

Stress, Burnout, Somatic Symptoms, and Working Conditions in Residents and Senior Doctors

Martha Edilia Palacios Nava*; María del Pilar Paz Román

Public Health Department, Faculty of Medicine, National Autonomous University of Mexico, Mexico.

***Corresponding Author(s): Martha Edilia Palacios Nava**

Public Health Department, Faculty of Medicine.

National Autonomous University of Mexico, Mexico.

Tel: 52-5556232300; Email: pnme@unam.mx

Received: Sep 15, 2020

Accepted: Oct 30, 2020

Published Online: Nov 03, 2020

Journal: Annals of Epidemiology and Public health

Publisher: MedDocs Publishers LLC

Online edition: http://meddocsonline.org/

Keywords: Health care workers; Burnout; Working conditions; Occupational epidemiology; Stress; Burnout; Somatic symptoms; Working conditions in residents and senior doctors.

Abstract

Burnout frequently is associated with stressors present in the medical field. The objective of this study was to identify the association between working conditions, stress burnout and somatic symptoms of residents and senior doctors. A cross-sectional study was carried out with 724 physicians from hospitals in Mexico City. We evaluated socio-demographic characteristics, working conditions, stress, burnout, and somatic symptoms. Wolfgang, Maslach and Kroenke inventories were used. They had a reliability of 0.91, 0.83 and 0.78, respectively. There were significant differences in the working conditions of residents and senior doctors, p<0.001. There was a higher prevalence of stress in residents than in doctors, p=0.006 The prevalence of emotional exhaustion was 44% for residents and 23% in doctors, p <0.001. The level of depersonalization was 51% and 46%, respectively, p = 0.004. These had significant differences according to working conditions. The risk of presenting severe somatic symptoms was 3.5 times higher in those who had a high stress level (CI 2.45-5.33). The risk of having severe symptoms was three times higher in those who perceived supervision (CI 1.49-2.9) and workload as excessive (CI 2.06-4.11). The risk of burnout was twice as high for those who reported excessive workload, performed guards, and attended more than 20 patients per day. We found significant differences in the levels of stress, burnout, and severity of symptoms according to professional category and working conditions between residents and senior doctors.

Introduction

Work stress is generated when characteristics of job do not match the capabilities, needs and resources of workers [1]. When stress is continuous, it can favor and/or increase the presence of health disorders, such as cardiovascular diseases, mental disorders, somatic symptoms, and burnout [2-6].

Stress and burnout can occur in any occupation. However, due to their daily work conditions, health professionals are who have a greater predisposition. These conditions include excessive work overload, responsibility and supervision, long working hours, little availability of time for family and social relationships, among others [5-7]. In addition, the strong competitiveness and arbitrary exercise of hierarchical functions in the medical field is well documented. These working conditions, which are part of physician´s learning, have been recognized as major stressors to which mainly undergraduate interns and specialty residents are exposed [3,8].

Cite this article: Martha Edilia PN, María del Pilar PR. Stress, Burnout, Somatic Symptoms, and Working Conditions in Residents and Senior Doctors. A Epidemiol Public Health. 2020; 3(1): 1030.

Since 2000, the World Health Organization (WHO) has recognized burnout as a problem derived from the work environment rather than from personal problems [9]. However, it was not until 2019 that it was included in the 11th International Classification of Diseases, not as a medical condition, but as an "occupational phenomenon". Burnout is defined "as a result of chronic stress in the workplace that has not been successfully handled" [10]. For this characterization WHO took the approach of Maslach and Jackson, who defined *burnout syndrome* as an inability to cope with chronic emotional stress, its main features are emotional exhaustion, depersonalization and reduced personal performance [11].

Different studies have shown the high frequency of the stress [3-5,12] and burnout in health professionals. The prevalence in different specialties and levels of physicians, as well as relationship with working conditions, organizational factors, quality of life and socio-demographic characteristics has been evaluated [6,8,9,13-23]. Likewise, the impact of burnout on mental and physical health, productivity and patient care has been evaluated [2,24,25].

Even though a large amount of research has been generated about stress, burnout and its association with various factors, in the literature review no studies have been found that have evaluated how the different professional category in the work of physicians is associated with the presence of stress, burnout and somatic symptoms. The purpose of this research was to identify the difference in working conditions between residents studying a specialty and senior doctors in hospitals and to determine if these conditions were associated with the frequency of stress, burnout, and somatic symptoms. Likewise, it was proposed, to use and validate a specific instrument for the determination of stress in health professionals [26,27]. The general objective was to identify the frequency of stress, burnout and somatic symptoms and its association with the working conditions of residents and senior doctors.

This work shows the expanded results of a global investigation, all the information is comprehensively reviewed and the interaction between working conditions, stress, burnout and somatic disorders is analyzed [5,6,27].

Methods

An analytical cross-sectional study was carried out with residents and senior doctors of seven hospitals in Mexico City. The sample was integrated for convenience and was made up for 724 physicians. A questionnaire with four sections was applied. In the first section, socio-demographic characteristics and working conditions were questioned, in the second the stress inventory for health professionals by Wolfgang (HPSI) [26] was included , in the third section we add the Maslach scale for burnout (MBI) [11], and in the fourth section the questionnaire for the health of the patient (PHQ-15), by Kroenke [28] was incorporated to assess the severity of somatic symptoms.

The working conditions were questioned: hours worked per week, number of patients, on-call duty, rotation and work shift, employment elsewhere, lack of freedom to do their job, supervision, and excessive workload.

The Wolfgang inventory includes 30 questions with Likert type scale. Each answer has 0 to 4 points. Instrument variables are personal recognition (9 questions), responsibility for patient care (7 questions), conflicts at work (7 questions), and professional uncertainty (7 questions). A general HPSI variable is the average of all items. The original publication [27] and studies in which it refers to having used the instrument [4,29,30] only reported averages of points obtained by health professionals and not proposed classification or cut points. Thus, to set stress levels we established four cutoffs. We consider the absolute scores, and the range between these values. The cutoff points were: 0 to 30, minimal stress or no stress; 31 to 60, moderate stress; 61 to 90, high stress; and 91 to 120, severe stress. Since the questions included in the inventory are specific to the work of health professionals, it was validated to evaluate its usefulness in this research [27].

The Maslach scale [11], included in the third section of the questionnaire, is the most used for determining burnout in health professionals [23], consisting of 22 questions with a Likert-type scale, with seven response options, ranging from 0, never to 6, every day. The points of each item allow the determination of emotional exhaustion, depersonalization and personal fulfillment dimensions or subscales. The delimitation of emotional exhaustion refers to the perception of being exhausted by the demands of the job, its cut-off points range are, from 0 to 18, low; 19 to 26, medium and 27 or more, high. Depersonalization subscale consists of 5 items, with the following definition: 0 to 5 points, low; 6 to 9, medium and if the score is equal to or greater than 10 it is classified as high. Personal achievement is considered low if the score obtained is from 0 to 33, medium, if it is between 34 and 39 and it is high if the sum of points is equal to or more than 40. For the diagnosis of burnout syndrome, in this research, we strictly follow the cut-off points and the criteria proposed by Maslach [11], which proposes the presence a high level of emotional exhaustion and depersonalization, accompanied by low personal fulfillment.

For somatic symptoms, in the fourth section we included Kroenke's PHQ-15, which assesses the severity of symptoms, it includes 15 questions, with a Likert-type scale, which consider 0, no discomfort; 1, occasional annoyance and 2, a lot of annoyance. The cutoff points are: 0-4 minimum, 5-9 mild, 10-14 high and 15-30 severe.

The information was analyzed with the SPSS 25 program. Quantitative variables were calculated through distributions of frequency, mean, median and standard deviation, while qualitative variables used proportions. To analyze differences between sociodemographic variables, working conditions and their association with stress levels, burnout and somatic manifestations, Chi squared was used. To estimate the risk of presenting stress, burnout and somatic symptoms, and their association to socio-demographic characteristics and working conditions of senior doctors and residents, odds ratios for prevalence were calculated, with a 95% CI. To analyze the differences of the estimated risks adjustments were made according to the professional category.

The study was conducted following the ethical principles set out in the Declaration of Helsinki for medical research in humans. The protocol was approved by the Ethics and Research Commission of the Faculty of Medicine of the National Autonomous University of Mexico.

Results

Frequency of stress, burnout, and somatic symptoms according to working conditions

The research involved 724 physicians from seven hospitals in Mexico City, 52% were residents and 48% were senior doc-

tors. 55% men and 45% women; 47% were single and 46% married Of the entire population, 30 % worked in Emergencies and Intensive Care, 35% in hospitalization and 35% in outpatient clinics. The median age was 32 years old and antiquity 3 years, this because just over 50% were residents and they remained in the hospital only during their period of study to be specialists. There were no statistically significant differences in the distribution in all variables according to professional category, nor sex [5,6]. As shown in Table 1, 94% of residents and 35% of the senior doctors performed guards and 64% of both groups attended between 16 and 30 patients per day. Regarding the working day, 59% of residents worked from 70 to 86 hours per week. Both groups reported lack of freedom to do their job, excessive supervision, and excessive workload, but frequencies were always higher in residents. Except for the number of patients, all these working conditions had statistically significant differences.

Table 1: Working conditions of residents and senior doctors of seven hospitals in Mexico City.

Variable	Attached doctors No. %	Residents No. %	Total No. %	P
Working hours by week				
40-55	(225) 64.8	(68) 18.0	(293) 40.5	0.0001
56-70	(81) 23.3	(86) 22.8	(167) 23.0	
71-86	(41) 11.8	(223) 59.2	(264) 36.5	
Carry out guards				
Yes	(120) 34.6	(355) 94.2	(475) 65.6	0.0001
No	(227) 65.4	(22) 5.8	(249) 34.4	
Patients by day				
<15	(107) 30.8	(105) 27.9	(212) 29.3	
16 - 30	(223) 64.3	(240) 63.7	(463) 64.0	0.135
>31	(17) 4.9	(32) 8.5	(49) 6.8	
Excessive supervisión				
Never	(109) 31.4	(51) 13.6	(160) 22.1	0.001
Sometimes	(179) 51.6	(175) 46.5	(354) 49.0	
Frequently	(44) 12.7	(106) 28.2	(150) 20.7	
Always	(15) 4.3	(44) 11.7	(59) 8.2	
Lack of freedom to do their job				
Never	(155) 44.7	(95) 25.5	(250) 34.7	0.0001
Sometimes	(133) 38.3	(175) 46.9	(308) 42.8	
Frequently	(47) 13.5	(73) 19.6	(120) 16.7	
Always	(12) 3.5	(30) 8.0	(42) 5.8	
Excessive workload				
Never	(28) 8.1	(13) 3.5	(41) 5.7	0.0001
Sometimes	(131) 37.9	(106) 28.4	(237) 33.0	
Frequently	(132) 38.2	(146) 39.1	(278) 38.7	
Always	(55) 15.9	(108) 29.0	(163) 22.7	

Stress and working conditions

The Wolfgang stress inventory for Health Professionals (HPSI) showed high internal consistency, with a Cronbach's alpha of the elements defined in the instrument of 0.915 [27]. With the sum of points of each participant, an overall score was integrated. The average obtained in the population was 43.9 with a standard deviation of 17.98 and a median of 44.

According to the established classification, 23% of the entire population presented a low level of stress, 61% had moderate stress and 15% had high stress, and only 1% presented severe stress. However, according to the category at work, 19% of residents had high stress, while 11% of senior doctors presented it, p = 0.006

There were significant differences in the presence of stress, according to the number of hours worked per week, lack of freedom to do their job, excessive supervision and workload, p <0.001. Also, there were significant differences with carried out guards p = 0.005 and number of patients attended, p = 0.04

There were no statistically significant differences in the frequency and level of stress, according to sex, age, and marital status.

Burnout and working conditions

The Maslach inventory for burnout determination (MBI) had an acceptable reliability, with a Cronbach's alpha of 0.783 [6].

34% of all physicians had a high level of emotional exhaustion, 49% had a high level of depersonalization, and 54% had a low level of personal fulfillment.

16% of the population presented Burnout syndrome, with a high level of emotional exhaustion and depersonalization, and a low level of personal fulfillment at the same time.

However, according to the professional category, there were statistically significant differences (p≤ 0.01) in the prevalence of burnout as a whole and two of its dimensions in residents and senior doctors. The syndrome was found in 19% of the first and 12% of the latter group; also, emotional exhaustion was 44.4% and 23%, and in depersonalization the difference was 51% and 46%, respectively. Low personal fulfillment was 54% in both groups. The higher prevalence of burnout and its dimensions were associated with a greater number of hours worked (p <0.001), carrying out guards (p = 0.001), more patients seen per

day (p = 0.007), excessive supervision and workload and lack of freedom to do their job (p <0.001)

Working conditions and severity of somatic symptoms

There was a good internal reliability of the PHQ-15, with a 0.80 Cronbach's alpha [28]. 25% of all physicians had a high level of severity of symptoms. Residents had 26% and senior doctors 24%, p = 0.007. Women scored higher than men on the severity scale of the symptoms, p <0.001, they scored 34% in the high level.

There were statistically significant differences in the relationship between the level of severity of psychosomatic symptoms, this relationship was more frequent in those who performed night guards, had lack of freedom to do their job, had excessive supervision and workload, p <0.001.

We did not find differences according to age and marital status.

Associations among working conditions, stress, burnout and somatic symptoms

In the first analysis, we found statistically significant differences in working conditions, frequency of stress, burnout, and somatic symptoms. All these conditions were worse in residents, and the frequency of alterations was higher for residents than for senior doctors. To identify differences in the risks between residents and senior doctors, the scales of variables were reclassified. As shown in Table 2, the risk of presenting stress and burnout was higher for residents than for senior doctors. We found that lack of freedom to do their job, supervision, and excessive workload increased the risk of presenting stress, burnout, and high severity of somatic symptoms.

This association was most evident between excessive supervision and stress and between excessive workload and burnout.

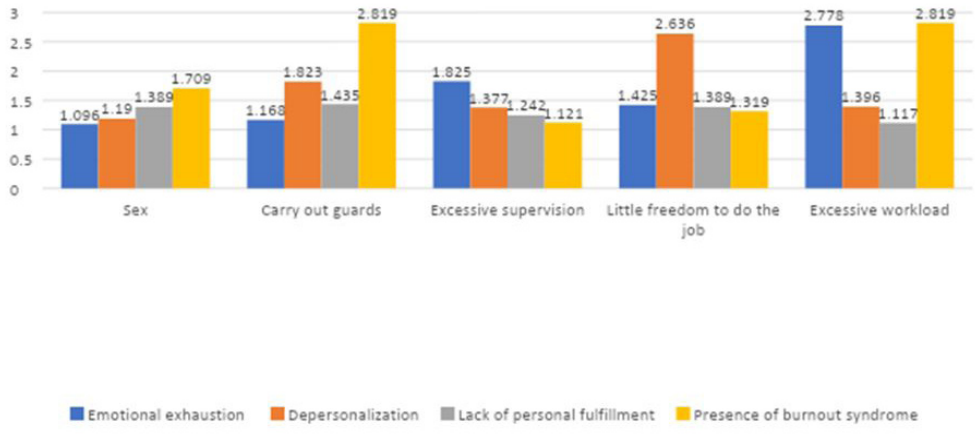
When the variables were adjusted according to professional category, we observed residents had a higher risk of emotional exhaustion, depersonalization, low personal fulfillment, and burnout syndrome as a whole. Residents who were overloaded with work and were on night duty had more than twice the risk of emotional exhaustion and the syndrome also. Little freedom to do their job had twice the risk for depersonalization. There was higher risk for burnout and low personal fulfillment in resident women. Figure 1.

Table 2: Association among working conditions, stress, burnout, and severity of somatic symptoms, in residents and senior doctors of seven hospitals in Mexico City.

Variable	Stress Prevalence*	ORP ** 95% CI	Burnout prevalence *	ORP ** 95% CI	Severity of somatic symptoms *	ORP ** 95% CI
Job category						
Residents	23.1	1.65	19.3	1.71	35.1	.979
Doctors	15.4	1.12-1.43	12.2	1.13-2.59	35.6	.920-1.33
Excessive supervision						
Yes	36.0	4.01	22.0	1.82	47.8	2.08
No	12.3	2.69-5.96	13.4	1.20-2.77	30.5	1.49-2.91
Lack of freedom to do their job						
Yes	35.7	3.35	29.5	1.85	53.2	2.62
No	8.5	2.22-3.05	13.7	1.19-2.89	39.2	1.82-3.77
Excessive workload						
Yes	25.8	3.46	21.3	3.43	44.3	2.91
No	9.1	2.16-5.57	7.0	2.06-5.71	21.5	2.06-4.11

* x 100 physicians. ** Odds ratio for prevalence

Figure 1: Burnout risk and their dimensions adjusted according to professional category in seven hospitals in Mexico City.



Odds Ratio Prevalence
(*) Significant CI 95%

Association between presence of stress, burnout, and somatic symptoms

As observed in Table 3, having stress significantly increased the risk of presenting burnout and a high level of severity of somatic symptoms.

In addition, those who presented burnout increased their risk of presenting a high level of severity of somatic symptoms. The risk for presenting high severity of somatic symptoms was almost the same for those who had stress as for those with burnout. Table 4

Table 3: Risk for burnout and high level of severity of somatic symptoms in residents and senior doctors according to prevalence of stress.

Variable	Burnout prevalence*	ORP** IC 95%	High level of severity of somatic symptoms	ORP** IC95%
Stress				
Yes	58.2	6.9	60.0	3.6
No	9.4	4.4-10.8	29.5	2.42-5.33

*x 100 physicians. Odds Ratio for prevalence

Table 4: Risk for high level of severity of somatic symptoms and prevalence of burnout.

Variable	High level of severity of somatic symptoms*	ORP** 95%
Burnout		
Yes	60.0	3.39
No	30.8	2.24-5.13

*x 100 physicians. Odds Ratio for prevalence

Discussion

As mentioned in the introduction, the purpose of this research was to identify the difference in working conditions between residents studying a specialty and senior doctors, in hospitals, and to determine if these conditions were associated with the frequency of stress, burnout, and somatic symptoms. Likewise, a specific instrument for determining stress in health professionals was proposed, it was used and validated [27].

A peculiarity in the performance of the work of the residents is the double role that they play in the medical institution, on the one hand, they are scholarship students and on the other, in the face of an insufficient number of doctors assigned to hospitals, they are responsible for patient care. This means that, as we found in this study, their working conditions are very exhausting. The specific conditions of this physical wear have already been published with detail and coincide with that referred to in different reports [5,6]. They highlight strenuous working hours, excessive workload, and lack of freedom to do their job [20,31-35].

The stress assessment was performed with the Wolfgang inventory [26]. Its importance is that, unlike other instruments to measure stress [36-38], the questions included are very specific for medical work. The validation of this instrument showed a greater consistency than previously reported [26,27]. Likewise, the average stress found in our research was higher than that reported in other studies that used the same instrument [4,29,30].

In this research, stress risk was higher in residents and was significantly associated with their working conditions. However, although high levels of stress and their distribution in resident and senior doctors have been reported in different investigations [3,4,12,29,30,39], it is not possible to establish a level stress comparison, this is because the measurements of our study were made with a different instrument, in which we established cut-off points [5] that did not exist in the original inventory methodology [26].

Regarding burnout, many studies have evaluated prevalence in senior doctors of different specialties and residents [14-16,20,23,34,40,41]. A difficulty in comparing the prevalence found in different studies, is the inconsistency in the syndrome determination in different investigations. A systematic review showed that in 64 studies there were 10 different cut-off points to define the level of each subscale and 8 different criteria to determine the presence of burnout. Several of these considered the presence of the syndrome in those with moderate levels, others added the moderate and high levels or defined the syndrome with only one high-level subscale [21]. The difference in the criteria for the delimitation of the burnout syndrome also is reported in the meta-analysis carried out by Prentice et al, in which the authors comment on the need to standardize the definition of burnout in accordance with the Maslach Burnout Inventory framework in order to facilitate the analysis [42]. We think this definition exists, but not all researchers apply it.

This methodological heterogeneity produces ranges of prevalence of burnout and its subscales ranging from 0 to 80% [23]. In other studies they reported prevalence of 27% to 70%, in which moderate and high levels are added to make the diagnosis of the syndrome [14,15,22,41,43,44], or use the high level of emotional exhaustion or depersonalization to determine the syndrome [45].

When comparing our findings with studies that used the same methodology and were conducted with residents, we also found different prevalence, although these were not as extensive. Previously reported emotional exhaustion was between 59.8% and 19% [20,35,46], while in our study it was 44%. In contrast, depersonalization was higher in our study, since it had a prevalence of 51%, against 33%, 20% and 38%, reported by the same authors. The conjunction of high exhaustion and depersonalization, accompanied by low personal achievement in residents was also higher in our study, with 19%, in contrast to 12%, reported by Paredes and Zubairi.

When analyzing the association of the working conditions of residents and senior doctors, we found a 71% higher risk for the former. When adjusting according to professional category, we observe that in residents who perform guards and have excessive workload requirements, the risk increased three times, and that female residents were at greater risk for lack of personal fulfillment and exhaustion in their set. These work factors were also reported by Zubairi although causal associations were not calculated [46].

Stress and burnout had a higher risk of occurring in residents than in senior doctors, and the risk was present in those who

had an excessive workload, excessive supervision, and lack of freedom to do their job. We found no difference in the overall prevalence of severity of symptoms between residents and senior doctors. However, there was a greater risk in the presence of the three conditions previously mentioned.

Likewise, we found a high risk of high severity of symptoms in those who were identified with stress, a risk that increases almost six times in the presence of burnout. In turn, the syndrome significantly increases the risk of symptom severity.

It is important to highlight the similarity in the prevalence and associations of stress and burnout, depending on the different working conditions between residents and senior doctors and its impact on the severity of somatic symptoms. The explanation for these similarities is because, ultimately, burnout is the most serious manifestation of chronic stress.

Prevention of work stress and burnout can involve primary and secondary prevention measures. For primary prevention, modifications in the organization of work is indispensable. These include the reduction in the number of hours worked, the number of patients attended and an increase in rest breaks during the workday. For this, it would be essential to hire a larger number of senior doctors and a redistribution of tasks. Within secondary prevention measures, there exists a series of proposals that help doctors reduce the presence of stress and burnout at work. Among them, training for self-recognition and acceptance of their own susceptibility to suffer them. Relaxation strategies, yoga and exercise are also useful. However, to do any of these options, it is also necessary to have more free time.

Finally, it is necessary to talk about the limits and scope of the results of this study. The main limitation is because it is a cross-sectional design, it measures both the exposure and the desired outcome event, which does not allow us to meet the temporality criteria for a causal association. Likewise, the results cannot be inferred from other populations because the sample was made for convenience in seven hospitals. The scopes have to do with having achieved the stated purpose, by using and validating a specific instrument for measuring stress in doctors [26,27]. Likewise, the classification criteria established by Maslach [11] were strictly complied with. It helped to quantitatively characterize the differences in working conditions between residents and senior doctors and delimit how these conditions affect risk in the frequency of stress, and somatic symptoms.

Conclusions

We found significant differences in working conditions between senior doctors and residents, the latter had the worst working conditions.

They worked more hours per week, did extra hours, had lack of freedom to do their job, excessive supervision, and workload.

The questionnaires applied for *burnout*, stress, and severity of somatic symptoms had a high reliability.

Prevalence of *burnout***,** stress, and severity of somatic symptoms were higher in residents than in senior doctors.

There were significant differences of stress, *burnout* levels, and severity of somatic symptoms according to working conditions.

The risk of presenting stress and *burnout* was higher in residents than in doctors.

It is striking that female residents were at greater risk than males for burnout and low personal fulfillment, a situation that should be studied in greater detail.

The risk for the severity of somatic symptoms was higher in those who had high levels of stress or *burnout.*

The results found in this study could contribute to proposed measures of primary and secondary prevention and to legislate around the working conditions and occupational pathology of physicians in Mexico.

References

1. NIOSH. Stress at work. National Institute for Occupational Safety and Health (NIOSH). Publications. NIOSH USA. 1999; 11-101.
2. Juárez A. Psychosocial factors related to mental health in human services professionals in Mexico. Ciencia y Trabajo. 2004; 14: 189-196.
3. Buddeberg-Fischer B, Klaghofer R, Stamm M, Siegrist J, Buddeberg C. Work stress and reduced health in young physicians: prospective evidence from Swiss residents. Int Arch Occup Environ Health. 2008.
4. Román HJ. Stress and burnout in health professionals at the primary and secondary levels of care. National Institute of Workers' Health. Rev Cub Public Health. 2003; 29: 103-110.
5. Palacios NME, Paz RMP. Working conditions, stress, and psychosomatic manifestations in doctors of hospitals in Mexico City. Med Segur Trab. 2014; 60: 322-334.
6. Palacios NME, Paz RMP. Difference in working conditions and its association with the frequency of burnout in resident and attached doctors. Med Segur Trab. 2019; 65: 76-86.
7. Harvey S, Courcy F, Petit A, Hudon J, Teed M, et al. Organizational interventions and mental health in the workplace: A synthesis of international approaches. Studies and research projects report. Institute of Research Robert Sauvé. Santé et securité du travail. 2006.
8. Wei-Min Jin, Ying Zhang, Xiao-Ping Wang. Job burnout and organizational justice among medical interns in Shanghai, People's Republic of China. Advances in Medical Education and Practice. 2015; 6: 539-544
9. Palmer Y, Gómez-Vera A, Cabrera-Pivoral C, Prince-Vélez RS. Organizational risk factors associated with burnout syndrome in medical anesthesiologists. Mental Health. 2005; 28: 82-91.
10. Burn-Out an "Occupational Phenomenon": International Classification of Diseases. Available online. 2020.
11. Maslach C, Jackson SE. The measurement of experienced burnout. J Occupational Behavior. 1981; 2: 99-103.
12. Martínez-Lanz P, Medina-Mora ME, Rivera E. Addictions, depression, and stress in resident doctors. Fac Med Magazine UNAM. 2005; 48: 191-197.
13. Demerouti E. 1999. Burnout: a consequence of specific working conditions in human services and production work. Frankfurt / Main, Germany: Peter Lang. Bakker AB, Vardakou I, Kantas A. 2003. The convergent validity of two burnout instruments: a multitrait-multimethod analysis. Eur J Psychol Assess. 2003; 19: 12-23.
14. Vilà-Falgueras M, Cruzate-Muñoz C, Orfila-Pernasb F, Creixell-Sureda J, González-López MP, Davins-Miralles J. Burnout and teamwork among primary care professionals. Aten Primaria.

2015; 47: 25-31.

15. Castañeda- Aguilera E, García de Alba-García J. Analysis of possible sociodemographic and occupational risk factors and prevalence of burnout syndrome in Mexican dentists. Rev Colomb Psiquiat. 2013; 42: 182-190.

16. Ávila-Toscano JH, Gómez-Hernández LT, Montiel-Salgado MM. Demographic and labor characteristics associated with Burnout Syndrome in health professionals. Pensamiento Psicológico. 2010; 8: 39-52.

17. West CP, DyrbyeLN, Erwin PJ, Shanafelt TD. Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. Lancet. 2016; 388: 2272-2281.

18. Deschamps PA, Olivares RSB, De la Rosa ZK, Asunsolo A. Influence of shifts and night guards on the appearance of Burnout Syndrome in doctors and nurses. Med Segur Trab. 2011; 57: 224-241.

19. Barros DS, Tironi MOS, Nascimento Sobrinho CL, Neves FS, Bitencourt AGV et al. Intensive care unit physicians: sociodemographic profile, working conditions and factors associated to the burnout syndrome. Rev Bras Ter Intensive. 2008; 20: 235-240.

20. Prieto-Miranda SE, Rodríguez-Gallardo GB, Jiménez-Bernardino CA, Guerrero-Quintero LG. Professional burnout and quality of life in resident doctors. Rev Med Inst Mex Seguro Soc. 2013; 51: 574-579.

21. Juárez-Garcia A, Alvaro J Idrovo, Camacho-Avila A, Placencia-Reyes O. Burnout syndrome in the Mexican population: A systematic review. Salud Mental. 2014; 37: 159-176.

22. Aranda-Beltrán C, Barraza-Salas JH, Romero-Paredes JJ, Quiñonez-Zárate LA, Ceniceros-Cabrales AP, González-Ortega G, Esparza-Piña JA. Psychosocial factors and Burnout syndrome in general practitioners from Tepic, Nayarit (Mexico). Salud Uninorte 2015; 31: 245-254.

23. Rotenstein LS, Torre M, Ramos MA, Rosales RC, Guille C, et al. Prevalence of burnout among physicians. A systematic review. JAMA. 2018; 320: 1131-1150.

24. Dewa C, Loong D, Bonato S, Thanh NX, Jacobs P. How does burnout affect physician productivity? A systematic literature review. BMC Health Services Research 2014, 14: 325.

25. Toral-Villanueva R, Aguilar-Madrid G, Juárez-Pérez CA. Burnout and patient care in junior doctors in Mexico City. Occupational Medicine 2009; 59: 8-13.

26. Wolfgang AP. The health professions stress inventory. Psychol Rep 1988; 62: 220-222.

27. Palacios NME, Morán ACI, Paz RMP. Validation of Wolfgang's inventory in Mexican doctors. Measurement of work stress in hospitals. Rev Mex Sal Trab. 2014; 6; 62-68.

28. Kroenke K, Spitzer RL, Williams JBW. The PHQ-15: Validity of a New Measure for Evaluating the Severity of Somatic Symptoms. Psychosomatic Medicine. 2002; 64: 258-266.

29. Wolfgang AP.Job stress in the health professions: A study of physicians, nurses and pharmacist. Behavioral Medical. 1988; 14: 43-7.

30. Eels TD, Lacefield P, Maxey J. Symptoms correlates and factor structure of the health profession stress inventory. Psychol Report. 1994; 75: 1563-1568.

31. Graue WE, Álvarez CR, Sánchez MM. Burnout syndrome: Depersonalization, emotional exhaustion, and job dissatisfaction as problems in the practice of medicine and professional development. Presentation in Seminar The Current Exercise of Medicine. 2007.

32. Bret S. Stetka, MD; John Watson. Overworked, underslept, and the politics of resident shift hours. Medscape Public Health. 2016.

33. Casas D, Rodríguez A, Casas I, Galeana C. Resident physicians in Mexico: tradition or humiliation. Medwave. 2015; 13: e5764.

34. Álvarez-Hernández G, Medécigo-Vite S, Ibarra-García C. Prevalence of burnout syndrome in resident doctors of a pediatric hospital in the State of Sonora. Bol Med Hosp Infant Mex. 2010; 67: 44-51.

35. Paredes-G OL, Sanabria-Ferrand PA. Prevalence of burnout syndrome in residents of medical-surgical specialties, its relationship with psychological well-being and with sociodemographic and work variables. Rev Med. 2008; 16: 25-32.

36. Karasek R, Brisson C, Kawakami N, Houtman I, Bongers P, et al. The Job Content Questionnaire (JCQ): An instrument for internationally comparative assessment of psychological job characteristics. J Occup Health Psych. 1998; 4: 322-355.

37. Medina AS, Preciado SML, Pando MM. Adaptation of the organizational work stress scale for Mexican workers. RESPYN. 2007; 8: 1-9.

38. Díaz BA, Feldman L. Preliminary validation of the job stress questionnaire (effort-reward imbalance) in a sample of Venezuelan health workers. Ciencia y Trabajo. 2010; 12: 320-323.

39. González-Cabrera J, Fernández-Prada M, Iribar-Ibabe C, Saliner M, Ruano R. and Peinado, J. Physiological stress and anxiety in resident physicians who perform guards Emergency Services. International Journal of Environmental Research and Public Health. 2018; 15: 506.

40. Balcázar-Rincón LE, Montejo-Fraga LF, Ramírez-Alcántara YL. Prevalence of burnout syndrome in resident doctors of a hospital in Mérida, Yucatán, México. Aten Fam. 2015; 22: 111-114.

41. Terrones-Rodríguez JF, Cisneros-Pérez V, Arreola-Rocha JJ. Burnout syndrome in resident doctors of the General Hospital of Durango, Mexico. Rev Med Inst Mex Seguro Soc. 2016; 54: 242-248

42. Prentice S, Dorstyn D, Benson J, Elliot T. Burnout levels and patterns in postgraduate medical trainees: A systematic review and meta-analysis. Acad Med 2020.

43. Sánchez-Madrid MA, Delgado Martínez AD, Mayor Pérez D. Prevalence of burnout syndrome or professional burnout in orthopedic surgeons in Spain. Rev Ortopédica Traumatología 2005; 49: 364-367.

44. Fonseca M, San Clemente G, Hernández C, Visiedo C, Bragulat E, et al. Residents, guards, and burnout syndrome. Rev Clin Esp 2010; 210: 209-215.

45. William WI, Lederer S, Mandili C, Nikravesh R, Seligman L, et al. Burnout during resident training: A literature review. Journal of Graduate Medical Education. 2009; 236-242.

46. Zubairi AJ, Noordin S. Factors associated with burnout among residents in a developing country. Ann Med Surg (Lond). 2016; 6: 60-63.