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RESEARCH

Prevalência da síndrome de burnout em médicos de uma instituição hospitalar federal de ensino

Prevalence of burnout syndrome among physicians of a federal education hospital

Prevalencia del síndrome de burnout en médicos de un hospital en la educación federal

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ABSTRACT

Objective: to estimate the prevalence of burnout syndrome among physicians of a federal education hospital in the state of Paraíba/Brazil. **Method:** a descriptive and observational study, which involved 134 doctors randomly chosen among medical residents, professors of the ufpb and federal physicians from the institution. three sets of questionnaires were used: socio-demographic and professional, mbi-hss and itra. the data were statistically analyzed with the aid of the spss-18.0. **Results:** it was detected a prevalence of the syndrome of 81.34% and the predominant features among respondents suffering from burnout were: young adult, with children, unmarried, early career working in various health institutions, with delicate relationship with supervisors in various activities and tasks with poorly defined. **Conclusions:** it was concluded that the burnout syndrome was highly prevalent in the workplace hospital doctor and should be target of public policies to reduce stress from this kind of work. **Descriptors:** Burnout, professional, Physicians, Hospitals, federal.

RESUMO

Objetivo: estimar a prevalência de burnout entre médicos de uma instituição hospitalar federal de ensino localizada no estado da Paraíba/Brasil. **Método:** estudo descritivo e observacional, do qual participaram 134 médicos, escolhidos aleatoriamente entre médicos-residentes, professores da ufpb e médicos servidores federais da instituição. foram utilizados três questionários: caracterização sócio-demográfica e profissional, mbi-hss e o itra. os dados foram submetidos à análise estatística com o auxílio do spss-18.0. **Resultados:** foi evidenciada uma prevalência da síndrome de 81,34% e as características predominantes dentre os pesquisados acometidos pelo burnout foram: adulto jovem, com filhos, sem companheiro, em início de carreira, trabalhando em várias instituições de saúde, com relação delicada com as chefias, em diversas atividades e com tarefas pouco definidas. **Conclusão:** concluiu-se que foi de alta prevalência o burnout no contexto de trabalho médico hospitalar, devendo ser alvo de políticas públicas para diminuir estressores oriundos desse tipo de trabalho. **Descritores:** Esgotamento profissional, Médicos, Hospitais federais.

RESUMEN

Objetivo: para estimar la prevalencia de burnout en los médicos en un hospital de educación federal ubicada en el estado de paraíba/brasil. **Método:** estudio descriptivo, observacional, al que asistieron 134 médicos seleccionados al azar entre los médicos residentes, maestros ufpb y médicos servidores institución federal. se utilizaron tres cuestionarios: socio-demográfico y profesional mbi-hss y el itra. los datos fueron analizados estadísticamente con la ayuda de spss-18.0. **Resultados:** se detectó una prevalencia del síndrome de 81,34% y los rasgos predominantes entre los encuestados se vieron afectados por burnout: adulto joven, con hijos, solteras, carrera a principios de los establecimientos de salud diferentes, con delicada relación con los supervisores de las distintas actividades y tareas con poco definido. **Conclusión:** se concluye que la prevalencia de burnout fue alta en el trabajo médico del hospital, debe ser el objetivo de las políticas públicas para reducir el estrés de este tipo de trabajo. **Descriptor:** Agotamiento profesional; Médicos; Hospitales federales.

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INTRODUCTION

The Technological advances, social, cultural and globalization brought benefits to the modern world, leading, on the other hand, major changes in the biopsychosocial behavior of human beings with considerable influence on the quality of life of the population.¹ The Organization of work of the impacted man in the psychic apparatus which may emerge sufferings related to their individual story full of projects, of hopes, wishes in the context of an organization that ignores such longings.¹

In this scenario, one of the consequences generated to employees can be the Burnout Syndrome or fatigue syndrome, which is characterized as an entity that stems from chronic stress from work combined with the failures of personal strategies to counter the stress.²

The development of burnout syndrome results from a progressive and gradual process of wear in the mood and motivation accompanied by physical and psychic symptoms in such a way that the worker loses the sense of its relationship with the work, and everything seems to lose direction.³ Is characterized by three dimensions sintomatológicas, emotional exhaustion verified by the presence of emotional exhaustion, physical or both, depersonalization emotional insensitivity or observed for the emotional hardening and lack of involvement with the work, identified by the personal and professional inadequacy.⁴

Among health professionals is consensus that the hospital environment can provide stress and aggravations psychics, therefore, direct contact with the suffering, pain and death, work overload, lack of resources to adequately perform its role and stimuli in their activity, can lead to stress.⁵

In the case of federal hospitals responsible for this context's education comes work progressively worsening, as has been noticed in university hospitals across the country, that the salary of teachers is low and working conditions, whether the desktop facilities or equipment that your doctor needs, are lousy, decreasing productivity and efficiency of such institutions.⁶

On the other hand, the federal government comes gradually decreasing resources for university hospitals or resorting later to Brazilian companies of hospital services to manage the University hospitals. These are public companies federal private law representing the Government's attempt to guide the hospital work with a view to profit.⁷

Thus, the trend is that the medical work in hospitals become increasingly productive having a worker to take more and more users to meet a logic similar to private initiative. Burnout syndrome develops widely related to organizational values, consistent work environment.⁸ So, this research aimed to investigate the prevalence of Burnout among doctors to a federal health hospital and education located in Paraíba/Brazil.

METHOD

This research is characterized as an observational study, transversal type you described the characteristics of a federal institution of health and education in Paraíba/Brazil, held in the period from October 2011 to April 2012.

The population of the study consisted by 358 doctors, which was calculated based on data from the human resources Department of the institution studied and the departments linked to the center of medical sciences at the Federal University of Paraíba (UFPB).

The sample was calculated using the sample size of the program OPEN EPI (Open Source Statistics for Public Health) version 2.3.1, estimated accuracy of 5% and 95% confidence interval, resulting in 179 doctors chosen at random. Inclusion criteria were considered be resident doctor or professor at UFPB in any health service clinical in nature, surgical and/or medical laboratory or be hired by the federal institution and server, exclusion, doctors in the period of data collection were not at the institution for any reason or those who refused to participate in the research or do not complete the instruments applied.

So were contacted 161 physicians and of these only 134 attended the pre-established criteria. We emphasize that 36 were medical residents, 39 staff at UFPB and 59 federal employees of the institution.

Three questionnaires were used: socio-demographic Characterization and Maslach Burnout Inventory professional Human Services Survey (MBI-HSS) in Portuguese and the inventory on the work and risks of Illness (ITRA) with regard to the scale of assessment of the Work context (EACT). The questionnaires were autoaplicados, indulging the informed consent (TFCC) to each of the surveyed in two ways, separately, of the three questionnaires.

The data collection was based on visit the institution search and invite participation of medical research randomly, signing an informed consent, and self application of the three questionnaires mentioned above in time and place judged suitable by the participants, having been collected later.

To assess the level of burnout of individuals surveyed, there are several criteria presented in the literature. In this study, was chosen the criteria presented by Maslach and Jackson⁹ for this syndrome, which sorts your levels as moderate, serious or not affected by the syndrome.

Were considered serious burnout level those who possessed serious scores in two of the three dimensions at least; for serious score, get high scores in emotional exhaustion and depersonalization and low in professional achievement. Finally, were classified in not affected by burnout syndrome all cases that do not fit in the two previous descriptions.

Percentiles used to classify exposed will from zero to 100, as well as the scores used in emotional exhaustion dimension are 0-14 to the low level, 15-31 for the middle level and greater than 31 to high level, in Depersonalization score zero for low level, 36-44 for the middle level and greater than 44 to the high level⁹.

The ITRA is comprised of four interdependent scales whose goal is to assess four dimensions of the relationship work and risks of illness. Of these four scales, was used only the scale of assessment of the Work context, which is composed of three factors, organisation of work, working conditions and the socio-professional relations. It is a likert-type scale, with the following response options: “1” never, “2” rarely, “3” sometimes, “4” often and “5” always.

With the purpose to identify the likelihood of doctors develop burnout when exposed to factors investigated with the use of the EACT, chose to dichotomize variables in the ITRA ranges so that the responses found for "never" and "rarely" as "not exposed to factors" and the other as "exposed to factors".

To establish statistically significant associations between burnout syndrome and the other two instruments used, it was established that are affected by this syndrome every one that presents any degree of it, and are not affected, everyone who is not affected by the same according to the criteria mentioned above.

The sets of valid questionnaires were coded and entered with the aid of the software SPSS (Statistical Package for the Social Sciences) 18.0, later being subjected to statistical analysis. The significance level adopted in the results was 5%, being considered significant values of $P < 0,05\%$. To assess the association between variables was applied the chi-square test of Pearson.

This study answered the requirements proposed by the Resolution 196/96, which rules on standards and regulatory guidelines of research involving humans. This research was approved by the ethics and Research Committee of the University Hospital Lauro Wanderley for your accomplishment under protocol CEP nº.316/1 (CAAE Nº. 0113.0.126.000-11).

RESULTS

The sample of 134 doctors revealed a prevalence of burnout syndrome, according to the criteria of Maslach and Jackson⁹, where it was possible to notice that 18,65% of the doctors are not affected by the burnout syndrome, while 60,45% are involved in moderate degree and 20,9% are affected by the syndrome in severe degree. When you add the first two percentages, whereas any degree of burnout syndrome, we obtain the percentage distribution by identifying which 18,65% of the interviewees did not present the syndrome while 81,35% had.

Correlating occurrence of burnout syndrome with the scale of assessment of the Work context, there was no statistically significant relationship between items shown in table 1:

Table 1 - Items of socio-demographic characterization that had a statistically significant association with the occurrence of burnout syndrome in medical health institution researched. João Pessoa/PB, Brazil, in 2012.

Variables	Syndrome of <i>Burnout</i>				<i>p</i> -value
	Yes		No		
	n	%	n	%	

Age					
Up to 40 years	3	2,23	54	40,29	0,000
More than 40 years	22	16,41	53	39,55	
Kids					
Not responded	0	0	2	1,49	0,032
Don't have	3	2,23	41	30,59	
Have	22	16,41	66	49,25	
Companion					
Without companion	4	2,98	60	44,77	0,047
With partner	21	15,67	49	36,56	
Training					
Graduate	2	1,49	31	23,13	0,032
Post-graduate	23	17,16	78	58,2	
Time of institution					
Up to 10 years	5	3,73	68	50,74	0,000
More than 10 years	20	14,92	41	30,59	
Exercise time in the clinic					
Up to 10 years	6	4,47	61	45,52	0,000
More than 10 years	19	14,17	36	26,86	
Specialization					
Yes	23	17,16	74	55,22	0,015
No	2	1,49	35	26,11	
Number of health institutions in working					
Up to two	19	14,17	53	39,55	0,015
More than two	6	4,47	55	41,04	
Time of profession					
Up to 15 years	3	2,23	52	38,8	0,001
More than 15 years	22	16,41	57	42,53	

The variables of the socio-demographic characterization that showed statistically significant relationship with the occurrence of the syndrome of burnout 40 years were up, have kids, don't have a companion, be a graduate degree, working until 10 years on research institution, working until 10 years in the same sector in the institution, possess expertise, working in more than two health institutions, have up to 15 years of profession. Should be made explicit to have fellow meant have been declared single in relation to marital status, and be a graduate degree included all those who declared having completed a medical residency.

The profile of the individuals affected by the syndrome of burnout in this research was of young adult, with children, without partner, at the beginning of their careers after having completed a medical residency any, working in various health institutions.

Correlating occurrence of burnout syndrome with Socio-Demographic Characterization, there was no statistically significant relationship between the items presented in the table 2.

Table 2 - Items of Work Context Assessment Scale that had a statistically significant association with the occurrence of burnout in physicians surveyed .João Pessoa/PB, Brazil, 2012.

Items	Syndrome of Burnout				p-value
	Yes n	%	No n	%	
The pace of work is excessive					
Exposed	8	5,97	11	8,2	0,005
Not exposed	17	12,68	98	73,13	
The tasks are fulfilled with deadline pressure					
Exposed	12	8,95	23	17,16	0,006
Not exposed	13	9,7	86	64,17	
There is a strong recovery by results					
Exposed	11	8,2	23	17,16	0,018
Not exposed	14	10,44	86	64,17	
The rules for execution of tasks are rigid					
Exposed	13	9,7	31	23,13	0,024
Not exposed	12	8,95	78	58,2	

Tasks performed suffer discontinuities						
Exposed	12	8,95	23	17,16	0,006	
Not exposed	13	9,7	86	64,17		
The tasks are not clearly defined						
Exposed	22	16,41	60	44,57	0,002	
Not exposed	3	2,23	49	36,56		
Lack of leadership support for my professional development						
Exposed	19	14,17	49	36,56	0,005	
Not exposed	6	4,47	60	44,57		

Only two of the three factors of the EACT had statistically significant association in this research, the organization of work and socio-professional relations. The items relating to the Organization of work were the first five listed in table 1, while the items consistent socio-professional relations were the last two of the table.

DISCUSSION

Burnout syndrome has its etiology related to the job and the individual capacity to counter the chronic stress produced by the working environment. We point out that the prevalence of the syndrome of burnout in doctors surveyed was 81,34%, this being revealed by those considered moderate and severe degrees of the syndrome, that is, with high scores in emotional exhaustion and depersonalization at the same time, or with a low score in professional and high achievement in one of the other two dimensions simultaneously.

This percentage is distinct from other results obtained in national or international research for doctors working in hospital attention. Studies^{10,11,2,12} showed a rate of 7,4% in doctors, 53,7% of pediatricians; that, in turn, found a prevalence of 3,2% in Argentine and 72,6% of Pediatricians in anesthesiologists Paraguayans. These differences are common results according to the literature and vary according to the professional profile of the doctors, as well as the criteria used to determine who is affected by burnout syndrome and who is not, there are still variations in order to establish the prevalence and the percentiles that each researcher uses in its methods.

Thus, it can be concluded that the prevalence of the syndrome of burnout for this research corresponds to a value intermediate between those found in Brazilian and international research, constituting a situation of normality in the literature.

So, the socio-demographic profile of these individuals varies by country or continent studied, being in the United States an adult profile with less than 30 years, and may be confused with the healthy worker effect, and in Europe, the older adult, being identified to be single and have a greater degree of study are other risk factors for the development of the syndrome in tariff¹³. Nationwide, research¹⁰ noted a higher prevalence of burnout syndrome in intensivists with age less than 33 years, with graduation time equal to or less than nine years, with working time in the ICU not exceeding seven years; to the extent that another study 14 pointed higher prevalence of the syndrome of professional stress in women, who did not practice physical activity or hobby.

Burnout syndrome develops more young workers than among those aged 30 or 40 years⁵. The fact that the doctors study with up to 40 years have been most affected by stress is possibly explained by the less experience that these individuals have to confront in relation to adversity at work, supporting smaller degrees of stress and burnout syndrome

developing on a larger scale. There is no consensus in the literature about having children be a variable that lay out the burnout syndrome, however there are polls that argue that fatherhood or motherhood entail pressure on the parent affected, it is another reason capable of generating stress that would help the emergence of professional burnout¹⁵.

Justified if the variables work in more than 10 years at the same institution and working in more than 10 years at the same institution, and in the same sector as risk factors for burnout by the frustration of expectations facing the reality of professional work, that would be work-related factor in stoking to the swindle¹⁶. The fact of working at more than two institutions have had statistically significant relationship with the occurrence of burnout syndrome suggests association with excessive load of work, having the rationale for this variable be cause for stress syndrome professional given earlier.

Graduate school had statistically significant association probably mean the entry into the world of work, not having more support of tutors of medical residency. From the completion of the residency, charging for accurate results, in terms of medical diagnosis, conduct, management of care, becomes greater, which brings greater responsibility and stressors.

Therefore, the socio-demographic profile found in the sample is consistent with international and national literature data, suggesting that the current risk factors for burnout syndrome should still be considered as such.

The statistically significant relationship between the items of the “Organization of work” and “socio-professional relations” with the occurrence of burnout syndrome suggests that doctors surveyed work too much, having delicate relationship with the managers, in several distinct activities and with little tasks defined. For delicate relationship with the leadership, must be understood a set of working under pressure, with strict rules and with little support for professional development. In relation to doctors work, has already been justified its association with burnout syndrome by the accumulation of tasks, strict, inefficient communication, inability to ascend in their careers, all this being considered organizational factor that is associated with the higher rates to beats¹⁶.

On the other hand, labour factors associated with higher rates of professional stress syndrome are exemplified by ambiguity, in which the individual does not know clearly what their function; low level of control of the activities, which do not allow the employee the possibility of creation; precarious organizational support.

Furthermore, the reality of little federal funding of hospitals, mismanagement of public resources or privatization of hospital management have a significant impact on the employee. The University hospitals are sources of prestige for the medical class and the teachers involved, however, work in a place that is institutionalized to work with tertiary attention is frustrating and stressful for the worker⁸.

Can, finally, correlate the high prevalence of burnout syndrome, 81,34%, found in this research significantly statistical association with the “Organization of work” and “socio-professional relations” of the EACT. This suggests that this syndrome depends on a lot of working conditions in which the worker is inserted, and seek alternatives that focus on work so that the burnout has its incidence decreased.

Whereas the context of medical work involves situations similar to those described by these factors according to the variables that had a higher association with burnout syndrome, it becomes apparent that condition the emergence of professional stress.

CONCLUSION

It was concluded that the doctors surveyed are affected by burnout syndrome, varying the degree, and that this entity has relationships with the current medical work context. Thus, it is essential to reflect the health of the worker, enabling improvements in the context of medical work, and stimulating coping strategies of stressors arising from the work. All this will contribute to the incidence of this syndrome suffer a decrease in the coming years.

This research also concluded that stress syndrome depends on the professional context of work about the rules of this possibility that the worker has to be creative, good relationship with the managers, billing by type. In addition, it was observed that the greater the number of stressors within the working environment, the greater the association with burnout. Finally, it should be highlighted the variety of criteria for working with such a syndrome due to the different contexts of work studied, varying by country, type of work performed, organization of work in question.

The main limitations of this study were not hit the sample calculated, not having delivered sets of questionnaires to all or to the landslide of the population, the use of different percentiles of other research involving doctors and burnout syndrome.

REFERENCES

1. Jodas DA, Haddad MCL. Síndrome de Burnout em trabalhadores de enfermagem de um pronto socorro de hospital universitário. *Acta paul enferm.* 2009; 22(2):192-7.
2. Gil-Monte PR, Marucco MA. Prevalencia del "síndrome de quemarse por el trabajo" (burnout) en pediatras de hospitales generales. *Rev Saude Publica.* 2008; 42(3):450-6.
3. Murofuse NT, Abranches SS, Napoleão AA. Reflexões sobre estresse e Burnout e a relação com a enfermagem. *Rev latinoam enferm.* 2005; 13(2):255-61.
4. Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annu Rev Psychol.* 2001; 52:397-422.
5. Ritter RS, Stumm EMF, Kircher RM. Análise de Burnout em profissionais de uma unidade de emergência de um hospital geral. *Rev eletrônica enferm.* 2009; 11(2):236-48.
6. Perrota U. O ensino médico e a crise nos hospitais universitários [editorial]. *Rev Col Bras Cir.* 2008; 35(3):151-2.
7. Medici AC. Hospitais universitários: passado, presente e futuro. *Rev Assoc Med Bras.* 2001; 47(2):149-56.
8. Borges LO, Argolo JCT, Pereira ALS, Machado EAP, Silva WS. A síndrome de Burnout e os valores organizacionais: um estudo comparativo em hospitais universitários. *Psicol reflex crit.* 2002; 15(1):189-200.
9. Maslach C, Jackson SE. The measurement of experienced of Burnout. *J Organ Behav.* 1981; 2:99-113.
10. Tironi MOS, Nascimento Sobrinho CL, Barros DS, Reis EJFB, Marques Filho ES, Almeida A, et al. Trabalho e síndrome da estafa profissional (Síndrome de Burnout) em médicos intensivistas de Salvador. *Rev Assoc Med Bras.* 2009; 55(6):656-62.
11. Lima FD, Buunk AP, Araújo MJB, Chaves JGM, Muniz DLO, Queiroz LB. Síndrome de Burnout em residentes da Universidade Federal de Uberlândia - 2004. *Rev Bras Educ Med.* 2007; 31(2):137-46.
12. Delgado Maidana W, Vega Carduz E, Sanabria L, Figueredo Thiel SJ. Prevalencia del síndrome de Burnout en médicos anestesiólogos del Paraguay durante el año 2010. *Mem Inst Invest Cienc Salud.* 2011; 9(1):13-20.
13. Schaufeli WB, BP Buunk. Burnout: uma visão geral de 25 anos de pesquisa e teorização. In: Schabracq MJ, Winnubst JAM, Cooper CL, editors. *O manual de psicologia do trabalho e saúde.* Chichester: Wiley; 2003. p. 383-425.
14. Tucunduva LTCM, Garcia AP, Prudente FVB, Centofanti G, Souza CM, Monteiro TA, et al. A síndrome da estafa profissional em médicos cancerologistas brasileiros. *Rev Assoc Med Bras.* 2006; 52(2):108-12.
15. Trindade LL, Lautert, L. Síndrome de Burnout entre os trabalhadores da Estratégia de Saúde da Família. *Rev Esc Enferm USP.* 2010; 44(2):274-9.
16. Trigo TR, Tenk CT, Hallak JEC. Síndrome de burnout ou estafa profissional e os transtornos psiquiátricos. *Rev Psiquiatr Clín.* 2007; 34(5):223-33.
23. Furtado LG, Nóbrega

MML. Construção de banco de termos identificados nos registros de enfermagem utilizando a CIPE. Rev eletrônica enferm [periódico na internet]. 2007 [citado 2012 nov 12];9(3)[aproximado 25 p.]. Disponível em <http://www.fen.ufg.br/revista/v9/n3/v9n3a06.htm>



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