Investigación y Educación en Enfermería
ISSN: 0120-5307
revistaiee@gmail.com
Universidad de Antioquia
Colombia

Inoue, Kelly Cristina; Gomes da Silva Versa, Gelena Lucinéia; Misue Matsuda, Laura
Stress level among intensive care nurses in the municipality of Paraná (Brazil)
Investigación y Educación en Enfermería, vol. 32, núm. 1, 2014, pp. 69-77
Universidad de Antioquia
Medellín, Colombia

Stress level among intensive care nurses in the municipality of Paraná (Brazil)

Kelly Cristina Inoue[1]
Gelena Lucinéia Gomes da Silva Versa[2]
Laura Misue Matsuda[3]

Stress level among intensive care nurses in the municipality of Paraná (Brazil)

Objective. To identify stress levels among intensive care nurses who work in the municipality of Western Paraná, Brazil. **Methodology.** This is a cross-sectional cohort study, carried out from May to July 2010, included 60 nurses from intensive care units (adult, pediatric, or neonatal) of five hospitals. All participants completed the Bianchi Stress Scale. **Results.** The mean participant age was 31 years; 70% of the nurses were women, 33% had more than 15 years of experience, and 88% conducted care activities. The general level of stress was medium. Stress levels were low for relationships with other units and supervisors, activities related to adequate functioning of the unit and the coordination of activities of the unit. Levels were medium for the following domains: activities related to personnel management, labor conditions for the development of nursing activities, and delivery of care to patient; this last domain was related to the following stress factors: facing patient death, attending to emergencies in the unit, advising patients' family members, and conducting tasks in the minimal time available. **Conclusion.** Although the general stress level was medium, the identification of domains with a high score can be used to plan intervention strategies to preserve the health of intensive care nurses and, in turn, improve quality of care delivered to severely ill patients.

Key words: nurses; stress, psychological; intensive care units.

Nivel de estrés en enfermeros intensivistas de un municipio de Paraná (Brasil)

Objetivo. Identificar el nivel de estrés de los enfermeros intensivistas, quienes trabajan en un municipio del oeste del Paraná, Brasil. **Metodología.** Estudio de corte transversal realizado de mayo a julio de 2010, con 60 enfermeros de las Unidades de Cuidados Intensivos (del Adulto, Pediátrica o Neonata) de cinco hospitales. Todos los participantes respondieron la escala Bianchi de Estrés. **Resultados.** El promedio de edad fue de 31 años; el 70% era de sexo femenino; el 33% tenía más de 15

1 RN, Master. Professor Faculdade Ingá, Intensivist Hospital Universitário de Maringá, Brazil.
email: kellyelais@hotmail.com
2 RN, Master. Intensivist Hospital Universitário do Oeste do Paraná, Brazil.
email: gelenaenfermagem@yahoo.com.br
3 RN, Ph.D. Professor Universidade Estadual de Maringá, Brazil.
email: lmmatsuda@uem.br

Article linked to research: Stress em enfermeiros de unidade de terapia intensive.

Conflicts of interests: none.

Receipt date: Oct 3, 2012.

Approval date: Aug 20, 2013.

How to cite this article: Inoue KC, Versa GLGS. Stress level among intensive care nurses in the municipality of Paraná (Brazil). Invest Educ Enferm. 2013;32(1): 69-77.

años de haber terminado sus estudios; el 88% realizaba actividades de cuidado. El nivel general de estrés fue mediano. Por dominio, el estrés se manifestó de la siguiente manera: a). bajo, en: relaciones con otras unidades y supervisores, actividades relacionadas con el adecuado funcionamiento de la unidad y con la coordinación de las actividades de la unidad; y b). mediano, en los dominios: actividades relacionadas con el manejo del personal, condiciones laborales para el desarrollo de las actividades de enfermería, y la atención prestada al paciente. Este último se relacionó con los siguientes factores de estrés: enfrentar la muerte del paciente, atender las emergencias en la unidad, orientar familiares de pacientes críticos y realizar tareas con tiempo mínimo disponible. **Conclusión.** A pesar de que nivel de estrés general fue mediano, los dominios identificados con mayor puntuación posibilitan planear estrategias de intervención para la preservación de la salud de los enfermeros intensivistas, que redunda en una mejor calidad de la atención prestada al paciente grave.

Palabras clave: enfermeras; estrés psicológico; unidades de cuidados intensivos.

Nível de estresse nos enfermeiros intensivistas de um município no Paraná (brasil)

Objetivo. Identificar o nível de estresse dos enfermeiros intensivistas, que trabalham num município do oeste do Paraná, Brasil. **Metodologia**. Estudo de corte transversal realizado de maio a julho de 2010, com 60 enfermeiros das Unidades de Cuidados Intensivos (do Adulto, Pediátrica ou Neonata) de cinco hospitais. Todos os participantes responderam a escala Bianchi de Estresse. **Resultados**. A média de idade foi de 31 anos, o 70% eram mulheres, 33% tinham mais de 15 anos de ter terminado seus estudos, o 88% realizava atividades de cuidado. O nível geral de estresse foi médio. Por domínio, o estresse foi baixo em: relações com outras unidades e supervisores, atividades relacionadas com o adequado funcionamento da unidade e com a coordenação das atividades da unidade; e foi médio nos domínios: atividades relacionadas com o manejo do pessoal, condições trabalhistas para o desenvolvimento das atividades de enfermagem, e o atendimento prestado ao paciente; este último se relacionou aos fatores de estresse: enfrentar a morte do paciente, atender as emergências na unidade, orientar familiares de pacientes críticos e, realizar tarefas com tempo mínimo disponível. **Conclusão**. Apesar do nível de estresse geral foi médio, os domínios identificados com maior pontuação possibilitam planejar estratégias de intervenção para a preservação da saúde dos enfermeiros intensivistas, que redunda numa melhor qualidade do atendimento prestado ao paciente grave.

Palavras chave: enfermeiras; estresse psicológico; unidades de terapia intensiva**.**

Introduction

The interaction of the relational and infrastructural components present in the workplace provides environments more or less favorable to workers' health.[1] Nonetheless, the risks associated with nursing practice can trigger stress and negatively influence nurses' physical and mental health, with damage to professional activity.[2,3] The term "stress" is related to unpleasant sensations and/or discomfort experienced by an individual in certain situations; the individual uses his or her psychological processes and understanding to interpret the facts and perceive them as stressful.[4] Nurses confront various stressors during their activities that may influence their personal and professional life; these stressors are related to control over work; professional relationships; and the nature of the profession, the workplace, and the organization.[5] We know that nurses practice a profession that can be characterized as highly stressful when compared with other health professions because they almost always operate in an environment that is permeated by disease aggravation and death, requires quick decisions, and entails high levels of attention, skill, and

responsibility.[6-8] In Shanghai, China, for example, nurses were suffering from high levels of burnout, which was strongly associated with work-related stress.[9]

Other research, on the effect of work environment on hospital outcomes in nine countries (USA, China, South Korea, Thailand, Japan, New Zealand, UK [England and Scotland], Canada, and Germany), identified high nurse burnout in hospitals in all countries except Germany. Moreover, between one-quarter and one-third of hospitals in each country were judged to have poor work environments; working in a hospital with a better work environment was associated with significantly lower odds of nurse burnout and job dissatisfaction and with better quality-of-care outcomes.[10] Thus, stress in nursing and its consequences seem to occur in many parts of the world.

Working in a hospital environment can be very stressful, especially for nurses who work in intensive care units (ICUs).[11,12] This high stress level results from the constant expectancy that critically ill patients will decompensate, in association with the complexity of care. This complexity is inherent in the advanced technological concentration of the ICU.[13] Considering that each individual has the possibility to react differently to the many stimuli to which he or she is exposed, the manner in which the individual responds will determine the stress level and any resulting the changes.[2] Therefore, professionals who are able to identify which factors stress them can develop strategies to deal with what these factors and thus improve their quality of life and of work.[4]

Considering the importance of promoting favorable working conditions to workers' health and to the quality of care they provide in the ICU, the questions assessed in this study include the following: Are the nurses who work in the ICU of a municipality in the Brazilian interior stressed? Which stressors exert a higher influence on the stress level of these workers? To answer to these questions, this study aimed to investigate stress levels in critical care nurses who work in a municipality in Western Paraná, Brazil.

Methodology

This descriptive, quantitative study was conducted from May to July 2010 in the adult, pediatric, and neonatal ICUs of five hospitals in the Western region of Paraná State, Brazil. These hospitals were named A, B, C, D, and E. The study population was composed of 60 critical care nurses of both sexes. We excluded nurses who had worked for less than three months in the service investigated.

Data were collected by using the Bianchi Stress Scale (BSS),[14] which consists of a Likert-type scale, auto-filled. Part 1 solicits sociodemographic characteristics , and Part 2 contains 51 items/questions related to the activities performed by nurses and/or working conditions, which are called stressors. The answers to Part 2 of the BSS are unique and range between 1 (not very stressful) and 7 (highly stressful); the value 4 is neutral, and 0 refers to noncompletion of the evaluated activity.

For Part 2, the average score for each stressor and the average score for each domain were calculated. The 51 stressors were grouped into six domains that deal with the care and management activities: (1) relationship with other units and supervisors; (2) activities related to the suitable operation of the unit; (3) activities related to personnel management; (4) assistance provided to the patient; (5) coordination of the unit's activities; and (6) working conditions for the performance of the nurse's activities.

Both for the analysis of average score for each stressor and for each domain, the stress level were classified as follows: (1) **low** (score equal to or below 3.0 points); (2) **medium** (score between 3.1 and 5.9 points); and (3) **high** (average score equal to or above 6.0 points). The data were entered into an electronic spreadsheet (EpiInfo 3.5.3) to calculate descriptive statistics: frequencies and percentages for nominal and ordinal qualitative variables and variation in minimum and maximum values and average and standard deviation (SD) for continuous quantitative variables.

The study adhered to the ethical and legal principles valid in Brazil, and is recorded in the Standing Committee on Ethics in Research Involving Humans (COPEP) of the State University of Maringá (UEM) under approval number 421/2010.

Results

Characteristics of study population

The study population was composed of 60 nurses. Of these, 41 (69.5%) were women, 39 (65%) were married, 34 (58.6%) were heads of a family, and 30 (50.8%) had no children. The participants ranged in age from 23 to 43 years, with an average age of 31±5.1 years. The nurses had an of average 5±3.0 years of training, and maximum time since graduation from a nursing program of 15 years 20 (33.3%) were undergraduate students, 34 (56.7%) had already completed a specialization course, and 2 (3.3%) had a master's degree.

Thirty-five nurses (58.37%) work at a private hospital and 25 (41.7%) at a public institution. The maximum duration of experience working in the ICU was 10 years; 37 (61.7%) nurses worked in an adult ICU; 14 (23.3%) in a pediatric ICU, and 8 (13.3%) in a neonatal ICU. Distribution according to work shift was as follows: 9 (15%) nurses worked in the morning, 20 (33.3%) in the afternoon, 26 (43.3%) at nighttime and 5 (8.4%) in more than one shift.

It is noteworthy that 53 (88.3%) nurses performed care activities, with weekly work hours ranging from 30 to 56 hours; 30 nurses (50.8%) worked 36 hours and 24 (40.7%) worked 40 hours per week, 45 (75%) had only one job, and 45 (75%) had a monthly income of three to 10 times the minimum salary. Regarding satisfaction with salary, 25 participants (41.7%) considered themselves satisfied, 19 (31.7%) were somewhat satisfied, 8 (13.3%) were somewhat dissatisfied, and 4 (6.7%) each were very satisfied or very dissatisfied, respectively.

Nurses' stress levels

The descriptive statistics and classification of stress levels by domain are presented in Table 1. Stress levels were classified as medium for half of the domains and low for the other half.

Table 2 presents stressor's average score of each item by domain of BBS.

Table 1. Stress levels of critical care nurses in a municipality of Western Paraná, Cascavel-PR, Brazil, 2010

Domain	Minimum	Maximum	Average±SD	Stress Level
(A) Relationship with other units and supervisors	0.2	6.1	3.0±1.2	Low
(B) Activities related to the suitable operation of the unit	0	6.3	2.2±1.7	Low
(C) Activities related to personnel management	0.8	7.0	3.6±1.5	Medium
(D) Assistance provided to the patient	0.8	6.6	4.0±1.4	Medium
(E) Coordination of unit's activities	0.5	6.1	3.0±1.1	Low
(F) Working conditions for the performance of nurse's activities	0.1	6.6	3.6±1.3	Medium
Total	0.6	5.6	3.3±1.0	Medium

Table 2. Stressors' average score of each item by domain of BSS in Cascavel-PR, Brazil, 2010

Item	Average± SD
Domain A	
Q40 Relationship with other units (n=59)	3.2 ± 1.6
Q41 Relationship with surgical center (n=58)	3.1 ± 1.5
Q42 Relationship with material center (n=60)	3.1 ± 1.6
Q43 Relationship with warehouse (n=51)	2.7 ± 1.7
Q44 Relationship with pharmacy (n=59)	4.1 ± 1.9
Q45 Relationship with maintenance (n=57)	3.0 ± 2.0
Q46 Relationship with admission/discharge of patients (n=59)	3.3 ± 1.6
Q50 Communication with nursing supervisors (n=59)	2.5 ± 1.5
Q51 Communication with board of director (n=59)	2.8 ± 1.7
Domain B	
Q1 Forecast of material to be used (n=42)	2.8 ± 1.5
Q2 Replacement of material (n=43)	2.9 ± 1.7
Q3 Control of used material (n=47)	2.8 ± 1.5
Q4 Control of equipment (n=49)	3.2 ± 1.6
Q5 Request of review and fixing of equipment (n=44)	3.0 ± 1.8
Q6 Counting of existing amount of material in unit (n=38)	3.4 ± 1.6
Domain C	
Q7 Managing nursing staff (n=57)	4.3 ± 1.7
Q8 Conducting distribution of employees (n=58)	3.7 ± 1.8
Q9 Supervising nursing activities (n=60)	4.1 ± 1.6
Q12 Conducting training (n=55)	3.9 ± 1.7
Q13 Evaluating professional performance (n=59)	3.9 ± 1.7
Q14 Constructing a scale of work for employees (n=43)	3.5 ± 1.7
Domain D	
Q16 Admitting patient in the unit (n=59)	4.4 ± 2.1
Q17 Conducting physical exam on the patient (n=57)	3.7 ± 1.7
Q18 Prescribing nursing care (n=58)	3.7 ± 1.6
Q19 Evaluating patient conditions (n=59)	3.6 ± 1.7
Q20 Addressing patients' needs (n=60)	3.9 ± 1.8
Q21 Addressing families' needs (n=59)	4.3 ± 2.0
Q22 Orienting patient for self-care (n=42)	3.6 ± 1.7
Q23 Orienting families to take care of patient (n=52)	3.7 ± 1.8
Q24 Supervising nursing care delivered (n=60)	4.1 ± 1.6
Q25 Orienting patient's discharge (n=53)	3.5 ± 1.6
Q26 Delivering nursing care (n=58)	3.8 ± 1.5
Q27 Addressing the emergencies in the unit (n=59)	4.9 ± 2.0
Q28 Addressing family members of critically ill patients (n=60)	4.7 ± 1.8
Q29 Facing the patient's death (n=60)	5.6 ± 1.6
Q30 Guiding the family of critically ill patients (n=55)	4.8 ± 1.7

Table 2. Stressors' average score of each item by domain of BSS in Cascavel-PR, Brazil, 2010 (Cont.)

Item	Average± SD
Domain E	
Q10 Managing quality of care (n=60)	4.4 ± 1.5
Q11 Coordinating activities in the unit (n=60)	4.2 ± 1.6
Q15 Elaborating a monthly report in the unit (n=42)	1.3 ± 1.8
Q31 Discussing cases with employees (n=55)	3.7 ± 1.7
Q32 Discussing cases with multidisciplinary team (n=52)	3.9 ± 1.6
Q38 Creating routines, norms and procedures (n=32)	3.5 ± 1.7
Q39 Updating routines, norms and procedures (n=32)	3.8 ± 1.8
Q47 Defining nurses` functions (n=58)	3.7 ± 1.6
Domain F	
Q33 Participating in meetings of Department of Nursing (n=56)	3.3 ± 1.7
Q34 Participating in committees in the institution (n=52)	3.3 ± 1.8
Q35 Participating in scientific events (n=50)	3.0 ± 1.9
Q36 Physical environment of the unit (n=59)	3.8 ± 1.6
Q37 Level of noise in the unit (n=60)	4.4 ± 1.9
Q48 Conducting bureaucratic activities (n=59)	4.0 ± 1.7
Q49 Performing tasks with minimal available time (n=59)	4.8 ± 1.9

Discussion

According to Table 1, stress levels were *low* in domains A, B, and E of the BSS and *medium* in domains C, D, and F. This finding represents a medium stress level for critical care nurses in a municipality in Western of Paraná. The demographic characteristics correspond to those seen for Brazilian nurses overall: a predominance of female workers and, in the case of the ICU, younger nurses[4,15,16] who appear well suited to attend the agility demands and the higher physical load of the work in this sector. These results correspond to UK and Chinese ICU nurses, whose average ages were 29.2 and 37 years, respectively; most of them were also female.[11,12]

In a study whose objective was to examine the relationships between nurse stress and nurse staffing in a hospital setting, younger nurses had significantly more nursing stress than older nurses according to analysis of variance.[17] Concomitantly, although linear regression analyses showed higher burden of stress and burnout among hospital nurses at younger age and in those from higher-grade hospitals,[10] the stress level may have been positively influenced by the level of education of the ICU nurses studied. Despite their youth and relatively short training time, a majority (60%) of nurses had completed some postgraduate courses. As a result, they may feel prepared for working in the ICU. It is inferred that despite being a propitious environment for the development of occupational and burnout stress,[4,18] nurse training may have had a role in the classification of the stress level as *medium* (Table 1).

Occupational health education and training programs contribute to the improvement of knowledge and development of specific nurses'

skills, thereby helping them attend to work demands and reduce the stress level at work.[7]

The stress of nurses' work in the ICU can be minimized or hidden by the sense of pleasure in working in a challenging and, often , gratifying environment.[19,20] In this sense, future studies should examine why there was no evidence of *high* stress among critical care nurses in Western Paraná, Brazil. Nurses may have developed coping strategies to deal with ICU stressors. In Iran, for example, clinical nurses use a variety of reactions to cope with different stressors in their workplace, such as work management, self-control, emotional, spiritual, cognitive, and interactional strategies.[5]

Although the classification of stress scores was *medium*, we highlight the result of the domain D, which had the highest score (4.0 points, Table 1). Therefore, *Assistance provided to patient in ICU* is differentiated from other sectors because it is up to nurses, privately, to direct care of critically ill and perform complex activities present in ICUs every day.

According the Table 2, stressors of domain D had a higher constancy, while domain B showed a lower constancy. In addition, some comments should be made about these findings. By analyzing the scores of each stressor in Table 2, it is observed that *Communication with nursing supervisors* (Q50, domain A) had the lowest score (2.5 points), followed by *Relationship with warehouse* (Q43, domain A), with 2.7 points, and *Forecast of material to be used* and *Control of used material* (Q1 and Q3 respectively, domain B), both with 2.8 points. This result may relate to the fact that, in ICU, all infrastructure necessary for the care of critically ill has been normalized and, therefore, there is a minimum store of materials and equipment per bed, or fraction.[21]

Domain B, which presented the lowest average for the classification of stress level (Table 1), also obtained few different answers from 0 (all with fewer than 50 respondents, Table 2). This result, in part, can be explained by the fact that *Activities related to the proper operation of the unit* are usually the responsibility of the administrative nurse and, as stated earlier, 53 (88.3%) of the studied nurses performed care activities. Concerning the highest scores of stressors, Table 2 shows that the majority belongs to domain D, namely: *Facing the patient's death* (Q29, 5.6 points), *Attending the emergencies in the unit* (Q27, 4.9 points), and *Guiding the family of critically ill patients* (Q30, 4.8 points). Despite that, domain F also featured a high score for the stressor *Performing tasks with minimal available time* (Q49, 4.8 points).

Regarding work stress level due to patient deaths (5.6 points) and unit emergencies (4.8 points), these items were identified as the most stressful among the ICU nurses', corroborating other Brazilian studies[22,23] that found these areas were primarily responsible for the stress among nursing professionals. Both patient deaths and the need for emergency care are constant in the ICU, a fact that should suppose the internalization and acceptance of these natural events as natural to the process of work done there. However, in both cases, subjective aspects involve sensations and feelings, such as the lack of preparation of each individual to live and/or accepting any kind of loss. In the ICU, in the midst of so much technological sophistication, nurses perpetuate the assumption that this environment must save lives even when death is inevitable.

In a qualitative study set in in the ICU of a large teaching hospital in the United Kingdom that explored critical care nurses' experiences of grief and their coping mechanisms when a patient dies, the death of a patient was considered less traumatic if the nurse had anticipated the death and had provided good nursing care.[18] From this perspective, psychological attention, with the practice of lifelong learning and continuing at work, may be important an resource for the prevention or minimization of stress in ICU nurses. Regarding emergency situations and the need to perform tasks in a short period of time (Q27 and Q49, respectively), it is understood that stress comes from the need for agility and precision in making

decision related to resource availability, which assumes the difference between the people's life and death.

A study conducted in the ICU of a Brazilian university hospital found a 59.4% prevalence of occupational stress among nursing professionals. These nurses mentioned as causes of stress the severity of the patients' illnesses and the instability of the clinical environment due to the requirement for immediate response and actions for cardiac arrest, which caused stress and psychophysics agitation.[24]

Another stressor highlighted by ICU nurses investigated was the guidance of the family of critically ill patients (Q30), as noted by one participant. Thus, guidance of the patient's family is not an easy task; regardless of level of education or social status, the family experiences a unique moment with an array of emotional responses that can be an obstacle to understanding the situation and to interactions with the ICU staff. We must also mention that nurses may face difficulty in providing information about interventions and responding to the family members' questions.[25] Such situations, judged by families as very important, may result from lack of infrastructure for ICU nurses to provide care for and education of family members of critically ill patient, lack of work organization, and lack of space.

Limitations of this study include the scope and descriptive nature of the analysis. However, the findings may motivate other researchers to further investigate stress of ICU nurses according to the domains of BSS.

Conclusion

In conclusion, critical care nurses from a municipality in Western Paraná, Brazil, had medium levels of stress, mainly because of workload of care provided to patients. The findings are important and deserve attention to guide future actions to reduce those interventions, with the scope of preserving the health of critical care nurses and, consequently, the quality of care they provide. In summary, the data from this study suggest the urgent need for future research with different designs in order to assess the association between severity of illness and nursing workload in the ICU with regard to the health and functional capacity of critical care nurses.

References

1. Griep RH, Rotenberg L, Landsbergis P, Vasconcellos-Silva PR. Uso combinado de modelos de estresse no trabalho e a saúde auto-referida na enfermagem. Rev Saúde Pública. 2011; 45(1):145-52.
2. Hanzelmann RS, Passos JP. Imagens e representações da enfermagem acerca do stress e sua influência na atividade laboral. Rev Esc Enferm USP. 2010; 44(3):694-701.
3. Verdon M, Merlani P, Perneger T, Ricou B. Burnout in a surgical ICU team. Intensive Care Med. 2008; 34(1):152-6.
4. Preto VA, Pedrao LJ. O estresse entre enfermeiros que atuam em Unidade de Terapia Intensiva. Rev Esc Enferm USP. 2009; 43(4):841-8.
5. Jannati Y, Mohammadi R, Seyedfatemi N. Iranian clinical nurses' coping strategies for job stress. J Occup Health. 2011; 53(2):123-9.
6. Hsu H-Y, Chen S-H, Yu H-Y, Lou J-H. Job stress, achievement motivation and occupational burnout among male nurses. J Adv Nurs. 2010; 66(7):1592-601.
7. Wu H, Chi TS, Chen L, Wang L, Jin YP. Occupational stress among hospital nurses: cross-sectional survey. J Adv Nurs. 2010 ;66(3):627-34.
8. Rocha MCP, Martino MMF. O estresse e qualidade de sono do enfermeiro nos diferentes turnos hospitalares. Rev Esc Enferm USP. 2010;44(2):280-6.
9. Xie Z, Wang A, Chen B. Nurse burnout and its association with occupational stress in a cross-sectional study in Shanghai. J Adv Nurs. 2011; 67(7):1537-46.
10. Aiken LD, Sloane DM, Clarke S, Poghosyan L, Cho E, You L, *et al*. Importance of work environments on hospital outcomes in nine countries. Int J Qual Health Care. 2011; 23(4):357-64.

11. Li J, Lambert VA. Workplace stressors, coping, demographics and job satisfaction in Chinese intensive care nurses. Nurs Crit Care. 2008; 13(1):12-24.

12. Burgess L, Irvine F, Wallymahmed A. Personality, stress and coping in intensive care nurses: a descriptive exploratory study. Nurs Crit Care. 2010; 15(3):129-40.

13. Inoue KC, Matsuda LM. Dimensionamento de pessoal de enfermagem em unidade de terapia intensiva para adultos. Acta Paul Enferm. 2010; 23(3):379-84.

14. Bianchi ERF. Escala Bianchi de Stress. Rev Esc Enferm USP. 2009; 43(spe):1055-62.

15. Guerrer FJL, Bianchi ERF. Caracterização do estresse nos enfermeiros de unidades de terapia intensiva. Rev Esc Enferm USP. 2008; 42(2):355-62.

16. Cavalheiro AM, Moura Junior DF, Lopes AC. Stress in nurses working in intensive care units. Rev Latino-Am Enfermagem. 2008; 16(1):29-35.

17. Purcell SR, Kutash M, Cobb S. The relationship between nurse's stress and nurse staffing factors in a hospital setting. J Nurs Manag. 2011; 19(6):714-20.

18. Shorter M, Stayt LC. Critical care nurses' experiences of grief in an adult intensive care unit. J Adv Nurs. 2010; 66(1):159-67.

19. Silva IAS, Cruz EA. Trabalho da enfermeira intensivista: um estudo da estrutura das representações sociais. Rev Esc Enferm USP. 2008; 42(3):554-62.

20. Salomé GME, Vitória HC, Silva GTR. The nursing professional in an Intensive Therapy Unit. Acta Paul Enferm. 2008;21(2): 294-9.

21. Resolução ANVISA n. 7, de 24 de fevereiro de 2010 (BR). Dispõe sobre os requisitos mínimos para funcionamento de Unidades de Terapia Intensiva e dá outras providências. Diário Oficial da União [internet]. 2012 Feb 24. [cited 2012 Nov 11]. Available from: http://bvsms.saude.gov.br/bvs/saudelegis/anvisa/2010/res0007_24_02_2010.html

22. Rodrigues AB, Chaves EC. Fatores estressantes e estratégias de *coping* dos enfermeiros atuantes em oncologia. Rev Latino-Am Enfermagem. 2008; 16(1):24-8.

23. Guido LA, Umann J, Stekel LMC, Linch GFC, Silva RM, Lopes LFD. Estresse, *coping* e estado de saúde de enfermeiros de clínica médica em um hospital universitário. Cienc Cuid Saúde. 2009; 8(4):615-21.

24. Miranda EJP, Stancato K. Riscos à saúde de equipe de enfermagem em unidade de terapia intensiva: proposta de abordagem integral da saúde. Rev Bras Ter Intensiva. 2008; 20(1):68-76.

25. Hinkle JL, Fitzpatrick E. Needs of American relatives of intensive care patients: Perceptions of relatives, physicians and Nurses. Intensive Crit Care Nurs. 2011; 27(4):218-25.