

Burnout Syndrome prevalence of on-call surgeons in a trauma reference hospital and its correlation with weekly workload: cross-sectional study

Prevalência da Síndrome de Burnout em cirurgiões plantonistas de um hospital de referência para trauma e sua correlação com carga horária semanal de trabalho: estudo transversal

RODRIGO NOBRE DE NOVAIS¹; LOUISE MATOS ROCHA¹; RAISSA JARDELINO ELOI¹; LUCIANO MENEZES DOS SANTOS¹; MARINA VIEGAS MOURA REZENDE RIBEIRO¹; FERNANDO WAGNER DA SILVA RAMOS¹. FERNANDO JOSÉ CAMELLO DE LIMA¹; CÉLIO FERNANDO DE SOUSA-RODRIGUES¹; FABIANO TIMBÓ BARBOSA¹.

ABSTRACT

Objective: to determine the prevalence of Burnout Syndrome (BS) for surgeons working in referral hospital for trauma in Maceió and to evaluate the possible correlation between BS and weekly workload. **Methods:** cross-sectional study with 43 on-call surgeons at Professor Osvaldo Brandão Vilela General State Hospital, Maceió, between July and December, 2015. A self-administered form was used to evaluate BS through the Maslach Burnout Inventory (MBI) and socio-demographic characteristics among participants. Spearman's S test was used to compare BS and weekly workload. Significant level was 5%. **Results:** among the surgeons studied, 95.35% were male and the mean age was 43.9 ± 8.95 years. The mean weekly workload on call in trauma was 33.90 ± 16.82 hours. The frequency of high scores in at least one of the three dimensions of MBI was 46.5%. Professional achievement was correlated with weekly workload ($P = 0.020$). **Conclusion:** the prevalence of Burnout Syndrome among on-call surgeons in referral hospital for trauma was 46.5%. In this sample there was correlation between weekly workload and the Burnout Syndrome.

Keywords: Job Satisfaction. Burnout, Professional. Observational Studies as Topic. Surgeons.

INTRODUCTION

The Burnout Syndrome (BS) is as a state of exhaustion caused by the working activity^{1,2}. It is a medical condition classically characterized by three dimensions: emotional exhaustion, depersonalization and low personal accomplishment³. The main cause of emotional exhaustion is usually prolonged exposure to stress that manifests itself through the loss of enthusiasm for work and feelings of imprisonment and impotence³. The depersonalization features indifference in interpersonal treatment, the professional coming to consider colleagues and patients as objects⁴. The reduction in job satisfaction is characterized by negative personal assessments or feelings of incompetence associated with job dissatisfaction⁴.

Individuals who are more prone to BS are generally those that have a high degree of perfectionism

and often have the feeling of guilt for not having met their own expectations⁵. The first indication that emotional trauma is already present in the professional are the stress reactions⁵. These are conscious or unconscious, behavioral, emotional and cognitive reactions that the BS bearer displays to cope with the stressor agent⁵.

The most used diagnostic tool is the Maslach Burnout Inventory (MBI) questionnaire, which includes 22 items that measure three dimensions of BS³. The MBI is the gold standard for the identification of BS in clinical research³.

The prevalence of BS varies between surveys and depends on the analyzed population. International research has shown that the prevalence among physicians working in intensive care units may vary between 0 and 70%⁴⁻⁶. Prevalence among surgeons in Brazil is not yet established and it remains unclear if the excess weekly working hours can positively contribute to BS emergence.

1 - Federal University of Alagoas, Basis of Surgical and Anesthetic Technique, Maceió, Alagoas State, Brazil.

The objective of this research was to determine the prevalence of BS in medical surgeons working in a trauma reference hospital in Maceió and to evaluate the possible correlation between BS and the weekly working hours. The hypothesis tested in this study is that the correlation between BS and the weekly workload among surgeons in a trauma reference hospital in Maceió is 0.3. The correlation coefficient evaluates the relationship between variables. Its values serve to identify the intensity of the relationship. Values between 0.1 and 0.29 are mild, between 0.3 and 0.49 are moderate, and between 0.5 and 1, intense. There are no studies evaluating this issue among surgeons in Brazil, so we considered the reference value of 0.3 to be clinically relevant for this research's hypothesis.

METHODS

This was a transversal study of analytical character. We collected data in trauma reference hospital in Maceió. The research was submitted to the *Plataforma Brasil* and approved under protocol 560,965. We carried out the research between June and December 2014. We used an informed consent form.

The survey included physicians working as on duty surgeons on shifts at the trauma hospital in the city of Maceio. We excluded physicians who did not properly answer the data collection form in the part containing the instrument whose purpose was to assess the presence of professional Burnout, MBI, or the question about the weekly working hours. This study made no restriction on the size of the sample in terms of age, gender, color, ethnic or social group.

We created a list of identification numbers for doctors who met the inclusion criteria of this research. We asked the physicians to participate after a draw. We addressed the participants during their shifts in the institution where they worked. We obtained data on lifestyle, workplaces, health status, and stressors among those who were diagnosed as having the BS. The participants signed the consent form at the same time they filled the data collection form.

The data collection form was a self-administered instrument. The information used were those provided by the participants. The researchers did not interfere in the filling or to clarify doubts regarding the instrument questions. This form contained four blocks of questions: first, general identification of the participants with optional name identification, whose goal was to collect data on gender, marital status, age, expertise, lifestyle, total weekly working hours and other data to characterize the sample; the second, assessment of professional stress through the MBI; the third, containing questions about health symptoms and problems; and the fourth, containing questions related to stress in the workplace.

The MBI was validated for Portuguese and has 22 questions with five options each, according to the 1-5 Likert scale, to assess the three dimensions of BS⁷. The three dimensions have been independently described as follows: emotional exhaustion is evaluated in nine items, depersonalization in five items, and job satisfaction in eight⁷.

The MBI allows to classify participants into levels: high, moderate or low. The rating levels for the MBI dimensions are based on the sum of items in each dimension, as follows: emotional exhaustion, high when greater than or equal to 27 points, moderate between 19 and 26 points, low when and less than 19 points; depersonalization, high when greater than or equal to 10 points, moderate between 6 and 9 points, and low when less than 6 points; and job satisfaction, high between 0 and 33 points, moderate between 34 and 39 points, and low when greater than 40⁷. Job satisfaction is in a direction opposite to the other MBI domains. We considered as having BS the participants who had high level in at least one of the MBI domains⁸.

The primary variables were: prevalence of BS and correlation between BS and weekly working hours. The secondary variables were: signs, symptoms and disorders associated with BS, psychological and behavioral symptoms, weekly working hours in the trauma hospital, physical activity, smoking, drinking habits, leisure hours and chronic diseases.

The signs, symptoms and disorders associated with BS are characterized by progressive and constant fatigue, sleep disturbances, muscle or muscle-skeletal pain, headache, migraine, gastrointestinal disorders, cardiovascular disorders, respiratory disorders, and sexual dysfunction.

Psychological and behavioral symptoms were characterized as lack of attention and concentration, memory changes, slowness of thought, impatience, emotional instability, asthenia, anorexia, depression, irritability, aggressiveness, difficulty in accepting changes, loss of initiative, use of illegal substances, tendency to isolation, feelings of omnipotence, loss of interest in work, absenteeism, irony and cynicism.

Considering a correlation between the BS score and the weekly working hours of 0.3, the sample required 43 participants for a significance level of 5% and a statistical power of 80%. We describe continuous variables as mean and standard deviation, and categorical variables by simple frequency. We used The Shapiro-Wilk test to verify the symmetry of data distribution. We applied the Spearman's S test for statistical correlation. The level of significance of this research was 5%, with two-tailed test. We used the BioEstat 5.0 computer application to perform the statistical and sample size calculations⁹.

RESULTS

The research was carried out as planned. We analyzed the responses of 43 participants. Among the participants, two (4.65%) were women and 41 (95.35%) men. The average age was 45.53 ± 8.35 years. The marital status of participants was distributed as follows: two (4.65%) single, two (4.65%) divorced and 39 (90.70%) married. Of the participants, 36 (83.72%) had children, with a mean of 2.41 ± 1.16 children per participant.

Regarding professional activity as a surgeon, 38 (88.37%) participants had specialization in surgery. The average work as a surgeon was 17.60 ± 9.06 years. The type of establishments in which they worked were: 41 (95.35%) participants in public and private institutions and two (4.65%) participants only in public

institutions. Regarding the monthly wage income, 41 (95.34%) participants reported more than 13 minimum wages, one (2.33%) participant, between ten and 13 minimum wages, and one (2.33%) participant, less than ten minimum wages. Personal satisfaction with the monthly income was classified as satisfactory by 31 (72.74%) participants, dissatisfactory by eight (18.6%) participants, three (6.98%) participants did not score it and one (2.33%) did not wish to answer.

The average weekly working hours as a doctor on duty in the trauma service was 33.90 ± 16.82 hours. The average uninterrupted shift time in the trauma service was 29.39 ± 17.72 hours. The average weekly working hours out of the trauma service was 28.96 ± 17.94 hours.

Regarding weekly hours devoted to leisure activities, we observed an average of 36.43 ± 18.38 hours. Aerobic physical activity, walking or running were reported by 31 (72.09%) participants, with the weekly average of 6.63 ± 3.99 hours.

As for general health and lifestyle, ten (23.26%) reported suffering from chronic diseases, consisting mainly of hypertension, diabetes and gastrointestinal disorders. Among the participants, 40 (93.02%) reported to be non-smokers. Alcohol use was reported by 30 (69.77%) individuals.

The score of the participants for the MBI questions according to each domain were: 20.98 ± 5.64 for emotional exhaustion, 8.46 ± 2.27 for depersonalization and 35.40 ± 3.62 for job satisfaction. We identified BS in 20 (46.5%) participants. The correlation between the weekly working hours and the three dimensions of BS were +0.16 for emotional exhaustion ($p=0.497$), +0.13 for depersonalization ($p=0.565$) and -0.51 for job satisfaction ($p=0.020$).

Participants reported the signs, symptoms and disorders associated with BS as follows: seven (35%) subjects had no symptoms, five (25%) reported steady and progressive fatigue, three (15%) had headache, three (15%) participants displayed muscular and osteoarticular pain, and two (10%) showed cardiovascular disorders.

Individuals reported psychological and behavioral symptoms as follows: one (5%) participants had no symptoms, eight (40%) participants reported impatience, five (25%) had inability to relax, two (10%) displayed memory changes, two (10%) participants had dismay, one (5%) participant had irritability, and one (5%) had difficulty in accepting the changes.

Participants marked more than one alternative in item existing factors at work that were considered stressful or harmful to health. The answers were: one (5%) participants did not score any of the factors, eight (40%) marked the possibility of complications, 12 (60%), the lack of resources, 11 (55%) participants chose administrative problems, six, excessive noise (30%), six (30%) participants marked the amount of patients per doctor, four (20%) participants, the obligation to deal with various issues, three (15%) marked dealing with suffering and death, three (15%) chose team commitment, three (15%) participants marked accelerated pace of work, two (10%) participants chose the care for patients at risk of death, one (5%) marked the difficulty for sleeping in shifts, one (5%), the relationship with the team, and one (5%) participant scored working in the operating room and in the emergency room.

Participants marked more than one alternative in item feeling in the workplace during night shifts. The answers were: 14 (70%) participants did not score any alternative, two (10%) stated that they felt prevented from acting according to their principles at work, two (10%) participants marked that they felt their work hampered by quality of the relationships in the workplace, one (5%) chose the difficulty in communicating with the shift organizers, and one (5%) stated to feel uncomfortable with frequent rule changes.

DISCUSSION

We obtained the answer to this research's question. The results can be briefly described as follows: the prevalence of BS among attending physicians in a trauma reference hospital in Maceió was 46.5% and we identi-

fied a correlation between the weekly working hours and the BS.

The research was classified as a cross-sectional study using a self-administered questionnaire. The cross-sectional study does not allow inferences related to causation⁴. The objective of this research did not involve the analysis of the BS's causes. The questionnaire is a research instrument already well-established by the literature, which is used in clinical research involving the need to assess the subjectivity of the research subject. The instrument most commonly used in this research topic is the MBI, however there are other instruments to analyze BS regardless of the analysis of the domains that characterize BS^{7,8}. The researchers chose to use an existing Portuguese version of the MBI since it had already been validated¹⁰.

The limitations of this study deserve comment, such as: incomplete filling of the questionnaire form and the need for more than one answer on some items. The fact that some answers were not answered do not undermine the objectives of this research though, since the items on the weekly working hours and the MBI have been completely answered. The forms analysis revealed that only two participants filled out the form incompletely. The items symptoms, signs and disorders associated with BS or behavioral and psychological symptoms were scored by the participants only once, as oriented by the form itself. The frequency of these results could have been greater, since the BS bearers could display of more than one symptom or sign. The way these items were answered may have limited results, but did not invalidate the execution of the research and the dissemination of results.

The research showed a predominance of male participants. The analysis of other studies shows that the female gender is more prone to the development of BS, since despite having the same exposure to stressors, women still have greater involvement with the household duties and family⁷. The predominance of males in the survey can also be seen in the service where the study was performed. The average age of participants was 45 years, and of working as a surgeon, 17 years, indicating the pos-

sibility of long exposure to stressors. A study presented prevalence with different values considering the professional working environment: 14.5% in the intensive care unit, 21.9% in the oncology department, 17.5% in the operating room and 17.2% in the department of surgery¹¹. The places where the surgeon performs his/her labor activity may display more or less potential for the development of BS. The analysis that takes into account different age groups and working time was not planned for this research.

Most participants were married and had children. One survey reported that these are protective factors for BS due to the ability that this group of people have to face problems⁷.

The prevalence of BS was high in this study. The medical literature shows no consensus regarding the diagnosis of BS. One possible way is to diagnose individuals as BS bearers if they have scores for three MBI domains¹¹. This research was in accordance with other studies that used a high score in at least one domain to diagnose BS^{6,8,12}. The lack of consensus in the literature and the way this research was performed may explain the high prevalence of BS. The high prevalence of BS in professionals evaluated in other studies was also high, similar to our results^{6,8,12}. There are other researchers trying to validate new tools to diagnose BS¹⁰. The new instruments need to be validated in different professional populations to gain more acceptance and use in clinical research.

The analysis of the correlation between the BS and the weekly working hours showed statistical significance when considering the job satisfaction domain. A research performed in the United States and Puerto Rico found similar results¹³. A survey assessed the impact of the reduction of weekly working hours on the incidence of BS for surgeons, however the reduction in the number of working hours alone was not accompanied by a reduction in BS incidence¹⁴. It would be essential to know what were the motivations for each professional to choose the medical specialty, as well as what their strategies to deal with stress situations of their daily work, to elucidate aspects involving job satisfaction. The

Stress Vulnerability Questionnaire may help to elucidate these issues in future research. The method used in this research allowed no detail to clarify the situation. The research in question noted that the increase in weekly working hours is related to BS.

The analysis of behavioral and psychological symptoms and signs serves to identify which domain is affected in BS. The MBI results showed that there were diagnoses given by high scores in all three domains. Emotional exhaustion is usually the first area to be committed in BS⁵. We observed fewer BS diagnoses in this area than in others. The job satisfaction is usually the last dimension to be committed in BS⁵. There is a predominance of feelings of inefficiency and poor self-confidence⁵. It is important to note that, in this research, this last dimension of BS was the one correlated with the weekly workload.

The implication of this research's results to clinical practice is the suggestion that strategies be developed to treat or even prevent the onset of BS. The Maslach model shows that BS is a process that begins with the emotional exhaustion, being followed by depersonalization, and finally the lack of job satisfaction. However, in our research the score of the latter domain in the MBI was striking and also correlated with the weekly hours workload, suggesting that this may be the main focus of the strategies to be implemented to treat or prevent BS.

Future research needs to determine the prevalence of BS in surgeons working in trauma hospitals in Brazil to confirm the results of this research, as well as to carefully assess specific conditions that may be causing the trauma surgeon to be not fully realized professionally. An important contribution in future research will be to assess whether the reduction of weekly working hours may have some influence on professionals already diagnosed with BS. It is possible that in other studies one can analyze BS together with the time of exposure to stressors.

In conclusion, the prevalence of Burnout Syndrome among surgeons in a trauma reference hospital was 46.5%. There was correlation between the weekly working hours and the Burnout Syndrome.

R E S U M O

Objetivo: determinar a prevalência da Síndrome de Burnout (SB) em médicos cirurgiões que trabalham em hospital de referência para o trauma em Maceió e avaliar a possível correlação entre SB e a carga horária semanal de trabalho. **Métodos:** estudo transversal com 43 cirurgiões de plantão do Hospital Geral do Estado Professor Osvaldo Brandão Vilela, Maceió, entre julho e dezembro de 2015. Um formulário autoadministrado foi utilizado para avaliar SB por meio do *Maslach Burnout Inventory* (MBI) e as características sociodemográficas entre os participantes. Foi utilizado o teste de Spearman S para comparar SB e carga horária semanal. O nível de significância foi 5%. **Resultados:** entre os cirurgiões estudados, 95,35% eram do sexo masculino e a média de idade foi 43,9±8,95 anos. A média da carga horária semanal de plantão no trauma foi 33,90±16,82 horas. A frequência de pontuações elevadas em pelo menos uma das três dimensões do MBI foi 46,5%. Realização profissional foi correlacionada com a carga de trabalho semanal ($P=0,020$). **Conclusão:** a prevalência da Síndrome de Burnout entre cirurgiões plantonistas em hospital de referência para o trauma foi 46,5%. Nesta amostra houve correlação entre a carga horária semanal de trabalho e a Síndrome de Burnout.

Descritores: Satisfação no Emprego. Esgotamento Profissional. Estudo Observacional como Assunto. Cirurgiões.

REFERENCES

1. Yuguero Torres O, Esquerda Aresté M, Marsal Mora JR, Soler-González J. Association between Sick Leave Prescribing Practices and Physician Burnout and Empathy. *PLoS ONE*. 2015;10(7):e0133379.
2. Lee YY, Medford AR, Halim AS. Burnout in physicians. *J R Coll Physicians Edinb*. 2015;45(2):104-7.
3. Romani M, Ashkar K. Burnout among physicians. *Libyan J Med*. 2014;9:23556.
4. 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.
5. van Mol MM, Kompanje EJ, Benoit DD, Bakker J, Nijkamp MD. The prevalence of compassion fatigue and Burnout among healthcare professionals in intensive care units: a systematic review. *PLoS ONE*. 2015;10(8):e0136955.
6. Barbosa FT, Leão BA, Tavares GM, Santos JG. Burnout Syndrome and weekly workload of on-call physicians: cross-sectional study. *São Paulo Med J*. 2012;130(5):282-8.
7. Moreira DS, Magnago RF, Sakae TM, Magajewski FRL. Prevalência da síndrome de Burnout em trabalhadores de enfermagem de um hospital de grande porte da Região Sul do Brasil. *Cad Saúde Pública*. 2009;25(7):1559-68.
8. Grunfeld E, Whelan TJ, Zitzelsberger L, Willan AR, Montesanto B, Evans WK. Cancer care workers in Ontario: prevalence of Burnout, job stress and job satisfaction. *CMAJ*. 2000;163(2):166-9.
9. Ayres M, Ayres Jr. M, Ayres DL, Santos AS. *BioEstat 5.0: aplicações nas áreas de ciências biológicas e médicas*. Belém: MCT; IDSM; CNPq, 2007. 364 p.
10. Tamayo MR, Tróccoli BT. Construção e validação fatorial da Escala de Caracterização do Burnout (ECB). *Estud Psicol*. 2009;14(3):213-21.
11. Ramirez AJ, Graham J, Richards MA, Cull A, Gregory WM, Leaning MS, et al. Burnout and psychiatric disorder among cancer clinicians. *Br J Cancer*. 1995;71(6):1263-9.
12. Nascimento Sobrinho CL, Barros DS, Tironi MOS, Marques Filho ES. Médicos de UTI: prevalência da Síndrome de Burnout, características sociodemográficas e condições de trabalho. *Rev Bras Educ Med*. 2010;34(1):106-15.
13. Gabbe SG, Melville J, Mandel L, Walker E. Burnout in chairs of obstetrics and gynecology: diagnosis, treatment and prevention. *Am J Obstet Gynecol*. 2002;186(4):601-12.
14. Gelfrand DV, Podnos YD, Carmichael JC, Saltzman DJ, Wilson SE, Williams RA. Effect of the 80-hour workweek on resident Burnout. *Arch Surg*. 2004;139(9):933-8; discussion 938-40.

Received in: 17/05/2016

Accepted for publication: 12/07/2016

Conflict of interest: none.

Source of funding: none.

Mailing address:

Fabiano Timbó Barbosa

E-mail: fabianotimbo@yahoo.com.br

fabianotimbo@hotmail.com