



Stress, coping and burnout among Intensive Care Unit nursing staff: associated factors*

Estresse, coping e burnout da Equipe de Enfermagem de Unidades de Terapia Intensiva: fatores associados

Éstres, coping y burnout del equipo de enfermería de unidades de cuidados intensivos: factores asociados

Rafaela Andolhe¹, Ricardo Luis Barbosa², Elaine Machado de Oliveira³, Ana Lúcia Siqueira Costa⁴, Katia Grillo Padilha⁴

* Extracted from the thesis Segurança do paciente em Unidades de Terapia Intensiva: estresse, coping e burnout da equipe de enfermagem e ocorrência de eventos adversos e incidentes, Escola de Enfermagem, Universidade de São Paulo, 2013.

¹ Universidade Federal de Santa Maria, Departamento de Enfermagem, Santa Maria, RS, Brazil.

² Universidade de São Paulo, Escola de Enfermagem, São Paulo, SP, Brazil.

³ Universidade de São Paulo, Escola de Enfermagem, Programa de Pós-Graduação em Enfermagem na Saúde do Adulto, São Paulo, SP, Brazil.

⁴ Universidade de São Paulo, Escola de Enfermagem, Departamento de Enfermagem Médico Cirúrgica, São Paulo, SP, Brazil.

ABSTRACT

Objective: To investigate emotional stress, coping and burnout among nursing staff and their association with biosocial factors and characteristics of work in Intensive Care Units (ICU). **Method:** This was a cross-sectional study, conducted in eight ICUs at a teaching hospital in the city of São Paulo, Brazil, in October 2012. Biosocial data and information about the professionals' work was gathered, and they were given the Scale of Occupational Stress, Scale of Occupational Coping, List of Signs and Symptoms of Stress and the Maslach Burnout Inventory. **Results:** The study sample consisted of 287 subjects, predominately women, with partners and children. Most professionals presented moderate stress levels and control as a coping strategy (74.47% and 79.93%, respectively), and burnout was present among 12.54%. Factors associated with stress were related to working conditions. The most prevalent protective factors were having a partner, working in the clinical ICU and liking work, while adequate amount of sleep was a protective factor for burnout. **Conclusion:** Control of the working environment and adequate sleep are decisive and protective factors in dealing with situations of occupational stress.

DESCRIPTORS

Burnout, Professional; Nursing, Team; Shift Work; Intensive Care Units.

Correspondence Addressed to:

Rafaela Andolhe
Centro de Ciências da Saúde
Av. Roraima, 1000 - Prédio 26, Sala 1339 - Bairro
Camobi
CEP 97105-900 - Santa Maria, RS, Brazil
rafaela.andolhe@ufsm.br

Received: 04/14/2015
Approved: 07/28/2015

INTRODUCTION

The world of labor in the field of health and nursing has undergone a transformation over the last few centuries. In addition to technological advances and benefits for the population, these changes have also resulted in professional environments being permeated by change and situations that lead to emotional stress. This context has many implications for patient safety and the health of healthcare professionals⁽¹⁾.

Stress is defined as any event, whether internal or environmental, that exceeds the adaptive or resistance resources of an individual or social systems⁽²⁾. It is a process that involves organic and psychic changes with relevance to the cognitive system and how it interprets different stimuli⁽³⁾. In dealing with stressful situations, coping strategies are employed in order for adverse events to be experienced more appropriately⁽²⁾. However, in the absence of actual strategies for neutralizing stressors, burnout syndrome may occur, defined as a syndrome of psychological exhaustion that leads to the exacerbation of emotional exhaustion⁽⁴⁾.

Nursing has been recognized as a profession for over 50 years and is considered one of the most stressful occupations⁽⁵⁾. Stress in nursing has been widely studied in different healthcare contexts, but still need further investigation, as they consider peculiarities of this professional activity, regional differences that impact the healthcare model adopted, and the management resources used in workplace strategies⁽⁵⁻¹⁰⁾.

Regarding ICUs, studies⁽⁷⁻⁸⁾ have shown that nursing professionals who work in this particular environment deal with high levels of stress. Nurses are exposed daily to adverse events, not only in the environment, but also in terms of the patients' critical condition. In such a working environment, quick decision-making is a determining factor for patient survival and is strongly associated with neuroendocrine manifestations of stress. In addition to these work characteristics, studies have indicated that ICU nurses present high prevalence of work-related exhaustion⁽⁸⁻⁹⁾.

Considering that stress and burnout in nursing is a reality and that the literature has not yet provided a clear definition of which factors are associated with them, this study aimed to: verify the levels of stress, coping strategies and burnout among ICU nursing professionals and their association with biosocial and work factors.

METHOD

This was an observational cross-sectional study conducted in eight ICUs of high-complexity units in the city of São Paulo, in October 2012.

The study population consisted of the nursing staff (nurses, nursing technicians and aides) in two clinical ICUs, two surgical ICUs and four specialty ICUs, regardless of time of work at the institution, a target population of 344 professionals (120 nurses and 224 nursing technicians and aides). Professionals who were on any kind of leave from work during the data collection period were excluded. The professionals who composed the sample worked six-hour morning and afternoon shifts or 12-hour alternated night shifts, with a 36-hour weekly workload and with the

possibility rotating shifts. The staff was distributed in a 1:2 nursing technician/aid to patient staffing ratio and a 1:8 nurse to patient staffing ratio.

A location was set aside for professionals to fill out the data collection instruments during work hours so that respondents could reflect and answer the questionnaires in privacy for reflecting and selecting the answers for the items on the scale.

In this study, we used a questionnaire to gather the following information about biosocial factors: gender (male/female), age (years), marital status (has a partner: yes/no), children (yes/no), amount of sleep needed per day (h), actual hours of sleep (h). Furthermore, the questionnaire also collected information about the characteristics of the nursing staff's work: shift (day/night), fixed hours (yes/no), type of ICU (clinical/surgical/specialty), time since graduation (years), time working at the institution (years), time working in ICUs (years), job satisfaction (yes/no), willingness to work (yes/no), likes work (yes/no) and adequate unit human resources and materials (yes/no).

The following instruments were used to gather work-related data:

The short version of the Work Stress Scale (WSS), developed and validated in Brazilian Portuguese by Paschoal and Tamayo⁽¹²⁾, composed of 13 items answered on a Likert scale with values ranging from 1 (completely disagree), 2 (disagree), 3 (somewhat agree), 4 (agree) and 5 (completely agree). The instrument was developed in Brazil with a sample of 437 workers and obtaining a value for Cronbach's alpha of 0.85⁽¹²⁾. The total score obtainable on the scale varies from 13 to 65 points, and the higher the score, the greater the perception of work stress.

List of Signs and Symptoms of Stress (LSS)⁽¹³⁻¹⁴⁾, composed of 60 signs or symptoms of stress, in which respondents assess with what frequency they perceive or feel each of the items on a Likert scale ranging from 0 to 3: 0 (never), 1 (rarely), 2 (often), 3 (always). The total score of the inventory can range from 0 to 180 points, indicating the following levels of stress: no stress (0 to 11), low (12 to 28 points), moderate (29 to 60 points), high (61 to 120 points) and very high (over 120 points). Reliability values obtained on the study by Kurebaiashy⁽¹⁵⁾ in a sample of 175 people using Cronbach's alpha ranged from 0.918 to 0.955.

Latack's Coping Scale⁽¹⁶⁾ was translated and validated to Brazilian Portuguese by Pinheiro et. al, in a sample of 296 company workers, is used to measure the most commonly used coping strategies by workers in the workplace environment. It consists of 29 items distributed among three factors: control (11 items), symptom management (9 items) and escape (9 items). Each item was assessed on a five-point Likert scale (1="I never do it" to 5="I always do it"). The reliability of the original scale measured with Cronbach's alpha varied from 0.77 to 0.81. In the present study, occupational coping was analyzed according to prevalence, i.e., by investigating the coping mechanisms most indicated by participants.

Maslach Burnout Inventory-Human Services Survey (MBI-HSS)⁽¹⁷⁾ was translated and validated into Brazilian

Portuguese by Lautert⁽¹⁷⁾ with a sample of hospital nurses. Initially composed of 47 items, it now is used in its short version, with 22 items distributed among three dimensions: emotional distress (9 items), depersonalization (5 items), and professional achievement (8 items). The reliability of the original scale measured with Cronbach's alpha was 0.89. To analyze burnout in the present study, the highest scores for emotional distress, depersonalization and professional achievement indicated the presence of burnout, and the lowest scores indicated the absence of the syndrome.

The data were typed into Excel, imported and processed using the Statistical Package for the Social Sciences (SPSS), version 18.0.

For data analysis, nursing technicians and aides were grouped into one category. Stress level was dichotomized into high and low using the sample mean as the threshold in both scales. Association between levels of stress, prevalent coping strategy and the presence of burnout with the qualitative biosocial and work variables of the nursing staff was conducted using the chi-square test. Quantitative variables were tested using Student's t-test or ANOVA. Logistic regression was conducted using backward⁽¹⁸⁾ elimination method, in which the first model contained all the studied variables. A model for each of the scales (dichotomized) was tested to analyze the association between biosocial and work variables with stress (OSC and LSS), prevalent coping strategies and the presence of burnout. Level of significance was set at 5% for all tests.

The study was approved according to Resolution 196/1996 of the Brazilian National Health Council on human research ethics, updated in Resolution 466/2012, and by the hospital's ethics committee, ruling no. 0196/11.

RESULTS

The sample was comprised of 287 (85.92%) participants, of which 109 (37.98%) worked in surgical ICUs, 76 (26.48%) in clinical ICUs and 102 (135.54%) in specialty ICUs. Of this total, 34.84% were nurses, 12.89% nursing technicians and 52.27%, nursing aides. The sample consisted predominately of women (83.97%), who lived with a partner (50.53%) and had children (63.07%). In terms of age, the mean was 37.54 and 39.46 years for nurses and technicians/aids, respectively.

Regarding time since graduation, the mean was 9.42 and 11.63 years for nurses, technician/aids respectively, with a statistically significant difference between the groups. Considering time working at the institution, the mean was 8.18 years and 10.20 years respectively, for nurses and technicians/aids. Time working in the ICUs was lower, with a mean of 7.74 years for nurses and 9.23 years for nursing technicians and aids.

When asked about work, the 95.07% of the participants reported liking their work, 90.17% declared being satisfied with the activities and 53.38% felt willingness to work at the ICU. Most of the professionals (61.35%) had a fixed work schedule.

Regarding the available human resources and materials in the units, 78.37% of the nursing team stated that the staff

size was inadequate, and 58.16% considered that the materials available at the unit were insufficient for delivering health care.

Mean amount of sleep needed per day and mean amount of hours actually slept by the professionals was, respectively, 7.66 and 5.90 hours, demonstrating a deficit of approximately 2 hours. Most professionals did not get enough hours of sleep per day (60.53%) when compared to the hours of sleep needed by them.

STRESS, COPING AND BURNOUT AMONG THE NURSING STAFF

Regarding the level of stress indicated by the Work Stress Scale (WSS), 74.47% of the participants presented moderate levels of stress, 13.29% low levels and 12.24%, high levels.

In terms of the List of Signs and Symptoms of Stress (LSS), 46.13% of the professionals presented moderate stress levels, while approximately 30.00% presented high and very high stress levels. Absence of stress and low levels of stress at work were displayed by 25.00% of the sample.

The main coping strategy for dealing with stress at work was proactively taking control, presented by 79.93% of the nursing staff. A smaller percentage (12.54%) presented burnout syndrome. This result was similar to the percentage of nursing staff that presented higher levels of stress.

ANALYSIS OF ASSOCIATION AMONG STRESS, COPING AND BURNOUT

The qualitative variables that were associated with the stress levels measured with the WSS were: having a fixed work schedule ($p=0.01$); actual hours of sleep ($p=0.00$); willingness to work ($p=0.00$); job satisfaction ($p=0.00$ e); adequate staff size ($p=0.00$); adequate material resources ($p=0.00$). The quantitative variables analyzed with Student's t-test did not display any statistically significant association with stress (WSS).

Table 1 presents the variables that were significant after the convergence of the adjustment method for stress (WSS). It is worth noting that the analysis revealed the variable "actual hours of sleep" as a protective factor for work stress ($p=0.00$), i.e., professionals who reported getting enough sleep presented low levels of stress. The factors associated with an increased chance of presenting high levels of stress were: not having a fixed schedule, not feeling willingness to work, not experiencing job satisfaction at the ICU and believing that staff size was insufficient.

Table 1 - Logistic regression model for factors associated with the level of stress at work (WSS) and biosocial variables - São Paulo, São Paulo, Brazil, 2012.

Final model Variables	B	p	OR	OR-CI95%
Fixed work schedule	0.62	0.03	1.86	[1.04-3.31]
Assessment of actual hours of sleep	-0.90	0.00	0.40	[0.22-0.75]
Willingness to work	0.97	0.00	2.65	[1.46-4.82]
Job satisfaction at the ICU	1.28	0.02	3.61	[1.20-10.81]
Adequate staff size	1.02	0.01	2.78	[1.29-6.02]

Source: Research results, São Paulo, Brazil, 2012.

In terms of the manifestation of signs and symptoms of stress measured by the LSS, the chi-square test revealed associations of symptom manifestation and stress levels measured by the WSS with the following variables: gender ($p=0.02$), fixed work schedule ($p=0.00$), assessment of actual hours of sleep ($p=0.00$), willingness to work ($p=0.00$), job satisfaction at the ICU ($p=0.01$), adequate staff size ($p=0.00$) and prevalent coping strategy ($p=0.02$).

The t-test did not result in any statistically significant association between the signs and symptoms of stress (LSS) and the quantitative variables (age, hours of sleep needed daily, time since graduation, time working at the institution and at the unit). There was an association with hour of sleep needed ($p=0.01$).

The logistic regression model showed that the variables associated with the signs and symptoms of stress (LSS) were: surgical ICU ($p=0.03$), willingness to work ($p=0.00$), job satisfaction at the ICU ($p=0.00$), adequate material resources ($p=0.01$) and assessment of actual hours of sleep. Professionals working in the surgical ICU professionals, who were unwilling to work, who believed that the material resources were inadequate and who did not sleep enough had more chances of presenting neuroendocrine changes related to stress. The men displayed lower probability of stress in comparison with the women (Table 2).

Table 2 - Logistic regression model for factors associated with the signs and symptoms of stress (LSS) – São Paulo, São Paulo, Brazil, 2012.

Final model Variables	B	p	OR	OR-CI95%
Surgical ICU	0.78	0.03	2.19	[1.07-4.48]
Gender	-0.88	0.04	0.41	[0.18-0.96]
Willingness to work	1.35	0.00	3.86	[2.12-7.01]
Adequate resources	0.84	0.01	0.33	[1.25-4.31]
Assessment of actual hours of sleep	0.42	0.00	1.52	[1.21-1.91]

Source: Research results, São Paulo, 2012.

However, there was an association between the prevalent coping strategy and professional category ($p=0.03$), marital status ($p=0.04$) and fixed work schedule ($p=0.02$), according to the chi-square test. This test resulted showed that age ($p=0.04$) and time since graduation ($p=0.01$) were statistically associated with prevalent coping strategy.

The logistic regression model showed that the variables associated with control as a coping behavior were: time since graduation ($p=0.00$) and time working in the ICU ($p=0.02$), or in other words, professionals with more years of experience are more likely to present control as their coping strategy. Working in the clinical ICU ($p=0.02$), having a partner ($p=0.02$) and liking the work at the ICU ($p=0.03$) increased the probability of the professional employing control as a coping strategy (Table 3).

Table 3 - Logistic regression model for factors associated to prevalent coping strategy - São Paulo, São Paulo, Brazil, 2012.

Final model Variables	B	p	OR	OR-CI95%
Time since graduation	0.13	0.00	0.86	[0.79-0.94]
Time working at the ICU	0.10	0.02	1.11	[1.02-1.21]
Clinical ICU	-0.95	0.02	0.38	[0.17-0.88]
Marital status	-0.80	0.02	0.44	[0.23-0.89]
Likes working in the ICU	-2.22	0.03	0.10	[0.01-0.84]

Source: Research results, São Paulo, 2012.

Regarding the presence of burnout, the chi-square test presented associations with the assessment of actual hours of sleep ($p=0.03$). There were no associations with quantitative variables.

The logistic regression model displayed that the only variable associated with burnout among the nursing staff in the ICUs was the assessment of actual hours of sleep ($p=0.03$), i.e., professionals who reported getting sufficient sleep did not present burnout (Table 4).

Table 4 - Model of logistic regression of the factors associated with burnout - São Paulo, São Paulo, Brazil, 2012.

Final Model Variables	B	p	OR	OR-CI95%
Assessment actual hours of sleep	-0.28	0.03	0.76	[0.59-0.98]

Source: Research results, São Paulo, 2012.

DISCUSSION

In light of the analysis of the biosocial characteristics of the ICU nursing staff evaluated in this study ($n=287$), there was a predominance of the female gender, a characteristic of the nursing profession that has been indicated by several national and international studies^(7-9,17). Some authors have found that women are more susceptible to stress than men and, therefore, are more prone to have lower levels of quality of life⁽¹⁹⁾. On the other hand, women express their feelings more openly than men, which can also explain the higher level of stress verified through self-reported data^(8,19). These factors can also explain why, in this study, men were less likely to present signs and symptoms of stress.

In contrast to what has been observed in the literature, gender proved to be a protective factor associated with the signs and symptoms of stress in this study. However, this variable in isolation cannot be considered a protective factor for stress. It is possible that being married, having children, having more professional experience, having fixed work schedules, liking their job and feeling satisfied were elements that contributed to moderate levels of stress and the absence of burnout.

Civil status was associated with control coping strategies ($p=0.04$) and represented a protective factor ($p=0.02$), highlighting the importance of having a partner as a source of support, safety and motivation when dealing with job stressors. Having a partner can be considered a positive factor in dealing with stress and, consequently, preventing burnout⁽²⁰⁾. This variable associated with job satisfaction and time working at the institution increased the odds of opting for control as a coping strategy. This result may cor-

roborate the importance of family supporting the professional's efforts⁽²¹⁾, contributing to personal and professional satisfaction in addition to control over job stressors.

Most of the participants declared liking their work activities. The support offered by supervisors and coworkers tends to be more important in determining job satisfaction than financial remuneration⁽²²⁾. This reality can explain why liking work at the ICU was a protective factor for stress ($p=0.03$). The fact that these professionals were satisfied with the job suggests that the participants face their activities as a positive challenge, even when working conditions are not fully adequate.

Regarding age, the mean was 37.54 and 39.46 years for nurses and technicians/aides, respectively, indicating that the sample consisted of a mature and experienced group of workers.

Even though some studies have indicated that the desirable professional profile for working at ICUs consists of younger individuals⁽²³⁾, other ones have indicated that individuals under the age of 30 are more susceptible to burnout⁽²⁰⁾. However, when it comes to coping with stress on a daily basis, there is no consensus among researchers regarding age. In this study, age was associated with control as a coping strategy ($p=0.04$), which corroborates the understanding held by some authors about the relevance of life experience when assessing stress and the choice of coping strategy among individuals⁽²⁾. This argument also explains the association found between time since graduation, time of work at the institution and unit, and choice of coping strategies based on control.

Association analyses identified that having a fixed schedule was also a factor that reduced the probability of individuals undergoing stress. Uncertain work schedules present a challenge for organizing work, social and personal activities. A study conducted with nurses working shift schedules⁽²⁴⁾ confirmed that those who worked rotating schedules used more inadequate coping mechanisms to deal with stress. The association between coping strategy and the variable "fixed schedule" found in this study corroborates this proposition, as planning and pro-activity are coping resources that correlate positively with dealing with stress successfully, according to a study conducted with ICU nurses in a hospital in northern England⁽¹¹⁾.

Willingness to work was associated with stress according to the analysis of the results obtained by the two instruments in this study (WSS and LSS). Based on these results, it is possible to infer that there is a trend for individuals with higher stress scores to manifest more signs and symptoms related to physical exhaustion, interfering with willingness to work.

In terms of sleep, even though the average amount of sleep needed reported by participants was approximately 7 h, close to that recommended for healthy adults, the amount of actual sleep was around 5 h. In other words, there was a 2-hour deficit with regards to what is recommended for reestablishing the body's organic conditions. These results also justify the fact that participants considered the amount of actual sleep insufficient. Sleep deprivation is a negative health factor for nursing professionals, impacting quality of life, compromising cognitive functions and work capacity and creating favorable conditions for the occurrence of error⁽²⁵⁾.

The analysis of stress levels in this study showed that most participants presented moderate levels of stress. The other variables indicated that the professionals coped well with stress. However, according to the nursing staff's assessment in terms of their working conditions, which were considered inadequate for carrying out their activities, it is possible that the participants were hesitant to express the exhaustion felt by them due to the workplace environment.

Association analyses revealed that the most stressful variables related to the working conditions as reported by the ICU nursing staff were related to organization, and the availability of human and material resources. In light of this, it is possible to infer that work-related stressors were the main conditioning factors of stress levels in this study.

In terms of coping, the control dimension of coping was prevalent among the nursing staff, similarly to another Brazilian study⁽²⁷⁾. This finding corroborates the results that showed that the participants assessed work-related stressors as positive events and used adequate coping strategies to deal with these situations.

There was a low prevalence of burnout among the studied sample (12.54%), of which 3.86% were nurses and 8.70%, nursing technicians and aides. This prevalence was similar to that found among hospital nurses in Holland (10%), according to a study conducted in 12 European countries and the United States⁽¹⁾.

In the present study, there was a statistically significant association between burnout and hours of sleep needed to restore energy ($p=0.01$). As mentioned, sleep deprivation causes several disorders, among them: gastrointestinal, cardiovascular, cognitive, mood swings, and compromised performance in social, personal and work activities, as concentration and attention capacities are reduced⁽²⁸⁾.

This result is also corroborated by logistic regression analysis, which found that the assessment of actual hours of sleep was a protective factor for burnout ($p=0.03$).

Getting adequate hours of sleep in order for the organism to recover from the exhaustion of the work day seems to contribute to avoiding the signs and symptoms of physical exhaustion, primarily stress and burnout, and are of primary importance for the health of individuals.

In this study, stress was strongly associated with work-related variables. It is worth considering that intervention measures directed at improving working conditions, related to structural aspects, can lead to positive results also in quality of health care and, consequently, patient safety. Latent errors are related to institutional processes and resources and are therefore more easily prevented⁽²⁹⁾. Investing in better working conditions, both in terms of supplying adequate human and material resources and the actual organization of work processes means investing in patient safety.

CONCLUSION

The present study found moderate levels of stress among the subjects studied and a low prevalence of burnout. On the other hand, the percentage of individuals who suffered from burnout syndrome was similar to that of in-

dividuals with high stress levels. These findings suggest that most participants perceived job stressors as a challenge. In addition, control coping strategies were most commonly used by the professionals in this study, which corroborates the prevalence of moderate stress levels and also the low prevalence of burnout among the nursing staff.

Another noteworthy finding refers to the variables “hours of actual sleep”, “having a partner” and “liking work” as variables that contributed positively to coping with stress and preventing burnout in this study.

Even though the sample and variables studied may present limitations, the results indicate that quality of life at work is related to the conditions present for performing professional activities.

The results of this study contribute to directing further research involving more in-depth analyses about the quality of sleep of ICU nursing staff, work shifts and the analyzed variables and their impact on quality of care and patient safety.

RESUMO

Objetivo: Investigar o estresse emocional, o coping e burnout da equipe de enfermagem e a associação com fatores biosociais e do trabalho em Unidade de Terapia Intensiva (UTI). **Método:** Estudo transversal, realizado em oito UTI de hospital-escola, do município de São Paulo, em 2012. Coletaram-se dados biosociais e de trabalho dos profissionais, juntamente com Escalas de Estresse no Trabalho, Coping Ocupacional, Lista de Sinais e Sintomas e Inventário Maslach de Burnout. **Resultados:** Participaram da pesquisa 287 sujeitos, predominantemente mulheres, com companheiro e filhos. O nível médio de estresse e coping controle foram prevalentes (74,47% e 79,93%, respectivamente) e a presença de burnout em 12,54%. Fatores associados ao estresse referiram-se às condições de trabalho. Ter companheiro, atuar em UTI Clínica e gostar do trabalho foram fatores de proteção para coping prevalente, enquanto que horas de sono adequadas foi fator de proteção para burnout. **Conclusão:** O controle do ambiente de trabalho e o sono adequado são fatores decisivos e protetores para enfrentamento das situações de estresse ocupacional.

DESCRITORES

Esgotamento Profissional; Equipe de Enfermagem; Trabalho em Turnos; Unidades de Terapia Intensiva.

RESUMEN

Objetivo: Investigar estrés emocional, coping y burnout en el equipo de enfermería y su asociación con factores biosociales y del trabajo en la Unidad de Cuidados Intensivos (UCI). **Método:** Estudio transversal desarrollado en ocho UCI de hospital universitario en São Paulo, en 2012. Recogió datos biosociales y del trabajo junto con Escalas de Estrés en el trabajo, Coping del Trabajo, Lista de Signos y Síntomas y Maslach Burnout Inventory. **Resultados:** Los participantes fueron 287 sujetos, en su mayoría mujeres, con compañero y hijos. Nivel medio de estrés y coping control fueron prevalentes (74,47% y 79,93%, respectivamente) y la presencia de burnout en 12,54%. Los factores asociados con estrés que se refieren a las condiciones de trabajo. Tener compañero, trabajar en la UCI Clínica y disfrutar del trabajo fueron factores de protección para coping prevalente, mientras que las horas adecuadas de sueño fue un factor protector para agotamiento. **Conclusión:** Ambiente de trabajo y sueño adecuado son cruciales para iniciar estrés.

DESCRIPTORES

Agotamiento Profesional; Grupo de Enfermería; Trabajo por Turnos; Unidades de Cuidados Intensivos.

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Financial support: Coordination for the Improvement of Higher Education Personnel (CAPES), the São Paulo Research Foundation (FAPESP), the National Council for Scientific and Technological Development (CNPq) and the Mapfre Foundation.
