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ORIGINAL ARTICLE

DEMAND FOR PERSONAL CARE AND SIZING OF NURSING IN THE INTENSIVE CARE UNIT

DEMANDA DE CUIDADOS E DIMENSIONAMENTO DE PESSOAL DE ENFERMAGEM EM UNIDADE DE TERAPIA INTENSIVA

DEMANDA DE CUIDADO Y TAMAÑO DE PERSONAL DE ENFERMERÍA EN LA UNIDAD DE CUIDADOS INTENSIVOS

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ABSTRACT

Objective: to identify the demand for care and sizing of the nursing staff. ***Method:*** a descriptive and quantitative study, developed in an intensive care unit with 21 adult patients, from 1st November to 23rd December 2011. Data were collected through a systematic observation and medical chart review using the classification system of patients Perroca and analyzed by the software Statistical Package for the Social Sciences - 21.0 version. The research project was approved by the Ethics Committee under protocol nº 488/11. ***Results:*** there was a predominance of intensive care (75.9%), semi-intensive care (21.1%), and intermediate care (3%). Identified the need for six nurses and an over 10 nursing technicians according to Resolution 293/2004 COFEN. ***Conclusion:*** the identification of the demand for care of patients is essential for targeting of assistance according to the needs of the patient and avoids the overhead work. ***Descriptors:*** Critical Care Unit; Care; Sizing.

RESUMO

Objetivo: identificar a demanda de cuidados e o dimensionamento do pessoal de enfermagem. ***Método***: estudo descritivo, quantitativo, desenvolvido em uma Unidade de Terapia Intensiva adulto com 21 pacientes, de 1 de novembro a 23 de dezembro de 2011. Os dados foram coletados por meio de observação sistemática e consultas aos prontuários utilizando-se o sistema de classificação de pacientes de Perroca e analisados pelo software Statistical Package for the Social Sciences - versão 21.0. O projeto de pesquisa foi aprovado pelo Comitê de Ética sob o protocolo nº 488/11. ***Resultados***: houve predominância de cuidados intensivos (75,9%), cuidados semi-intensivos (21,1%), e cuidados intermediários (3%). Identificou-se a necessidade de seis enfermeiros e um excesso de 10 técnicos de enfermagem conforme a Resolução 293/2004 do COFEN. ***Conclusão***: a identificação da demanda de cuidados dos pacientes é indispensável para o direcionamento da assistência de acordo com as necessidades do paciente e evita a sobrecarga de trabalho. ***Descritores***: Unidade de Cuidados Críticos; Cuidado; Dimensionamento.

RESUMEN

Objetivo: identificar la demanda de atención y dimensionamiento del personal de enfermería. ***Método:*** estudio descriptivo, cuantitativo, se convirtió en una unidad de cuidados intensivos con 21 pacientes adultos, a partir de noviembre 1 hasta diciembre 23, 2011. Los datos fueron recolectados a través de la observación sistemática y la revisión de la historia médica con el sistema de clasificación de pacientes Perroca y se analizaron mediante el paquete estadístico para las Ciencias Sociales - Versión 21.0. El proyecto de investigación fue aprobado por el Comité de Ética bajo el protocolo n ° 488/11. ***Resultados:*** se observó un predominio de cuidados intensivos (75,9%), cuidados semi-intensivos (21,1%) y de cuidados intermedios (3%). Identificó la necesidad de seis enfermeras y más de 10 técnicos de enfermería de acuerdo a la Resolución 293/2004 COFEN. ***Conclusión:*** la identificación de la demanda de atención de los pacientes es esencial para la orientación de la asistencia de acuerdo con las necesidades del paciente y evita la sobrecarga de trabajo. ***Descriptores:*** Unidad de Cuidados Intensivos; Cuidados; Tamaño.

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INTRODUCTION

The Intensive Care Unit (ICU) environments are complex care, for the care of critically ill patients who require specific physical space, specialized human resources and advanced technological arsenal, making them expensive units.[1] In this scenario, health professionals, especially doctors and nurses, are possessed of great depth of knowledge and skills to perform procedures. Therefore, these professionals require much preparation, as often confronted with critical situations whose decisions define the boundary between life or death.[2]

Regarding the nursing admittedly UTI implies high workload due to the allocation of patients subject to changing hemodynamic and imminent risk of death, which require complex care, uninterrupted attention and immediate decision-making. Moreover, with the evolution of technology imposes coated papers hospital complex and cognitive components that may cause mental burdens on workers.[3]

It is worth noting that at the national level, insufficient numerical and qualitative human resource for the nursing service has been of concern to nurses who hold management positions in nursing, since the inadequacy of these resources to meet the needs of nursing care to patients, seriously compromises the quality of care and involves extra work, having that sense, legal issues and health worker.[4]

The Federal Board of Nursing (COFEN), through Resolution 293/2004 established guidelines for the design of nursing personnel in health institutions, establishing the amount of nursing hours according to the level of complexity of care, therefore, the nurse manager should adopt a classification system to categorize patients demand care provided.[5]

The adoption of a Patient Classification System (PCS), in hospitals, especially in ICU, enables the nurse manager, greater knowledge of their clientele also favors the development of skills and competencies of professionals to provide assistance and management in a more secure, innovative, autonomous and participatory. There are several SCP, which can be used in any environment of a hospital environment. An instrument developed and validated by Perroca (1996) has achieved excellent results demonstrated in some studies.[6,7]

The Law of Professional Nursing 7.498/86 in its article 11, states that it is exclusively the nurse planning, organization, coordination, implementation and evaluation of nursing services.[8] Thus it is essential that the nurse manager makes these processes applicable to their practice, to ensure the quality of nursing care.

The strategy of scaling nursing staff represents the application of a systematic process to determine the number and class required to provide professional nursing care to ensure quality and safety to a group of patients, and its operation requires the use of a method that allows systemize the interrelationships and measurement of variables that affect the workload of the nursing staff.[9]

Because the ICU, a complex environment, and that may require physical and psychological in workers, it is essential to proper sizing of staff, demand proper care, seeking to avoid work overload and wear professional nursing. From there, you can reflect on the proper sizing of staff, seeking the rationality of human and financial resources employed in this unit, providing thereby improving the quality of care and appropriateness of nursing workload with what is recommended in the resolution COFEN 293/2004.[5]

Thus, this study aims to:

- To identify the demand for nursing care in a adult Intensive Care Unit through the Classification System patients Perroca
- To investigate whether the design of nursing staff is adequate for the demands of patient care.

METHOD

Prospective study of descriptive quantitative approach carried out in the Intensive Care Unit (ICU-Adult) of the Intensive Care Unit of a Teaching Hospital. The sample consisted of 21 patients admitted to this hospital during the period from 01 November 2011 to 23 December 2011. Inclusion criteria were patients admitted to the adult ICU length of stay with a minimum of 24 hours of hospitalization, and agreed to participate by signing or legal guardian of the Term of Consent. The study excluded those patients with length of stay less than 24 hours and not agreed to participate by signing the informed consent or legal guardian.

For data collection instrument was used for patient classification developed and validated by Perroca,[9] guided by the Theory of Basic Human Needs Wanda Horta, who considers the needs of individual patients.[10] This instrument currently contains nine critical indicators: Planning and coordination of the care process,

research and monitoring, body care and eliminations, careful skin and mucous membranes, nutrition and hydration, mobility and activity, therapy, emotional support and health education.

In order to classify each of these indicators received a gradation from one to four, pointing in ascending the complexity of care required. The patient was classified in all indicators within one of four levels, the option that best describes your situation. The final summation categorized care: minimum, intermediate, semi-intensive and intensive.[9] The definitions of these levels of care listed by Perroca is in line with Resolution 293/2004 of COFEN.[5]

For data collection techniques were used systematic observation, and medical chart review of patients seeking to prove care needs according to the classification system of patients Perroca.[9] Patients were evaluated once daily until the clinical outcome (high or death), except on the weekends shifts. Data collection was performed by two nurses who are part of the clinical study unit for a period of 39 days in total.

For the procedure of data analysis followed the following steps: data were entered into a database system using the Statistical Package for Social Sciences (SPSS) version 21.0. To calculate the arithmetic mean of patients / day consultations to the database differing degrees of care established by means of the scores on the scale Perroca at minimum, intermediate, semi-intensive and intensive, based on the quantification of the number of care / day to patients. Thereafter, the absolute number was divided by 39 which is the number of days the study was conducted, thereby obtaining the arithmetic patient / day demands care. We then calculated the hours of nursing work for 24 hours, according to the care needs of the patient, based on the Resolution 293/2004, 5 by the following formula:

Nursing hours = [(PCMx3,8)+(PCIx5,6)+(PCSIx9,4)+(PCItx17,9)]. Where: PCM = minimal care patients, PCI patients = intermediate care, care patients PCSI = semi-intensive; PCIT = intensive care patients. Soon after, the calculation was performed for quantification of personnel for the industry through constant Marino (Km), through the formula: Staffing Km = x Hours nursing. Being that to Km = DS / IST JST x, where: DS = Day of the week = 7 days; = IST additional nursing staff to cover unforeseen absences to work, absenteeism or benefit, which was considered 15%; JST = working week, which was considered 30 hours.

The number of employees was calculated using the formula = Km x THE QP, where QP = amount of personal KM = constant Marino and THE = total nursing hours. Thus, the staff needed to work in the ICU was obtained and confronted with the recommended resolution COFEN No 293/2004. Finally, the data were discussed in the light of relevant literature and the researcher's interpretive vision.

This research complied with Resolution 196/96 of the National Health Council, which regulates research involving human subjects.[11] Obtained assent to its realization by the Ethics Committee in Research of the University Hospital Lauro Wanderley under protocol number 488/11.

RESULTS AND DISCUSSION

How to characterize the subjects participating in the study addressed the following aspects: gender, age group, type of admission and causes of ICU stay, and provenance. The study was to sample 21 patients who were hospitalized during data collection. Of these, eleven (52.3%) were female and ten were male (47.7%). Of the total sample, 14 (62%) were adults, seven (33.4%) were elderly, and (4.76) teenager. With regard to age predominated among adults 18-59 years (62%), but there is a significant percentage of elderly (33.4%).

Regarding the data on the type and causes of hospitalization in the ICU, we found that most admissions were concerned Medicine (95.84%), and among these, stood out as major causes Insufficiency Acute Respiratory with 20.83%, followed by arrhythmias and Septic Shock with 12.5% each, the meningitis (Bacterial and Fungal) with 8.33%. Acute myocardial infarction (AMI), decreased level of consciousness, Chronic Renal Failure, Cardiogenic Shock, Hypertensive Crisis, Deep Vein Thrombosis, Guillain Barré syndrome, Medullary aplasia and Cirrhosis occurred to a lesser extent in 4.16% each.

With respect to the merits, it can be seen that 38% of hospitalized patients in the ICU were coming from the medical clinic, 14.28% Clinic infectious diseases, 9.52% came from the own home and 9.52% of Emergency Unit Department of Santa Rita (Metropolitan Region), other Surgical Center, Hospital Edson Ramalho, Hospital of Cajazeiras, Private Office, Hospital of Patos and Pediatrics occurred by 4.76% each.

♦ Identification of Demand for nursing care dispensed within the Intensive Care Unit

The demand for nursing care is one of the priorities to be identified by the nurse manager, since the workload entails a number of negative aspects for both the caregiver as for the cared for.

Table 1. Distribution of ratings of patients in care types: minimum, intermediate, semi-intensive and intensive as the number and percentage scores in the adult intensive care unit. João Pessoa, 2011.

Types of Care	n	%
Minimal (9 to 12 points)	—	—
Intermediates (15 to 18 points)	7	3%
Semi-intensives (19 to 24 points)	49	21,1%
Intensives (25 to 36 points)	177	75,9%
Total	233	100%

Source: Direct Search: Oliveira, D.S.T.de. Collecting data in the Intensive Care Unit (ICU). João Pessoa, 2011.

It can be seen in Table 1, that the environment of care, sometimes studied, there was a predominance of intensive care being provided by 177 times (75.9%), by 49 times (21.1%) was the need for semi-intensive care and seven times (3%) were employed intermediate care, no patient was classified as minimal care.

In a study conducted in an ICU, also a teaching hospital, we found a similar result, where the majority (72.09%) of patients requiring intensive care.[2] A patient intensive care is understood that it is serious, but is recoverable, with imminent risk of death, subject to hemodynamic instability and requires nursing care and constant medical and specialized. The percentage of patients in semi-intensive care was 21.1%, also similar to the study of Inoue and Matsuda[2] that had a percentage of 21.77%. In another research conducted in various clinics of a teaching hospital, including the ICU, there was a predominance of 100% of the 21 patients who formed the sample.[12]

In this study, intermediate care is provided at 3%. In research done by Inoue and Matsuda[2] application systems for classifying patients in ICU, demonstrated that no patient intermediate care. In this sense, it is noteworthy that although a percentage smaller, intermediate care are not characteristic of UTIs, because these are intended for the care of patients in the acute or critical.

In this sense, it emphasizes the importance of identifying the real needs of patients and indications for admission and ICU stay, since this care environment is designed specifically for critical patients and often occupying an ICU bed for intermediate care patients is unnecessary, moreover entails costs and decreases the number of beds available for patients who really need of intensive care. The table below shows the percentage distribution in relation to the type of care identified in daily assessments in adult ICU.

Table 2. Percentage distribution between care in relation to the number of daily evaluations. João Pessoa, adult ICU, 2011.

Care /Day	Minimum	Intermediate	Semi-intensive	Intensive	Number of beds
1	0%	0%	0%	0%	100%
2	0%	0%	0%	0%	100%
3	0%	0%	0%	20%	80%
4	0%	0%	0%	20%	80%
5	0%	0%	0%	40%	60%
6	0%	0%	0%	43%	57%
7	0%	0%	0%	57%	43%
8	0%	0%	0%	57%	43%
9	0%	0%	0%	62%	38%
10	0%	0%	0%	29%	71%
11	0%	0%	0%	29%	71%
12	0%	0%	0%	20%	80%
13	0%	0%	0%	17%	83%
14	0%	0%	0%	0%	100%
15	0%	0%	0%	29%	71%
16	0%	0%	0%	33%	67%
17	0%	0%	0%	33%	67%
18	0%	0%	0%	33%	67%
19	0%	0%	0%	33%	67%
20	0%	0%	0%	33%	67%
21	0%	0%	0%	33%	67%

22	0%	0%	29%	71%
23	0%	0%	17%	83%
24	0%	0%	17%	83%
25	0%	0%	17%	83%
26	0%	0%	29%	71%
27	0%	0%	17%	83%
28	0%	14%	14%	71%
29	0%	20%	0%	80%
30	0%	14%	0%	86%
31	0%	0%	17%	83%
32	0%	17%	0%	83%
33	0%	17%	0%	83%
34	0%	17%	0%	83%
35	0%	0%	0%	100%
36	0%	0%	0%	100%
37	0%	0%	0%	100%
38	0%	0%	0%	100%
39	0%	0%	0%	100%

Source: Direct Search: Oliveira, D.S.T.de. Collecting data in the Intensive Care Unit (ICU). João Pessoa, 2011.

From Table 2, it is possible to observe the percentage distribution between minimal care, intermediate, semi-intensive and intensive, especially because the intensive care who were present during the entire data collection, ie in 39 days. Note that on days 7, 8, 9 there was predominance of semi-intensive care at the expense of intensive care, and these days the ability of UTI was highest, ie, seven beds. Thus, there is again the need to properly size the staff with a view to the demand for care to be provided to patients.

In terms of the number of patients / day per level of care provided showed that the average number of patients in intensive care / day was 4.53. The average patient in semi-intensive care / day was 1.25. Finally the average Intermediate care patients / day was 0.179. Given these results, the next part was performed calculations regarding nursing hours and amount of staff needed from the average of patients categorized by demand for care (intensive, semi-intensive and intermediate).

Scaling of nursing staff in the ICU adult as recommended in Resolution 293/2004 COFEN.

For proper sizing of staff COFEN Resolution 293/2004, determines the amount of nursing hours required for each degree of care (minimum, intermediate, semi-intensive and intensive). For calculation purposes, providing that the resolution must be considered as nursing hours for bed within 24 hours.[5]

3.8 hours of nursing per customer assistance minimal or self care;

5.6 hours of nursing per customer, in intermediate care;

9.4 hours of nursing per customer assistance in semi-intensive;

17.9 hours of nursing per customer in intensive care.

These levels of care are achieved by the system of classifying patients in this study was used Perroca. Thus, in the previous section, we obtained the average patient / day, according to the type of care / caring thus:

PCM: minimal care patients: none

PCI: intermediate care patients: 0,179

PCSI: patients in semi-intensive care: 1,25

PCIT: intensive care patients: 4,53

Thus hours nursing = [(PCMx3,8)+(PCIx5,6)+(PCSIx9,4)+(PCItx17,9)]

Hour nursing =[0 + (0,179x 5,6) + (1,25 x 9,4) + (4,53x 17,9)]

Nursing hours = 0,98 + 11,3 + 78,76

The total hours of Nursing (THE) equals approximately 93,83 hours. Thus, the amount of personal can be obtained by: QP = KM x THE where, considering the STI 15% and a JST of 30 hours, we have KM = 0.2683 thus QP= 0,2883 x 93,83, then QP is equal to 25,1 or approximately 25 nurses.

The distribution of professionals by category should follow the group of patients with higher prevalence in this sense, considering the most prevalent group care, or intensive care according to Resolution 293/2004, the number of nurses should be 52% to 56% of team nursing members.[5] this case, considering that the percentage should be

52%, the number of professionals should be 13 nurses and 12 nursing technicians. Figure 2 illustrates the amount of existing professional activities in the ICU, and the amount that should be the second scaling according to the resolution COFEN 293/2004.

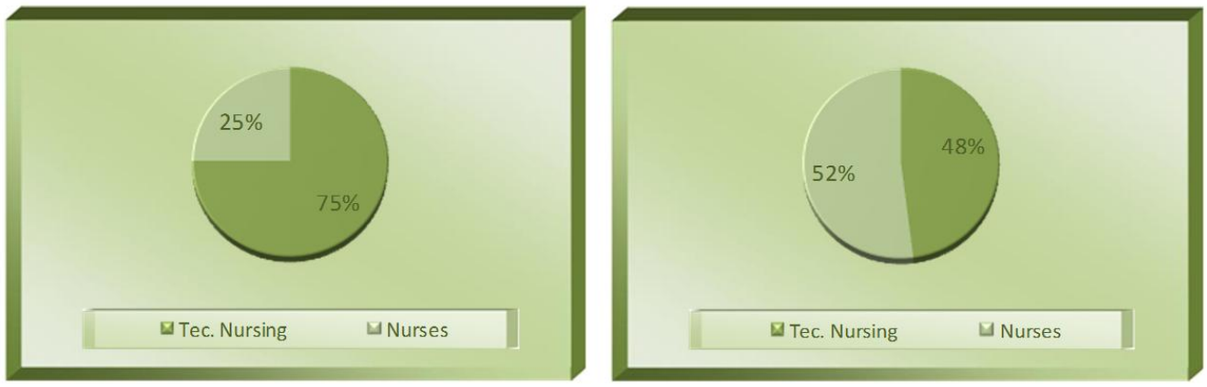

Figure 1. Comparative table of existing nursing staff in the Adult ICU and staff as sizing based staff COFEN Resolution 293/2004. Source: Direct Search: Oliveira, D.S.T.de. Collecting data in the Intensive Care Unit (ICU). João Pessoa, 2011

From the figure above, we can see that the box midlevel corresponds today to 21 professionals and 75% of the nursing staff, and the lower portion, seven (25%) were nurses. Based on the Classification System of Patients, and sizing calculation as Personnel Resolution COFEN 2004.5 UTI study should have a higher percentage of professional top-level, ie, 13 (52%) should be nurses, and 11 (48%) should be nursing technicians, since this environment of care predominated intensive care. It is observed that there is a small percentage of nurses in relation to total nursing staff. This finding has also been identified in other studies in the Intensive Care Unit, this fact generates workload to these professionals, or even dysfunction in the performance of professional nursing assistants (nursing staff), with potential damage to the quality of care the critically ill patient in the ICU.[2,14]

According to Law 7.498/94, it is the nurse privately to provide direct nursing care to patients with serious life-threatening, and the implementation of nursing care of greater technical complexity and requiring scientific knowledge base and ability to make immediate decisions.[8] Accordingly, based on the legal support of the profession, there is need to expand the framework for nursing professionals with hiring six more nurses to the ICU, since this unit has seven nurses today, that, to be complied with the enforcement of the provisions of law of the nursing profession.

It was identified that there are a number of practical nurses higher than that found in the calculation of the personnel dimension. ICU for 21 technicians (75%) and there should be 12 (48%) under Resolution 293/2004.5 But some points should be considered regarding the amount of nursing technicians therefore to elaborate scales for technical nursing in an ICU, as n0 7 RDC ANVISA, which establishes the minimum requirements for operation of Intensive Care Units, there must be a practical nurse for every two beds and one nurse for every eight beds.[14]

Therefore, as the scaling calculated according to Resolution 293/2004 COFEN, the amount of technicians was found in this study (11 professionals), it becomes infeasible to construct the monthly scale for these professionals, since there must be at least four technicians per shift, as recommended in the DRC n0 7 ANVISA, because the ICU studied for seven beds.

Thus, it should be emphasized that in this study, one must consider the question of the burden on these professionals, because the reduction in the quantity of technicians may impact health worker Added to this fact, another important aspect relates to the fact that the ICU is part of the structure of a teaching hospital. There is greater need for professionals to support academic activities, as the sector's training field for teaching, research and practice of health professionals and related fields at both the upper and on a technical level, it is necessary also to reflect on these issues .

Finally, another aspect that must be taken into account is the use of Technical Security Index (STI) empirical 15%. The institution and the unit concerned shall calculate their own STI care unit because each has its specificities and realities that can interfere with STIs among nursing workers, for example, varies according to several factors, such as the type of work, education level, gender and working conditions.[2]

Because of the lack of control or not characteristics of absences sector, the use of IST used in this study may have influenced the design staff.

CONCLUSION

From this study, we found that relative demand for nursing care in the adult intensive care unit, intensive care predominated, and there was also a reasonable proportion of patients hospitalized in the sector requiring semi-intensive care, and care not commonly identified in this care environment as care intermediates were identified in approximately 3%.

Thus, these data and information found herein are relevant when thinking about the proper sizing of the nursing staff, in order to reduce the workload of professionals, moreover, such information is necessary to reflect on the real indications of a patient to the intensive care unit, where there should be only intensive care.

In this study it was also possible to investigate the scaling of the nursing staff of the adult ICU, and identify that there is a deficit of six nurses in the context of nursing, there are 10 nursing technicians, more than is recommended by Resolution 293/2004 COFEN. In this sense, one should take into consideration the basic operating characteristics of the ICU, where the ANVISA, determines the minimum manpower for operation of these units. This calculation of staff, evidenced here, based on Resolution 293/2004 COFEN, may not be matching the reality found in the ICU study, which has seven beds, and there should be at least four technicians per shift, and the development of viable a scale with only 11 technicians in nursing.

With regard to the quantitative nursing professionals, it is necessary to carry out further studies and perhaps the development of new design methods of personnel, using the Patient Classification Systems more complete and specific to accurately quantify the nursing workload in the sector. Finally, it is imperative demand classification routine care of hospitalized patients in care environment, in order to promote a better quality of care, free of damage or failures related to stress and overwork. The proper sizing of personnel manager allows nurses to meet the people who are providing care, and allows direct assistance in accordance with the actual needs of the patient.

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