

## RISK ASSESSMENT FOR BURNOUT SYNDROME IN MILITARY FIREFIGHTERS\*

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**Objective:** To analyze the risk of the development of the Burnout Syndrome in military firefighters. **Method:** cross-sectional study using a quantitative approach with 51 military firefighters from a battalion of the state of Santa Catarina. Data was collected in March and April 2016. Associations were assessed with Fischer's exact test or Pearson's Chi-square with the use of SPSS software, version 24.0. **Results:** Emotional exhaustion was high, being reported in 51% of the participants. Having children; length of time working in the profession; better organization at work and slow or moderate work pace were considered protective factors in the development of BS. Overtime and slow or moderate work pace indicated lower levels of depersonalization. Assessment of the level of professional accomplishment (PA) revealed 49 subjects (98%) with high level of PA, which confers protection to military firefighters regarding the development of the syndrome. **Conclusion:** Although there were no cases of burnout among the study participants, a significant number of professionals were at a high risk of developing the syndrome.

**KEYWORDS:** Worker's health; Quality of life; Professional Exhaustion; Psychological Stress.

### AVALIAÇÃO DO RISCO PARA A SÍNDROME DE BURNOUT EM BOMBEIROS MILITARES

**Objetivo:** analisar o risco de desenvolvimento da Síndrome de *Burnout* em bombeiros militares. **Método:** estudo transversal, de abordagem quantitativa, realizado com 51 bombeiros militares de um batalhão de Santa Catarina com a coleta de dados nos meses de março e abril de 2016. As análises de associação foram realizadas por meio do teste exato de Fischer ou Qui-quadrado de Pearson com a utilização do *software* SPSS, versão 24.0. **Resultados:** a exaustão emocional apresentou-se alta em 51% dos participantes, sendo fator de proteção ter filhos; mais anos de trabalho; melhor organização do local de trabalho e ritmo de trabalho lento ou moderado. Horas extras e ritmo de trabalho lento ou moderado foram indicativos de níveis mais baixos de despersonalização. A avaliação do nível de realização profissional mostrou 49 sujeitos (98%) com nível alto, o que confere proteção aos bombeiros militares quanto ao desenvolvimento da síndrome. **Conclusão:** embora não tenham sido identificados casos entre os investigados, um número significativo de profissionais apresentou risco elevado para o desenvolvimento da síndrome.

**DESCRIPTORIOS:** Saúde do trabalhador; Qualidade de vida; Esgotamento Profissional; Estresse Psicológico.

### EVALUACIÓN DEL RIESGO PARA SÍNDROME DE BURNOUT EN BOMBEROS MILITARES

**Objetivo:** analizar el riesgo de desarrollo del Síndrome de *Burnout* en bomberos militares. **Método:** estudio transversal, de abordaje cuantitativo, realizado con 51 bomberos militares de un batallón de Santa Catarina. Se recogieron los datos en los meses de marzo y abril de 2016. Se realizaron los análisis de asociación por medio del test exacto de Fischer o Chi cuadrado de Pearson con la utilización del *software* SPSS, versión 24.0. **Resultados:** el agotamiento emocional fue alto en 51% de los participantes y fue factor de protección tener hijos; más años de trabajo; más organización del sitio de trabajo y ritmo de trabajo lento o moderado. Horas extras y ritmo de trabajo lento o moderado fueron indicativos de niveles más bajos de despersonalización. La evaluación del nivel de realización profesional presentó 49 sujetos (98%) con alto nivel, lo que muestra protección a los bomberos militares cuanto al desarrollo del síndrome. **Conclusión:** a pesar de no identificarse casos entre los investigados, un número significativo de profesionales presentó riesgo elevado para el desarrollo del síndrome.

**DESCRIPTORIOS:** Salud del trabajador; Calidad de vida; Agotamiento Profesional; Estrés Psicológico.

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## ● INTRODUCTION

The Burnout Syndrome (BS) is a psychosocial phenomenon that significantly impairs workers' health and occurs as a chronic response to interpersonal stressors in work-related situations, such as excessive demands and conflicts associated with lack of emotional reward and recognition<sup>(1)</sup>. As a psychological syndrome, Burnout Syndrome is an emotional response to stress caused by dealing with many people<sup>(2)</sup>, a condition that emerges as a chronic response to interpersonal stressors on the job<sup>(3)</sup>.

The referred syndrome is composed of three dimensions, namely: Emotional Exhaustion (EE), refers to feeling emotionally exhausted by interpersonal relations; Depersonalization (DE), characterized by the development of negative feelings and attitudes towards the recipient of the service, generating insensitivity and indifference, and Reduced Personal Accomplishment (RPA), which is characterized by an eroded sense of effectiveness and personal accomplishment of the professional<sup>(4)</sup>.

The Burnout Syndrome (BS) is associated to the onset of several feelings and personal or professional factors. Among them, lack of professional reward, work overload, hierarchy and rigidity, excessive working rules, lack of professional reward, among others<sup>(5)</sup> triggering emotional exhaustion, loss of interest in work and low professional accomplishment<sup>(6)</sup>.

Occupations where employees are more in interaction with other people are more likely to trigger the development of the BS<sup>(3)</sup>. Firefighters are professionals exposed to psychosocial risks, sleep deprivation and long work cycles<sup>(7)</sup>, conditions that favor illness<sup>(8)</sup>, and are asked to provide efficient responses in emergency situations and in the defense of public and private goods<sup>(9)</sup>, which leads to a gradual decrease in physical and mental capacity<sup>(5)</sup>.

In this regard, a study with firefighters from Belo Horizonte aimed to estimate the prevalence of Post-Traumatic Stress Disorder (PTSD) found that the associated occupational variables include work psychosocial factors, occupational traumatic events, working time and absenteeism<sup>(8)</sup>. When investigating the relationship between the perception of stress and the levels of physical activity of military firefighters in the State of Alagoas, the variable age range was found to be associated with higher risk of negative stress, as follows: firefighters aged up to 30 years had a 3.21 times higher risk of having negative stress<sup>(10)</sup> than professionals in other age ranges.

Assessment of the risk factors for the development of BS and the identification of which factors are actually associated with BS in military firefighters will be useful for the implementation of intervention strategies aimed at reducing labor stress and illness, contributing to the prevention of accidents at work and improving the quality of services provided to the community. Therefore, this article aimed to analyze the risk of the development of BS in military firefighters.

## ● METHOD

Cross-sectional study using a quantitative approach with military firefighters from a battalion in western Santa Catarina. This battalion was composed of 73 regular military firefighters. However, fourteen firefighters were excluded for the following reasons: some were providing police services in shore towns during the peak summer months; some were on vacation or leave and some were attending training programs for corporals or sergeants (held in other cities) or had received a medical certificate during data collection. Hence, 549 professionals were available at the time of data collection. The inclusion criteria were military firefighters of both genders who worked in the battalion, and the professionals involved in police services during summer months, on vacation, on leave, in training courses or with a medical certificate were excluded.

The sample consisted of male and female firefighters aged 18-65 years and who were performing their regular activities in the data collection period. There were 51 military firefighters, as follows: four performed administrative duties, being responsible for issuing documents for regularization of residential, commercial and other buildings; forty-seven (47) were involved in operational activities working in pre-hospital medical care, firefighting, vehicle rescue, water rescue, prevention, among other services.

Data was collected in the workplace, in March and April 2016, though the use of a form for recording socio-demographic and work-related data and the *Maslach Burnout Inventory* (MBI) tool translated into Portuguese and adapted in Brazil in 2001<sup>(11)</sup>.

In Brazil, the MBI was initially designed for use in health professionals, later in education workers, and, more recently, in a multidisciplinary sample of workers<sup>(12)</sup>.

The MBI is composed of a 1-5 score Likert scale and has 22 items grouped in the three dimensions of BS. The first scale, which refers to Emotional Exhaustion (EE), is composed of nine items and includes questions 1; 2; 3; 6; 8; 13; 14; 16 and 20. The first scale, which addresses Emotional Exhaustion (EE), is composed of nine items and includes questions 1; 2; 3; 6; 8; 13; 14; 16 and 20. The second scale refers to Depersonalization (DE), which is composed of five questions: 5; 10; 11; 15 and 22, and the third scale refers to low Professional Accomplishment (LPA), which consists of eight questions, namely: 4; 7; 9; 12; 17; 18; 19 and 21.

The answers were scored as follows: (1) "never"; (2) "rarely"; (3) "sometimes"; (4) "frequently" and (5) "always", also used in the Brazilian adaptation<sup>(11)</sup> and in other studies<sup>(12-15)</sup>. The scale has three levels for BS: "zero or low", from zero to ten points; "average", from 11 to 20 points and "high" from 21 to 48 points<sup>(11)</sup>.

Data analysis considers the scores of each dimension proposed in the instrument, and high scores in the dimensions emotional exhaustion and depersonalization and low scores in professional accomplishment were associated with a high risk of Burnout<sup>(11-12)</sup>.

Analysis of associations between dependent and independent variables was performed with Pearson's Chi-square or Fisher's exact test, depending on the frequency observed and the type of distribution of the variable. The Statistical Package of Social Sciences (SPSS®), version 24.0 was used for all analyzes.

The present study was approved by the Research Ethics Committee of Universidade do Estado de Santa Catarina –UDESC, under protocol no 1.412.076, in February 2016.

## ● RESULTS

The study sample consisted of 51 military firefighters with a mean age of 35.65 ( $\pm$  8.20) years and mean time of professional performance of 12.69 ( $\pm$  9.57) years. Of these, 45 (88.2%) were married or lived with a partner; 27 (52.9%) had children; 37 (72.5%) did not have any health problems in the previous year; 43 (84.3%) did not use medication, and two subjects (5.9%) were smokers.

The participants described some health problems such as ligament injuries, lumbar disc herniation, neck pain, muscle problems, ankylosing spondylitis, hepatitis, gastritis, hypertension, insomnia, and stress.

According to the participants, the off duty time (42 = 92.2%) and leisure time were considered sufficient (35 = 68.6%). Despite the level of satisfaction over the off-duty period, it was considered insufficient by four professionals, which is remarkable given the number of professionals working overtime (23 = 46%).

Most workers said the workplace was well-organized (28 = 56%), that the work pace was moderate (33 = 66%), though they face understaffing (41 = 82%), which may compromise workers' performance in the execution of their tasks.

There were more firefighters in operational activities (72.5%) than in administrative duties (27.5%). The predominant weekly workload was 56 hours or more for 19 (37.3%) workers and a 24-hour shift followed by two consecutive days (48 hours) off duty for 36 (70.6%) workers. Thus, military firefighters are required to work more than 40 hours a week. Overwork can be caused by understaffing, a situation reported by 42 (82.4%) participants. Sleep hours ranged from three to nine hours in 24 hours (6.48  $\pm$  1.61).

The analyzes of table 1 show a statistically significant association ( $p \leq 0.05$ ) between having children, length of time working in the profession, level of organization of the workplace, work pace and Emotional Exhaustion (EE) level.

It should be stressed that due to the small sample size, which results in zero or very low frequencies, the categories were grouped for statistical analysis, as shown in tables 1 and 2.

**Table 1-** Level of emotional exhaustion in military firefighters. Chapecó, SC, Brazil, 2016

Variables	Zero/Low or Medium		High		P
	N	%	N	%	
<b>Marital status</b>					<b>1<sup>#</sup></b>
Single/without a partner	3	50	3	50	
Married/with a partner	21	47.7	23	52.3	
<b>Children</b>					<b>0.05*</b>
Yes	16	61.5	10	38.5	
No	8	33.3	16	66.7	
<b>Work sector</b>					<b>1*</b>
Administrative	7	50	7	50	
Operational	17	47.2	19	52.8	
<b>Use of medication</b>					<b>0.46<sup>#</sup></b>
No	19	45.2	23	54.8	
Yes	5	62.5	3	37.5	
<b>Length of time working in the profession</b>					<b>0.04*</b>
Up to 10 years	10	34.5	19	65.5	
11 years or more	14	58.3	7	33.3	
<b>Overtime</b>					<b>0.10*</b>
Yes	8	34.8	15	65.2	
No	16	59.3	11	40.7	
<b>Organization in the workplace</b>					<b>0.05*</b>
Organized	17	60.7	11	39.3	
Partially organized or disorganized	7	31.8	15	68.2	
<b>Work pace</b>					<b>0.01<sup>#</sup></b>
Slow or Moderate	20	60.6	13	39.4	
Fast	4	23,5	13	76.5	
<b>Number of people in the work schedule</b>					<b>0.22<sup>#</sup></b>
Adequate	5	71.4	2	28.6	
Inadequate	17	41.5	24	58.5	

\*Pearson's chi square test; # Fisher's exact test

Regarding the Emotional Exhaustion (EE) Scale, 26 (51%) individuals showed high scores while 24 (49%) individuals had low/medium scores.

Four variables were statistically significant: having children ( $p = 0.05$ ); length of time working in the profession ( $p = 0.04$ ); organization of the workplace ( $p = 0.05$ ) and work pace ( $p = 0.01$ ), i.e., protective factors in EE.

Regarding Depersonalization (DE), 26 individuals were classified at medium and high levels, and 24 individuals at low or zero level. The level of DE showed a statistically significant association ( $p \leq 0.05$ ) with overtime and with work pace (Table 2).

**Table 2** - Assessment of the level of depersonalization in military firefighters. Chapecó, SC, Brazil, 2016

Variables	Zero/Low		Medium or High		P
	N	%	N	%	
<b>Marital Status</b>					<b>0.19<sup>#</sup></b>
Single/without a partner	1	16.7	5	83.3	
Married/with a partner	23	52.3	21	47.7	
<b>Children</b>					<b>0.17<sup>*</sup></b>
Yes	15	57.7	11	42.3	
No	9	39.5	15	62.5	
<b>Work sector</b>					<b>0.53<sup>*</sup></b>
Administrative	8	57.1	6	42.9	
Operational	16	44.4	20	55.6	
<b>Use of medication</b>					<b>1.00<sup>#</sup></b>
No	20	47.6	22	52.4	
Yes	4	50	4	50	
<b>Length of time working in the profession</b>					<b>0.39<sup>*</sup></b>
Up to 10 years	12	41.4	17	58.6	
11 years or more	12	57.1	9	42.9	
<b>Overtime</b>					<b>0.00<sup>*</sup></b>
Yes	6	26.1	17	73.9	
No	18	66.7	9	33,3	
<b>Organization in the workplace</b>					<b>0.78<sup>*</sup></b>
Organized	14	50	14	50	
Partially organized or disorganized	10	45.5	12	54.5	
<b>Work pace</b>					<b>0.07<sup>*</sup></b>
Slow or Moderate	19	57.6	14	42.4	
Fast	5	29.4	12	70.6	
<b>Number of people in the work schedule</b>					<b>0.24<sup>#</sup></b>
Adequate	5	71.4	2	28.6	
Inadequate	18	43.9	23	56.1	

\*Pearson's chi square; <sup>#</sup> Fisher's exact test.

Assessment of the level of Professional Accomplishment (PA) in military firefighters showed that 49 subjects (98%) had high PA levels; only one participant had a medium level of PA and none had low or zero levels. These high PA levels confer protection to military firefighters against the development of BS.

## ● DISCUSSION

It was found that none of the participants had Burnout Syndrome because none of them were classified as having low levels of Professional Accomplishment. An individual with BS must have high levels of emotional exhaustion (EE) and depersonalization (DE) and low levels of PA<sup>11-12</sup>.

However, regarding the 51 military firefighters who completed the MBI for the EE subscale, it was found that 26 workers (51%) have a high level of emotional exhaustion, a key factor in the analysis of BS as it indicates the existence of an ongoing process of stress. High levels of emotional exhaustion are accompanied by physical and emotional symptoms, being considered the initial process for the development of BS<sup>(12)</sup>.

It should be noted that diseases originating in and by work are usually identified in more advanced stages because they present signs and symptoms common to other diseases<sup>(16)</sup>. Adverse working conditions can lead to physical and mental disorders<sup>(17)</sup>, which was identified in this study by the high EE levels (51%), a fact that may favor absenteeism, musculoskeletal injuries and mental disorders, and elevated risks for workplace accidents<sup>(17)</sup>.

In this study, some participants reported sleeping three or four hours a day, which may compromise work activities since sleep restores and preserves an individual's energy<sup>(18)</sup>. Sleep deprivation impacts daily activities<sup>(18)</sup> and sleep quality is affected by daytime activities<sup>(19)</sup>.

There was a statistically significant association between the variables Length of time working in the profession, Workplace Organization and Work pace, with dimension EE, as well as a statistically significant association between the variables Overtime and Work pace with dimension DE, which corroborates data from the literature indicating that excessive workload is included among the physical and emotional distress that predispose to Burnout syndrome, as well as inadequate pay, inequality at work and conflicting values<sup>(20)</sup>. Moreover, individuals with stress have intensified emotions and run out of energy/get tired, while those with Burnout syndrome lose hope and feel exhausted<sup>(21)</sup>.

Personal characteristics such as age, gender, educational level, marital status, children, and personality do not trigger the Burnout syndrome, but facilitate this condition. It is often said that marriage, a healthy relationship, reduces the propensity to burnout syndrome. The opposite occurs with single, widowed and divorced individuals<sup>(4)</sup>. In this study, the variable having children was statistically significant, representing a protective factor in the development of BS.

Individuals more committed to their work activities tend to face the most challenging moments in a more positive way, minimizing their vulnerability to disorganization. Meanwhile, less committed individuals may show less flexibility to unpleasant situations during work, becoming more stressed<sup>(23)</sup>. Thus, in this study, some variables showed a statistically significant relationship with BS, such as length of time working in the profession, workplace organization and work pace.

Burnout level is higher in younger, single and childless individuals, and the higher the number and quality of interpersonal relationships, the lower the Burnout level<sup>(15)</sup>. Also, the older the individual, the lower the level of the syndrome. On the other hand, the most experienced workers, the "survivors", manage to obviate the Burnout syndrome and remain in the profession<sup>(15)</sup> corroborating the findings of this study in that lower length of time in the profession favored the development of Burnout.

Thus, it can be concluded that some characteristics of the job have impact on the development of BS as follows: type of occupation, length of time working in the profession, length of time in the institution, shift work or night shift and overload, among others<sup>(23)</sup>. Moreover, it is believed that the greater the workload of the professional, the more exhausting the work will be. Work overload has been one of the variables most reported as a predictive factor of BS<sup>(24)</sup>.

## ● CONCLUSION

None of the subjects in the sample had BS. However, more than half of the firefighters were at risk for development of the syndrome, particularly because of their high levels of EE and DE. It is suggested that health professionals be aware of their symptoms and find ways to minimize the risk of developing Burnout syndrome through systematic interventions, seeking the well-being of these workers, to ensure they remain active and contributing to the local community, thus ensuring the fulfillment of the constitutional mission of preserving lives and property of others.

One limitation of the present study is the sample size and the difficulty to contact the firefighters because of their external activities.

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