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Original Research

Factors Associated with Fatigue and Excessive Daytime Sleepiness in Professionals Working in Mobile Emergency Care Service

Fatores Associados à Fadiga e Sonolência Diurna Excessiva em Profissionais que atuam em Serviço de Atendimento Móvel de Urgência

Factores Asociados a Fatiga y Somnolencia Diurna Excesiva en Profesionales que actúan en Servicios Móviles de Atención de Urgencias

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Abstract
Objective: Analyze factors associated with fatigue and excessive daytime sleepiness among professionals of the Mobile Emergency Care Service (SAMU) of the Federal District/Brazil**.** Methods: This is a cross-sectional analytical study with a quantitative approach. Data were obtained from a questionnaire and two scales used for sociodemographic, fatigue and sleepiness data collection. Descriptive statistics and statistical tests were used for data analysis. Results: 323 professionals participated in this research: nurse technician, nurse, driver, and doctor. Our results demonstrated the prevalence of male professionals (64.7%), age < 40 years (51.4%), married (64.1%), nurse technician (43.7%). The highest level of fatigue rates was observed in female professionals (p <0.001), without physical activity (p = 0.004), nurse technician (p <0.001), dissatisfied with their job (p <0.001). The highest rates of sleepiness were observed in nurse technicians (p <0.001) and females (p = 0.015). Conclusion: There is a positive correlation between fatigue and excessive daytime sleepiness, as well as several factors that are associated with higher scores in these two conditions that affect SAMU-DF Pre-Hospital Care professionals**.**
Descriptors: Sleep Wake Disorders; Mental Health; Emergency Medical Services; Emergency Relief.
Resumo
Objetivo: Analisar fatores associados à fadiga e sonolência diurna excessiva entre profissionais do Serviço de Atendimento Móvel de Urgência (SAMU) do Distrito Federal/Brasil. Métodos: Trata-se de um estudo analítico transversal com abordagem quantitativa. Os dados foram obtidos a partir de um questionário e de duas escalas utilizadas para coleta de dados sociodemográficos, fadiga e sonolência. Estatística descritiva e testes estatísticos foram utilizados para análise dos dados. Resultados: participaram desta pesquisa 323 profissionais: técnico de enfermagem, enfermeiro, motorista e médico. Nossos resultados demonstraram a prevalência de profissionais do sexo masculino (64,7%), idade < 40 anos (51,4%), casados (64,1%), técnico de enfermagem (43,7%). O maior índice de fadiga foi observado em profissionais do sexo feminino (p<0,001), sem atividade física (p=0,004), técnico de enfermagem (p<0,001), insatisfeitos com o trabalho (p<0,001). As maiores taxas de sonolência foram observadas nos técnicos de enfermagem (p<0,001) e no sexo feminino (p=0,015). Conclusão: Existe uma correlação positiva entre fadiga e sonolência diurna excessiva, assim como diversos fatores que estão associados a maiores escores nessas duas condições que acometem os profissionais da Atenção Pré-Hospitalar do SAMU-DF.
Descritores: Transtornos do Sono Vigília; Saúde Mental; Serviços Médicos de Emergência; Socorro de Urgência.
Resumen
Objetivo: Analizar los factores asociados a la fatiga y la somnolencia diurna excesiva entre los profesionales del Servicio Móvil de Atención de Urgencias (SAMU) del Distrito Federal/Brasil. Métodos: Se trata de un estudio analítico transversal con enfoque cuantitativo. Los datos se obtuvieron a partir de un cuestionario y das escalas utilizadas para la recolección de datos sociodemográficos, fatiga y somnolencia. Se utilizaron estadísticas descriptivas y pruebas estadísticas para el análisis de datos. Resultados: Participaron de esta investigación 323 profesionales: técnico de enfermería, enfermero, conductor y médico. Nuestros resultados demostraron la prevalencia de profesionales del sexo masculino (64,7%), edad < 40 años (51,4%), casados (64,1%), técnicos de enfermería (43,7%). El mayor nivel de índices de fatiga se observó en mujeres profesionales (p <0,001), sin actividad física (p = 0,004), técnico de enfermería (p <0,001), insatisfechas con su trabajo (p <0,001). Los mayores índices de somnolencia se observaron en técnicos de enfermería (p <0,001) y sexo femenino (p = 0,015). Conclusión: Existe una correlación positiva entre la fatiga y la somnolencia diurna excesiva, así como varios factores que se asocian con puntuaciones más altas en estas dos condiciones que afectan a los profesionales de Atención Prehospitalaria del SAMU-DF.
Descriptores: Trastornos del Sueño-Vigilia; Salud Mental; Servicios Médicos de Urgencia; Socorro de Urgencia.

INTRODUCTION

Faced with a capitalist society, possess a job is one indispensable mean for social integration. A new era of transformation of social relations has emerged, as well as new processes for restructuring the organizational management of work environments[1]. Such transformations provided versatilities in labor

practices, contributing for the emergence of psychophysiological and emotional diseases[2].

There are several problems that can expose employees to the risks of an unhealthy job[3], resulting in a series of health issues. Workers health, on one hand, is influenced by socioeconomic, technological and environmental factors inserted in the production and consumption factor. On the other hand, are motivated by risk factors, arising from physical, chemical, biological, mechanical and ergonomic features inherent to the labor process[4].

Workers from Pre-Hospital Care Services (PHCS), our study samples, are susceptible to all kind of occupational risks. Their working environment facilitates a sequence of risks to occupational health[3].

Several risk conditions influence workers' environment in the PHCS service. Their labor process leaves them more vulnerable to risks, as they often work under inadequate lighting, environmental phenomena (such as rain, heat, cold), unhealthy environments, aggressive people, traffic, social tumult, among others[5].

Professionals of the PHCS service are susceptible to several health problems, including those related to mental health. Two important problems that can affect these professionals are: excessive daytime sleepiness (EDS) and fatigue, which have become chronic problems in these workers. These problems are associated with reduced occupational capacity, safety issues and an increased risk of suffering some health problem[6].

Those injuries can directly impair cognitive activity, leading to a difficulty in fixing and maintaining attention, impairing both memory and the ability to plan strategically; disturbing the motor function, more associated with agility and promptness; leading to an uncontrolled impulse and disorganized reasoning; occupational injuries; in such a way that these circumstances are linked to a greater or lesser degree in cases of fatigue and EDS[7,8].

EDS, as an increased disposition for sleep, is accompanied by an obligatory feature to fall sleep, sleep attacks and involuntary naps, although sleep is not appropriate in the moment. This leads to a reduction in the ability of physical and mental activity[7]. Fatigue, on the other hand, is a term misused to imply EDS. It is referred as a tiredness, exhaustion, and lack of energy. Most of the time, it is caused by overwork and eased by rest[7].

Therefore, EDS and fatigue among health professionals, especially professionals of the PHCS , can contribute to accidents and lead to mistakes, that affects the safety of health care, contributing to a reduction in the quality of the service provided, since workers must present promptness, quick reasoning for decision making in face of urgent and emergency care[9].

Therefore, the object of this research was professionals who work in the Mobile Emergency Care Service (SAMU) of the Federal District (DF) in Brazil. Thus, the objective was to analyze the factors associated with fatigue and EDS in SAMU-DF workers.

MATERIAL AND METHOD

This is a cross-sectional analytical study with a quantitative approach. This is a methodology that, when faced with a specific moment, situations are expressed as moments of reality. In cross-sectional studies it is possible to analyze a group, therefore, one of the advantages is the agility with which response of acquired elements is achieved[10].

This research was carried out through questionnaires applied to professionals who work in SAMH-DF. The sampling was based on convenience criteria, with professionals who work in mobile urgency and emergency units, namely: nurses, doctors, drivers, and nurse technicians.

The Inclusion criteria was working in the basic support ambulance or in the rapid intervention vehicle, or in an advanced support ambulance, or in the medical and motorcycle transport. The exclusion criteria were professionals who were on work leave, on vacation and those who worked internally at the base.

Questionnaires were applied in the participants' workplace, that is, in decentralized bases, between December 2017 and June 2018, including holidays, weekends, morning, afternoon or night, aiming to reach a greater number of participants, since, as it is a work process different from that developed in hospitals, professionals are often not in the work environment due to occurrences. Data collection, in addition to be done in the work environment, was also performed during workday, when professionals were at the base without occurrence / care.

There are centers in DF located in strategic points, with the purpose of covering the extension of the DF, as well as providing an effective response, on time, of urgency and emergency care. DF also has a SAMU service coverage of 100% of the population.

There is still the Mental Health Center created in mid-2013 with the purpose of providing assistance in situations of psychiatric crises in the psychosocial sphere. It works through Medical Regulation, with regulatory doctors aiming the identification of the issue and resolution through call center. If necessary, on-site intervention is done through the rapid intervention vehicle, manned by a multiprofessional team such as: psychiatrist, nurse, driver, social worker and psychologist[11].

In the development of this research, the following questionnaires were applied: Occupational sociodemographic, Chalder's fatigue scale and Epworth's sleepiness scale. The occupational sociodemographic questionnaire contained social data used for the sample characterization. Variables present in this questionnaire were: age, gender, marital status, education degree, professional category, period of service, the existence of another employment relationship, weekly working hours, physical activity, alcohol consumption, preexisting diseases, and occupational health risk.

Chalder Fatigue Scale (CFS) is a British questionnaire designed to improve methodological research on epidemiology and symptoms of fatigue. In view of other existing scales, we chose to use a short, easy to administer and self-assess scale that could be applied in hospitals and in the community environment[12].

This questionnaire was translated and adapted to Brazilian cultural context, in the setting of primary health care. After a direct and close comparison between Brazil's and United Kingdom's reality, and after a cross-cultural adaptation process, it was validated in mid-2003[13]. This scale was developed and widely used to measure the severity of fatigue or used as a support method to assess chronic fatigue syndrome [13].

CFS is composed by four different answers (never, rarely, occasionally, and always), which respectively correspond to the values 0, 1, 2 and 3. The bimodal method was used to analyze CFS. According to this scale, scores zero and one are equivalent to zero, on the other hand, scores two and three are replaced by one, and the resulting score ranges from zero to 11. Individuals with fatigue have scores above four[13,14].

The Epworth Sleepiness Scale (ESS) analyzes EDS[15]. This scale was developed from observations of the nature of EDS, being translated, adapted, and validated for the brazilian context[16]. It is easy to understand, quick to fill, valid and safe for the assessment of EDS, and can be a useful resource in clinical practice and research[16]. It is a questionnaire with eight items referring to the chances of falling asleep in various active and passive situations, with 0 to 3 possible answers, with 0 corresponding to no chance and 3, high chance. This scale allows scores ranging from 0 to 24 in an increasing degree of EDS. The higher the scores, the greater the EDS. Scores up to 10 are considered normal and a scores above 11 are considered pathological[16].

After data collection, a database was created using the IBM SPSS Statistics 18 software. Subsequently, descriptive statistics were performed with the calculation of central tendency measures for continuous variables, such as standard deviation, average, and the calculation of absolute and relative percentage frequencies for discrete variables. A normality test (Kolmogorov-Smirnov) was applied to distinguish between parametric and non-parametric distributions, with the purpose of comparing results from the questionnaires stratified by sociodemographic variables. For variables with parametric distribution, ANOVA and Student t tests were used and for non-parametric distributions, Kruskal-Wallis and Mann-Whitney tests were used. P values less than or equal to 0.05 were considered significant.

This research was first submitted to the Ethics Committee of the Pontifical Catholic University of Goiás (PUC Goiás) and, later, to the Ethics Committee of the Health Sciences Teaching and Research Foundation (HSTRF) of the Federal District. We received approval from both committees with the respective opinions n. 2,332,741 and n. 2,434,144. After that, data collection process began.

RESULTS

This study was carried out with 323 individuals, consisting of nurses, drivers, nurse technicians and doctors, working at SAMU-DF. Of these, 166 (51.4%) have 40 years or less. Regarding to gender, 209 (64.7%) individuals were male, 207 (64.1%) declared being married, 251 (77.7%) mentioned having children and 250 (77.4%) reported having any health problems.

The analysis of fatigue levels identified that 178 (55.1%) professionals had a score lower than 4 and 145 (44.9%), higher than 4, the latter being considered with fatigue.

When comparing fatigue levels with

sociodemographic aspects, higher fatigue scores were identified in individuals under 40 years of age (p = 0.048). In addition, the female gender (M = 5.0; SD = 3.7) is associated with higher levels of fatigue (p <0.001) (Table 1). Regarding to education, incomplete University education obtained a higher score (M = 4.7; SD = 3.3) compared to other school levels (p = 0.039). Another significant data was related to the practice of physical activity. Fatigue levels were higher (M = 5.6; SD = 3.7) in professionals that reported never having performed physical activity (p = 0.004) (Table 1).

Table 1. Comparison of fatigue levels with sociodemographic aspects of 323 SAMU professionals, Distrito Federal, Brazil, 2018

Variables	*Fatigue*		*p-Value*
	Medium	*SD*	
Age (years)			
≤ 40	4,3	0,3	
> 40	3,5	0,3	**0,048***
Gender			
Female	5,0	3,7	
Male	3,3	3,0	**<0,001***
Civil status			
Single	4,3	3,3	
Married	3,7	3,3	
Widower	4,7	5,0	
Divorced	4,1	3,7	0,633
Children			
No	4,0	3,4	
Yes	3,9	3,3	0,763
Scholarity			
High school	2,9	3,0	
Incomplete University education	4,7	3,3	
Complete University education	4,0	3,3	
Postgraduate	4,1	3,5	**0,039***
Bars and parties			
Frequently	3,3	2,7	
Occasionally	4,3	3,6	
Never	3,6	3,1	0,238
Physical activity			
Frequently	3,7	3,3	
Occasionally	3,7	3,2	
Never	5,6	3,7	**0,004***
Recreation activity			
Frequently	3,4	3,1	
Occasionally	4,1	3,4	
Never	4,9	4,5	0,145
Housework			
Frequently	4,1	3,5	
Occasionally	3,7	3,2	
Never	4,0	4,1	0,668
Have a health problem			
No	3,7	3,3	
Yes	4,6	3,5	0,051

Obs. Participants who did not respond were excluded from this analysis.

Among all professional categories covered in this research, nurse technician had the highest number of representatives, with 141 (43.7%) individuals. Furthermore, 212 professionals (65.6%) reported working in SAMU – Federal District over five years and there was a predominance of professionals with a work regime of 40 hours per week, 263 (81.4%). Our study also demonstrated that 296 (91.6%) professionals reported the recognition of health risks in their work environment and 197 (61.0%) declared being satisfied with their job. However, a large part of the population (n=194) (60.1%), mentioned usually getting tired at work.

Comparing fatigue levels with organizational environment, the professional category with the highest fatigue score (M = 4.8; SD = 3.8) was nurse technician (p <0.001). Regarding job satisfaction, those who reported dissatisfaction had a higher fatigue score (p <0.001) (Table 2). In addition, higher fatigue scores were found in individuals who considered their work environment terrible (M = 5.3; SD = 3.6) (p = 0.005) and, in professionals who reported getting very tired in their work environment (M = 4.6; SD = 3.3) (p <0.001) (Table 2).

Table 2. Comparison of fatigue levels with organizational aspects of 323 SAMU professionals, Federal District, Brazil, 2018.

Variables	*Fatigue*		*p-Value*
	Medium	*SD*	
SAMU categories			
nurse	4,4	3,6	
nurse technician	4,8	3,5	
doctor	3,2	3,5	
Conductor	2,8	2,6	**<0,001***
Nucleus			
North and East Center	3,8	3,2	
South Center	3,8	3,2	
Gmau	3,7	3,3	
North	4,8	3,9	
West	3,9	3,1	
Regulation	3,2	3,5	
South-west 1	3,4	3,6	
South-west 2	3,9	2,9	
South	4,2	3,4	0,683
Time in SAMU			
less than 1 year	2,0	1,9	
1 - 5 years	3,7	3,2	
Above 5 years	4,1	3,4	0,239
Weekly Journey			
20 hrs	4,4	3,8	
40 hrs	3,8	3,2	
60 hrs	4,8	3,9	0,611
Other Job			
Yes	4,3	3,6	
No	3,8	3,3	0,282
Health risk in the workplace			
Yes	4,0	3,4	
No	3,4	2,5	0,372
Job Satisfaction			
Satisfied	3,4	3,1	
Indifferent	4,0	3,5	
Dissatisfied	5,5	3,5	**<0,001***
Workplace			
Terrible	5,3	3,6	
Indifferent	4,2	3,5	
Excellent	3,2	2,8	**0,005***
Usually gets tired at work			
No	2,9	3,1	
Yes	4,6	3,3	**<0,001***

Obs. Participants who did not respond were excluded from this analysis.

Regarding to excessive daytime sleepiness, 205 (63.5%) professionals had a score equal to or less than 10, while 118 (36.5%) had a score greater than 10, constituting cases of EDS. Comparing EDS levels with sociodemographic aspects, a higher score was identified among females (M = 10.3; SD = 5.2) compared to males (M = 8.8; SD = 4.4) (p=0,015) (Table 3).

Comparing EDS levels with the organizational environment, we observed that EDS levels are strongly associated with working as a nurse technician (M = 10.4; SD = 5.1) (p <0.001) (Table 4). It was also possible verify that higher EDS scores were found in professionals who reported having another employment relationship (p = 0.042), as well as those who mentioned getting tired in the work environment (p = 0.019) (Table 4). Pearson's correlation analysis carried out between the levels of EDS and fatigue identified, with statistical significance, a moderate correlation index (r = 0.522) (p <0.0001).

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Table 3. Comparison of excessive daytime sleepiness levels with sociodemographic aspects of 323 SAMU professionals, Federal District, Brazil, 2018.

Variables	*Sleepiness*		*p-Value*
	Medium	*SD*	
Age (Years)			
≤ 40	9,6	0,4	
> 40	9,1	0,4	0,197
Gender			
Female	10,3	5,2	
Male	8,8	4,4	**0,015***
Civil status			
Single	10,5	4,5	
Married	9,1	4,7	
Widower	7,7	7,1	
Divorced	9,0	5,0	0,146
Children			
No	9,9	4,5	
Yes	9,2	4,8	0,320
Scholarity			
High school	8,5	4,5	
Incomplete University education	9,6	3,8	
Complete University education	9,1	4,7	
Postgraduate	10,2	5,3	0,132
Bars and Parties			
Frequently	8,9	4,3	
Occasionally	9,7	5,0	
Never	8,8	4,3	0,277
Physical activity			
Frequently	9,7	5,0	
Occasionally	8,8	4,4	
Never	10,4	4,9	0,114
Recreation activity			
Frequently	9,6	5,1	
Occasionally	9,3	4,6	
Never	9,2	4,7	0,883
Housework			
Frequently	9,6	5,0	
Occasionally	9,3	4,4	
Never	7,0	3,8	0,217
Have a health problem			
No	9,4	4,7	
Yes	9,3	4,7	0,842

Obs. Participants who did not respond were excluded from this analysis.

Table 4. Comparison of excessive daytime sleepiness levels with organizational aspects of 323 SAMU professionals, Federal District, Brazil, 2018.

Variables	*Sleepiness*		*p-Value*
	Medium	*SD*	
SAMU category			
Nurse	10,2	5,0	
Nurse technician	10,4	5,1	
Doctor	8,0	3,8	
Conductor	8,0	3,9	**<0,001***
Nucleus			
North and East Center	8,8	5,2	
South Center	9,4	4,7	
Gmau	9,1	4,6	
North	9,1	4,8	
West	9,9	4,8	
Regulation	8,0	3,8	
South-west1	8,8	4,6	
South-west 2	10,4	4,8	
South	10,3	4,4	0,548
Time in SAMU			
Less than 1 Year	8,3	3,1	
1 to 5 years	8,9	4,3	
Above 5 years	9,6	5,0	0,610
Weekly Journey			
20 hrs	10,0	5,0	
40 hrs	9,2	4,7	
60 hrs	9,9	4,4	0,524
Other Job			
Yes	10,1	4,8	
No	9,1	4,6	**0,042***
Health risk in the workplace			
Yes	9,4	4,7	
No	9,0	4,7	0,670
Job Satisfaction			
Satisfied	9,1	4,6	
Indifferent	9,4	5,0	
Dissatisfied	10,2	4,5	0,296
Workplace			
Terrible	9,8	4,2	
Indifferent	9,6	5,0	
Excelente	9,0	4,4	0,529
Usually gets tired at work			
No	8,6	4,4	
Yes	9,9	4,9	**0,019***

Obs. Participants who did not respond were excluded from this analysis.

DISCUSSION

Workers who perform their duties in mobile emergency care services must be seen from a different perspective on their health and life conditions, since they work day-to-day in an external environment, which, in addition to being unknown, is often unprotected. PHCS professionals are at higher risk of illness due to professional reasons[17]. The inconsistencies found, especially in urgency and emergency services, as well as institutional obstacles that prevent resolvability, can arouse in professionals personal confrontations, ethical dilemmas and psychological suffering[18].

In this study, fatigue rates above normal were found in almost half of the sample. Fatigue and its implications can compromise the willingness to work and leave employees more vulnerable to workplace accident. In emergency services, fatigue is correlated to misconduct with patients, compromising their safety. In addition, accidents involving ambulances are related to fatigue[19], as well as the occurrence of injuries in the PHCS work environment[20].

Female individuals obtained a higher score for fatigue and EDS compared to male individuals. The multitask roles played by women who also work in the professional field make them more susceptible to manifest fatigue, given that their entry into the labor market does not exempt them from the domestic role and the conduct of the offspring's education, favoring the appearance of this grievance[21].

We also observed that professionals aged under 40 years, with incomplete University education and nurse technicians had higher levels of fatigue. In a similar study, nurses with lower age were at the highest level of fatigue, showing that, the older the age, the less physical and psychological wear and tear. Younger professionals aim to create great perspectives on the way they act, accumulating many functions, being more meticulous and involved with work, assuming functions not typical of their own, and moreover, imposing more for themselves, to maintain visibility[17].

Another point to consider is that many professionals accumulate jobs in order to improve their financial situation, associated with a search for professional qualification. This combination can trigger fatigue in younger professionals[17]. In addition, older people tend to be more resilient and develop coping strategies[22].

Nurse technicians seek University education as a means of professional, personal and learning evolution. However, the accumulation of functions and activities can contribute to the appearance of fatigue. Studies show that nurse assistants and technicians have less social support, and, consequently, are more

exposed to mental illness[23]. One issue to be considered is the restructuring of SAMU-DF. In 2017 the government decreased the number of SAMU employees, as part of a transformation to minimize expenses, which end up overloading the work of nurse technicians. The government removed a member of the group, who were previously two nurse technicians, based on the Ministry of Health Ordinance No. 1,010, of May 21, 2012[24], which states that the Basic Life Support Unit should be composed of, at least, two workers, one being a nurse technician or assistant and the other an emergency vehicle driver.

A decrease in human resources promotes dissatisfaction and overload in the work environment, affecting productivity and quality care[25]. The composition of two members in the PHCS service working team during extended shift hours can compromise safety, as workers work in stressful circumstances[20].

In addition, interpersonal relationship between team members is a key element for satisfaction, dissatisfaction, and success in the work environment. In this way, a pleasant relationship between the team, management and public managers can provide a change from suffering to a well-being and contentment at work[23].

In our analysis of the degree of satisfaction and work environment, we found that professionals who are dissatisfied with their work and those who consider the work environment to be terrible have higher levels of fatigue. Dissatisfaction with work may be related to low personal fulfillment, with low self-esteem, demotivation and professional frustration[22]. Job dissatisfaction is also due to insufficient organizational support, difficulty in interpersonal relationships, psychological overload, and low decision-making power, which can compromise the provision of quality care[22].

Individuals who self-reported getting tired at work, as well as those who do not practice physical activity had a significantly higher score on fatigue levels. Professionals who deal in the workplace with circumstances that request a certain demand and, yet have too many different tasks at work, can culminate in a state of fatigue[21]. The consequences of a sedentary lifestyle are worrying because professionals are more likely to develop fatigue. The positive effects of physical activity for human organism are known[21].

The self-reported work overload induces tiredness, unavailability of rest time, leisure, physical activity, healthy eating practice and self-care[18].

It is relevant to mention that physical activity can reverse some neurochemical changes and increase serotonin. This has positive consequences, as reduces anxiety linked to sleep deprivation, contributing to an effective non-pharmacological therapeutic treatment[26].

In addition, our data show a prevalence of 36.5% of DSS in the studied population. It is necessary to emphasize that regardless the values found, increased scores indicate a greater vulnerability to risks against these professionals' physical integrity. Sleep deprivation is linked to a significant decrease in reaction time, memory and cognitive deficit[27]. People with chronic sleep deprivation understand that they have already adapted to the condition or have learned to overcome poor sleep. Thus, the effects of sleep deprivation on performance cannot be accurately stated[27].

A survey identified that DSS is not associated with injury, as professionals in this situation, in practice, are less active and therefore less predisposed to be exposed to health problems[6]. The effects of sleep deficiency are linked to important health problems, which can impair learning, memory, judgment and performance, in addition to sustaining chronic diseases such as metabolic and cardiovascular diseases and some types of cancer[27].

A study carried out with American firefighters found that those with sleep disorders had a higher risk of developing cardiovascular disease, diabetes, depression and anxiety[28]. It is known that acute sleep loss, that is, a prolonged wake of 19 to 24 hours, promotes a performance deficit similar to those observed in people with a blood alcohol concentration of 0.05% and 0.10%[27].

Another variable analyzed in this study, the existence of another employment relationship, was significantly associated with EDS. Overwork, voluntary overtime is consistent with fatigue, chronic exhaustion and sleep deprivation. In this sense, it is important to highlight that for most adults to feel invigorated, it takes seven to eight hours of quality sleep, daily[27].

The work in PHCS has an inflexible schedule in its organizational process. Despite the peculiar characteristics of this professional activity, there is a decrease in sleep and prolonged wakefulness, capable of causing a change in circadian rhythm and a disruption in

the homeostatic sleep process[29].

The existence of another employment relationship or the accumulation of functions and daily activities can make professionals more prone to fatigue and injury due to decreased sleep, increased fatigue, accumulation of hours worked and longer commuting time[20].

The restructures of the work environment, contemplating a nurse technician by ambulance with basic support can explain this phenomenon. Sleep deprivation can collaborate with physiological processes related to stress and trigger acute inflammatory responses that will impact in this professionals health[29].

As can be seen, there is a close relationship between work environment and EDS. Work environmental conditions can be a disincentive for restoring sleep, given the time allowed for rest. It is noticeable that in SAMU-DF many bases, conditions found are not facilitators for professionals' invigoration, in an opportune moment. A healthy work environment is necessary to benefit professionals' health[30]. Sleep quality, unlike quantity, plays a role in job performance and risk of injury[6]

The variable “usually gets tired at work”, was also associated with increased levels for EDS. Sleep is a physiological need that restores workers physical and mental state. However, depending on your level of quality, you may experience excessive tiredness and, as a result, it influences workers' development, affecting the degree of job satisfaction[31]

The need for social and organizational support is evident in this study. This can contribute to professional's adaptive skills in the face of stressful episodes. High psychological demands and low social support in the work environment are correlated to reduced work capacity and increased minor psychological disorders[23].

A good example was the implementation of the Psychology Service at SAMU in Rio Grande do Norte/Brazil, an important and valuable contribution to workers psychological health, with repercussions on biopsychosocial aspects. This service allowed strengthen the bond between psychologists and other professionals who worked at SAMU, through initiatives such as: therapeutic wheels, psychological duty, individual psychotherapeutic assistance, discussions on health policies, urgency, and emergency, as well as educational lectures[32]. It is essential to be aware about the group of professionals who report health problem (whether physical or mental) and who live with drowsiness and fatigue, since these causes are interrelated, and their behaviors both in daily life and in the work environment prejudice health[23].

CONCLUSION

This study allowed the analysis of factors associated with levels of fatigue and DSS among professionals of SAMU.

Our results demonstrated that 44.9% of the studied population had significant levels of fatigue and 36.5% of EDS. In the analysis of fatigue levels, significant variables were age, gender, educational level, physical activity, pre-existing health problem, professional category, job satisfaction, work environment and the degree of tiredness at work. In the EDS analysis, on the other hand, significant variables were: gender, professional category, the existence of another employment relationship and the degree of tiredness at work.

This study also showed a vast multiplicity of factors that were associated with both, EDS and fatigue. In this way, considering that, working hours limits and the amount of rest established in labor standards correspond to a reductionist view of the phenomenon, it is important to implement a broad and multidimensional approach to assist the implementation of improvements and the maintenance of the health of SAMU professionals.

Prevention strategies must be a link between the work environment and the extra work environment, and therefore, professional's social-family context should be included in order to seek a quality of life with a holistic view, with the organizational environment not being the direct cause for high levels of fatigue and EDS.

Further research should be conducted on this topic and aimed to PHCS professionals to accurately determine social benefit policies aimed to these professionals and countermeasures for these symptoms in the workplace.

Finally, we expected that this study will provide evidence that will serve as a basis for the creation of a fatigue and EDS risk management program. We also expect that workers may have an active participation on this program, so they can reflect their own life inside and outside the work environment and propose actions.

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CONFLICTS OF INTERESTS

The authors declare no conflicts of interests.

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