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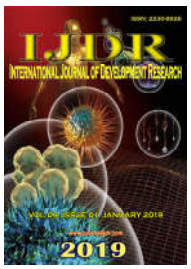

ORIGINAL RESEARCH ARTICLE OPEN ACCESS

NURSING TEAM STRESS IN INTENSIVE THERAPY UNITS

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ABSTRACT

This study aimed to characterize the stress of the nursing team in an intensive care unit. It is an observational, descriptive, cross-sectional and quantitative study conducted between April and June 2016, with 93 professionals from the nursing team of three public hospitals in São Luís do Maranhão, Brazil. Three questionnaires, a semi-structured one composed by socioeconomic and occupational data, the Stress Inventory in Nursesand the Stress Symptom Scale were used. It was observed that 83.9% were women, 44.1% were aged between 26 and 35 years, 31.2% with income from 3 to 4 minimum wages, 4.3% presented low stress level, 72.04 % moderate and 23.65% high. The stressors were: "lack of material needed for work", "providing care for serious patients" and "working in an unhealthy environment". In the scale of physical symptoms: "muscular pains" and "constant fatigue" were the most predominant; the psychological ones were: "worrying excessively about things in general", "being more emotional" and "irritability". Conclusion: stress impairs the quality of life at work, physical, psychic and emotional health, interferes in the quality of service provided and in interpersonal relationships. Therefore, there is a need to implement strategies that reduce stressful stimuli in the work environment.

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INTRODUCTION

As a productive being and under the influence of the capitalist economic system, man spends more than a third of his day in work activities, for thirty-five years or more, in an accelerated routine with many tasks, sometimes with two jobs, and without adequate conditions (MORENO *et al*., 2018; GUIDO *et al*., 2012). The increasingly competitive labor market itself requires a higher level of qualification, speed of problem solving, efficiency and excellence. The new technologies and management methods intensify the demands on the work, altering the sickness profile of workers and potentializing their manifestations asstress, physical and mental fatigue (SOUSA *et al*., 2012). Stress is considered a complex set of alterations of organic and/or psychic origin caused by stimuli and aggressive propulsive factors.

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To exemplify these stimuli in work environments, the high burden of professional responsibility is cited, the dynamics of work relations and the requirement on the quality of the services provided. And among the behavioral manifestations of stress, tremors, nervous smile, grinding teeth, polaciuria, hyperphagia, anger, increased consumption of alcohol, tobacco, stimulants, sedatives and other drugs are more frequent (SOUSA; GALVÃO, 2015; FERRAREZE, 2006). In order to promote worker health, the World Health Organization, together with the Institute of Work, Health and Organizations of the University of Nottingham, produced a Worker Health Protection Series in 2004, one of which is "The organization work and stress ", demonstrating the pertinence of this theme (WHO, 2006). In Brazil, the Guidelines for the National Policy for the Promotion of Workers' Health of the Unified Health System were instituted, which aims to improve the health conditions of the worker by addressing the general and specific aspects of the environments and work

organization that may lead to the occurrence of health problems. Among its guidelines is the promotion of intersectoral policies aimed at improving the quality of life and reducing the vulnerability and risks related to the health of SUS workers, as well as the development of instruments that allow personnel to be dimensioned according to the quantitative needs of the assistance (BRASIL 2011). According to Social Security data, mental and behavioral disorders were the fourth cause of withdrawal from work in Brazil, with 161,946 thousand disease-related benefits granted in 2015. Of these, 33,751 thousand were allocated to "Neurotic disorders, stress-related disorders and somatoform disorders". The "reactions to severe stress" and "adaptation disorders" totaled 6,858 thousand disease-related aids (BRAZIL 2016). High levels of stress can be found in different workplaces, but hospitals often have an environment more conducive to their appearance, since they deal with health-disease conditions. Some hospital sectors due to the amount of stressful stimuli favor the sickness of their workers. Researches affirm that intensive care units (ICUs) bring together stressors and keep professionals in a constant state of alert for critical patients who are likely to die, and are characterized by cold environments, artificial lighting and beeps of monitoring devices (RODRIGUES, 2012).

Due to these specificities of the ICUs, the complexity of situations and relationships established thereis understood; in which nursing is part of a multiprofessional team in which everyone needs to be interrelated in favor of the hemodynamically unstable patient and requires that the team be constantly alert in an environment where the level of complexity and technological specificity is high, and in which there is a physical and emotional debilitation of the patient and family members who seek mainly in the nursing team, for being closer, emotional support and help, requiring professionals psychological stability to deal with the outcomes that go beyond their possibilities of resolution (GRILLO *et al*., 2017). This study is justified by the need of attention to the nursing worker, with a focus on mental health and the salubrity of the work environment, aiming at effective measures to favor the improvement of the work environment, life and health of these workers. This research aimed to characterize the stress of the nursing team in intensive care units (ICU).

MATERIALS AND METHODS

This is an observational, descriptive, cross-sectional study with a quantitative approach developed at the Intensive Care Unit (ICU) of three hospitals of the public health network of São Luís do Maranhão, Brazil, between April and June 2016. The hospitals are units of reference of the state for the care of medium and high complexity integrated into the Unified Health System (SUS). The research population comprised 216 nursing professionals, nurses and nursing technicians, of the mentioned units, who had a minimum of one year of ICU work and who voluntarily accepted to participate in the study. The sample resulted in 93 nursing professionals selected for convenience. Data collection was performed by the researchers through aninterview, in the morning, afternoon and evening shifts, three times a week in a three-month period. Three data collection instruments were used: a semistructured form referring to socioeconomic and occupational variables, the Stress Inventory in Nurses and the Stress Symptom Scale. Prior to the interview, all participants were informed of the study objectives as well as all Relevant Elements of the study. Only those professionals who signed the Free and Informed Consent Term - TCLE in two ways participated. The socioeconomic and occupational characterization variables collected in the study were: gender, age, marital status, schooling, number of children, time in the sector, head position, number of links, monthly individual income, hours of daily sleep and level of stress. In order to verify the level of stress of the professionals and to identify the stressors in the work of the nursing team, the Stress Inventory in Nurseswas used, which corresponds to an instrument that has as objective to measure the occupational stress of the nurse, however, in this study was applied in the team of nursing, considering that the items addressed in such an instrument can also be experienced by nursing technicians at some point in their professional practice.

The Stress Inventory in Nurses contains 38 items, however, in this research was added 5 more items cited as relevant by other authors who used the same instrument in similar researches (MONTANHOLI; TAVARES; OLIVEIRA, 2006; ADOLHE *et al*., 2015). Thus, there were 43 items whose answers were distributed in Likert scale and attributed scores of 1 to 5: never (1), rarely (2), sometimes (3), often (4) and always (5), according to the authors' suggestion, with a total score of at least 43 points and a maximum of 215. From the sum of the responses of each participant, we verified the distribution of the scores related to the stress level of the nursing team in the last six months referring to items addressed. For purposes of analysis, the variables / items were grouped into three factors / domains: interpersonal relationships, career stressors and intrinsic factors to work. The sum of all domains is termed the "global factor," and provides a "general measure of occupational stress." Stress Symptom Scale was used to identify manifestations triggered and/or stimulated by stress in the ICU nursing team. The Stress Symptom Scale is divided into two sections, one referring to the physical symptoms, which correspond to the physiological manifestations, with 13 variables, and another one composed of psychological symptoms, addressing 18 variables. For purposes of analysis, only the descriptive variables that represented the greatest source of stress were considered.

The data collected was inserted into a *Microsoft Excel* 2013 worksheet and subsequently exported to the *Statistical Package for the Social Sciences* - SPSS (version 22.0). To analyze the data, we used descriptive statistics resources. Mean and standard deviation were calculated for continuous variables and absolute and relative frequency for categorical variables. To identify the stressors in the work of the nursing team, through the Stress Inventory in Nurses, a simple, average and standard deviation of each variable was performed, approaching those that obtained lower and higher frequency in their respective domains. Then, the average of each domain was calculated in order to compare them and identify the one that represented the greatest source of stress. To identify the manifestations triggered and/or stimulated by stress in the ICU's nursing team, through Stress Symptom Scale, frequencyabsolute, mean and standard deviation were calculated. After analysis, the data were presented in the form of graphs and tables. The research was approved by the Research Ethics Committee of the Federal University of Maranhão under protocol nº 1,294,644, in compliance with National Health Council Resolution nº 466/12, regarding the development of research involving human beings.

RESULTS

A total of 93 nursing professionals participated in the study, 83.9% were female, 44.1% were between 26 and 35 years old, 50.5% were married, 61.3% had children, 32.3 % have one child, 25.8% have two or three children and 3.2% more than three children. Regarding the level of schooling, 52.7% have completed higher education, of which 34.4% are in postgraduate studies. The occupational data showed that most of the professionals had 2 to 5 years in the ICU (29.0%), 53.8% had work in another hospital and 4.3% had three employment links. Most of them do not hold a managerial position (93.5%) and have a monthly income of 3-4 minimum salaries (31.2%) (Table 1).

Table 1. Socioeconomic and occupational characteristics of professionals from the nursing team of three public hospitals, São Luís, MA, Brazil, 2016.

VARIABLES		n	%
	Female	78	83,9
Sex	Male	12	12,9
	No reply	3	3,2
	Until 25 years	5	5,4
	26 to 30 years	12	12,9
Age	31 to 35 years	29	31,2
	36 to 40 years	23	24,7
	41 to 45 years	13	14
	Over 45 years	11	11,8
	Not married	43	46,2
	Married/added	47	50,5
Marital status	Divorced	2	2,2
	No reply	1	1,1
	Complete high school	22	23,7
	Studying higher education	22	23,7
Education	Complete Higher	17	18,3
	Education	32	34,4
	Postgraduate studies		
	None	36	38,7
	1 son	30	32,3
Number of	2 to 3 children	24	25,8
children	More than 3 children	3	3,2
	1 year	23	24,7
	2 to 5 years	27	29
ICU working time	5 to 10 years	21	22,6
	More than 10 years	22	23,7
Leadership	Yes	6	6,5
position	No	87	93,5
	1	30	32,3
Employment links	2	50	53,8
	3	4	4,3
	No reply	9	9,7
	Until 2 minimum wages	25	26,9
	3 to 4 minimum wages	29	31,2
Monthly income	4 to 5 minimum wages	15	16,1
	More than 5 minimum	19	20,4
	wages	5	5,4
	No reply		

Source: Research data, 2016.

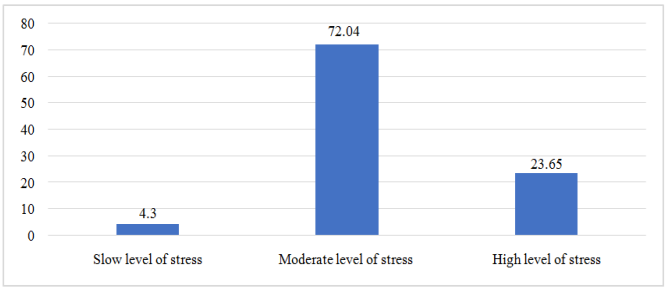

Figure 1. Stress level of the nursing team in the ICU from the Inventory of Stress in Nurses, São Luís, MA, Brazil, 2016

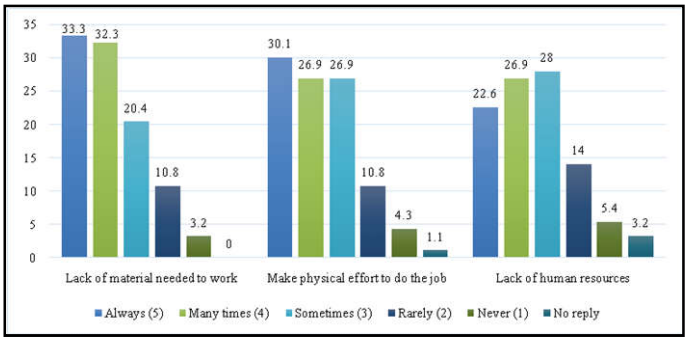

Figure 2. Main stressors of the ICU nursing team, in the "Intrinsic Work Factors" domain, in the "many times/always" frequency. São Luís, MA, 2016

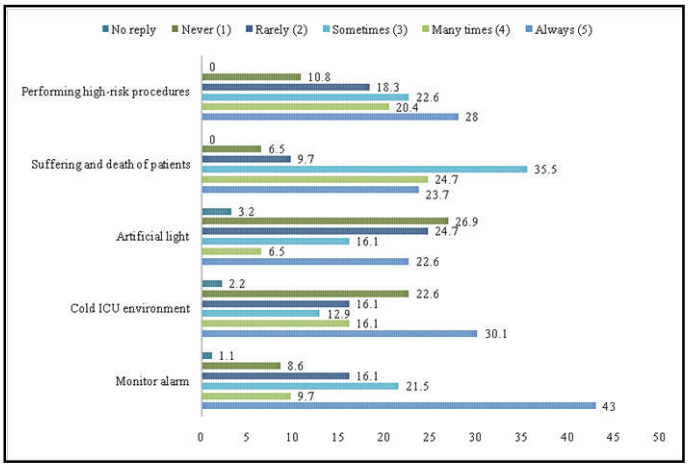

Figure 3. Stressful agents of the ICU nursing team, in the "many times/always" frequency, of items added to the Stress Inventory in Nurses, São Luís, MA, 2016

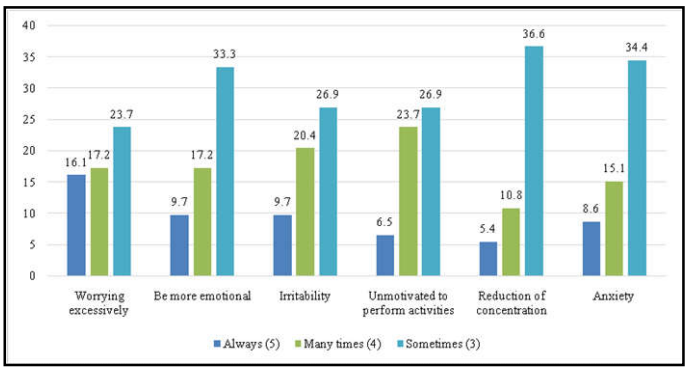

Figure 4. Psychological manifestations of the nursing team in ICUs, São Luís, MA, Brazil, 2016

Regarding the stress level of the nursing team, two of the variables addressed in the socioeconomic and occupational questionnaire were "hours of sleep" and "how much the participants felt stressed". Regarding the hours of sleep, 67.8% of the participants reported sleeping up to 6 hours. Regarding the level of self-reported stress, it was found that 40.9% felt moderately stressed, 29% highly stressed and 1.1% totally stressed. 27.9% reported feeling little or nothing stressed. Such information is relevant since more than half (71.1%) affirmed moderate or high stress level. Considering that the authors of the Inventory of Stress in Nurses did not present a standardization for the measurement of stress levels, the following organization was adopted in this study: the participants were classified in groups referring to low, moderate and high levels of stress, the score was divided into

three and it was considered as a low level of stress when less than 33.3%, moderate stress, between 33.3% and 66.6%, and a high level of stress above 66.6%. In this way 4 (4.3%) participants with low stress level were obtained, 67 (72.04%) with moderate stress and 22 (23.65%) with high stress levels (Figure 1). The average found was 127.03 (moderate stress) and fashion 141 (score of 6 participants). As for the stressors at work, the Inventory of Stress in Nurses presents three domains: "Interpersonal Relations", "Career Stressors" and "Intrinsic Work Factors". Among the stressful stimuli related to "Interpersonal Relationships", the three that stood out with a score of 5 (always) were "assisting the patient" (44.1%); "Providing assistance to critically ill patients" (44.1%) and "working as a team" (34.4%). Regarding the "Career Stress Roles", the variables that most stood out were "working in an unhealthy environment" mentioned by 34.4% of the participants in the "always" frequency, and 19.4% as "many times" and "working in inadequate physical facilities, with "always" frequency "21.5%," and "many times" 19.4%. Regarding the stressors "factors intrinsic to work", the highest percentages were observed in the items: "lack of material needed to work", cited as "always" by 33.3%, "many times" by 32.3%; "To make physical effort to carry out the work", referred to as "always" by 30.1%, "many times" by 26.9%; and "lack of human resources" mentioned as "always" by 22.6%, "many times" by 26.9% (Figure 2). Also in this study, the variable "taking service home" was the least mentioned as a stress factor (27.6%). While the variable "administering or supervising the work of other people" was cited as "never" by 49.5% of the participants. Regarding the five items added to the questionnaire Inventory of Stress in Nurses, the highest percentage of scores was 5 (always) "alarm of monitors and other equipment" (43.0%); and "cold ICU environment" (30.1%), justifying why this item is also the second with the highest percentage in score 1 (never), behind only the variable "artificial light" (26.9%). The variable "patient suffering and death" was mentioned by 35.5% of participants in the "sometimes" frequency, followed by 24.7% with score 4 (many times) and 23.7% with score 5 (always) (Figure 3). The averages found among the three domains were 3.11 in "interpersonal relations"; "Career stressors" mean 2.81 and "stressors intrinsic to work" mean 2.83. As for the manifestations triggered and/or stimulated by stress from the Stress Symptom Scale, "arms and legs pains (muscular pain)" were found with 33.3% in score 5 (always), presenting 22.6% in score 4 (many times) and 29% in score 3 (sometimes); presented mean 3.72, standard deviation 1,126; and "constant fatigue" with 19.4% in score 5 (always), 21.5% in score 4 (many times) and 32.3% in score 3 (sometimes); obtaining an average of 3.27 and standard deviation 1,196. The least quoted physical manifestations and highest score 1 (never) were "sexual problems" with 61.3%, mean of 1.62 and standard deviation of 0.920; and "nausea and vomiting" with 59.1%, mean 1.61 and standard deviation of 0.860. It was observed that 23.7% of the participants stated that they often felt "unmotivated to carry out day-to-day activities", 36.6% stated that they sometimes felt "reduced ability to concentrate" and 34.4% reported that sometimes they feel "anxiety" (Figure 4).

DISCUSSION

The results presented characteristics expected for the professionals in the profession, as it is observed in the composition of the students of technical courses and graduation in nursing predominance of the number of women, corroborating with research that characterized the nursing professional in Brazil and found that 87.24% of the nursing team is composed of women, in numbers, represents 1,264,641 out of a total of 1,449,583 professionals. Regarding age, the age group between 26 and 35 years is equivalent to 44.1% of the participants. Close value was verified in the same research, in which this age group represented 43.79% of nurses and 43.92% of nursing technicians (BRASIL, 2011).

The double working day, a common feature in the nursing profession due to lack of salary floor and low pay, are often associated with overload. It is considered that the majority of nursing professionals are composed of women, who by the feminine nature and sociocultural conventions accumulate domestic and family activities. Considering also that the working day is on average 6 hours, a professional with two employment bonds works 12 hours daily and a few more hours in domestic activities. This workload, the consequent reduction of rest time and the excessive collection can be triggers for high levels of stress (MONTANHOLI; TAVARES; OLIVEIRA, 2006). A survey carried out with the nursing team that works in the ICUs of the public hospitals of São Paulo - Brazil presented as one of the variables the quantity of hours of sleep required for a restful sleep and the amount of sleeping hours. It was found that on average 7.66 hours of sleep were required, but only 5.90 hours of sleep, 60.53% of participants had insufficient hours of sleep (ANDOLHE *et al*., 2015), a result similar to that found in the present study. Taking into account that many components of the nursing team have scales that alternate between day and night shifts, this irregularity can be accompanied by fatigue, irritability, periods of excessive sleep and/or insomnia (FERNANDES, 2006), and deficits of attention that productivity, quality of work and health of the worker(SILVA *et al*., 2010). A professional who feels moderately stressed may in a very short space of time feel very or totally stressed, which justifies why some research instruments assess the risk for high levels of stress, as in the study conducted in Manaus with the nurses who worked in emergencies and emergencies. In the Bianchi Stress Scale, 52.8% of the interviewees were at risk for high level stress (FONSECA, 2014). Corroborating with this research, a nursing team that works in the ICUs in São Paulo hospitals, in which the Stress at Work Scale was used, found that 74.47% of the participants had an average level of stress, 13,29 % low level and 12.24% high stress level (ANDOLHE, *et al*., 2015). A company is fundamentally formed by its professionals. These are the ones who will work for the missions, visions and values to be put into practice. Studies show that high levels of stress interfere with their performance and consequently reflect on the success of the institution (WHO, 2004).

According to a study carried out in São Paulo - Brazil that compared the level of perceived / self-reported stress by nurses from accredited and non-accredited institutions and who used the Stress Inventory in Nurses, it was verified that "working with a lack of human resources "And" lack of material "were the main variables cited in the domain" Intrinsic factors at work "; 88.5% and 80.8%, respectively, as stress factors in non-accredited hospitals and 76.4% and 37% in accredited hospitals. The variable "physical effort to perform work" was reported in both hospitals with 48%, higher value (83.9% in the "sometimes", "many times" and "always" frequency) was found in this study. One possible explanation is that this research was carried out with nurses and this one with the nursing team. It is known that many procedures performed by

nursing technicians require greater physical effort (HIGASHI *et al*., 2013). Still in accordance with the aforementioned study, the variable "taking service home" was the least mentioned as stress factor (27.6%), corroborating with the results of the present study, in which 82.8% of the participants stated that they are never sources of stress. Low rates were already expected, since the very nature of nursing work, especially when care, is performed during their stay in the workplace (HIGASHI *et al*., 2013).

Studies indicate that among the several factors that can trigger stress in ICUs are: "volume of alarms; isolation from other clinics; unhealthy environment; artificial light; cold environment; rotation; work overload; low wages; the presence of a very close contact with the patients [...]"(SOUZA *et al*., 2012, p.26),"intermittent noises of monitors, aspiration pumps, respirators, groans, cries of pain, crying "and possibility of death (RODRIGUES, 2012, page 455). All these factors can trigger dissatisfaction, exhaustion, and compromise the quality of care (DEJOURS, 1992). It is observed that almost half of the participants consider patients suffering and death as a variable that "many times / always" are reasons for tension or stress, corroborating with research carried out with intensive care nurses in Paraná - Brazil in which the Bianchi Scale of stress and the variable "face the death of the patient" was obtained as the most cited with 5.6 points out of a total of 7 points (INOUE *et al*., 2013). As biopsychosocial beings in constant interaction with the external environment, we are modified and influenced by any changes that take us away from homeostasis, thus initiating the adaptive process. Death usually alludes to loss and is not always accepted as a natural process of life (BORGES, 2011). For health professionals, the death of a patient can trigger feelings of nonconformity, impotence or even incompetence. It is observed that little is said about the death process and dying at graduation; we are prepared to deal with the beginning of life, but not with its end (KUSTER; BISOGNO, 2010). Values close to the weighted average of the domains of this research were found in a study carried out with nurses working at the Hemato-oncology Unit of the University Hospital of Rio Grande do Sul - Brazil, in which the Stress Inventory in Nurses was also used and obtained as mean 2.42 for the domain "interpersonal relations", with margin of +/- 0.65, reaching the maximum average of 3.07, a value close to that found in this research. The same was verified in relation to the "intrinsic factors to work", which obtained a mean of 2.68, with a margin of +/- 0.70; and "career stressors" with an average of 2.55 and a margin of +/- 0.59 (UMANN *et al*., 2014).

A study carried out in Minas Gerais - Brazil with nursing technicians found that the most frequent symptoms were fatigue and pain in the muscles of the neck and shoulders (SANTOS; PEREIRA, 2014). It is worth noting that among the stress-inducing variables in the Nurses' Stress Inventory, "physical effort to perform the job" was the one that obtained the highest average in the "stressors intrinsic to work" domain with 3.68, and was mentioned by 57% of the participants "many times / always". Diseases occur due to adaptive problems, some stemming from "excess of hostility", others due to "excess physical reactions of submission". In this way, the psychosomatic responses are classified into three syndromes associated with stress: somatization, fatigue and depression (FRANÇA 2008). Fatigue is a process triggered from the "physical or mental energy burnout," and one of the most recurring symptoms in stress. In depression, the feelings / feelings of discouragement, abandonment, loneliness and disbelief are the most frequent (FRANÇA, 2008, p.21). Finally, somatization is the "process by which a conflict that can not find a mental solution triggers endocrine-metabolic disorders in the body, the starting point of a somatic illness" (DEJOURS, 1992).

Conclusion

This study allowed to characterize the stress of the nursing team in intensive care units (ICU) of three hospitals of the public health of São Luís do Maranhão, Brazil. According to the literature it was possible to perceive that the hospital environment is rich in stressful stimuli and that some sectors are more propitious to the sickness of its workers as the intensive care units, being therefore the source of many studies related to the stress. It was verified in this research that the level of stress of the participants evaluated from the Inventory of Stress in Nurses applied in the nursing team was considered moderate coinciding with the self-declared stress. This is relevant information because when measures of coping are not implemented, moderate stress can increase in a short period of time. The use of the Inventory of Stress in Nurses has shown to be sensitive to the proposed objectives, however, there is no uniformity in the measurement of stress, since it does not assign values to designate stress levels. With regard to stressors, the domain "interpersonal relations" was highlighted, and the most mentioned variable as a stimulus that generates tension or stress was to provide assistance to the patient and to work as a team. Suffering and death of patients were also mentioned by more than half of the participants. Regarding the physical and psychological manifestations evaluated from the Stress Symptom Scale, muscle pain, constant tiredness, excessive worry, emotionality and irritability were reported. It is concluded that occupational stress impairs the quality of life at work, physical, psychic and emotional health, interferes in the interpersonal relations and the quality of the service provided. Scientific research on the subject is fundamental to support effective coping strategies that reduce stress and reduce stressors. It is suggested that the participating institutions of this research approach the subject with their professionals and seek strategies for the health of the worker.

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