COMPARISON OF THE WORKLOAD OF NURSING IN ADULT INTENSIVE CARE UNITS

COMPARAÇÃO DA CARGA DE TRABALHO DE ENFERMAGEM EM UNIDADES DE TERAPIA INTENSIVA ADULTO

COMPARACIÓN DE LA CARGA DE TRABAJO DE ENFERMERÍA EN UNIDADES DE TERAPIA INTENSIVA DE ADULTOS

Patricia Oliveira Salgado1, Lais Samara de Melo2, Lívia Maria Emerick de Souza3, Paula Gabriela Ribeiro Andrade

ABSTRACT

Objective: to compare the workload of nursing in two adult intensive care units (ICU), according to TISS-28. Method: it was a quantitative, prospective and longitudinal study. The sample was composed by all patients admitted from 3rd May to 31st July, 2010, totaling 149 of them. Data collection was carried out by a form composed of identification data, TISS-28 interventions and destination of patients. Data collected were processed and used in simple frequencies and measures of central tendency. The research was authorized by the Committee of Ethics and Research of the institution, by protocol No 326022. Results: in the surgical ICU, 64% of patients were females, while in the medical ICU, 54% were males. Age varied from 16 to 90 years in the surgical ICU and from 16 to 93 years in the medical ICU. In the surgical ICU, 65% of patients stayed hospitalized from one to five days, while in the other ICU, most patients stayed hospitalized from 11 to 20 days. TISS-28 overall average score was 25.0 in both units. Conclusion: it was confirmed that both ICUs had the same nursing workload. It is considered that the systematic application of TISS-28 can help nursing managers with human resources management. Descriptors: nursing; index of severity of the disease; workload; intensive care units.

RESUMO

Objetivo: comparar a carga de trabalho de enfermagem de duas unidades de terapia intensiva adulto segundo o TISS-28. Método: estudo quantitativo, prospectivo e longitudinal. A amostra foi composta por todos os pacientes admitidos no período de 3 de maio a 31 de julho de 2010, totalizando 149 destes. A coleta de dados foi realizada por meio de formulário composto por dados de identificação, intervenções do TISS-28 e destino dos pacientes. Os dados coletados foram processados e utilizados em frequências simples e medidas de tendência central. A pesquisa foi autorizada pelo Comitê de Ética e Pesquisa da instituição, sob o protocolo N° 326022. Resultados: na UTI cirúrgica, 64% dos pacientes internados eram do sexo feminino, enquanto na UTI médica, 54% eram do sexo masculino. A faixa etária variou entre 16 e 90 anos na UTI cirúrgica e entre 16 e 93 anos na UTI médica. Na UTI cirúrgica, 65% dos pacientes permaneceram internados de um a cinco dias, enquanto na outra UTI, a maioria dos pacientes permaneceu internada entre 11 e 20 dias. A pontuação média geral do TISS-28 nas duas unidades foi de 25,0. Conclusão: verificou-se que as duas UTIs apresentaram a mesma carga de trabalho de enfermagem. Considera-se que a aplicação sistemática do TISS-28 pode auxiliar os gerentes de enfermagem no gerenciamento dos recursos humanos. Descritores: enfermagem; índice de gravidade da doença; carga de trabalho; unidades de terapia intensiva.

RESUMEN

Objetivo: comparar la carga de trabajo de enfermería de dos unidades de terapia intensiva adultos (UTI) de acuerdo con el TISS-28. Método: estudio cuantitativo, prospectivo y longitudinal. La muestra estaba compuesta por todos los pacientes internados del 3 de mayo al 31 de julio de 2010, totalizando 149 de ellos. La recopilación de datos se realizó por medio de un formulario compuesto por los datos de identificación, intervenciones del TISS-28 y el destino de los pacientes. Los datos recopilados fueron procesados y utilizados en frecuencias simples y medidas de tendencia central. La investigación fue autorizada por el Comité de Ética e Investigación de la institución, con el protocolo N° 325022. Resultados: en la UTI quirúrgica el 64% de los pacientes internados eran del sexo femenino, mientras que en la UTI clínica el 54% era de sexo masculino. La edad varió entre 16 y 90 años en la UTI quirúrgica y de 16 a 93 años en la UTI clínica. En la UTI quirúrgica el 65% de los pacientes permaneció internado de uno a cinco días, mientras que en la otra UTI la mayoría de los pacientes permaneció internada de 11 a 20 días. La puntuación promedio general del TISS-28 en las dos unidades fue de 25,0. Conclusión: fue confirmado que las dos UTIs tuvieron la misma carga de trabajo de enfermería. Se considera que la aplicación sistemática del TISS-28 puede auxiliar a los gerentes de enfermería en la administración de los recursos humanos. Descritores: enfermería; índice de gravedad de la enfermedad; carga de trabajo; unidades de terapia intensiva.

1Nurse, Doctoral student in the Nursing Graduate Program of Federal University of Minas Gerais/UFMG, Teacher of Graduate Programs in Nursing of UNA – University Center and Multi-professional Residency Program in Health of the Odilon Behrens Municipal Hospital in the city of Belo Horizonte (MG), Brazil. E-mail: patriciaoliveiraemail@gmail.com; 2Student of Nursing, Academic at Odilon Behrens Municipal Hospital, Undergraduate student in Nursing at Pontifical Catholic University of Minas Gerais/PUC-MG. City of Belo Horizonte (MG), Brazil. E-mail: laisdtna@yahoo.com.br; 3Nurse, Graduated at Pontifical Catholic University of Minas Gerais. City of Belo Horizonte (MG). E-mail: licemari_2007@yahoo.com.br; 4Nurse. Nurse at Odilon Behrens Municipal Hospital in the city of Belo Horizonte (MG), Brazil. E-mail: paula_gabriela13@yahoo.com.br.

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INTRODUCTION

Intensive care units (ICUs) are places intended for severely ill patients care, many of them with imminent risk of death. These patients have medical and nursing uninterrupted assistance, with own specific equipment, specialized human resources and access to technologies intended for diagnosis and therapy.1

There are three factors that stand out in relation to care provided to patients in an ICU, namely: a) the rising costs of assistance provided to health care on the part of the institution; b) the need for precise data on severity and prognosis of patients; and c) evaluation of nursing workload.23

The measurement of the decease severity of the patient and nursing workload evaluation are an old and challenging search of an adequate number of professionals in order to ensure quality and positive cost-benefit ratio.2

Evaluation of nursing work demand, as well as the factors associated with it, has shown to be indispensable as managing resource of these ICUs, since a staff oversized implies high costs. On the other hand, it is known that a reduced staff tends to determine a drop in efficiency of care, prolonging hospitalization, increasing mortality and morbidity rates and generating greater cost for treating of patients.3

From the 1970s, several graduation rates of patients’ diseases severity in ICUs were developed. They vary considerably and have contributed to estimate prognoses in different ways.3

Among the various rates, the Therapeutic Intervention Scoring System (TISS) has distinguished itself as a system that quantifies the therapeutic interventions according to the complexity, degree of invasiveness, time spent by nursing staff to carry out certain procedures, and quantitative evaluation of the dysfunction degree of patients seriously ill.2 It is based on the premise that, regardless of diagnosis, the more procedures the patient is submitted to, the greater the severity of the disease is and, consequently, greater is the time spent by the nursing staff for such care.57

This system was created in 1974,6 it underwent adaptations in 1983 and extensive restructuring in 1996, when it started to contain 28 items, which resulted in version TISS-28.37 In that version, after a study that included the record of multiple observations of nursing activities in ICUs, it was concluded that one point of TISS-28 is equivalent to a consumption of 10.6 minutes of a nursing professional assisting a patient.578

In large hospitals, which have different types of ICUs (General, cardiac, surgical, neurological, among others), complaints of nursing staff members in relation to insufficient personnel available are frequent. In addition, certain disputes of ICUs managers arise in order to achieve greater amount of human resources. They use profiles of patients received by these units as justification.8

This reality is also experienced in a large public hospital in the city of Belo Horizonte, state of Minas Gerais. The institution has three adult ICUs, being two for medical care and one for surgical care. The difference between care specialties of these units is a frequent issue of complaints among practitioners of nursing staffs regarding workloads. Given this reality, the following question arises: Is there a difference in nursing workload between the two adult ICUs of this institution?

The relevance of this study is related to the importance of analyzing the workload of nursing according to the type of ICU and characteristics of patients, considering the need for adequacy of human resources in those sectors and their implications in improving care quality. This way, the present study aims to compare the workload of nursing of two adult ICUs, according to TISS-28.

METHOD

This is a quantitative, prospective and longitudinal study carried out in two adult ICUs of a public hospital in the city of Belo Horizonte, state of Minas Gerais.

The hospital has three adult ICUs, two addressed for clinical care and one for surgical care, with ten beds each. The study was developed in the surgical ICU and in one of the clinical ICUs. The third ICU was not a scenario of study due to internal problems of the institution that occurred during data collection.

The subjects of the research were all patients admitted from 3rd May to 31st July, 2010, with minimum stay of 24 hours in the ICU, in accordance to requirements for application of TISS-28 rate, totaling 149 patients.

Data collection was carried out with the
daily application of a form composed of patients’ identification data relating to hospitalization in the ICU, therapeutic interventions of TISS-28 and patients’ destinations (discharge/death/transfer). The form was filled out by nurses daily in the mornings, from the direct observation of the patients and the nursing and medical notes of therapeutic procedures and monitoring.

Data were stored in an electronic database created in Microsoft Excel for Windows. A descriptive analysis of patients’ demographic data (age, gender), time of stay and destination was carried out through simple frequencies and measures of central tendency.

It can be observed that in the surgical ICU, 64% of patients were females, while in the medical ICU, 54% were males. Age varied between 16 and 90 years in the surgical ICU, in which 65.1% belonged to category ≥16 and <60 years and between 16 and 93 years in the medical ICU, in which 62.5% belonged to category >60 years.

In relation to the length of hospitalization of patients within the sample of this study, 65% of them were hospitalized from one to five days in the surgical ICU, while in the medical ICU the higher percentage of length of hospitalization (36% of patients) was from 11 and 20 days.

The study obtained favorable opinion from the Committee of Ethics in Research of the institution (Opinion COEP No 326022) and met the resolution 196/96 of the Ministry of Health. This resolution deals with research involving human subjects.

### RESULTS

During data collection, 92 patients were hospitalized in the surgical ICU and 56 patients in the medical ICU. Demographic characteristics (gender and age), time of stay and destination of patients of both units are presented in Table 1.

<table>
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<tbody>
<tr>
<td>Variables</td>
<td>Patients/Surgical ICU</td>
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<tr>
<td>Gender</td>
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<td>Male</td>
<td>33</td>
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<tr>
<td>Female</td>
<td>59</td>
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<td>Age</td>
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<td>31-60 days</td>
<td>03</td>
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<tr>
<td>Over 61 days</td>
<td>01</td>
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<tr>
<td>Patient’s destination</td>
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</tr>
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<td>Unit of hospitalization</td>
<td>73</td>
</tr>
<tr>
<td>Transfer to another hospital</td>
<td>02</td>
</tr>
<tr>
<td>Death</td>
<td>17</td>
</tr>
</tbody>
</table>

Source: Data from the research.

With regard to the destination of patients, both for the surgical ICU and for the clinical ICU most patients was forwarded to the hospital’s care unit after discharge from the ICUs, 73(79%) and 32(57%), respectively. However, it is remarkable that during data collection the number of deaths in the clinical ICU was higher than in the surgical ICU - 23(34%) patients in the first and 17(18%) in the second.

From the daily total score -i.e., from the sum of TISS-28 values of all patients who composed the sample- the average of monthly nursing workload of both ICUs can be recorded, as shown in Table 2.
It can be observed that TISS-28 average score was the same in both units, i.e., 25.0 points.

In Table 2, the number of nursing care hours consumed by patient, during an eight-hour shift, is also shown. Taking into account that each point of TISS-28 is equivalent to 10.6 minutes, according to the average score obtained (25.0 points) for care of one patient, during an eight-hour shift, 4.42 hours are required. Thus, in an eight-hour care, a nurse can devote his/her time to 1.8 patients. Considering this value and that the units studied have ten beds each, it is necessary the presence of five to six nurses every eight working hours by ICU.

**DISCUSSION**

It is observed a greater number of patients in the surgical ICU than in the medical ICU, confirming a higher turnover of patients in the first unit when compared to the second. This fact can be explained because surgical ICUs are intended for the hospitalization of patients in immediate post-surgery, with longer stay in the unit than clinical patients, who often become chronic.

With regard to gender and age, differences between both units are observed. The surgical ICU shows predominance of female patients with age inferior to 60 years, while in the clinical ICU elderly male patients are the majority.

Studies show that, in general, men are more commonly admitted in ICUs than women and are at higher risk to the leading causes of death. These differences may be explained by the higher incidence of pathologies in men that lead to critical diseases such as trauma.

It was found that 50.5% of patients in adult ICUs were aged between 61 and 80 years in Brazil in 1990. In a study carried out in the ICU of a university hospital in the city of São Paulo, data similar to those found in the clinical ICU of this study were found, i.e., 57% of patients were males and 53% were above the age of 60 years.

Among patients of the surgical ICU, 60 (65%) were hospitalized from one to five days, while in the clinic ICU, 20 (36%) patients were hospitalized from 11 to 20 days. According to data from the Brazilian Association of Intensive Medicine (AMIB), the average time of stay of 69% of patients in Brazilian ICUs is from one to six days, with a predominant average of three to four days. The fact that the clinical ICU showed greater stay of patients can be explained by the profile of these people served in this unit, in which most were elderly. Longevity associated with multiple diseases influence on development of health deterioration, which requires treatment in ICUS. In addition, these data also influence on time of stay in the unit and deaths frequency.

Authors correlated time of stay and hospital mortality and found that the longer the time of stay in the ICUs, the higher the mortality of patients. This fact can be explained through the complications that may arise from the treatment performed at the ICU, mainly with the exacerbation of pre-existing chronic diseases and hospital infection.

However, in this study the time of stay of patients in the surgical ICU was smaller than in the clinical ICU; nevertheless, patients of both units showed the same average score of TISS-28 (25.0 points), contrary to the studies mentioned above. It is noteworthy that the average value of TISS-28 found in this work was next to those found in national and international studies. The fact that both ICUs had the same average score of TISS-28 can be explained by the high turnover of patients’ hospitalization in the surgical ICU.

TISS-28 is composed of seven major categories: basic activities; ventilatory support; cardiovascular support; renal support; neurological support; metabolic support; and specific interventions. Each of these categories consists of specific items, with scores ranging from one to eight. Depending on the total number of points obtained, patients are categorized into four groups, namely: Class I - 1 to 20 points; Class II - 20 to 35 points; Class III - 35 to 60 points; and Class IV - above 60 points. For the average value of TISS-28 found in this study (25.0 points), patients are classified...
physiologically stable, but requiring intensive nursing care and continuous monitoring.\(^5\) The use of TISS-28, as a tool that quantifies the nursing workload, allows nursing managers of ICUs to evaluate the real need of the number of nurses in these services.\(^4\) This evaluation is justified because, in most cases, the amount of nurses is insufficient to promote the organization of professional work regarding the methodology and tools of work. In this regard, the implementation of the Process of Nursing stands out. The latter has been considered a methodological tool that guides nursing professional care and documentation of professional practice.

It is noteworthy to observe the limitations of this study regarding nursing activities performed in the units; even though they are not described in TISS-28, such as: corporal hygiene procedures; support and care for the family; and managerial and administrative tasks.

**CONCLUSION**

From the goal proposed in this study, it was found that both ICUs had the same TISS-28 average score (25.0 points); this way, they had the same nursing workload.

It is considered that the systematic application of TISS-28 can help nursing managers of ICUs, as it contributes to minimize the difficulties encountered by nurses when managing nursing human resources. Furthermore, it makes arguments more solid - both with the caring staff and managers of institutions - because they have theoretical and scientific foundations. Daily application of TISS-28 is also useful in nursing clinical practice, since it makes a relevant evaluation of the severity of patients’ conditions and can help ensure improvement in assistance and security of care provided.

**REFERENCES**


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Corresponding Address
Patrícia de Oliveira Salgado
Rua Formiga, 50 – Bairro São Cristóvão
CEP: 31110-430 – Belo Horizonte (MG), Brazil