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BURNOUT IN MEDICAL RESIDENTS AND ASSOCIATED FACTORS

Healthcare

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ABSTRACT

Burnout syndrome (BS) is characterized by high emotional exhaustion, high depersonalization and low professional accomplishment.

OBJECTIVE: To determine the prevalence of BS in medical residents and to assess its relationship with work hours, medical specialty, year of residency program, gender, age and marital status.

METHODS: An observational study was conducted in Recife, Brazil, from June to August 2008. BS was assessed using the Maslach Burnout Inventory.

RESULTS: BS was diagnosed in 31.6% of the medical residents. No statistically significant association between the variables studied and BS was found. High emotional exhaustion was found in 67.1%, high depersonalization in 69.6% and low professional accomplishment in 43% of the medical residents assessed.

CONCLUSION: The prevalence of BS in the medical residents was consistent with rates reported in the literature, although none of the risk factors assessed were significantly associated with the syndrome.

KEYWORDS

Burnout. Resident Doctor. Medical Specialization.

INTRODUCTION

In 1974, Freudenberger coined the expression "staff burnout" to describe a syndrome involving exhaustion, disillusion and isolation in mental health workers (1974). Although Burnout Syndrome (BS) has been reported in the literature since the mid-1970s, it remains largely unrecognized in the Brazilian milieu (Prins et al., 2007).

BS is a state of chronic stress characteristic of the work setting, defined by a combination of emotional exhaustion, depersonalization and low professional accomplishment(Schaufeli & Buunk, 2003).

Emotional exhaustion is typically the first symptom of work-related stress, leading to both emotional and physical exhaustion of staff. Depersonalization arises as a defense response to this exhaustion, manifesting in the form of negative attitudes and feelings, reducing involvement in the work and its effectiveness. In addition, low personal accomplishment at work arises as feelings of ineffectiveness, failure and that professional goals have not been achieved(Maslach & Leiter, 1999).

In the development of BS, social, organizational and profession-related variables are also involved in triggering the condition. Other personal characteristics such as age, gender, educational level act as facilitators or inhibitors of the action of stressors (Benevides-Pereira, 2002).

Healthcare professionals (physicians, nurses etc.) or professionals that work directly with clients (e.g. teachers), are the groups most predominantly affected (Magalhães & Glina, 2006; Shanafelt et al., 2002).

Residency is a stressing phase of training for medical doctors during which they are submitted to long working hours, limited autonomy and low pay (Thomas, 2004). Residents' responsibilities with patient lives are great from the outset, yet their knowledge and experience are still being improved (Msaouel et al., 2010).

Some studies have shown high rates of BS in medical residents with a prevalence ranging from 44% to 76% (Shanafelt et al., 2002; Fahrenkopf et al., 2008; Moradi et al., 2015; Ratnakaran, Prabhakaran & Karunakaran, 2016).

The objective of this study was to determine the prevalence of BS in medical residents and to assess its relationship with work hours, medical specialty, year of residency, gender, age and marital status.

Methodology

A descriptive cross-sectional study of medical residents (anesthesiology, general surgery, vascular surgery, internal medicine, neurology, orthopedics and urology) at the Getúlio Vargas Hospital (Recife-Pernambuco, Brazil) was conducted between June and August 2008.

The medical residents were asked to take part in the study, the aim of which was clearly and objectively explained. The free and informed consent form was then signed for voluntary participation in the study.

The present investigation included all medical residents enrolled during the study period, excluding those whose medical residency was suspended or that failed to properly complete questionnaires.

This study was approved by the Management of the Getúlio Vargas Hospital and by the Research Ethics Committee of the Agamenon Magalhães Hospital at a plenary meeting held on 06/25/2008.

In order to meet the proposed objectives of this study, the Maslach

Burnout Inventory and its HSS (Human Services Survey) version, more fitting for service providers, were used as data collection instruments(Carlotto & Câmara, 2007).

The MBI questionnaire comprises 22 items, containing the question statements, each of which is accompanied by a 7-point Likert-type scale measuring how often respondents feel this way about working, with ratings from 0 (never) to 6 (every day). Of the total 22 items, nine evaluate the Emotion Exhaustion (EE) dimension, five Depersonalization (DP) and eight Professional Accomplishment (PA). Each dimension is scored as high, moderate or low(Lima et al., 2007).

In the present study, BS was defined as scores > 26 for the EE dimension, > 9 for DP and < 33 for PA. The cut-offs for the three criteria were based on values defined by the GEPEB (formerly the NEPASB). Risk for BS was defined when two of the three criteria were met.

Data were collected on gender, age, marital status, specialty, year of residency, work week (≤ 72 or > 72 hours) and knowledge about the syndrome.

Data Analysis

The prevalence of BS in medical residents was assessed. Odds ratio (OR) was calculated to assess risk for the syndrome associated with gender, marital status, clinical or surgical specialty, work hours, year of residency and awareness of the syndrome.

For the data analysis, absolute and percentage distributions were obtained and the following statistics measured: mean, median, standard deviation, coefficient of variation, minimum value and maximum value (descriptive statistical techniques). Pearson´s Chi-square test was used, or Fisher´s Exact test when conditions for use of the Chi-square test were not satisfied, along with Student´s *t*-test with equal variances (inferential statistical techniques). Levene´s F-test was used to check the hypothesis of equality of variances.

A 5.0% level of significance was adopted for all statistics tests. Data were keyed into an Excel spreadsheet and the SPSS (Statistical Package for the Social Sciences) software version 13 was used for all statistical calculations.

Results

Of the total 82 medical residents, 79 took part in the study, representing 96.34% of all residents at the HGV. Two residents were excluded for residency suspension and another because they could not be located at the time of questionnaire application during the study period. All participants properly completed the questionnaires applied.

Of the 79 residents interviewed, mean age was 27.48 years. The demographic characteristics of the study group are shown in (Table 1). Among the medical residents interviewed, 25 were diagnosed with BS, representing a prevalence of 31.6% (Table 2).

The BS group comprised individuals that were predominantly male, single, with a work week > 72 hours, on the 2nd year and from the surgery area. Over 50% of the residents with BS were unaware of the syndrome. None of the variables studied were significantly associated with BS (Table 3).

Risk for BS was defined as the presence of two of the criteria. Thus, of the 54 residents not presenting BS, 27 (50%) were classified as "at risk" for the syndrome. Thirteen (24%) residents met one criteria and 14 (26%) satisfied none of the criteria for diagnosis of the syndrome.

The data on distribution of the 3 dimensions of BS (EE, PA, DP) among the participants is given in table 4.

Discussion

Medical residency constitutes a learning modality for physicians to improve and acquire competencies and confer, upon conclusion, the title of specialist in specific areas (Ministério da Educação, 1977) but also marks a period of emotional stress, overwork and changes in lifestyle.

Burnout is very common in physicians, with a prevalence of around 50%(Shanafelt et al., 2015). This figure is cause for concern given the negative affects of BS, such as reduced involvement and decline in the quality of work as well as impact on the medical care delivered to patients(Fahrenkopf et al., 2008; Lima et al., 2007; IsHak et al., 2009). In the present study, scores on the MBI were high for the emotional exhaustion/depersonalization domains and low for the professional accomplishment domain, indicating BS in the individuals assessed. Although the MBI is widely used in studies, differences in criteria for diagnosing BS exist (Prins et al., 2007). Some studies define Burnout as the presence of emotional exhaustion or depersonalization (Shanafelt et al., 2002; Thomas, 2004; Gopal et al., 2005; Nyssen et al., 2003) while others require both these criteria (Fahrenkopf et al., 2008) or all three concomitantly (Moradi et al., 2015; Lima et al., 2007; Embriaco et al., 2007; Garza et al., 2004; Lima, 2004).

Of the 79 medical residents interviewed, 31.6% met criteria for BS diagnosis. This rate is in line with the literature reviews of Prins et al. (2007) and IsHak et al. (2009), which reported rates of 18-82% and 27-75%, respectively.

Some studies conducted in Brazil found lower prevalences than the rate detected in the present study (Gouveia et al, 2017; Lima et al, 2007). Gouveia et al. (2017) suggested a two-fold higher risk of developing BS in medical residents of surgical areas compared to clinical specialities. In the present study, there was no statistically significant difference among specialties.

As outlined previously, the use of less conservative diagnostic criteria, requiring only the emotional and depersonalization domains, has led to much higher BS prevalences being reported. Shanafelt et al. (2002) found a prevalence of 76% based on the two criteria, similar to the rate in the present study (78.5%).

The effect of gender on the development of Burnout appears to be weak, as shown in a recent systematic review of the literature on medical residents in anesthesiology (Sanfilippo et al., 2017).

The BS group in the present study had a mean age of 27 years (range 24-32 years), similar to the group without the syndrome, and in line with the finding of Fahrenkopf et al. (2008) showing no association between Burnout and age.

According to the results of Ozkula et al. (2017), high emotional exhaustion and depersonalization domain scores occurred among physicians aged 20-29 years, together with lower professional accomplishment rates(Ozkula & Durukan, 2017).

Financial and family responsibilities connected with marriage may represent a triggering factor for BS. However, results of studies regarding marital status as a risk factor for BS are conflicting (Sanfilippo et al., 2017; Ferreira et al., 2017; Martini, Arfken, & Churchill, 2004).In the present study, such as the review by Stanfilippo et al. (2017), we found no association.

The present study adopted a cut-off of 72 hours/week for assessing work week, found no difference in work week between groups with and without BS [OR = 1.25 (0.46-3.42)]. A similar result was found in a 2014 study of anesthesiologists in (Maceió-Alagoas state, where mean work week among individuals diagnosed with BS was 69.27 ± 22.39 hours versus 51.08 ± 18.74 in the group without BS (Barbosa et al., 2017). The number of hours worked per week was associated with risk for BS in US physicians relative to professionals from other areas (Shanafelt et al., 2012) and result of loss of focus, increasing risk of errors and difficulty reserving personal time (Ozkula, & Durukan, 2017).

Physicians on the 1st year of residency are more vulnerable to developing BS, probably because this marks a period of adaptation to the demands and inexperience in practicing the profession (Martini et al., 2004). However, akin to the present study, other investigations failed to find a statistically significant association (Fahrenkopf et al., 2008; Lima et al., 2007; IsHak et al., 2009).

Despite the high prevalence of BS in medical residents, the present study showed that almost 70% were unaware of the syndrome during the period assessed. No studies exploring this factor were available in

the current literature. Among the group diagnosed with BS, 37.9 % were aware and 28% unaware of the condition, indicating no association between having BS and being aware of the condition.

One reason prompting the study of this syndrome in medical residents is that, besides its high prevalence, the condition can negatively impact the quality of healthcare provided to the population (Dewa et al., 2017) The working conditions of healthcare providers, including sleep deprivation and work overload, significantly contribute to rates of medication errors (Fahrenkopf et al., 2008). Some studies examining the relationship between residents with Burnout and self-reported medical errors have shown a decline in the quality of medical care delivered to patients (Shanafelt et al., 2002; Fahrenkopf et al., 2008; IsHak et al., 2009). A limitation of this study was the absence of an analysis of the quality of care provided by the physicians with BS.

Despite the high prevalence of BS in the medical residents assessed, none of the risk factors evaluated were significantly associated with the syndrome, probably due to the small number of participants.

Therefore, further studies and awareness of BS among medical residents should be promoted to elucidate triggering factors and allow the implementation of effective preventive and curative measures to improve medical residents´ mental health and the quality of healthcare delivered to patients.

Conflict of interest declaration: The authors declare no conflicts of interest.

TABLE 1- Distribution of participants according to variables assessed

Variables	N	%
• **Group**		
General surgery	18	22.8
Anesthesiology	9	11.4
Orthopedics	23	29.1
Internal medicine	16	20.3
Urology	8	10.1
Neurosurgery	3	3.8
Vascular surgery	2	2.5
• **Area of practice**		
Clinical	16	20.3
Surgical	63	79.7
• **Sex**		
Male	50	63.3
Female	29	36.7
• **Marital status**		
Single	58	73.4
Married	21	26.6
• **Year of residency**		
First	31	39.2
Second	30	38.0
Third	16	20.3
Fourth	2	2.5
• **Work week (hours)**		
< 60	2	2.5
60-72	26	32.9
> 72	51	64.6
TOTAL	79	100.00

TABLE 2- Age statistics according to presence of Burnout Syndrome

Statistics	Burnout Syndrome Yes (n = 25)	No (n = 54)	Total group (n = 79)	p-value
Mean	27.64	27.41	27.48	$p^{(1)} = 0.641$
Median	27.00	27.00	27.00	
Standard deviation	2.10	2.03	2.04	
Coefficient of variation			7.42	
Minimum	24	23	23	
Maximum	32	33	33	

(1): Based on Student´s t-test with equal variance

TABLE 3- Assessment of Burnout Syndrome according to variables specialty, area of practice, sex, marital status, year of residency, work week and awareness of Burnout Syndrome

Variable	Burnout Syndrome Yes N	Yes %	No N	No %	TOTAL N	TOTAL %	p-value	OR (95.0% CI)
• **Specialty**								
General surgery	**9**	**50.0**	**9**	**50.0**	18	100.0	**$p^{(1)} = 0.196$**	*
Anesthesiology	**2**	**22.2**	**7**	**77.8**	9	100.0		
Orthopedics	**10**	**43.5**	**13**	**56.5**	23	100.0		
Internal medicine	**3**	**18.8**	**13**	**81.2**	16	100.0		
Urology	**1**	**12.5**	**7**	**87.5**	8	100.0		
Neurosurgery	**-**	**-**	**3**	**100**	3	100.0		
Vascular surgery	**-**	**-**	**2**	**100**	2	100.0		
• **Area of practice**								
Clinical	**3**	**18.8**	**13**	**81.2**	16	100.0	**$p^{(2)} = 0.214$**	**1.00**
Surgical	**22**	**34.9**	**41**	**65.1**	41	100.0		**2.33 (0.60-9.04)**
• **Sex**								
Male	**17**	**34.0**	**33**	**66.0**	50	100.0	**$p^{(2)} = 0.555$**	**1.35 (0.50-3.69)**
Female	**8**	**27.6**	**21**	**72.4**	29	100.0		**1.00**
• **Marital status**								
Single	**18**	**31.0**	**40**	**69.0**	58	100.0	**$p^{(1)} = 0.846$**	**1.00**
Married	**7**	**33.3**	**14**	**66.7**	21	100.0		**1.11 (0.38-3.22)**
• **Year of residency**								
First year	**9**	**29.0**	**22**	**71.0**	31	100.0	**$p^{(2)} = 0.923$**	**1.00**
Second year	**10**	**33.3**	**20**	**66.7**	30	100.0		**1.22 (0.41-3.62)**
Third/fourth years	**6**	**33.3**	**12**	**66.7**	18	100.0		**1.22 (0.35-4.27)**
• **Work week**								
> 72 hours	**17**	**33.3**	**34**	**66.7**	51	100.0	**$p^{(2)} = 0.663$**	**1.25 (0.46-3.42)**
≤ 72 hours	**8**	**28.6**	**20**	**71.4**	28	100.0		**1.00**
• **Awareness of BS**								
Yes	**11**	**37.9**	**18**	**62.1**	29	100.0	**$p^{(2)} = 0.360$**	**1.57 (0.59-4.15)**
No	**14**	**28.0**	**36**	**72.0**	50	1000		**1.00**
Total group	25	31.6	54	68.4	79	100.0		

(*): Not determined due to occurrence of null frequencies.
(1): Based on Fisher´s Exact test.
(2): Based on Pearson´s Chi-squared test.

TABLE 4- Distribution of participants according to the 3 Burnout dimensions

Variable	N	%
• **Emotional Exhaustion**		
Low	**5**	**6.3**
Moderate	**21**	**26.6**
High	**53**	**67.1**
• **Depersonalization**		
Low	**4**	**5.1**
Moderate	**20**	**25.3**
High	**55**	**69.6**
• **Professional Accomplishment**		
Low	**34**	**43.0**
Moderate	**38**	**48.1**
High	**7**	**8.9**
TOTAL	79	100.00

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