CLÍNICA

NURSES' STRESS IN ICU IN BRAZILIAN REGIONS
ESTRESSE DOS ENFERMEIROS ATUANTES EM UTI NAS REGIÕES DO BRASIL

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ABSTRACT

Introduction: This research is based on a survey regarding he level of stress and the stressors in ICU nurses in the regions of Brazil. The study received approval from the Local Research Ethics Committee.

Methodology: The data were collected from May to December 2005. The Bianchi Stress Scale, constituted by a socio-demographic categorization and 51 items about activities performed by nurses, was used.

Sample: The sample was comprised of 263 ICU nurses working in high - complexity hospitals of Brazilian state capitals. The sample was predominantly female (91.6%) and young (80.2% < 40 years old). Of the total sample, 87.8% were assistential nurses and 74.5% held a postgraduate degree.

Results: Considering the stressors score by region, the results showed that Southeast (SE) > Central-West (CW) > North (N) > Northeast (NE) > South (S). Nurses in the Southeast region had higher levels of stress when compared with those in the Northeast in domain C, and this result is statistically significant.

Conclusion: The study evidentiates the need to better prepare nurses to overcome difficulties by providing them with accessible tools in order to assess stressors based on the available coping mechanisms, thus lowering the occurrence of individual stress.

RESUMO

Introdução: O estudo propõe um levantamento do nível de estresse e dos estressores presentes nos enfermeiros que atuam nas UTIs das regiões do Brasil. O estudo foi submetido e aprovado pela Comissão de Ética em Pesquisa local.

Metodologia: Os dados foram coletados no período de maio a dezembro de 2005, utilizando-se a Escala Bianchi de Stress, constituída por caracterização sociodemográfica e 51 itens que versam sobre as atividades desempenhadas pelos enfermeiros.

Resultados: A população foi de 263 enfermeiros atuantes nas UTIs de hospitais de alta complexidade das capitais dos estados brasileiros. A amostra teve predomínio feminino (91,6%), jovens (80,2% < 40 anos), sendo 87,8% assistenciais e 74,5% com pós-graduação. Considerando-se o escore de estressores por região, obteve-se que Sudeste>Centro-Oeste>Norte>Nordeste>Sul. Os enfermeiros da Região Sudeste apresentaram níveis de estresse mais elevados comparados aos da Nordeste no domínio C, sendo estatisticamente significante.

Conclusão: No estudo fica evidente a necessidade de se instrumentalizar cada vez mais o enfermeiro para que a avaliação do estressor seja feita com base nos mecanismos de enfrentamento disponíveis, possibilitando a menor ocorrência de estresse para o indivíduo.

RESUMEN

Introducción: El estudio propone un informe del nivel de estrés y de los estresores presentes en los enfermeros que actúan en las UCIs de las regiones de Brasil. El estudio fue sometido y aprobado por la Comissão de Ética em Pesquisa local.

Metodología: Los datos fueron colectados en el período de mayo a diciembre de 2005, utilizándose la Escala Bianchi de Stress, constituida por caracterización sociodemográfica y 51 items que versan sobre las actividades desempeñadas por los enfermeros.

Resultados: La población fue de 263 enfermeros actuantes en las UCIs de hospitales de alta complejidad de las capitales de los estados brasileños. La muestra tuvo predominio femenino (91,6%), jóvenes (80,2% < 40 anos), siendo 87,8% asistenciales y 74,5% con post-graduación. Considerándose la puntuación de estresores por región, se obtuvo que Sudeste>Centro-Oeste>Norte>Nordeste>Sur. Los enfermeros de la Región Sudeste presentaron niveles de estrés más elevados comparados a los del Nordeste en el dominio C, siendo estadísticamente significante.

Conclusión: En el estudio resulta evidente la necesidad de instrumentalizar cada vez más al enfermero para que la evaluación del estresor sea hecha basándose en los mecanismos de enfrentamiento disponibles, posibilitando la menor ocurrencia de estrés para el individuo.

INTRODUCTION

Concerns about suffering and satisfaction in the work of professional nurses have raised questions regarding how these professionals are able to withstand such an exhausting job, particularly due to their frequent exposure to suffering, pain, and death.[1]

Several authors describe nursing as a stressful profession due to the responsibility for the life of others and the closeness to patients for whom suffering is practically inevitable. This requires that nurses have a great amount of dedication in the performance of their duties, and this demand may increase the probability that they will suffer from physical and psychological strain. [1]

On the one hand, nursing jobs, being a part of healthcare, present nurses with several challenges that may lead to stress. On the other hand, the job is also a source of pleasure and satisfaction, feelings that boost human capacity to promote health and life. [2]

In critical environments, such as Intensive Care Units, stress poses a risk to the nurses' quality of life. [2]

The ICU is where patients who need direct and intensive care are admitted. These patients are seriously ill and are at high risk of death. For this reason, the ICU is considered a closed unit with very little communication with other hospital sectors. [3]

The assistance given to ICU patients is very controversial. If, on the one hand, quick interventions are needed, on the other, there is no doubt that ICUs are natural sources of feelings and emotions that are often expressed in an intense and prolonged way. [3]

However, it is not just the condition of patients that leads to stress in ICU nurses. The day-to-day work with colleagues, problems related to human and material resources, the high technology found in this sector, and the environment itself – the physical distribution and refrigeration/cooling system – may all lead to occupational stress in these professionals. [4]

ICUs have been the object of several investigations about the type of work and stress of nurses who work there. It is known that Brazil is a vast country with great cultural diversity within and among its regions. Upon this observation, this study, based on the master's degree dissertation [4] of the same author, aims at (1) characterizing the ICU nursing population in Brazil according to gender, age, position, education (degree), and years of work experience; and (2) show the prevailing stressors in nurses in each region and associate them to the level of stress reported.

METHODOLOGY

The sample is constituted of 263 ICU nurses working in the various high-complexity hospitals of Brazilian state capitals. This was the only criterion for inclusion in the research. Hospitals in Santa Catarina, Roraima and Rondonia declined to participate in the study.

The project was submitted to and approved by the Ethics Committee of the University of Sao Paulo Nursing School. Each nurse of the participating institutions received an envelope that contained the study questionnaire with the invitation letter and the term of responsibility, offering details and reiterating the confidentiality of the information obtained, the anonymity of the respondents and their free and spontaneous participation in the research. The period of data collection was from May to December 2005.

The data were collected using the Bianchi Stress Scale, validated by Bianchi [5] in 1999. This assessment tool is constituted by socio-demographic data and 51 items about activities performed by nurses. With the intent of comparing and assessing data, stress scores were determined in 6 domains: (A) interpersonal relationship; (B) unit functioning; (C) personnel administration; (D) nursing support; (E) unit coordination; (F) working conditions.

Each item was marked according to the following classification: 0 for non-performed activities; 1 for "little stressful" activities; 4 for "medium stressful", and 7 for "highly stressful".

The level of stress was calculated for each nurse, and the true mean was obtained, that is, the summation of the items divided by the marked items. The number of zeros marked was subtracted so that the mean could represent the level of stress for the activities performed by the nurses, without interference from the non-performed activities.

The true mean was also calculated for each domain. The summation of the items in each domain was obtained and divided by the number of respondents who marked the items valued from 1 to 7. The true mean for each item was also individually calculated.

The levels obtained were classified as low (up to 3.0), medium (from 3.1 to 4.0), alert (from 4.1 to 5.9) and high (above 6.0).

The statistical analysis was descriptive and inferential. Cronbach's Alpha Coefficient was used to assess data reliability and the non-parametric Mann-Whitney and Kruskall-Wallis tests were used to test the difference in the classification of independent groups. Cronbach's Alpha for the total scale in this study was 0.8366 and was considered satisfactory.

RESULTS AND DISCUSSION

Females were predominant in the study – 241 (91.6%) of the total sample, as in agreement with the general profile of nurses in Brazil. Basic counts in 2004 reported that approximately 92% of the total number of nurses in Brazil are female, which corroborates with the description of this profile. [6]

The sample was considered young (80% were younger than 40 years old). This is the profile of nurses expected to work in this sector because, even during their undergraduate studies, they are encouraged to assist critical patients, those that require a longer period of care. In their work *Hay et. al.* also found that 68.8% of the participating subjects were younger than 40 years old. [7]

The data showed that assistential nurses – more or less equivalent to licensed practical nurses – were predominant 231 (87.8%), since in the ICU the nurse is the one responsible for direct assistance to the patient.

The majority of nurses in the sample, 74.5%, have at least one postgraduate degree. This is becoming frequent among young nurses, who enter the job market with specializations, especially to work in high-complexity units such as ICUs.

This high percentage of nurses with postgraduate degrees may explain why there is such a small number of nurses who have recently graduated (20 - 7.6% in less than a year). Nurses without a specialization are not usually accepted in ICUs since this is a critical care sector. Obviously, higher qualifications give these professionals more credentials and experience, making them more suitable to work in highly demanding environments.

The results for individual level of stress were: 105 (39.9%) with low stress; 95 (36.5%), with medium stress; 62 (23.6%) in alert for high stress, and none with high stress. The majority of nurses (60.1%) fell in between medium to alert.

Most nurses in this sample work in the Northeast (102 – 38.8%) and Southeast regions 95 (36.1%).

To begin the study of Brazilian regions, an analysis of Brazilian ICUs was carried out in relation to their main characteristics, based on the Second Brazilian Census of ICUs, conducted by the Brazilian Association of Intensive Care Medicine (AMIB). [8]

The geographical distribution of ICUs follows, in a certain way, the population distribution and

the economic activity of states and regions. Nearly half (48%) of all ICUs are located in the Southeast region. In relation to the first census, we notice a process of decentralization of ICUs, with a relative increase of 8% in the number of ICUs located in the North, Central-West and Northeast regions, and a corresponding relative decrease in the number of ICUs in the Southeast region. [8]

This decentralization of ICUs made their distribution in the Brazilian regions more similar to the population distribution, according to the Brazilian Institute of Geography and Statistics (IBGE) 2000 Census. There is also a relationship between the distribution of ICUs and Gross Domestic Product (GDP) by region. [9]

ICUs are predominantly found in private hospitals and are not directly linked to University hospitals.

They are mostly found in medium (51 to 150 beds) and large hospitals (151 to 300 beds). Only 7 % of ICUs are located in small hospitals (up to 50 beds). 17% are found in extra large hospitals (more than 300 beds). [9]

The data coincides with the number of high-complexity hospitals, which were the object of study of the present work. According to the Ministry of Health, the Brazilian hospital network in 2003 was constituted by 5,864 hospitals. 468 (8%) were located in the Northern region; 2,026 (34.5%) in the Northeast; 1,669 (28.5%) in the Southeast; 651 (17.9%) in the Southern region, and 651 (11.1%) in the Central-West. [10]

There are 11,889 ICU beds in Brazil. 367 (3.1%) are found in the Northern region; 1,923 (16.2%) in the Northeast; 6,248 (52.6%) in the Southeast; 2,396 (20.1%) in the Southern region, and 955 (8%) in the Central-West. [10]

An analysis of the Brazilian regions reveals a difference in the distribution of ICU beds in relation to the number of high- complexity hospitals. The Southeast, in which fewer hospitals are located when compared with the Northeast, holds a higher number of ICU beds.

According to the Federal Council of Nursing (COFEN), in December 2005, there were 122,239 registered nurses in Brazil. Of those, 5.5% were in the Northern region; 21.2% in the Northeast; 49.5% in the Southeast; 16.4% in the Southern region, and 7.3% in the Central-West. [11]

Of the total number of registered nurses, including but not limited to those that work in ICUs, more are located in the Northeast and Southeast regions, which is approximately the same distribution found in this study.

In relation to the number of inhabitants per km^2 , it was found that SE > S > NE > CW > N. Regarding the number of ICU beds, the following was observed SE > S> NE > CW > N. However, when evaluating the number of nurses, we found that SE > NE > S > CW > N. The number of nurses in the Southeast region is adequate, but the number of active nurses in the Southern region should be higher than the one in the Northern region. [10]

Comparing data from the Ministry of Health with the results obtained in this study, it was observed that the Northeast is the region with the highest number of hospitals, but it is the third in the number of ICU beds and, according to the study, the second in the number of nurses. In the Northeast the highest level of stress was attributed to domain A (relationship with other units and superiors). The level of stress was low in the other domains. It is relevant

to infer that, despite the variable number of nurses in ICUs in this region, it may be that the stress they are subjected to, or its lack thereof, motivated them to participate in the study.

The Southeast region is second in the number of high- complexity hospitals and first in the number of ICU beds. It is also first in the number of ICU nurses. It was observed that nurses in this region of the country showed high levels of stress in all domains. These high levels may be particularly associated with the high number of patients in this region, since it is the region with the greatest population, according to IBGE. [9]
 It is also known that due to population growth, increases in the average age of survival and the complexity of treatments, the ICU has been a place in high demand of nurses due to its growing number of patients; consequently, there is a great amount of activities to be performed. This could explain the high scores observed.

The Southeast region was the only one that showed a statistically significant relationship with high levels of stress in domain C (activities related to personnel administration). Regarding this result, the conditions for assistance in ICUs must be analyzed. According to Law n.º 7.498 of Professional Exercise, the professional who is apt to work in high-complexity units is the nurse technician. This worker is not always available in the market – a situation that may lead to difficulties, thus making it stressful for nurses to face the problems described in domain C.

The third region with the highest number of high-complexity hospitals is the Southern region. It is the second in the number of ICU beds and the third in the number of nurses, according to the research. The highest level of stress for nurses in this region was found in domain E (coordination of unit activities). This region may be having the same problems as the Southeast region, perhaps because it is the second most populous region. Therefore, the availability of nurses may be low or still, there may be many activities to be performed.

The fourth region in the number of high-complexity hospitals is the Central-West. It is also fourth is the number of ICU beds and nurses. For these nurses, domains D (nursing support given to the patient) and B (activities related to adequate unit functioning) were sources of higher levels of stress. Stress in domain D is particular to the Central-West region, as none of the other regions indicated the assistance given as a source of stress.

The fifth region in the number of high complexity hospitals is the Northern region. This region is also fifth in the number of ICU beds and the one with the lowest number of ICU nurses. For this region, the domains with the highest level of stress were B (activities related to adequate unit functioning), E (coordination of unit activities) and F (working conditions for the performance of nursing duties).

 Batista [12], considering the size and scope of each unit researched, indicated that those institutions have a low number of nurses, thus leading to their overburden.

The Central-West and Northern regions are the least advanced in Healthcare. Perhaps this is the difficulty found by nurses who work there, since the number of professionals corresponds to the number of ICU beds and the population.

In making a general analysis of the regions of Brazil in relation to the level of stress, the Southeast region was the one with the highest levels, with a mean of 3.82. In the multiple comparisons among regions, a statistically significant result was obtained for the Southeast region, in relation to the stress nurses in the Northern region are subjected to. This result may be explained by the high number of patients in this area and by the low number of

professionals available to assist them, as mentioned above.

Due to the fact that this is a pioneer study in its investigation of ICUs in Brazilian regions, there is a certain degree of difficulty because of lack of reference. However, it is possible to see that within the boundaries of a country there are strong differences in relation to stressors. What is considered stressful in a region may not even be thought of as a problem in another. Nonetheless, the activities related to personnel administration, represented in domain C, were the ones that stood out. The highest levels of stress for all the regions of Brazil were found in this domain. When stress in the domains was evaluated, the Southeast region was the one with the highest levels.

The activities considered by the participating nurses to be more stressful, in decreasing order, were: to perform activities in very limited time (5.21); to face patient's death (5.16); to assist critical patients' families (4.92); to instruct critical patients' families (4.88); to control the quality of care (4.6); unit noise level (4.6); to manage the nursing team (4.58); to handle unit emergencies (4.55); to meet the needs of critical care patients' relatives (4.54); to perform bureaucratic activities (4.48); to coordinate activities (4.33); to plan the workers' monthly schedule (4.23); to supervise the nursing team's activities (4.19), and to write the unit's monthly report (4.12).

Studies about ICU stressors can be dated back to the 80s, and some of the same stressors are still present in the lives of the nurses participating in this study. Activities in domain C (activities related to personnel administration) are referred to as unit administration in the literature review. In domain F (working conditions for the performance of nursing activities) we can find: unpredictability of the environment, physical risks (X-rays, sharp, piercing materials, patients with additional precautions, frequent sounds and noise), and overwork. In domain E (coordination of unit activities): organizational and bureaucratic problems; domain D (nursing support to the patient): direct and constant contact with seriously ill patients and patients' death; domain B (activities related to adequate unit functioning): delay in laboratory and pharmaceutical results, and domain A (relationship with other units and superiors): relationship with other professionals. [3, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22]

CONCLUSIONS

In this study the demographic profile of the Brazilian nursing population was predominantly female (91.6%), young (80.2% were younger than 40 years old), assistential (87.8%), with a postgraduate degree (74.5%), and working in the Northeast region (38.8%).

The prevailing stressors for nurses in each one of the Brazilian regions were: Northeast region: activities in domain A – **replace all letter by activities**; Southeast region: activities in domain C; Southern region: activities in domain E; Central-West region: activities in domain D, and Northern region: activities in domains B, E, and F.

A statistically significant relationship was observed in domain C, where nurses in the Southeast region showed higher levels of stress when compared with those in the Northeast.

REFERENCES

1   Shimizu HE, Ciampone MHT. Sofrimento e prazer no trabalho vivenciado pelas enfermeiras que trabalham em unidades de terapia intensiva em um hospital escola. *Rev Esc Enferm USP*.1999;33(1):95-106.

2   Takahashi EIU. A emoção na prática de enfermagem: relatos de enfermeiros de UTI e UI [tese]. São Paulo (SP): Escola de Enfermagem, Universidade de São Paulo; 1991.

3   Gentry WD, Parkes KR. Psychologic stress in intensive care unit and non-intensive care unit nursing: a review of the past decade. *Heart Lung*. 1982;11(1):43-7.

4   Guerrer FJL. Estresse dos enfermeiros que atuam em unidades de terapia intensiva no Brasil [dissertação]. São Paulo (SP): Escola de Enfermagem, Universidade de São Paulo; 2007.

5   Bianchi ERF. Estresse entre Enfermeiros hospitalares [tese livre docência]. São Paulo (SP): Escola de Enfermagem, Universidade de São Paulo; 1999.

6   Silva A, Bianchi ERF. Estresse ocupacional da enfermeira de centro de material. *Rev Esc Enferm USP*. 1992;26(1):65-74.

7   Hays MA, All AC, Mannahan C, Cuaderes E, Wallace D. Reported stressors and ways of coping utilized by intensive care unit nurses. *Dimens Crit Care Nurs.* 2006; 25(4):185-93.

8   Associação de Medicina Intensiva Brasileira (AMIB). 2º Anuário Brasileiro de UTIs: 2002/2003. São Paulo; 2004.

9   Instituto Brasileiro de Geografia e Estatística (IBGE) [online]. Brasília; 2006. Disponível em: <http://www.ibge.gov.br> (2 set. 2006).

10   Brasil. Ministério da Saúde. Indicadores e dados básicos - Brasil - 2004 [online]. Brasília; 2004. Disponível em: <http://tabnet.datasus.gov.br/cgi/idb2004/matriz.htm> (2 set. 2006).

11   Conselho Federal de Enfermagem (COFEN) [online]. Rio de Janeiro; 2006 Disponível em: <http://www.portalcofen.com.br> (2 set. 2006).

12   Batista AAV, Vieira MJ, Cardoso NCS, Carvalho GRP. Fatores de motivação e insatisfação no trabalho do enfermeiro. *Rev Esc Enferm USP*. 2005;39(1):85-91.

13   Gomes GC, Lunardi WDF, Erdmann AL. O sofrimento psíquico em trabalhadores de UTI interferindo no seu modo de viver a enfermagem. *Rev Enferm UERJ*. 2006;14(1):93-9.

14   Corrêa A K. Sendo enfermeira no centro de terapia intensiva. *Rev Bras Enferm*. 1995;48(3):233-4.

15   Tesck ECB. Convivência contínua com estresse: vida e trabalho de enfermeiros nas UTIs [dissertação]. Rio de Janeiro (RJ): Escola de Enfermagem Anna Nery, Universidade Federal do Rio de Janeiro; 1982.

16   Pereira MER, Bueno SMV. Lazer: um caminho para aliviar as tensões no ambiente de trabalho em UTI: uma concepção da equipe de enfermagem. *Rev Lat Am Enferm.* 1997;5(4):75-83.

17   Fornés J, González R, Almedros ML, Crespí M, Gallego G. Respuesta del personal del enfermería al estrés profissional. *Enferm Intensiva*.1992;3(1):8-14.

18   Bailey JT, Steffan SM, Grout JW. The stress audit: identifying the stressors of ICU nursing. *J Nurs Educ*. 1980;19(6):15-25.

19   Spoth R, Konewko P. Intensive care staff stressors and life events changes across multiple settings and work units. *Heart Lung*. 1987;16(3):278-83.

20   Anderson M, Chiriboga DA, Bailey JT. Changes in management stressors on ICU nurses. *Dimens Crit Care Nurs*.1988;7(2):111-17.

21   Iskra-Golec I, Folkard S, Marek T, Noworol C. Health, well-being and burnout of ICU nurses on 12- and 8-h shifts. *Work Stress*. 1996;10(3):251-6.

Da Silva Britto E, Pimenta Carvalho AM. Stress, Coping (enfrentamento) e saúde geral dos enfermeiros que atuam em Unidades de Terapia Intensiva e problemas renais. Enfermeria Global [serial on the internet].2004;4. Available from: http://www.revistas.um.es/eglobal/article/view/589/627