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Epidemiological characteristics and causes of deaths in hospitalized patients under intensive care

Características epidemiológicas e causas de óbitos em pacientes internados em terapia intensiva

Características epidemiológicas y causas de muerte en pacientes internados en terapia intensiva

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ABSTRACT

Objective: to describe the epidemiological and sociodemographic characteristics of patients hospitalized in an ICU. **Method:** an epidemiological, descriptive and retrospective study. Population: 695 patients admitted from January to December 2011. The data collected were statistically analyzed with both absolute and relative frequency distribution. **Results:** 61.6% of the patients are male, aged 40 to 69 years, and most of them came from the surgery rooms. The most frequent reason for admission was diseases of the circulatory system (23.3%). At discharge from the ICU, 72.4% of the patients were sent to other units of the same institution, 31.1% to the intermediate care unit, and 20.4% died, of which 24.6% from diseases of the circulatory system. The afternoon shift had 45.8% of the admissions and 53.3% of the discharges. **Conclusion:** the description of the sociodemographic and epidemiological features guides the planning of nursing actions, providing a better quality service.

Key words: Intensive Care Unit; Critical Care; Descriptive Epidemiology; Nursing; Morbidity; Mortality Indicators.

RESUMO

Objetivo: descrever as características sociodemográficas e epidemiológicas dos pacientes internados em uma UTI. **Método:** estudo epidemiológico, descritivo e retrospectivo. População: 695 pacientes admitidos de janeiro a dezembro de 2011. Os dados coletados foram analisados estatisticamente com distribuição de frequências absoluta e relativa. **Resultados:** 61,6% dos pacientes são do sexo masculino, idade de 40 a 69 anos, e maioria proveniente do centro cirúrgico. O motivo de internação foram as doenças do aparelho circulatório (23,3%). Dos pacientes ao receber alta da UTI, 72,4% foram encaminhados para outras unidades da instituição, 31,1% para unidade de tratamento semi-intensivo e 20,4% foram a óbito, dos quais 24,6% foram por doenças do aparelho circulatório. O turno de trabalho que ocorreram admissões e altas foi o vespertino, com 45,8% das admissões e 53,3% das altas. **Conclusão:** a descrição das características sociodemográficas e epidemiológicas norteia o planejamento das ações de enfermagem, fornecendo um atendimento de melhor qualidade.

Descritores: Unidade de Terapia Intensiva; Cuidados Críticos; Epidemiologia Descritiva; Enfermagem; Indicadores de Morbimortalidade.

RESUMEN

Objetivo: describir las características sociodemográficas y epidemiológicas de los pacientes internados en una UTI. **Método:** estudio epidemiológico, descriptivo y retrospectivo. Población: 695 pacientes admitidos de enero a diciembre de 2011. Se analizaron estadísticamente los datos colectados con distribución de frecuencias absoluta y relativa. **Resultados:** 61,6% de los pacientes son del sexo masculino, edad de 40 a 69 años, y la mayoría proviene del centro quirúrgico. El motivo de internación fueran las enfermedades del aparato circulatorio (23,3%). De los pacientes que recibieron alta, se encaminaron 72,4% para las

otras unidades de la institución, 31,1% para la unidad de tratamiento semi-intensivo y 20,4% fallecieron, de los cuales 24,6% por enfermedades del aparato circulatorio. El turno de trabajo en el cual las demisiones ocurrieron es el vespertino, con 45,8% de las admisiones y 53,3% de las altas. **Conclusión:** la descripción de las características sociodemográficas y epidemiológicas guía la planificación de las acciones de enfermería, proveyendo un atendimiento de mejor calidad.
Palabras clave: Unidad de Terapia Intensiva; Cuidados Críticos; Epidemiologia Descriptiva; Enfermería; Indicadores de Morbimortalidad.

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INTRODUCTION

In the ICU, information about the sociodemographic and epidemiological characteristics of patients help define qualitative and quantitative strategies to improve patient care, especially in the prevention of complications, specialized care, and access to rehabilitation[1].

Knowing these characteristics also enables male and female nurses as well as other health professionals to plan care, regardless of the harm to health that led to hospitalization. For example, knowing the most frequent sex and age of people who are hospitalized in an ICU allows the team to prepare to take care of people with specific features. Similarly, knowing the most frequent types of harms provides the team with the basis to plan permanent education actions, purchase technology, and to adapt the structure of the unit[1]. Other aspects that contribute to planning patient care in the ICU are the origin of patients, morbidity, length of stay, among others.

Research showing these characteristics of the patients admitted to ICU(s) assists consolidation and changes in the care strategies. The resulting information can also be used to help improve the management of the unit, either from the human, structural, process point of view, or even the care management.

Considering the above, we decided to conduct this study aimed to describe the epidemiological and sociodemographic characteristics of patients admitted to an ICU of a referral hospital in the South of Brazil.

Literature review

The ICU is intended for the treatment of severe, critical patients requiring complex care and continuous monitoring; the technological apparatus allows health care professionals to have greater control of risk situations, provides speed in decision-making, and agility when facing critical situations[2].

However, it is essential to the understanding of demographic and epidemiological data. These help both the organization of nursing management and care and the local health system itself, including the hospital[3].

In Brazil, the first ICU with 10 beds was opened in 1967 at the Hospital dos Servidores do Estado do Rio de Janeiro [Public Employees' Hospital of the State of Rio de Janeiro]. In 1968, an ICU was created in the state of Santa Catarina; later, another one in Porto Alegre, in the state of Rio Grande do Sul[2]. Due to the growing number of patients requiring ICUs and the high cost of hospitalization, it is necessary to optimize the use of these beds[4].

The ICU staff of a tertiary hospital in the state of São Paulo used as criteria for filling vacancies: patients with priorities 1 and 2 (group 1 included severely ill patients, and group 2 included patients without instability, requiring intensive monitoring due to the possibility of decompensation), who benefited from the treatment in the ICU[5].

According to the authors, the beds should be occupied by patients with judicious indication and/or high probability of recovery, because the number of ICU beds available in the hospital network is limited in comparison with the demand.

Another study conducted in a general ICU in the state of Paraíba showed a predominance of hospitalizations of male patients (55.9%), with a prevalence of Diabetes Mellitus (DM) and cardiopathy[6]. This piece of data differs from the ones observed in another ICU from the same state, in which the main reason for admission was respiratory failure (43.3%)[7].

A survey published in August 2010 by the Brazilian Institute of Geography and Statistics (IBGE) shows that the pattern of deaths caused by infectious and communicable diseases in Brazil is being replaced by deaths due to chronic, degenerative diseases, and also by external causes linked to accidents and violence. Data indicates that circulatory diseases are the main causes of death in Brazil. Among men, accidents and violence come in the second position, and among women, neoplasms[8].

METHOD

This is an epidemiological, descriptive and retrospective study. The data were collected in the period between July and September 2012, from the medical records of patients admitted between January and December 2011, in an adult ICU with 14 beds in a public hospital that serves the Brazilian Unified Health System (SUS) exclusively, located in the city of Florianópolis, Santa Catarina. The ICU nursing staff consisted of 8 registered nurses and a head nurse, 18 physicians, three physiotherapists, 37 practical nurses or health care assistants, three general service assistants, and three janitors.

The nursing shifts were divided into 6 to 12 hours shifts, both daytime and nighttime. The weekly work load is 30 hours. The medical shifts were of 4 hours during the day and 12 hours at night.

The research protocol complied with the requirements of Resolution 466/12 from the Conselho Nacional de Saúde (CNS – National Health Council), and has been submitted and approved by the Research Ethics Committee of Plataforma Brasil.

Patients of both sexes and over 14 years old participated in the study, including those who were readmitted for any reason. As an exclusion criterion, we adopted the not consenting to participate in the study. The informed consent forms of the patients aged 14 to 18 years and of the ones who died were signed by their parents or by a family member. In total, 695 records were studied, and there was no exclusion.

The patients list was obtained from the logbook of the unit, with the following information: name, medical record number, date and time of admission, sex, age, unit of origin, admission diagnosis, date and time of discharge, death or transfer, and fate.

Data not found in the logbook were researched and collected in the electronic health record of the institution's medical file. The registered information of each patient was transferred and typed individually into an organized database with a spreadsheet.

Patients admitted to the adult ICU were characterized by the variables: sex, age, marital status, city of origin, origin, reason of admission according to the International Statistical Classification of Diseases and Related Health Problems – Tenth Revision (ICD-10), deaths by diagnostis group – also according to ICD-10, length of stay, discharge, admission and discharge per work shift[9].

Data were analyzed according to descriptive statistical procedures, using the distribution of absolute and relative frequencies. A database in electronic spreadsheets was created and analyzed by simple insertion of variables and presented in tables and charts.

RESULTS

Of the total of 695 records analyzed, 61.6% of the patients were male. Most hospitalizations (19%) were in the age group of 50 to 59 years, followed by the range of 60 to 69 years (17.1%), and by the 40 to 49 years range (15.1%). Adding the most frequent age ranges, slightly over half of the hospitalizations (51.2%) were of people aged between 40 and 69 years. The mean age by age group was 50 years. The minimum age was 14 years, and the maximum age was 80 years.

When patient distribution was compared by sex and age group, there was a predominance of male patients in almost all age groups, except in the group of those over 80 years old, in which women showed a slightly higher frequency than men, 3.2% and 2.9%, respectively. The age group of 50 to 60 years showed the highest frequency of males and females (19.0%), with 11.5% being men and 7.5% women. The second age group with highest frequency was that of 60 to 70 years (17.1%), with 10.2% male patients and 6.9% female; the third one was that of 40 to 50 years (15.1%), with 9.9% male patients and 5.2% female. The distribution of patients aged 20 to 30 years (14.5%) also drew our attention, as it was the fourth most frequent in the grand total, with 9.6% men and 4.9% women.

The study shows that just over half of the patients (52.5%) came to the ICU from surgery rooms (SR), followed by the emergency room (24.6%), and 12.4% were transferred from other institutions. Patients transferred from other units of the same hospital were much less frequent (6.2%).

According to the classification by ICD-10 chapters, the most frequent cause of hospitalization was Diseases of the circulatory system (23.3%), followed by Injury, poisoning and certain other consequences of external causes (21.3%). Neoplasms (tumors) were the third cause of hospitalization (15.0%) and Diseases of the respiratory system were the fourth cause (9.2%); Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified were the fifth cause (8.1%). When added up, the top five reasons or causes of hospitalization totaled 76.9%, while the others totaled 23.1%.

Cerebrovascular diseases were the most frequent diseases of the circulatory system in the hospitalization cases (79.6%), corresponding to 18.6% of all hospitalizations in the period (N = 695).

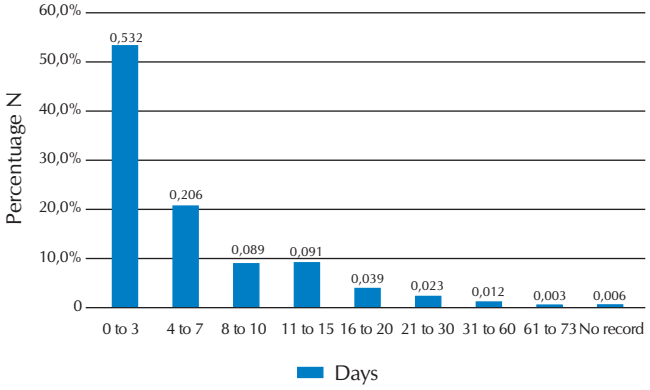
Injuries, poisoning, and certain other consequences of external causes – the most frequent being injuries to the head (45.9%), injuries involving multiple body regions (27.7%), and injuries to the hip and thigh (11.5%) – totaled 84.7% of hospitalizations (n = 148), corresponding to 18.1% of the total hospitalizations of the period (N = 695). Malignant neoplasms (tumors) corresponded to 14.1% of all cases (N = 695).

Analyzing these data, we found that the relative frequency of hospitalizations for cerebrovascular diseases, injuries (to the head, involving multiple body regions and to the hip and thigh), and malignant neoplasms (tumors) corresponded to 50.7% of total hospitalizations (N = 695). The absolute and relative frequencies of reasons for hospitalization linked to chapters of the ICD-10 were also noted: diseases of the respiratory system (9.2%/N = 695) and symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified (8.1%/N = 695).

As for the fate of the patients, 79.3% were discharged from the ICU, while 20.4% (n = 142) died. Among the patients discharged from the ICU, 72.4% were sent to other units of the hospital, 41.3% to general inpatient units, and 31.1% to the intermediate care unit (IMCU), which suggests that even without the need for intensive medical care, the patients remained in need of intensive nursing care because of their degree of disability and dependency at the time, although they had been discharged from the ICU. Only 6.0% were transferred to other institutions.

Analyzing the reason for hospitalization and death, we found that the greatest frequency of deaths was related to diseases of the circulatory system (24.6%). In second place came injuries, poisoning, and certain other consequences of external causes (16.9%). Deaths by diseases related to to symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified; some infectious and parasitic diseases; and diseases of the respiratory system came next, with 13.4% each.

Regarding the length of stay, slightly over half (53.2%) the patients remained hospitalized in the ICU for a period of 0 to 3 days. Other 20.6% were admitted for a period of 4 to 7 days, and 9.1% remained hospitalized in the intensive care unit from 11 to 15 days. The mean stay was 6 days. The minimum stay was less than 24 hours, and the maximum was 72 days (Figure 1).



Source: Logbook of the ICU and medical records of the patients.

Figure 1 – Distribution of the number of days of hospitalization of patients admitted to the ICU of the hospital from January to December 2011, Florianópolis, Santa Catarina, Brazil

Of the 695 ICU inpatients in 2011, 45.8% were admitted during the afternoon shift, and 41.2% in the night shift (7 p.m. - 7 a.m.). Only 12.9% were admitted during the morning shift (7 a.m. - 1 p.m.).

Most patients (53.3%) were discharged in the afternoon (1 p.m. - 7 p.m.), and 36.2% were discharged in the morning period (7 a.m. - 1 p.m.). Comparing the three shifts, the afternoon showed the highest prevalence of admissions and discharges, with 45.8% of the admissions and 53.3% of the releases. As for deaths, 40.8% occurred at night, 36.6% in the morning period, and 21.8% in the afternoon period.

DISCUSSION

The results according to sex are similar to other ICU studies. Of the total population studied (N = 695), 61.6% were male. Brazilian studies have been confirming this finding, with results varying from 55% to 58%, showing that more than 50% of the inpatients are of the male sex[10-11]. This may be a result of the low interest of men in health. Despite government initiatives regarding male sex disease prevention, when they eventually adhere to the treatment, severity is often already established.

Brazilian studies point to the age range between 50 and 75 years[5,10]. Such findings confirm that population aging also increases the frequency of older patients with health risks requiring ICU treatment, since the incidence of chronic degenerative diseases increases with age.

In this study, most patients (52.4%) came from surgery rooms (SR), similar to a study with 185 severe injury victims admitted in the ICU of a university hospital in São Paulo, which found that 57.84% of the patients admitted came from surgery rooms[12].

The fact that most of the patients of this study came from the surgery rooms is probably related to the surgical approach of cerebrovascular diseases and injuries (of the head, involving multiple body regions, and of the hip and thigh), worsening general health conditions and the need for stricter controls and monitoring such as the insertion of catheters to measure intracranial pressure, in case of intracranial hemorrhage and traumatic brain injury. In addition, it is a neurotrauma referral hospital.

The most frequent reason for admission into the ICU, according to the chapters in ICD-10, were diseases of the circulatory system, with 23.3% (n = 162), as shown the study conducted in general ICU(s) of two public hospitals and two private hospitals from the city of São Paulo; diseases of the circulatory system accounted for 58% of the hospitalizations, more than double the amount found in this study[13]. Despite studies that mention diseases of the circulatory system as the main admission diagnosis, there is still a shortage of works reporting which of them are more prevalent and which are more incident.

A study in two ICUs in the state of São Paulo showed a mortality rate of 20.8%, similar to the data in this research[14]. In another study, the highest mortality rate among the diseases described was cardiopathy, with 12.50%[6].

The length of stay in the ICU varied from a minimum of zero (less than 24 hours of hospitalization) to a maximum of 73 days. The mean stay was 6 days. Comparing these findings with data from literature, we observed that most of the patients remained in the hospital for a period equal to or lower than 6 days[15].

There is no consensus in literature concerning the number of days of hospitalization. According to the authors, this absence of consensus may be related to the fact that most studies were performed in units with mixed population (both clinical and surgical)[16].

After discharge from the ICU, 72.4% of the 695 patients were sent to other units of the institution, 31.1% to the intermediate care unit (IMCU), and 20.4% died. A study performed in four ICUs in the state of São Paulo showed that 64.6% are transferred to the IMCU after being released from the ICU[4].

Regarding patient admission and discharge by work shift, 46.9% were discharged and 45.8% were admitted in the nursing shift from 1 p.m. - 7 p.m. These results are similar to a study conducted in an ICU of the coast of Santa Catarina, which showed the highest turnover in the afternoon, with 39.89% of the admissions in that shift[17]. Thus, this period requires increased nursing workload.

A study performed in an ICU in Ribeirão Preto presented a greater need for nursing care on weekends and holidays[18]. However, we found few studies connecting the variables admissions and discharges with work shift.

This study may contribute to health care planning by the ICU teams, knowing the mortality due to different diseases. However, it is necessary to develop other similar studies in order to expand information on the characteristics of users and the impact on the health care and work process in the ICU.

CONCLUSION

Knowing demographic and epidemiological data from the population is a need not only because of the growth in health care costs, but specially in order to plan and improve health care in these units.

According to our results, the predominance of male patients aged 50 to 59 years admitted from the surgery rooms was observed. The most identified diagnosis was cardiovascular diseases, specifically cerebrovascular diseases. Thus, the

majority of deaths was due to circulatory illness. We observed an intense patient turnover, with a length of stay of 0 to 3 days.

Data from literature were confirmed in this study, such as sex, age, length of stay, type of discharge. However, there are aspects to be considered to allow comparison between the various studies on the subject, as classifying the medical diagnoses of the patients using ICD-10.

In this sense, we consider that the objective was reached when describing some of the sociodemographic and epidemiological characteristics of inpatients in the ICU.

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