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Burnout syndrome in resident physicians of a Federal University

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SUMMARY

OBJECTIVE: The objective of this study was to determine the frequency of burnout, global, and by dimension, in resident physicians of Federal University of Piauí, and to identify possible factors associated with the presence of the syndrome.

METHOD: This is a cross-sectional, observational, and descriptive study. Population: resident physicians in Federal University of Piauí's medical residency programs (136 individuals). The frequency of burnout was investigated using the Maslach Burnout Inventory. Sociodemographic variables were evaluated through a questionnaire and their associations with the presence of the syndrome were tested.

RESULTS: A total of 67 (49.26%) residents answered the questionnaires. The burnout syndrome frequencies found were global=73.1%; EE=44.8%; DP=64.2%, and PA=47.8%. Statistically significant association was obtained between current year of residency and EE; between having children and PA; between current work routine and DP; and between the use of antidepressant/hypnotic medication and EE. Compared with residency programs, there was a difference in the EE dimension, which was higher among residents in internal medicine residents (88.9%) and pediatrics (83.3%). In the comparative analysis between global burnout levels and all variables evaluated, no associations were found.

CONCLUSION: Burnout syndrome was found in the majority of participating residents. There was an association between sociodemographic variables and the presence of isolated burnout dimensions, but not between sociodemographic variables and global burnout.

KEYWORDS: Burnout. Psychological. Internship and Residency. Epidemiology.

INTRODUCTION

The term burnout was first used by the American psychologist Herbert Freudenberger in 1974, defining it as the state of frustration or fatigue triggered by investment in a particular cause, way of life or relationship that did not live up to expectations[1].

The most commonly used definition for burnout syndrome is the one developed by Maslach and Jackson in 1985. According to it, the syndrome is composed of a triad characterized by emotional exhaustion, depersonalization (negative responses, insensitive, and detached from others), and reduced professional achievement[2].

Burnout syndrome is a serious problem among health care professionals, as it is often associated with the development of anxiety, depression, substance abuse, and suicidal ideation in affected individuals. Patients assisted by professionals with burnout syndrome are more prone to medical errors, which makes the issue even more alarming[3].

It is postulated that resident doctors are even more susceptible to the development of burnout syndrome, since they are subjected to journeys of intense work in which they are demanded both as students in training and as professionals who must already demonstrate great expertise in performed activities[4].

A study with resident physicians of a university hospital in Ceará demonstrated a prevalence of global burnout of 68.7%[5]. No previous studies on the prevalence of this syndrome in resident physicians in Piauí were found.

The present study aimed to determine the prevalence of global burnout and burnout by dimension (emotional exhaustion, depersonalization, and reduced professional fulfillment) in resident doctors of Universidade Federal do Piauí (UFPI) and to identify possible factors associated with the presence of the syndrome.

METHODS

This is a cross-sectional, observational, and descriptive study. Study population consisted of resident physicians from the medical residency linked to UFPI, from different areas and totaling 136 residents.

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The following inclusion criteria were used: resident physicians from UFPI's medical residency programs, who were linked to their respective programs for at least 3 months. Exclusion criteria were: residents who were away from their programs during data collection, notably those who were on maternity leave, leave for medical treatment or under license to provide military service, as well as those who were absent in their respective fields of practice during three visits for data collection. The resident author of this study was also excluded.

Data collection was carried out through a structured interview with the application of two questionnaires. A sociodemographic questionnaire addressed variables such as age, sex, residency program attended, year of residency, marital status, having children, work in other institutions, practice of physical exercise, current use of antidepressants and/or hypnotics, use of alcohol, and use of tobacco. The second questionnaire was the version in Brazilian Portuguese of the Maslach Burnout Inventory (MBI). This is the most commonly used instrument in surveys on burnout; it has 22 questions and covers the three dimensions related to the syndrome: 9 questions about emotional exhaustion (EE); 8 questions about professional achievement (PA); and 5 questions about depersonalization (DP). Answers are on a Likert scale with seven options (never, once a year or less, once a month or less, sometimes a month, once a week, a few times a week, and every day). Burnout syndrome was detected using the cutoff points of high-level exhaustion (≥26), high-level depersonalization (≥9), and low-level professional achievement (≤33). The presence of global burnout was considered high score in the dimensions of emotional exhaustion and/or depersonalization, as previous studies suggested that the achievement dimension reflects a distinct psychopathology[6]. Data collection was performed from May to September 2019. Three attempts of collection were made for each residency program, at their respective training sites, on weekdays and different hours.

Data were submitted to a typing process using Microsoft Excel spreadsheets and later exported and analyzed using software R, version 3.5.1.

Results were presented through percentages of absolute and relative frequencies, as well as through descriptive statistics: average and sample standard deviation, maximum and minimum values; and through a bar graph. To verify the assumption of normality, the Shapiro–Wilk test was adopted. In the bivariate analysis, associations between independent variables and global burnout syndrome and its dimensions were performed using the chi-square test of Pearson or Fisher's exact test. Comparisons between ages according to high burnout or not were performed using the Mann-Whitney U-test, and their values were expressed as median±interquartile range. For all applied tests, the significance level of 5% was adopted.

All participants in the present study signed an Informed Consent Form. This work was approved by the Ethics and Research Committee linked to the University Hospital of Federal University of Piauí, under CAAE 08080819.1.0000.8050, opinion number 3,257,525.

RESULTS

Of the total 136 residents, 67 (49.26%) answered the questionnaires. Among these, 53.7% were women. The average age was 27±3.32 years, ranging from 23 to 45 years. Most were single (70.1%), did not have children (91%), had another stable job besides the residency or performed extra shifts (82.1%), and practiced physical exercise (80.6%). Notably, 22.4% stated that they had been using some antidepressants and/or hypnotic medication. Regarding the consumption of alcoholic beverages, 82.1% affirmed to use it frequently, whereas 17.9% stated that they never used it. Only one resident declared to be a smoker.

The prevalence of global burnout was 73.1%. It was found that 44.8% of residents reached high burnout levels in the EE dimension, 47.8% in the PA dimension, and 64.2% in the DP dimension (Table 1). The frequency of high burnout in at least one dimension was 86.6% and high burnout in all three dimensions was 22.4%, whereas 13.4% did not obtain high levels of burnout in any dimension.

In the comparative analysis between the levels of burnout by dimension and the variables considered, a statistically significant association was obtained between the current year in the residency program and the dimension of emotional exhaustion (p-value=0.028); between having children and the dimension of professional achievement (p-value=0.014); between the current work routine and the dimension of depersonalization (p-value=0.043); and between the use of antidepressant/hypnotic medication and the emotional exhaustion dimension (p-value=0.002; Table 1).

In a comparative analysis between the levels of global burnout and all analyzed variables, no statistically significant associations were found (Table 2).

In Table 3, it is noted that there were no statistically significant differences between the median ages of high and non-high burnout in all three dimensions, as well as in global burnout.

Table 1. Association between observed variables and high burnout by dimension.

Variables	EE		p-value	DP		p-value	PA		p-value
	Yes (%)	No (%)		Yes (%)	No (%)		Yes (%)	No (%)	
Total prevalence	44.8	55.2		64.2	35.3		47.8	52.2	
Gender									
Male	13 (41.9)	18 (58.1)	0.664[a]	21 (67.7)	10 (32.3)	0.573[a]	14 (45.2)	17 (54.8)	0.693[a]
Female	17 (47.2)	19 (52.8)		22 (61.1)	14 (38.9)		18 (50.0)	18 (50.0)	
Year in residency									
1st year	18 (58.1)	13 (41.9)	**0.028[a]**	21 (67.7)	10 (32.3)	0.672[a]	17 (54.8)	14 (45.2)	0.556[a]
2nd year	11 (42.3)	15 (57.7)		15 (58.7)	11 (42.3)		11 (42.3)	15 (57.7)	
3rd year	1 (10.0)	9 (90.0)		7 (70.0)	3 (30.0)		4 (40.0)	6 (60.0)	
Marital status									
Single	21 (44.7)	26 (55.3)	0.611[a]	31 (66.0)	16 (34.0)	0.447[a]	22 (46.8)	25 (53.2)	0.560[a]
Married	9 (50.0)	9 (50.0)		11 (61.1)	7 (38.9)		9 (50.0)	9 (50.0)	
Civil partnership	0 (0.0)	1 (100.0)		0 (0.0)	1 (100.0)		1 (100.0)	0 (0.0)	
Separated	0 (0.0)	1 (100.0)		1 (100.0)	0 (0.0)		0 (0.0)	1 (100.0)	
Have children									
Yes	2 (33.3)	4 (66.7)	0.684[b]	4 (66.7)	2 (33.3)	1[b]	0 (0.0)	6 (100.0)	0.025[b]
No	28 (45.9)	33 (54.1)		39 (63.9)	22 (36.1)		32 (52.5)	29 (47.5)	
Current work routine									
Medical residency only	6 (50.0)	6 (50.0)	0.283[a]	4 (33.3)	8 (66.7)	0.043[a]	7 (58.3)	5 (41.7)	0.160[a]
Stable job besides medical residency	18 (51.4)	17 (48.6)		24 (68.6)	11 (31.4)		19 (54.3)	16 (45.7)	
Sporadic extra shifts besides medical residency	6 (30.0)	14 (70.0)		15 (75.0)	5 (25.0)		6 (30.0)	14 (70.0)	
Frequency of physical exercise									
Never	7 (53.8)	6 (46.2)	0.622[a]	10 (76.9)	3 (23.1)	0.552[a]	6 (46.2)	7 (53.8)	0.996[a]
Once a month to once a week	6 (54.5)	5 (45.5)		6 (54.5)	5 (45.5)		5 (45.5)	6 (54.5)	
2–3 times a week	13 (37.1)	22 (62.9)		23 (65.7)	12 (34.3)		17 (48.6)	18 (51.4)	
Almost everyday	4 (50.0)	4 (50.0)		4 (50.0)	4 (50.0)		4 (50.0)	4 (50.0)	
Use of antidepressant or hypnotic medication									
Yes	12 (80.0)	3 (20.0)	**0.002[a]**	10 (66.7)	5 (33.3)	1[a]	10 (66.7)	5 (33.3)	0.096[a]
No	18 (34.6)	34 (65.4)		33 (63.5)	19 (36.5)		22 (42.3)	30 (57.7)	
Frequency of alcohol consumption									
Never	7 (58.3)	5 (41.7)	0.733[a]	9 (75.0)	3 (25.0)	0.281[a]	7 (58.3)	5 (41.7)	0.565[a]
Once a month or less	10 (41.7)	14 (58.3)		12 (50.0)	12 (50.0)		13 (54.2)	11 (45.8)	
2–4 times a month	10 (40.0)	15 (60.0)		17 (68.0)	8 (32.0)		10 (40.0)	15 (60.0)	
2–3 times a week	3 (50.0)	3 (50.0)		5 (83.3)	1 (16.7)		2 (33.3)	4 (66.7)	
Smoker									
Yes	1 (100.0)	0 (0.0)	0.448[b]	1 (100.0)	0 (0.0)	1[b]	1 (100.0)	0 (0.0)	0.478[b]
No	29 (43.9)	37 (56.1)		42 (63.6)	24 (36.4)		31 (47.0)	35 (53.0)	

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Table 1. Continuation.

Variables	EE		p-value	DP		p-value	PA		p-value
	Yes (%)	No (%)		Yes (%)	No (%)		Yes (%)	No (%)	
Residency program attended									
General surgery/prerequisite	2 (25.0)	6 (75.0)		5 (62.5)	3 (37.5)		4 (50.0)	4 (50.0)	
Internal medicine	8 (88.9)	1 (11.1)		6 (66.7)	3 (33.3)		5 (55.6)	4 (44.4)	
Dermatology	0 (0)	4 (100)		3 (75.0)	1 (25.0)		1 (25.0)	3 (75.0)	
Obstetrics and gynecology	4 (40.0)	6 (60.0)		6 (60.0)	4 (40.0)		6 (60.0)	4 (40.0)	
Ophthalmology	1 (20.0)	4 (80.0)	0.009[a]	2 (40.0)	3 (60.0)	0.839[a]	0 (0.0)	5 (100.0)	0.468[a]
Orthopedics and traumatology	3 (50.0)	3 (50.0)		5 (83.3)	1 (16.7)		3 (50.0)	3 (50.0)	
Pediatrics	5 (83.3)	1 (16.7)		5 (83.3)	1 (16.7)		4 (66.7)	2 (33.3)	
Psychiatry	1 (12.5)	7 (87.5)		4 (50.0)	4 (50.0)		3 (37.5)	5 (62.5)	
Other	6 (54.5)	5 (45.5)		7 (63.6)	4 (36.4)		6 (54.5)	5 (45.5)	

EE: emotional exhaustion; DP: depersonalization; PA: professional achievement. [a]Pearson's chi-square test. [b]Fisher's exact test.

Table 2. Association between observed variables and global burnout.

Variables	Global burnout		p-value
	Yes (%)	No (%)	
Gender			
Male	24 (77.4)	7 (22.6)	0.463[a]
Female	25 (69.4)	11 (30.6)	
Year in residency			
1st year	25 (80.6)	6 (19.4)	0.420[a]
2nd year	17 (65.4)	9 (34.6)	
3rd year	7 (70.0)	3 (30.0)	
Marital status			
Single	36 (76.6)	11 (23.4)	0.289[a]
Married	12 66.7)	6 (33.3)	
Civil partnership	0 (0.0)	1 (100.0)	
Separated	1 (100.0)	0 (0.0)	
Have children			
Yes	4 (66.7)	2 (33.3)	0.656[b]
No	45 (73.8)	16 (26.2)	
Current work routine			
Medical residency only	6 (50.0)	6 (50.0)	0.126[a]
Stable job besides medical residency	28 (80.0)	7 (20.0)	
Sporadic extra shifts besides medical residency	15 (75.0)	5 (35.0)	
Frequency of physical exercise			
Never	10 (76.9)	3 (23.1)	0.901[a]
Once a month to once a week	8 (72.7)	3 (27.3)	
2–3 times a week	26 (74.3)	9 (25.7)	
Almost everyday	5 (62.5)	3 (37.5)	

Continue...

Table 2. Continuation.

Variables	Global burnout		p-value
	Yes (%)	No (%)	
Use of antidepressant or hypnotic medication			
Yes	12 (80.0)	3 (20.0)	0.742b
No	37 (71.2)	15 (28.8)	
Frequency of alcohol consumption			
Never	10 (83.3)	2 (16.7)	0.238a
Once a month or less	14 (58.3)	10(41.7)	
2–4 times a month	20 (80.0)	5 20.0)	
2–3 times a week	5 (83.3)	1 (16.7)	
Smoker			
Yes	1 (100.0)	0 (0.0)	1b
No	48 (72.7)	18 (27.3)	
Residency program attended			
General surgery/prerequisite	5 (62.5)	3 (37.5)	0.370[a]
Internal medicine	8 (88.9)	1 (11.1	
Dermatology	3 (75.0)	1 (25.0)	
Obstetrics and gynecology	6 (60.0)	4 (40.0)	
Ophthalmology	2 (40.0)	3 (60.0)	
Orthopedics and traumatology	5 (83.3)	1 (16.7)	
Pediatrics	6 (100.0)	0 (0.0)	
Psychiatry	5 (62.5)	3 (37.5)	
Other	9 (81.8)	2 (18.2)	

[a]Pearson's chi-square test. [b]Fisher's exact test.

Table 3. High burnout in three dimensions and global burnout according to the age of residents.

	EE			DP			PA			Global burnout		
	Yes	No	p-value	Yes	No	p-value	Yes	No	p-value	Yes	No	p-value
Age	27±7.8	27±3.0	0.523	27±3.5	27 ±3.3	0.414	27±3.3	28 ±4.0	0.222	27±4.0	28 ±3.5	0.129

EE: emotional exhaustion; DP: depersonalization; PA: professional achievement. Mann–Whitney U-test. Median±interquartile range.

DISCUSSION

The frequency of global burnout in the studied group was 73.1%, demonstrating that this is a very common problem among the participants. The prevalence of burnout in resident physicians is variable in other studies (18–82%), which used different assessment scales and different interpretations, particularly in the definition of global burnout[7]. A study carried out with internal medicine residents at Washington University, which used the same definition of global burnout as our work, demonstrated a prevalence of 76%[6].

However, if we considered the confined definition of global burnout — in which it would be necessary to present high levels in all dimensions — the frequency of the referred syndrome in the participants of this study would be 22.4%. In a study

carried out with resident physicians of a university hospital in Goiás and which adopted such definition, the prevalence of global burnout was 18.05%[8].

In our study, doctors attending the first year of residency exhibited significantly higher levels of emotional exhaustion. In a study carried out in Israel with 78 residents from various areas of activity, burnout scores increased during the first year and decreased after 2 years[9]. Such results can be explained by multiple factors, such as greater number of night shifts during the first year, greater professional insecurity, and lack of adaptation to the work routine.

Participants who had children exhibited significantly lower values in the low professional achievement dimension. In a study with residents from different specialties, residents who had children also had lower burnout rates[10]. Although one could imagine that parenthood would overwhelm these individuals with even more responsibilities, it has proved to be a protective factor against burnout, possibly by bringing more humanization and providing the professional with additional motivation to work.

Participants who had jobs other than medical residency portrayed significantly higher levels of depersonalization. This result differs from that observed by Bond et al.[11] in a study carried out with resident physicians of a university hospital in Porto Alegre, in which there was no association between burnout (global and by dimension) and having another job. However, our results can be explained by the fact that this variable indirectly expresses a greater total workload. Factors such as long working hours and little time for rest and leisure are described as predictors of professional burnout[12].

There was an association between the use of antidepressants and/or hypnotics and a higher frequency of emotional exhaustion. Similar results were obtained in a study conducted with residents in Family and Community Medicine in Portugal[7]. The causal relations between burnout syndrome and depression remain unclear. It is possible that the experience of emotional exhaustion and unsatisfactory functioning may trigger a depressive episode. In contrast, depression can also sensitize the individual and predispose one to develop extreme reactions or stress. In addition, both conditions can occur independently[9].

When comparing the different training programs studied, the levels of emotional exhaustion were significantly higher among residents in internal medicine (88.9%) and pediatrics (83.3%). In a study carried out in Porto Alegre, residents in surgical specialties were less associated with emotional exhaustion and low professional achievement[11]. However, in a 2004 study that compared the burnout rate between different specialties in Michigan medical residency programs, no significant differences were found[10]. It is possible that the observed differences relate to the particularities of the routine in a specific service and cannot be extrapolated to categorize residents of a particular specialty as having a higher risk of developing burnout.

In this study, there was no association between the presence of global burnout or isolated dimensions and the variables: sex, age, marital status, frequency of physical activity, use of alcoholic beverages, and smoking. The link between such variables and burnout syndrome is in fact still obscure, as shown by a systematic review on the topic[1].

A limitation of this study was the large number of residents who did not answer the questionnaires (50.74%). Another limitation refers to the fact that this study is cross-sectional, thus not allowing to determine the causes of the emergence of professional exhaustion. The knowledge of these causes through further studies may allow the development of more effective strategies for preventing the syndrome.

No previous research was found on burnout in resident physicians in the Brazilian state of Piauí. Thus, this study was a pioneer in demonstrating the high frequency of this syndrome in our surroundings. In addition, it carried out extensive research on the association of burnout with sociodemographic variables, which may be important for the elaboration of hypotheses to be tested in future studies that aim to investigate the causes of professional burnout.

CONCLUSION

The frequencies of global burnout and burnout by isolated dimensions (emotional exhaustion, depersonalization, and low professional achievement) were high in the group of residents studied. The emotional exhaustion dimension was associated with being in the first year of medical residency and with using antidepressants and/or hypnotic medication, whereas the depersonalization dimension was associated with having other jobs besides medical residency. In contrast, a lower frequency of burnout in the professional achievement dimension was associated with having children. Furthermore, there was no difference in the presence of global burnout according to sociodemographic characteristics.

AUTHORS' CONTRIBUTIONS

LVS: Conceptualization. **LSP:** Data curation. **LVS:** Formal analysis. **LSP:** Funding acquisition. **LSP:** Investigation. **LVS:** Methodology. **LVS, LARLR:** Project administration. **LSP:** Resources. **LSP, VSA:** Software. **LVS:** Supervision. **LVS:** Validation. **LVS, LARLR:** Visualization. **LSP:** Writing – original draft. **LVS, VSA:** Writing – review and editing.

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