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ORIGINALES

Clinical-epidemiological profile of patients hospitalized in an intensive care unit of a school hospital

Perfil clínico-epidemiológico de pacientes internados em unidade de terapia intensiva de um hospital escola

Perfil clínico-epidemiológico de los pacientes ingresados en la unidad de cuidados intensivos de un hospital escuela

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ABSTRACT:

Objective: To characterize the clinical-epidemiological profile of patients admitted to the adult intensive care unit of a teaching hospital.

Method: Descriptive epidemiological study, with a quantitative approach, cross-sectional and retrospective nature. The research was carried out at the teaching hospital, in an adult intensive care unit between January and December 2021.

Results: 153 people were hospitalized. There was a predominance of males (68.6%). The average age was 53 years (standard deviation=20). Regarding the municipality of residence, Maringá predominated (39.9%). The average length of stay was 17 days (median=11; standard deviation=18). Regarding the primary cause of admission, it was noted that the most frequent causes were trauma (14.4%). Regarding the outcome of hospitalization, although the majority of participants were discharged from the sector (58.8%), there was an important proportion who died (37.3%).

Conclusion: Predominance of males, with an average age of 53 years, from the city of Maringá, hospitalized for around 17 days due to trauma and/or fractures, which required intubation and without

vasoactive drugs and hemodialysis, with a more rise in the sector is frequent, although the mortality rate was 37%, raising a warning for managers.

Keywords: Critical Care; Health Profile; Intensive Care Units.

RESUMO:

Objetivo: Caracterizar o perfil clínico-epidemiológico dos pacientes internados na unidade de terapia intensiva adulto de um hospital escola.
Método: Estudo epidemiológico descritivo, de abordagem quantitativa, recorte transversal e caráter retrospectivo. A pesquisa foi realizada no Hospital escola, em uma unidade de terapia intensiva adulto entre janeiro a dezembro de 2021.
Resultados: Foram registradas 153 pessoas hospitalizadas. Houve predomínio do sexo masculino (68,6%). A idade média de 53 anos (desvio padrão=20). No que se refere ao município de residência, predominaram Maringá (39,9%). O tempo médio de internação foi de 17 dias (mediana=11; desvio padrão=18). Em relação à causa primária da admissão, percebeu-se que as mais frequentes por traumas (14,4%). Quanto ao desfecho do internamento, embora a maioria dos participantes tenha evoluído para a alta do setor (58,8%), houve um importante parcela que foi a óbito (37,3%).
Conclusão: Predominância do sexo masculino, com idade média de 53 anos, oriundos da cidade de Maringá, internados por cerca de 17 dias por conta de traumas e/ou fraturas, que demandaram intubação e prescindiram de drogas vasoativas e hemodiálise, tendo como evolução mais frequente a alta do setor, embora a taxa de mortalidade tenha sido de 37%, suscitando um alerta para os gestores.

Palavras-chave: Cuidados Críticos; Perfil de Saúde; Unidades de Terapia Intensiva.

RESUMEN:

Objetivo: Caracterizar el perfil clínico-epidemiológico de los pacientes ingresados en la unidad de cuidados intensivos de adultos de un hospital universitario.
Método: Estudio epidemiológico descriptivo, con enfoque cuantitativo, de carácter transversal y retrospectivo. La investigación se realizó en el hospital universitario, en una unidad de cuidados intensivos para adultos, entre enero y diciembre de 2021.
Resultados: 153 personas fueron hospitalizadas. Hubo predominio del sexo masculino (68,6%). La edad promedio fue de 53 años (desviación estándar=20). En cuanto al municipio de residencia, predominó Maringá (39,9%). La duración media de la estancia fue de 17 días (mediana=11; desviación estándar=18). En cuanto a la causa primaria de ingreso, se observó que la causa más frecuente fue el trauma (14,4%). En cuanto al resultado de la hospitalización, aunque la mayoría de los participantes fueron dados de alta del sector (58,8%), hubo una proporción importante que falleció (37,3%).
Conclusión: Predominio del sexo masculino, con edad promedio de 53 años, de la ciudad de Maringá, hospitalizados alrededor de 17 días por traumatismos y/o fracturas, que requirieron intubación y sin fármacos vasoactivos y hemodiálisis, con mayor ascenso en el sector Es frecuente, aunque la tasa de mortalidad fue del 37%, lo que genera una advertencia para los directivos.

Palabras clave: Cuidados Críticos; Perfil de Salud; Unidades de cuidados intensivos.

INTRODUCTION

Intensive Care Units (ICU's) consist of high complexity environments in the hospital environment [(1)]. In general, the ICU's constitute an organized system for the care of critical patients, offering intensive and specialized medical and nursing care, as well as enabling improved monitoring capacity and multiple physiological support modalities to sustain life during a period of risk [(2).]

Since its introduction more than half a century ago, ICUs have become an integral part of the health system. Although they predominate in high-income countries, they are increasingly characteristic of health systems in low and middle countries. [(2)] In Brazil, data from December 2019 indicate the existence of just over 45,000 intensive care beds, between public and private, with higher concentration in the Southeast (51.9%) and Northeast (20.7%) [(3)].

Currently, the demand for beds in ICU has increased significantly, affecting the demand, and evidencing the bed gap in several locations in the country. [1] In addition, the Coronavirus Disease 2019 (COVID-19) pandemic caused greater search and need for intensive care units in patients with the severe form and unveiling a critical scenario of lack of physical and material resources in several regions of Brazil [4].
Thus, there is a need to increase treatment resources and improve ICU care, aiming at reducing hospitalization time and improving bed turnover. It is known that qualified communication and shared decision making among professionals are essential to ensure that the care offered to patients in ICU beds meets the physical, psychosocial, biological, existential, and spiritual needs of the patient [5].

It is in this context that the recognition of the epidemiological characteristics of patients admitted to the ICU's emerges with extreme relevance. Patients in intensive care have particularities linked to the health condition responsible for their hospitalization and the understanding of these characteristics consists of a primordial action for the qualification of care, as it allows strategic planning that corresponds to the needs of the affected person [6].

A study conducted in an ICU in the Federal District showed that the predominant profile was male patients, with a mean age of 56 years, coming from the hospital itself, with a primary diagnosis of hospitalization due to sepsis and/or septic shock. The mortality rate was 33%, with association to the use of vasoactive drugs and a shorter hospitalization time, while discharge was associated with a shorter time of mechanical ventilation and no need for hemodialysis [7].

It is understood that this information provides the direction of care and care actions, enabling better recovery and prognosis to patients admitted to the ICU [8]. This is due to the fact that the comprehensive and equitable care provided now encompasses the characteristics of the individual, emphasizing the effects of therapy, the evolution of the clinical picture and the risk factors to which the patient is exposed, circumvent possible complications and qualify care [9].

Given the above, the collection of epidemiological data on morbidity and mortality of a health environment becomes essential in making strategic decisions. The acquisition of technologies, training of human resources, reevaluation of care processes and structural adaptation are planned in order to adapt the unit to the characteristics of the population served in the region. Therefore, epidemiological studies that bring together different variables are extremely relevant in the health field[10].

Whereas the identification of epidemiological characteristics allows strategic decision-making, seeking to adapt technology, train human resources and re-evaluate care processes, as well as the potential to provide information to managers and health professionals that enable listing the demands of resources and the development of strategies aimed at qualified care, this study was guided by the question: What is the clinical-epidemiological profile of adult and elderly patients hospitalized in an intensive care unit of a school hospital?

Therefore, the objective of the study is to characterize the clinical-epidemiological profile of patients admitted to the adult intensive care unit of a teaching hospital in the city of Maringá, northwest of the state of Paraná, Brazil, in 2021.

METHOD

This was a descriptive epidemiological study, with a quantitative approach, cross-sectional and retrospective, guided by the tool Strengthening *the Reporting of Observational Studies in Epidemiology* (STROBE) [11].

Descriptive research allows the observation, registration, and description of characteristics of a given phenomenon in an affected audience, which were extracted from a pre-established point in retrograde time, allowing to return information from the past to the current moment to analyze the distribution of the characteristics of the affected people [12].

The research was conducted at the Regional University Hospital of Maringá (HRUM), linked to the State University of Maringá (UEM). The HRUM has 167 hospital beds, distributed as follows: medical clinic (23 beds), surgical clinic (21 beds), covid-19 ward (40 beds), gynecological and obstetric clinic (15 beds), pediatric clinic (23 beds), semi-intensive neonatal (5 beds), neonatal ICU (6 beds), adult ICU (8 beds), covid-19 ICU (20 beds) and pediatric ICU (6 beds).

It was delimited as a period of investigation the months of January to December 2021. All patients who met the following inclusion criteria were included in this study: date of hospitalization from January to December 2021 and age 18 years or older. Exclusion criteria were defined as: pregnant women or postpartum women and patients admitted in the period, but who remained in the ICU for less than 48 hours and/or who had no outcome until the date of data collection.

The study was conducted from primary data from electronic medical records, accessed and extracted via the Health Care Management System of the Unified Health System (GSUS). The GSUS aims to systematize the flow of health care in an integrated manner with the existing regulatory complex in the SUS, allowing the structuring of programming procedures, access regulation, audit, and billing.

The HRUM board was asked to access the GSUS, and the collection was carried out on the spot, during the period from November to December 2022 by one of the researchers in this study. For this purpose, an instrument was developed for collection in the software Microsoft Excel 2016, containing the variables of interest for the research. It should be noted that sensitive data, that is, that allow the identification of the participant (such as name and address), were not considered for the investigation.

The variables considered and collected for this research were: age at admission (in years); sex (male or female); use of vasoactive drugs (yes or no); use of mechanical ventilation (yes or no); hemodialysis (yes or no); period of hospitalization (difference in days between the date of admission and the date of outcome); main diagnosis (identification); and outcome (discharge from the sector, transfer to another hospital or death related to hospitalization).

The data were analyzed using Microsoft Excel 2016 software. Descriptive statistics techniques, presentation of information in contingency tables with absolute (n) and relative (%) frequencies for categorical variables, as well as measures of central tendency and dispersion for numerical variables were used (mean - Me, median - Md

and standard deviation - SD). Boxplot graphs were constructed according to the data nature of each variable.

The project is part of an umbrella research linked to UEM, which has the approval of the Commission for Regulation of Academic Activities (COREA) of HURM and was approved by the Permanent Committee for Ethics in Research with Human Beings (COPEP) under the opinion nº 5.718.969/2022, as recommended by Resolution nº 466/2012 of the National Health Council. Dispensation of informed consent (ICF) was requested, since the research used data from medical records.

RESULTS

From January to December 2021, 153 people were registered in the ICU of the respective school hospital. Regarding the sex of the individuals admitted, there was a predominance of men (68.6%). The mean and median age of the participants was 53 years (SD=20), with a higher occurrence of hospitalizations among those aged 42 to 47 years (15.0%) and 60 to 65 years (13.1%). Regarding the municipality of residence, Maringá (39.9%) and Paiçandu (10.5%) predominated, as shown in Table 1.

Table 1. Characterization of patients admitted to intensive care unit, according to sex, age group and municipality of residence. Maringá, Paraná, Jan-Dec/2021.

Variable	n	%
Sex		
Feminine	48	31,4
Masculine	105	68,6
Age group		
18 |--- 24 years old	12	7,8
24 |---- 30 years old	14	9,2
30 |--- 36 years old	8	5,2
36 |--- 42 years old	11	7,2
42 |--- 48 years old	23	15,0
48 |--- 54 years old	12	7,8
54 |--- 60 years old	8	5,2
60 |--- 66 years old	20	13,1
66 |--- 72 years old	9	5,9
72 |--- 78 years old	13	8,5
78 |--- 84 years old	14	9,2
84 |--- 90 years old	6	3,9
90 |--- 96 years old	3	2,0
Municipality of residence		
Angle	2	1,3
Ariquemes	1	0,7
Astorga	6	3,9
Watchtower	1	0,7
Cambará	1	0,7
Cianorte	1	0,7
Colorado	5	3,3
Corumbataí do Sul	1	0,7
Doctor Camargo	3	2,0
Engenheiro Beltrão	1	0,7
Floraí	1	0,7
Florida	1	0,7
Foz do Iguaçu	1	0,7
Iguaraçu	2	1,3
Iporã	1	0,7
Itaúna do Sul	1	0,7
Ivatuba	2	1,3

Mandaguaçu	6	3,9
Mandaguari	6	3,9
Marialva	8	5,2
Maringá	61	39,9
Our Lady of Grace	1	0,7
New Hope	5	3,3
Paiçandu	16	10,5
Paranacity	1	0,7
Paranavaí	1	0,7
Piraí Do Sul	1	0,7
Ponta Grossa	1	0,7
Presidente Castelo Branco	1	0,7
Santa Fe	4	2,6
Santo Inácio	1	0,7
São Jorge do Ivaí	1	0,7
Sarandi	7	4,6
Terra Boa	1	0,7
Total	**153**	**100,0**

Source: Data from research.

The mean length of stay was 17 days (Md=11; SD=18), with a predominance of hospitalizations for a period of 5 to 19 days (50.9%). Regarding the primary cause of admission to the ICU, it was noticed that the most frequent were hospitalizations due to trauma (14.4%), fractures (11.8%) and COVID-19 (10.5%). As for the outcome of hospitalization, although most of the participants evolved to discharge from the ICU (58.8%), there was an important portion that was death (37.3%), according to Table 2.

Table 2. Characterization of patients admitted to intensive care unit, according to time, cause and outcome of hospitalization. Maringá, Paraná, Jan-Dec/2021.

Variable	n	%
Weather		
2 |--- 5 days	32	20,9
5 |--- 10 days	38	24,8
10 |--- 20 days	40	26,1
20 |--- 30 days	15	9,8
30 |--- 60 days	23	15,0
60 |--- 120 days	5	3,3
Cause		
Cutaneous abscess	1	0,7
Liver abscess	1	0,7
Abscess periapical	1	0,7
Renal abscess	1	0,7
Acute abdomen	6	3,9
Stroke	5	3,3
Intestinal adherence	1	0,7
Pleural affection	1	0,7
Assaulting	5	3,3
Primary arthrosis	1	0,7
Bronchopneumonia	4	2,6
Calculosis of biliary pathway	1	0,7
Cellulite	3	2,0
Shock	1	0,7
Cirrhosis of the liver	2	1,3
Acute cholecystitis	1	0,7
Concussion	1	0,7
Constipation	1	0,7
Convulsion	1	0,7
Coronavirus	16	10,5
Diabetes mellitus	1	0,7

Digestive tract disease	1	0,7
Inflammatory disease of the liver	1	0,7
Lung disease	1	0,7
Communicable disease	2	1,3
Abdominal pain	7	4,6
Pulmonary embolism	1	0,7
Encephalitis	1	0,7
Encephalopathy	1	0,7
Epilepsy	1	0,7
General medical examination	4	2,6
Chest injury	1	0,7
Fistula	2	1,3
Fracture	18	11,8
Cognitive function	1	0,7
Hemorrhagic gastritis	1	0,7
Gastroenteritis	1	0,7
Hematemesis	4	2,6
Intestinal bleeding	2	1,3
Abdominal hernia	2	1,3
HIV	1	0,7
Urinary tract infection	3	2,0
Respiratory failure	1	0,7
Intoxication	1	0,7
Lupus	1	0,7
Melena	1	0,7
Meningitis	1	0,7
Intestinal obstruction	2	1,3
Cardiorespiratory arrest	4	2,6
Pneumothorax	1	0,7
Fall	2	1,3
Burn	3	2,0
Septicemia	1	0,7
Respiratory syndrome	1	0,7
Tachycardia	1	0,7
Trauma	22	14,4
Outcome		
High	90	58,8
Death	57	37,3
Transfer	6	3,9
Total	**153**	100,0

Source: Data from research.

Regarding the need for mechanical ventilation among hospitalized patients, it was seen that most needed intubation (64.1%). Regarding hemodialysis, most patients dispensed with the procedure (92.2%). Similarly, the use of vasoactive drugs was not necessary for most people admitted to the ICU (56.9%), as shown in Table 3.

Table 3. Characterization of patients admitted to intensive care unit, according to the need for ventilation, vasoactive drug and hemodialysis. Maringá, Paraná, Jan-Dec/2021.

Variable	n	%
Ventilation		
Not	55	35,9
Yes	98	64,1
Hemodialysis		
Not	141	92,2
Yes	12	7,8
Vasoactive drug		

Not	87	56,9
Yes	66	43,1
Total	**153**	100,0

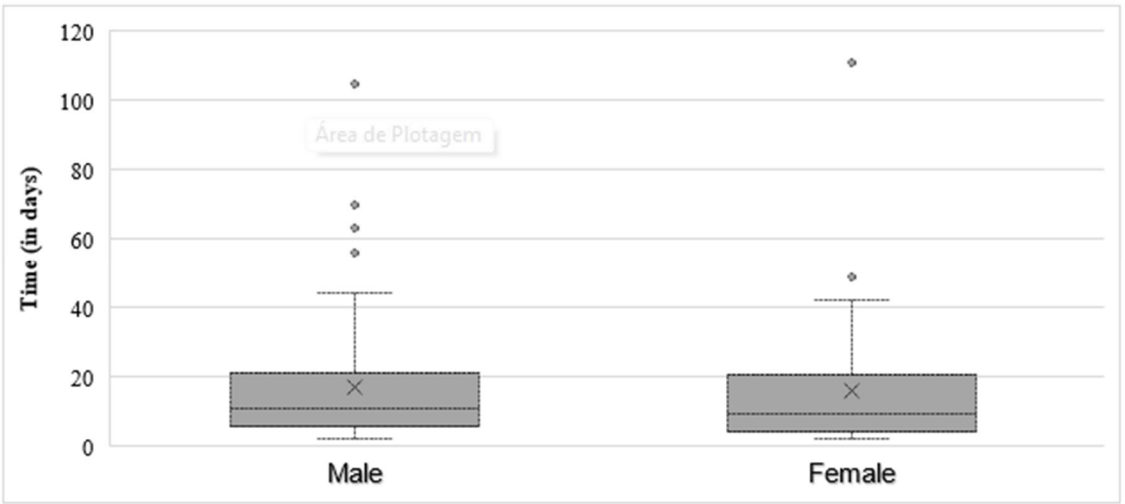
Source: Data from research.

In the comparison between the sex of the participants in this study, there was a change in age. Men had a mean age of 51 years (Md=50; SD=20), whereas women had a mean age of 58 years (Md=59; SD=19) (Figure 1). Regarding the length of hospitalization, it was noticed that the duration was close among men (Me=17; Md=11; SD=18) and women (Me=16; Md=10; SD=19) (Figure 2).

Figure 1. Boxplot graph of patients' age in intensive care unit, according to sex. Maringá, Paraná, Jan-Dec/2021.

Source: Data from research.

Figure 2. Boxplot *graph of* hospitalization time of patients admitted to intensive care unit, according to sex. Maringá, Paraná, Jan-Dec/2021.



Source: Data from research.

DISCUSSION

The analysis of the clinical-epidemiological profile of patients hospitalized in an ICU of a school hospital in the northwest of Paraná showed that there is a predominance of men, with a mean age of 53 years, from the hospitalized-on average for 17 days due to trauma or fractures, with evolution to discharge from the sector, which required intubation and dispensed vasoactive drugs and hemodialysis. The length of stay was similar between genders, but women were slightly older.

The largest number of men in this sector has already been observed in other studies[13,14], which may be associated with a less healthy lifestyle than, in general, neglect of care practices; the lower demand for health services, which increases the risk of worsening and worse clinical outcomes; excessive consumption of alcohol and tobacco, among others [15,16].

The mean and median age of 53 years identified in this research points to the predominance of a more aged public in the service, which represents an important factor to consider in the organization and planning of care, because the older age may be related to the worse prognosis of patients [17], and the identification of this demographic profile is essential in the elaboration of effective and singular care plans for each person assisted [18].

The importance of understanding the clinical and epidemiological characteristics of people in need of intensive care is emphasized for effective planning, organization, evaluation, and qualification of the services that are offered to this public. Therefore, the development of research in these places are fundamental to help you in the improvement and optimization of the care that is provided.

A study carried out in a hospital in India showed that the average length of hospitalization was 9 days (SD=6), a shorter period than this study. It is known that the length of stay in the ICU can be influenced by differences in disease patterns and comorbidities, however, it should be noted that prolonged time is commonly associated with unsuccessful results, such as complications and death [19].

The proportion of patients who died in this investigation was 37%. This value is close to that found in the studies, which showed mortality around 36% and 45%, respectively [19,20]. High mortality, in addition to being associated with length of stay in the ICU, also considers the age factor, since older populations tend to have higher chances of dying during intensive care [21].

In addition, factors such as use of vasoactive drugs for hemodynamic support and intubation to improve the respiratory pattern, which presented high occurrence in this study, added to the need for renal replacement therapy and the evolution of the natural history of the disease itself, are important predictors of mortality in the ICU. This context could explain the high mortality rate evidenced in this research, which is within the national range of 9 to 58% [22].

Meanwhile, when considering the natural history of the disease that led to hospitalization, there was a high proportion of people admitted due to trauma and fractures. In Brazil, ICU hospitalizations are predominantly due to cardiovascular diseases [22]. However, it should be considered that trauma is an important cause of

hospitalization in ICU, especially among the male public, which was also predominant in this study [23].

Among the younger population, hospitalization for trauma resulting from aggression and/or traffic accidents is common, whereas among the elderly, trauma is usually caused by falls. This scenario emphasizes the importance of preventing trauma and reducing the aggravation of cases, to reduce the occurrence of this disease of importance to public health, as well as mitigate the high rates of hospitalization in ICU as a result [23].

It is also important to highlight the need for caution in the interpretation of these results, since the time frame considered took place simultaneously with the covid-19 pandemic, which caused repercussions on the care and logistics management of health services, clinical and epidemiological characteristics pointed out here may have been influenced by this scenario.

Research carried out in the same institution scenario of this study was able to identify the deleterious effects caused directly by the health crisis of covid-19 in care, having been observed the consequent increase in the number of visits and hospitalizations within the ICU, including those associated with coronavirus infection, in addition to the increase in hospitalization costs, especially due to the expenses related to medications, which had readjustment in the pandemic period due to the scarce production [24].

Findings from other work developed in the adult ICU sector of the HURM found that the nursing team already suffered from emotional exhaustion, with risk for the development of Burnout syndrome [25]. This may have been accentuated even more in the pandemic period, given that this sector causes numerous stressful situations, such as lack of energy, feeling of frustration for losses etc.

Therefore, the understanding of the dynamics of this complex sector, the clinical-epidemiological profile and the condition in which the patients are, as well as the context in which the professionals are inserted, is directly related to the quality of the enabling the planning of care with regard to health promotion, prevention and recovery, in order to culminate in improvements in the service and care offered [26].

It is pointed out as a limitation of this study the time cut limited to one year and the use of information from medical records that, often, may be subject to errors and/ or incompleteness of completion by professionals, this problem can weaken the accuracy of the information presented here.

Thus, the importance of understanding the characteristics of patients served in health services is highlighted, to better understand the public assisted and to ensure the best effectiveness of planning and targeting of physical, personal, and financial resources, actions, enabling the attention to the singularities of individuals in line with the doctrinal principles of the Unified Health System, especially with regard to the integrality of care.

CONCLUSION

It was found that patients hospitalized in intensive care for adult patients of a school hospital in northwestern Paraná were mostly men, with a mean age of 53 years, from the city of Maringá, hospitalized for about 17 days of trauma and/ or fractures, who required intubation and dispensed with vasoactive drugs and hemodialysis, with the most frequent evolution being the high in the sector, although the mortality rate was 37%, raising an alert to managers.

It is also important to emphasize the need for new studies that seek to identify the factors that are associated with the hospitalization of people in units of high complexity, considering the possibility of identifying the possible predictors of aggravation and later, hospitalization in the intensive sector. Thus, strategies can be used to prevent the clinical worsening of patients and, consequently, reduce the increase in hospitalization costs.

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