



Submitted on: 07/24/2017
Approved on: 04/15/2018

ORIGINAL ARTICLE

Burnout syndrome frequency in resident physicians

Paulo Roberto Cruvinel Oliveira¹, Thayane Guimarães de Melo², Anelise Lopes², Monica Nunes Lima³, Dirceu Zorzetto Filho⁴, Vania Oliveira de Carvalho⁵

Keywords:

Burnout, Professional;
Fellowships and
Scholarships;
Occupational Health
Physicians

Abstract

Objective: To determine the frequency and factors associated with Burnout Syndrome (BS) in resident physicians in a University Hospital at the tertiary level. **Methods:** prospective, cross-sectional and analytical study was carried out from April to September 2016. All resident physicians in the institution were invited to participate and sociodemographic questionnaires were applied, the presence of BS by Maslach Burnout Inventory **Results:** Out of a total of 370 resident physicians, 117 (31.6%) participated. There was BS in 27.3% of the participants, with 67% presenting high emotional exhaustion, 47% high depersonalization and 53% low professional achievement indexes. There was a difference when compared to those without and with BS, when there were: absence of leisure activities (17.8% versus 37.5% - $p = 0.04$), absence of religion (22.3% versus 40.6% $p = 0.04$) and presence of chronic disease (20.9% versus 56.2% - $p = 0.04$). **Conclusions:** BS was frequent in resident physicians, with high rates in each domain of the syndrome. There was a higher frequency of BS in participants who had no leisure time, had no religious belief and had chronic disease.

¹ R3 in Pediatric Intensive Medicine at the Clinical Hospital of the Federal University of Paraná.

² Medical student at the Federal University of Paraná.

³ Associate Professor at the Federal University of Paraná; Coordinator of the UFPR Graduate Program in Child and Adolescent Health.

⁴ Associate Professor of Psychiatry at the Federal University of Paraná.

⁵ Senior Associate Professor of Pediatrics at the Federal University of Paraná.

Correspondence to:

Paulo Roberto Cruvinel Oliveira.

Departments of Pediatrics and Psychiatry, Federal University of Paraná. Rua Richard Strauss, nº 62, Vista Alegre. Curitiba - PR. Brazil. CEP: 80820-110.

E-mail: paulocruvinel@hotmail.com

INTRODUCTION

The relationship of individuals with their work and experiences in a professional environment results in personal satisfaction and improvement and can simultaneously be a source of stress. A balance among these factors depends on individuals and their selected occupation. Study of the individual–work binomial and analysis of the organizational environment provide an understanding of diseases triggered in a worker by work itself¹. Burnout syndrome (BS), also known as occupational exhaustion, results from an imbalance between an individual and his/her work activity and is characterized by emotional exhaustion (EE), depersonalization (DP), and feelings of decreased personal efficacy (PE). It is generally described in professionals who work under the protection and care of others, particularly healthcare professionals. BS leads to lower performance and efficiency, impairing the quality of care provided².

In addition, this condition is associated with physiological changes due to stress, generating a higher risk of infections. It has also been associated with alcoholism, illicit substance use, suicide risk, and mixed depressive–anxiety disorder. Moreover, it has socioeconomic implications such as absenteeism, abandonment of the specialty, and lower productivity². The Maslach Burnout Inventory (MBI) is an instrument in the form of a questionnaire that assesses the presence of BS. It considers the three domains of the syndrome (EE, DP, and PE), each of which can be classified as low, medium, or high^{3,4}.

Among health professionals, those most affected by BS are nurses, social workers, and physicians⁵. Among physicians, the prevalence of the syndrome ranges from 25% to 70%. Such discrepancy is explained by the fact that the frequency of BS varies with the working conditions, time of activity, and specialty⁶. Its prevalence is highest in anesthesiologists, followed by emergency physicians, intensivists, oncologists, and resident physicians^{7,8,9}. In resident physicians, the most frequent complaints are physical and mental exhaustion possibly due to long hours of work and sleep deprivation².

During medical residency, individuals are considered to be at a vital stage of their professional journey wherein they have the opportunity to undergo in-service training. This stage is fundamental for medical education and subspecialty training, during which residents acquire practical knowledge of the profession. Residency requires extra study time in addition to a workload with new professional demands of preceptors and patients. A considerable amount of responsibility and heavy workload are placed on medical residents, most of whom are newly graduated. They are required to offer quality care while they have not yet developed their skills in the subspecialty; therefore, they have substantial responsibility while having limited autonomy¹⁰. All these factors negatively affect the quality of life of resident physicians¹¹.

The level of professional exhaustion in resident physicians ranges from 15% to 70%. This proportion depends on the service evaluated and the method using which each study evaluates BS through the MBI, i.e., using only one domain or all three domains^{11,12,13,14,15,16}.

Residency is a study period during which professionals are under constant stress, presenting fatigue and fear of making mistakes. The personal and professional development observed in this period coexists with changes in lifestyle habits, which can lead to physical and mental health damage and cause BS. Due to the importance of this topic among professionals and to the society and considering the scarcity of studies on resident physicians, this study aimed to assess the frequency of BS and its associated factors in resident physicians.

METHODS

This prospective, transversal, analytical study was approved by the Ethics Committee of the institution (No. 54227716.0.0000.0096). Data were collected using a questionnaire applied to the medical residents of a tertiary university hospital located in Curitiba, Paraná, Brazil. All resident physicians were invited to participate; questionnaires were distributed and anonymously completed from April 25 to September 1, 2016, with a total of 117 participants.

Sociodemographic data were collected using an instrument developed by the researchers, including data on sex, age, marital status, year of residency, specialty of the residency, number of shifts per week, workload in addition to medical residency, physical activity, religion, substance use, leisure activities, presence of chronic disease, number of absences in the residency per month, time elapsed since the last vacation, and courses currently being undertaken (if any), as well as the occurrence of any of the following in the past 6 months: death or distancing from close friends or family, serious illness, hospitalization, and emotional problems.

The participants of the survey answered the MBI³ version validated for Brazilian Portuguese^{17,18}.

Occupational stress was assessed according to the MBI for the EE, DP, and PE domains through 22 questions; the items addressed were scored on a Likert scale (0–6). The questions were grouped into three domains: EE (0–54), DP (0–30), and PE (0–48). The mean values were calculated, and the cut-off points shown in Table 1 were used. BS was diagnosed in the presence of high EE (26–54) and DP (9–30) scores as well as a low PE score (0–33).

All data obtained were recorded in the instrument of data collection, entered into a spreadsheet (Microsoft Excel®), checked, and exported for further statistical analysis (Statistica® 10). The data are presented as mean, standard deviation, and coefficient of variation, and they were later correlated; for statistical analysis, chi-squared test with Yates' correction, Pearson's chi-squared test, and Student's *t*-test was used. The significance level was set at 5%.

Table 1. Cut-off points for burnout syndrome evaluation

Domains	Cut-off points		
	Low	Medium	High
Emotional exhaustion	0–15	16–25	26–54
Depersonalization	0–2	3–8	9–30
Professional efficacy	0–33	34–42	43–48

Source: Adapted from Benevides-Pereira, 2002.

RESULTS

The questionnaires were answered by 117 (31.6%) of 370 resident physicians of the institution. Table 2 summarizes the distribution of the participants per specialty.

Table 2. Distribution of the participants according to specialty

Specialty Direct access	Number of participants
General pediatrics	29
Obstetrics and gynecology	17
Clinical medicine	12
Radiology	11
Psychiatry	7
Pathology	4
Intensive therapy	4
General surgery	4
Infectology	3
Neurology	1
Anesthesiology	1
Dermatology Prerequisite	1
Pediatric Specialties	16
Pediatric Surgery	2

In the participants, there was a predominance of first-year residents (45.2%), females (70.9%), and single individuals (76.9%), with a mean age of 26.91 ± 2.40 years (Table 3).

BS

The mean value of each MBI domain was as follows: EE = 30.57 ± 11.58 ; DP = 7.48 ± 5.88 ; and PE = 31.79 ± 8.45 .

Of the 117 individuals evaluated, 79 (67.5%) presented high EE, 47 (40.0%) presented high DP, and 62 (53.0%) presented low PE. Because individuals who met only one or two criteria were not considered to have BS in the present study, only 32 residents (27.3%) presented BS.

Independent variables, i.e., age, sex, year of residency, marital status, religion, chronic diseases, areas of activity, physical activity, and leisure activities, were assessed according to the presence of BS (Table 3).

In the 32 participants with BS, the following percentages were observed when grouped by specialty: first- and second-year pediatric residents, 40.6%; complementary examination residents, 15.6%; third- and fourth-year pediatric, intensive medicine, clinical medicine, and obstetrics and gynecology residents, 9.4% each; and surgical specialties and anesthesiology, 6.3%.

On comparing the three specialties with the highest number of participants, pediatrics were found to have 68% of residents with BS vs. 36% without it, obstetrics and gynecology had 19% vs. 35%, and clinical medicine had 18% vs. 32%. It was observed that pediatrics had the highest percentage of physicians with BS, but this difference was not significant ($p = 0.06$).

DISCUSSION

In the present study, when considering the three domains in the MBI, the frequency of BS in resident physicians was found to be high. When assessing each domain, high EE was the most common finding, followed by low PE. Gil-Monte indicated that EE could be the trigger for DP as a self-defense mechanism of a professional attempting to minimize exhaustion, subsequently culminating in low PE¹⁹.

In the comparison among countries and hospitals, the prevalence of BS has been described with different frequencies. In an evaluation of 218 emergency medicine residents from eight programs in the United States, BS was defined as the presence of at least one of the domains, and it was detected in 67% of the participants¹¹. In 74 pediatric residents in Argentina, the frequency of BS measured by the MBI (considering moderate or high scores in at least two of the three domains) was 66%, a value higher than that observed in the present study²⁰. Further, BS (defined as high EE + high DP or low PE) was observed in 14.4% of 263 residents of 25 medical specialties in Greece¹². Blanchard et al. evaluated 204 oncology residents in university hospitals in France and observed BS (defined as high EE or DP scores) in 44% residents¹³. Al-Youbi et al. assessed 130 pediatricians (residents, medical assistants, and consultants) in Jeddah, Saudi Arabia, in private, public, and military hospitals. BS was detected in 34% of the participants considering the scores for the three domains¹⁴.

Table 3. Demographic data of the participants according to the presence or absence of burnout syndrome (BS).

	Without BS n = 85 (72.6%)	With BS n = 32 (27.3%)	p-value
Age in years 26.91 ± 2.4	26.87 ± 2.42	27.03 ± 2.37	0.74
Sex, n (%)	n (%)	n (%)	
Female 83 (70.90)	56 (65.8)	27 (84.3)	0.08
Male 34 (29.10)	29 (34.1)	5 (15.6)	
Marital status			
Married 27 (23.07)	21 (24)	6 (18.7)	0.06
Single 90 (76.93)	64 (75.2)	26 (81.2)	
Leisure activities*			
Yes 89 (76.72)	69 (82.14)	20 (62.50)	0.04
No 27 (23.28)	15 (17.85)	12 (37.50)	
Chronic disease*			
Yes 85 (72.64)	18 (20.93)	18 (56.25)	0.04
No 32 (27.36)	67 (78.82)	14 (43.75)	
Religious belief			
Yes 85 (72.64)	66 (77.65)	19 (59.38)	0.04
No 32 (27.36)	19 (22.35)	13 (40.63)	
Year of residency			
R1 53 (45.29)	41 (48.24)	12 (37.50)	0.17
R2 27 (23.07)	17 (20.00)	10 (31.25)	
R3 25 (21.36)	16 (18.82)	9 (28.13)	
R4 12 (10.25)	11 (12.94)	1 (3.13)	
Physical activity**			
Yes 39 (33.33)	32 (38.10)	7 (21.88)	0.15
No 77 (66.67)	52 (61.90)	25 (78.13)	

* asthma, depression, atopic dermatitis, hypothyroidism, migraine, anxiety, and hypertension ** one of the study participants did not answer the question about leisure and physical activity

In the present study, considering the three domains, 27.3% of the participants presented BS. Therefore, depending on the method of assessment, BS rates range approximately from 15% to 70%, considering the three domains of the syndrome.

High rates of EE and DP as well as a low rate of PE were also observed in some Brazilian studies. In a public hospital in Uberlândia, Lima et al. reported that 20.8% of 120 assessed residents had BS (65.0% EE, 61.7% DP, and 30.0% PE)²¹. Soares et al. assessed 72 resident physicians of a public hospital in Goiânia and observed BS in 18.0% physicians (50.0% with high EE, 31.9% with high DP, and 33.3% with low PE)²². Katsurayama et al. evaluated 48 residents of a university hospital in Amazonas and reported 44.9% with high EE, 18.4% with high DP, and 63.3% with low PE²³. Therefore, the rate of BS in resident physicians from different regions of Brazil is similar and close to 20.0%, with worrisome rates in each domain of this syndrome.

In the present study, it was not possible to adequately compare the frequency of BS in all specialties owing to the small number of participants in some areas. In the comparison of the medical specialties with the highest number of participants,

pediatrics presented the highest frequency of BS, but this difference was not significant. In Greece, Zis et al. evaluated 263 physicians and found a higher frequency of BS in surgical residents (50%) who worked more hours per week than those recommended by European labor standards. Residents with occupational exhaustion complained of overwork, lack of support from their supervisors, emotional demands in the family and professional context, low autonomy at work, and lower opportunities for professional development¹².

Asaiag et al. evaluated 136 gynecology, pediatric, clinical medicine, and general surgery residents and observed higher frequencies for high EE and DP and low PE in the surgical specialty and lower frequencies in clinical medicine¹⁶. In a study by Lima et al., a significant difference was observed in the DP domain, with a mean of 11.23 in the surgical specialties when compared with the clinical ones (9.42); no significant differences were observed for the other two domains of BS²¹. In the present study, pediatric residents presented a higher frequency of BS; however, it was not possible to compare this result with those for surgical specialties due to the small number of participants in the latter.

In the assessment of the independent variables of the sociodemographic questionnaire, a higher frequency of BS was observed in the participants who declared to have no leisure time, those with no religious belief, and those who had a chronic disease. In a multicenter study conducted in Portugal with 88 nurses and physicians of palliative care groups, Pereira et al. showed that professionals who claimed to have a religious belief presented lower BS rates²⁴, corroborating the present results. Regarding leisure, in a systematic review on BS in nursing professionals, Portela et al. demonstrated that those who declared a lack of time for leisure activities were more prone to develop BS; these authors indicated that these activities could be used to mitigate the likelihood of developing the syndrome²⁵. Varekamp et al. assessed 122 workers in the Netherlands; 44% of the population had one or more diseases for over 10 years. These authors showed that workers with chronic diseases had more absences at work, work incapacity, and worse scores for BS domains²⁶.

In the present study, a higher frequency of BS was observed in females and single individuals, but this difference was not significant; however, this finding is in agreement with those reported by Lima et al. (22% in women vs. 20% in men; $p > 0.05$)²¹. Asaiag et al. also failed to observe a significant difference in terms of BS between sexes in the resident physicians of a university hospital in Curitiba¹⁶. Al-Youbi indicated a greater probability of male residents presenting EE than female residents (40% vs. 31%; $p = 0.012$)¹⁴.

Marital status is indicated as an influencing factor in BS onset. In a multicenter cross-sectional study in the United States assessing emergency medicine residents, BS was observed in 65% of the participants. Those who were married or had a partner were more affected (60%) than those who were single (40%)¹¹, a finding divergent from that observed in the present study. In 24 residents assessed at a hospital in São Paulo, BS was observed in 50% of the participants, with no difference in terms of marital status¹⁵. It can be hypothesized that married residents are subjected to greater emotional stress and demands from their spouse regarding their presence at home. Because BS is multifactorial, it is possible that there are protective factors (spouse's understanding and stable relationship) or associated factors (greater workload) that are not assessed by the MBI.

Tironi et al. evaluated BS in 76 pediatric doctors from two institutions, one charity and one private, and observed that a younger physician tended to have a higher vulnerability to BS; those in the age group of 30–40 years were at the highest risk²⁷. In the present study, age group was not a significant independent variable possibly due to the small age variation in the participants. In the present study, physical activity did not influence the frequency of BS. Other authors who assessed BS in resident physicians also reported no differences in terms of age, marital status, or physical activity^{15,21,22}.

In the present study, the year of residency did not influence the frequency of BS. Asaiag et al. demonstrated a significant difference in terms of the DP domain: the lowest rates were observed in first-year residents (36.2 ± 5.2) as opposed to second-year residents (31.8 ± 7.8)¹⁶. Martins et al. demonstrated that the year of residency was an isolated predictor of BS; third-year residents were at a higher risk than others²⁰.

One limitation of the present study was the sample size, which was too small to identify differences among specialties. A longitudinal study with a higher number of participants can facilitate the assessment of critical areas and conception of preventive measures for BS. Nonetheless, it was possible to diagnose BS in 27% of resident physicians and determine that those with less leisure activities, without a religious belief, and with chronic diseases were more affected.

REFERENCES

1. Tironi MOS, Fernandes SRP. Síndrome de Burnout em médicos pediatras: estudo em dois hospitais de Salvador. [Burnout syndrome in pediatricians: a study in two hospitals in Salvador] *Rev. Bahiana Ped.* 2007;3:31-42.
2. Andrade APM. Avaliação da Atividade Cerebral durante o teste de atenção de médicos residentes de pediatria do primeiro ano de residência associada a prevalência de síndrome de burnout e sintomas de estresse. [An assessment of brain activity during the attention test applied to first-year pediatric residents associated to the prevalence of burnout syndrome and stress symptoms] Master's dissertation at the University of São Paulo School of Medicine, 2013. Available at: <http://www.teses.usp.br/teses/disponiveis/5/5141/tde-20052013-102120/pt-br.php>
3. Maslach C, Jackson S. The measurement of experienced burnout. *J. Occup. Behav.* 1981;2:99-113.
4. Maslach C, Wilmar BOS, Michael PL. Job burnout. *Annu. Rev. Psychol.* 2001;52:397-422.
5. Dyrbye LN, Thomas MR, Huschka MM, Lawson KL, Novotny PJ, Sloan JA. A multicenter study of burnout, depression and quality of life in minority and nonminority US medical students. *Mayo Clin. Proc.* 2006;81(11):1435-42.
6. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. *Ann. Intern. Med.* 2002;136(5):358-67.
7. Nyssen A-S, Hansez I. Stress and burnout in anaesthesia. *Curr. Opin. Anaesthesiol.* 2008;21(3):406-11.
8. Roth M, Morrone K, Moody K, Kim M, Wang D, Moadel A, et al. Career burnout among pediatric oncologists. *Pediatr. Blood Cancer.* 2011;15;57(7):1168–73.
9. Popa F, Arafat R, Purcarea VL, Lala A, Popa-Velea O, Bobirnac G. Occupational burnout levels in emergency medicine – a stage 2 nationwide study and analysis. *J. Med. Life.* 2010;3(4):449-53.
10. Lourenção LG, Moscardini AC, Sperli ZA, Soler G. Saúde e Qualidade de Vida de Médicos Residentes. [Health and quality of life of resident physicians] *Rev. da Assoc. Med. Bras.* 2010;56(1):81-91.
11. Takayesu JK, Ramoska EA, Clark TR, Hansoti B, Dougherty J, Freeman W, et al. Factors associated with burnout during emergency medicine residency. *Acad. Emerg. Med.* 2014;21(1):1031-35.
12. Zis P, Anagnostopoulos F, Sykioti P. Burnout in medical residents: A study based on the job demands-resources model. *Scientific World Journal.* 2014:673279. DOI: 10.1155/2014/673279.

13. Blanchard P. Prevalence and causes of burnout amongst oncology residents: A comprehensive nationwide cross-sectional study. *Eur. J. Cancer.* 2010;46:2708-15.
14. Al-Youbi RA, Jan MM. Burnout syndrome in pediatric practice. *Oman Med. J.* 2013;28 (4):252-4.
15. Fabichak C, Silva JS, Morrone LC. Síndrome de Burnout em médicos residentes e preditores organizacionais. [Burnout syndrome in resident physicians and organizational predictors] *Rev. Bras. Med. do Trab.* 2014;12(2):79-84.
16. Asaiag PE, Perotta B, Martins MA, Tempiski P. Avaliação da Qualidade de Vida, Sonolência Diurna e Burnout em Médicos Residentes. [An evaluation of quality of life, daytime sleepiness and burnout in resident physicians] *Rev. Bras. Ed. Médica.* 2010;34(3):422-9.
17. Benevides-Pereira AMT. O adoecer dos que se dedicam à cura das doenças. O Burnout em um grupo de médicos. [When those who work curing diseases fall ill themselves: Burnout in a group of physicians] In Benevides – Pereira AMT. *Burnout: quando o trabalho ameaça o bem-estar do trabalhador.* São Paulo: Casa do Psicólogo; 2002. p. 45-68.
18. Carlotto MS, Câmara SG. Propriedades psicométricas do Maslach Burnout Inventory em uma amostra multifuncional. [Psychometric properties of the Maslach Burnout Inventory in a multifunctional sample] *Est. de Psic. Campinas.* 2007;24(3):325-32.
19. Gil-Monte PR. Processo de queimar-se no trabalho. In: *Anais do 1º Seminário Internacional de Stress e Burnout;* Curitiba, Brasil. Curitiba: PUC; p. 30-1.2002.
20. Martins AE, Davenport MC, Del Valle MP, Di Lalla S, Domínguez P, Ormando L, et al. Impact of a brief intervention on the burnout levels of pediatric residents. *J. Pediatr. (Rio J).* 2011;87(6):493-8.
21. Lima DF, Buunk AP, Araújo MJB, Chaves JGM, Muniz DLO, Queiroz LB. Síndrome de Burnout em Residentes da Universidade Federal de Uberlândia. [Burnout syndrome in residents at the Federal University of Uberlândia] *Rev. Bras. Médica.* 2007;31(2):137-46.
22. Soares LR, Lopes TMO, Silva MAO, Ribeiro MVA, Almeida Junior MP, Silva RA, et al. Burnout e Pensamentos Suicidas em Médicos Residentes de Hospital Universitário. [Burnout and thoughts of suicide in resident physicians of a university hospital] *Rev. Bras. Ed. Médica.* 2012;36(1):77-82.
23. Katsurayama, Avaliação dos níveis de Estresse Psicológico em médicos Residentes e não Residentes de Hospitais Universitários. [An assessment of psychological stress levels in resident and non-resident physicians of university hospitals] *Psic. Hosp.* 2011;9(1):75-96.
24. Pereira SM, Teixeira CM, Ribeira O, Hernandez-Marrero, Fonseca AM, Carvalho AS. Burnout em médicos e enfermeiros: estudo quantitativo e multicêntrico em unidades de cuidados paliativos em Portugal. [Burnout in physicians and nurses: a quantitative multicenter study in palliative-care units in Portugal] *Rev. de Enf.* 2014;355-64.
25. Portela NLC, Pedrosa OA, Cunha SDJ, Monte SRL, Gomes RNS, Logo EC. Síndrome de Burnout em profissionais de enfermagem de serviços de urgência e emergência. [Burnout syndrome in nursing professionals of urgency and emergency services] *Pesqui. Cui. Fundamen. (Online).* 2015;7(3):2749-60.
26. Varekamp I, Van DIJK FJH. Workplace problems and solutions for employees with chronic diseases. *Occup. Med. (Lond).* 2010;60:287-93.
27. Tironi MOS, Fernandes SRP. Síndrome de Burnout em médicos pediatras: estudo em dois hospitais de Salvador. [Burnout syndrome in pediatricians: a study in two hospitals in Salvador] *Rev. Bras Ped.* 2007;3(1):31-42.