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RESEARCH

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CLINICAL OUTCOME OF PATIENTS HOSPITALIZED IN A CORONARY INTENSIVE CARE UNIT

Desfecho clínico de usuários internados em uma unidade intensiva coronariana

Desfecho clínico de usuários internados en una unidad intensiva coronariana

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ABSTRACT

Objective: to verify the clinical outcomes of patients hospitalized in a Coronary Intensive Care Unit of a hospital in the south of Mato Grosso. **Method:** a retrospective, documental cohort study with a quantitative approach, with a sample of 593 users during the year 2017. **Results:** significance was verified regarding the clinical outcome of death in the block of mechanical disorders, in relation to the lower number of admissions and proportionately an increase in the death outcome with 36.3%, which reflects the statistical association between the variables (p -value = 0.0184); It is also imperative to highlight the relationship between the number of discharges and deaths from the sixteenth day of hospitalization, with an association between the variables (p -value = 0.00001). **Conclusion:** based on the socio-demographic and clinical data of the patients served, the institution is able to implement the offered assistance, focusing on the specialized care, so as to pass on the reduction of the death outcome in the Coronary Unit.

Descriptors: Clinical outcome; Cardiovascular diseases; Aging; Coronary intensive care unit; Death.

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RESUMO

Objetivo: verificar quais os desfechos clínicos dos usuários internados em uma Unidade de Terapia Intensiva Coronariana de um hospital no sul de Mato Grosso. **Método:** estudo do tipo coorte retrospectivo, documental, com abordagem quantitativa, com 593 usuários durante o ano de 2017. **Resultados:** verificou-se significância em relação ao desfecho clínico óbito no bloco de distúrbios mecânicos, em relação ao número menor de admissões e proporcionalmente um aumento do desfecho óbito com 36,3% o que reflete a associação estatística entre as variáveis (p -valor=0,0184); Também é imperativo destacar a relação entre o número de altas e de óbitos a partir do décimo sexto dia de internação, ocorrendo associação entre as variáveis (p -valor= 0,00001). **Conclusão:** espera-se que a partir dos dados sociodemográficos e clínicos dos usuários atendidos, a instituição consiga implementar da assistência ofertada, com foco no atendimento especializado, de modo a repercutir na redução do desfecho óbito na Unidade Coronariana. **Descritores:** Desfecho clínico; Doenças cardiovasculares; Envelhecimento; Unidade Terapia intensiva coronariana; Óbito.

RESUMÉN

Objetivo: verificar los resultados clínicos de los usuarios internados en una Unidad de Terapia Intensiva Coronaria de un hospital en el sur de Mato Grosso. **Método:** estudio del tipo cohorte retrospectivo, documental, con abordaje cuantitativo, con muestra de 593 usuarios durante el año 2017. **Resultados:** se verificó significancia en relación al desenlace clínico óbito en el bloque de disturbios mecánicos, en relación al número menor de admisiones y proporcionalmente un aumento del desencadenamiento óbito con 36,3% lo que refleja la asociación estadística entre las variables (p -valor = 0,0184); También es imperativo destacar la relación entre el número de altas y de muertes a partir del décimo sexto día de internación, ocurriendo asociación entre las variables (p -valor = 0,00001). **Conclusión:** se espera que a partir de los datos sociodemográficos y clínicos de los usuarios atendidos, la institución consiga implementar la asistencia ofrecida, con foco en la atención especializada, para repercutir en la reducción del desenlace muerto en la Unidad Coronaria. **Descriptores:** Desventaja clínica; Enfermedades cardiovasculares; Envejecimiento; Unidad terapia intensiva coronaria; Muerte.

INTRODUCTION

According to the World Health Organization (WHO), the number of deaths from cardiovascular disease (CVD) has been increasing. It is estimated that in 2015 17.7 million people died, of these, 7.4 million died due to cardiovascular diseases, representing 31% of all deaths worldwide.¹

Cardiovascular diseases are those that affect the circulatory system, that is, the heart and blood vessels, and are classified as chronic noncommunicable diseases that can present complications thus compromising favorable prognosis of the patient, for example ischemic heart disease, strokes, heart failure and chronic renal failure.²

Complications may be associated with isolated modifiable risk factors such as physical inactivity, smoking, alcoholism, or associated with unmodifiable risk factors such as hyperglycemia, hypertension, hyperlipidemia, and obesity.¹ Modifiable risk factors are considered preventable

as lifestyle changes are made, preventing the development of the disease or improving the management and treatment of the disease already in place.¹

Once CVD is in place, with advancing age and the existence of other comorbidities, the patient may need specialized intensive therapeutic support, with technological resources, which are typically available in the Intensive Care Unit (ICU), i.e. a hospital sector for the care of critically ill patients, who need continuous attention from an intensive care unit multidisciplinary team and technological support for diagnosis, monitoring and drug therapy, in order to restore their health to a point where the patient can be discharged. There are also specialized ICUs, which provide assistance to patients with certain selected diseases, in the case of this study we refer to the Coronary Therapy Unit.³

Despite all the technological and professional support, the patient may remain for a long period in these intensive care units due to treatment-related complications, thus compromising clinical outcome.⁴ Clinical outcome can be conceptualized as a variable used to record the outcome of the treatment, such as cure (discharge) or clinical deterioration, which can lead to death.⁵

In this perspective, the question is: What have been the clinical outcomes of patients admitted to a Coronary Unit located in the southern region of Mato Grosso? And what sociodemographic factors may be related to clinical outcomes? In order to answer this question, we sought to verify the clinical outcomes of patients admitted to a Coronary Intensive Care Unit of a hospital in southern Mato Grosso.

METHODOLOGY

This is a retrospective, documentary cohort study with a quantitative approach. This study was approved by the Research Ethics Committee with an opinion of February 17, 2017, under No. 1,931,153 and CAAE Ethical Approval Certification: 62895316.8.0000.8088, following the ethical and legal precepts for research with human beings, available in National Health Council Resolution 466/2012.⁶

The study was conducted with patients admitted to a Coronary Adult Intensive Care Unit (UCO) of a philanthropic hospital in the southern region of Mato Grosso State. The unit under study has nine intensive therapy beds and serves 19 municipalities in the southern region of Mato Grosso.

The study population consisted of 593 medical records of patients admitted to the respective unit from January to December 2017, according to the following single criterion: having been admitted between January 1st and December 31st, 2017.

Data were collected from October 2017 to April 2018 once authorization by the institutional and approval of this study by CEP were received, in two stages, accessing the book of admissions of patients in the Unit for the survey

of sociodemographic data, and afterwards, accessing the hospital's electronic medical record system, which manages clinical, care, administrative, financial and strategic information for each patient.

The search for information was performed based on data available in the institution's databases, containing the following variables: age, patient diagnosis, gender, type of agreement, origin, length of stay in the ICU, clinical outcome, including transfer or death.

Data were entered into the *Epi Info 3.5.1* program and double-typed in order to correct inconsistencies and later for statistical analysis. The clinical outcome was considered the dependent variable and the other variables treated as independent. Quantitative variables were analyzed based on descriptive statistics, obtaining simple frequency, percentage. In relation to the numerical variables (age range and length of stay) frequency amplitude calculations were established to enable their stratification.

The association between the variables was performed using Pearson's chi-square test (X^2). Data analysis was performed with the results presented in tables containing absolute frequency (N) and relative frequency (%), with significance level p-value <0.05.

RESULT

593 patients were admitted to the Coronary Unit, from January 2017 to December 2017. In this study, the Unit's logbooks and medical records of each patient admitted in the above-mentioned period were evaluated. From the medical records analyzed, there was a predominance of male (n = 348) and female (n = 245) patients. Regarding clinical outcome 300 (59.2%) males were discharged from the Intensive Care Unit, 44 (55%) died and 4 (66.7%) were transferred to another hospital. From this perspective, it is clear that there was no statistical association between gender and clinical outcome (p-value = 0.7206).

Table 1 - Distribution of patients admitted to the Coronary Care Unit according to related clinical and sociodemographic variables cross-referenced with the clinical outcome. Mato Grosso, Brazil, 2017.

Variables	Outcomes			p-value	
	nTotal (593)	Discharge n (%)	Death n (%)		Other n (%)
Gender					
Male		300 (59,2)	44 (55,0)	4 (66,7)	0,7206
Female		207 (40,8)	36 (45,0)	2 (45,0)	
Age group					
16 - 25 yrs		7 (1,4)	0 (0,0)	0 (0,0)	0,4417
25 - 34 yrs		13 (2,6)	3 (3,8)	0 (0,0)	
34 - 43 yrs		36 (7,1)	2 (2,5)	0 (0,0)	
43 - 52 yrs		56 (11,0)	7 (8,8)	1 (16,7)	
52 - 61 yrs		104 (20,5)	10 (12,5)	1 (16,7)	
61 - 70 yrs		129 (25,4)	18 (22,5)	3 (50,0)	
70 - 79 yrs		106 (20,9)	23 (28,8)	1 (16,7)	
79 - 88 yrs		43 (8,5)	14 (17,5)	0 (0,0)	
88 - 97 yrs		12 (2,4)	3 (3,8)	0 (0,0)	
97 - 106 yrs		1 (0,2)	0 (0,0)	0 (0,0)	
Origin					
Clinical Inpatient Unit		55 (10,8)	13 (16,3)	0 (0,0)	0,0831
Surgical Center		166 (32,7)	13 (16,3)	1 (16,7)	
Emergency Unit		259 (51,1)	46 (57,5)	4 (66,7)	
Outpatient units		1 (0,2)	0 (0,0)	0 (0,0)	
Other		26 (5,1)	8 (10,0)	1 (16,7)	

Variables	Outcomes			p-value	
	nTotal (593)	Discharge n (%)	Death n (%)		Other n (%)
Diagnostic Hypothesis					
Arterial Coronary Disease		252 (49,7)	30 (37,5)	2 (33,3)	0,0184
Mechanical Disorders		93 (18,3)	29 (36,3)	2 (33,3)	
Conduction Disorder		57 (11,2)	8 (10,0)	0 (0,0)	
Cardiac Surgery		83 (16,4)	8 (10,0)	1 (16,7)	
Other		22 (4,3)	5 (6,3)	1 (16,7)	
Tempo de internação					
00 - 04 days		362 (71,4)	34 (42,5)	4 (66,7)	0,00001
04 - 08 days		98 (19,3)	21 (26,3)	0 (0,0)	
08 - 12 days		25 (4,9)	9 (11,3)	0 (0,0)	
12 - 16 days		13 (2,6)	6 (7,5)	0 (0,0)	
16 - 20 days		5 (1,0)	7 (8,8)	0 (0,0)	
20 - 24 days		3 (0,6)	2 (2,5)	0 (0,0)	
24 - 28 days		1 (0,2)	1 (1,3)	0 (0,0)	
28 - 32 days		0 (0,0)	0 (0,0)	2 (33,3)	
Total		507 (100,0)	80 (100,0)	6 (100,0)	

Source: Authors data.

The age of patients admitted to the unit ranged from 16 to 98 years. In order to better present the data, the frequency amplitude was calculated, aiming to organize age data in 10 age groups, with predominance of the age groups between 51 and 79 years old. The group with the highest number of admissions was between 61 and 70 years, totaling 150 admitted patients, of these 129 (25.4%) were discharged from the Intensive Care Unit, 18 (22.5%) died and 3 (50%) were transferred to another hospital. From this perspective there was no statistical significance (p-value = 0.4417), which would allow inferring the association between the variables.

Regarding the origin of the patient, we sought to classify the variable according to the internal records found in the Unit. The authors defined the following categories for origin: Clinical Inpatient Units, comprising units of the hospital in question or others; Surgical Center, including all patients who were referred to the specialized intensive care unit after surgery; Emergency Unit, including all those admitted from units of this nature, whether from the Emergency Room of the hospital itself or from public emergency services; Outpatient units, referring to all patients coming from a private or referenced doctor's office, by the municipal medical center; and finally the group called Other, which included all patients coming from other hospitals as well as readmissions. In this variable the majority were patients admitted from emergency units, totaling 309 admissions,

of these, 259 (51.1%) were discharged from the Unit, 46 (57.5%) died and 4 (66.7%) were discharged or transferred to other hospitals, with no statistical association with the clinical outcome variable (p-value = 0.0831).

The diagnostic hypotheses described at admission were classified according to the group of diseases established by the authors, such as Coronary Artery Disease (CAD), comprising: (ST-segment elevation or non-ST-elevation acute myocardial infarction; Stable and Unstable Angina); Mechanical Disorders: (Congestive Heart Failure, Cardiogenic Shock, Acute Pulmonary Edema); Conduction Disorders: (Arrhythmia, Atrial Flutter, Atrioventricular Block, Atrial Fibrillation, Supraventricular Tachyarrhythmias / Ventricular Tachycardia, Atrial Tachycardia, Bradycardia, Chagas Disease); Cardiac Surgical Intervention: (Aortic / Mitral Valve Replacement and Myocardial Revascularization), i.e. patients admitted in immediate postoperative periods. There was a predominance of patients admitted with CAD (totaling 284), 252 of them (49.7%) were discharged from the Intensive Care Unit, 30 patients (37.5%) died and 2 (33.3%) were transferred to another hospital; mechanical disorders led a lower number of admissions and proportionally increased death outcome, from a total of 125, 29 (36.3%) evolved to death, a significant percentage that reflects the statistical association between the variables, (p-value = 0.0184).

Finally, regarding the length of stay there was a variation between 1 and 32 days of stay of patients in the Intensive Care Unit, the stay in days was stratified based on the calculation of frequency range. There was a predominance of the hospitalization period of up to four days. 400 patients remained at least four days in the Unit. However, it is imperative to highlight the relationship between the number of discharges and the number of deaths from the sixteenth day of hospitalization on. Thus, an association between the variables was established (p -value = 0.00001).

DISCUSSION

This study demonstrated that the majority of patients hospitalized in 2017 in the Coronary Intensive Care Unit were male. In national studies carried out in the northeast⁴ and the southern regions⁷, the predominance of male hospitalizations in general and specialized intensive care units was found, with 51.7% and 61.6%, respectively, corroborating a North American study where 57% of admitted participants were male.⁸ Furthermore, 44 (55%) male patients had the outcome of death. Moreover, in men the rates of hospitalization have been increasing significantly between 2009 and 2015, according to data of the Ministry of Health.⁹ The relevant factors at the time of hospitalization, together with the clinical conditions of the patient define the outcome. It is considered that delays in search for care, the difficulty of access to the health service and the resolution of adversity may lead to the negative outcome.^{4,10}

The aging process is defined by physiological, morphological, biochemical and emotional changes, that should be considered as a set of progressive transformations, which lead to the development of pathologies linked to the organism's functionality caused by reductions in cell dynamics and the weakening of the organism's structures, making it difficult for the individual to keep his/her functional capacity intact.¹¹ Despite being aware of the changes related to human aging, they may not keep up with the chronology, as health and dependency levels, among other factors must be taken into account. In Brazil the National Elderly Policy (PNI) as well as in administrative and political instruments, which regulate and guarantee the rights of the elderly define the elderly as a 60-year-old person.^{12, 13}

In this study, the age of patients admitted to the unit ranged from 16 to 98 years. The group with the highest number of admissions was between 61 and 70 years of age, totaling 150 hospitalizations, which corroborates the findings of a study conducted in the state of Goiás, in the Midwest of Brazil¹⁴, where most hospitalizations were observed among 65 to 74 year olds, and a study conducted in the state of Rio Grande do Sul, southern Brazil, where the highest percentage of admissions / hospitalizations was from 61 to 70 years of age.¹⁰ In this age group 129

(25.4%) were discharged from the Intensive Care Unit, 18 (22.5%) died and 3 (50%) were transferred to another hospital and / or readmitted.

According to Table 1, although the number of admissions in the age group of 70 to 79 years is lower than the one previously mentioned, the number of deaths in this group was high (23 or 28.8%), of the total number of admitted patients, which was 106 (20.9%), hence the number of deaths increases with increasing age. In a survey conducted with data from all over Brazil, on both genders, the main cause of death of the elderly population were circulatory diseases, accounting for 34.1% and 35.2% of male and female deaths, respectively.¹²

Simultaneously with the increase in the life expectancy of the population, the increase in the incidence of lifestyle-related noncommunicable chronic diseases is observed due to the high rates of sedentary lifestyle and lack of knowledge of the aging process, on the part of the individual and the population, which in turn results in increased hospitalizations of the elderly in the Intensive Care Unit.

Given this, institutions should develop actions aimed at coping with the care of the population in this age group, because according to the data presented the number of hospitalizations and deaths among the elderly was the highest. It is believed that the implementation of care aimed at the care of elderly patients may favor the adoption of qualified care practices, aimed at patients over sixty years of age.^{15,7}

The majority of patients in this study were admitted from the emergency units, totaling 309 admissions. A Brazilian study conducted in Santa Catarina, State located in the southern region⁷, found that the majority of hospitalizations was initiated in the Surgical Center (52.5%), in the second place appears the urgency and emergency unit (24.6%), corroborating another similar study conducted in the State of Piauí, in northeastern Brazil⁴, that identified inpatient units as the main origin of hospitalizations (49.5%); this data also corroborates a study conducted in the State of Rio Grande do Sul¹⁰, where the majority of patients (39%) were brought in from the Emergency Unit (Emergency Room). We also note the outcomes for admitted patients coming from these units, with 259 (51.1%) being discharged from the Unit, 46 (57.5%) dying and 4 (66.7%) being transferred to other hospitals and / or readmitted. This percentage of death reflects the complexity of the cases, that due to advanced age and presence of acute chronic diseases require specialized treatment.¹⁰

The American Heart Association indicates that the mortality rates attributed to cardiovascular disease between 2003 and 2013 have declined representing 30.8% of all deaths in the United States, nevertheless these diseases trigger one in each three deaths, with Coronary Artery Disease accounting for one in seven deaths.

In Brazil, resources and investments focusing on health promotion and prevention measures are being increased, nevertheless cardiovascular diseases represent 80% of medical care, contributing to increased hospitalization rates.¹⁶

When analyzing the diagnostic hypotheses of the admitted patients, there is a predominance of CAD, totaling 284, and 252 (49.7%) were discharged from the Intensive Care Unit, 30 (37.5%) died and 2 (33.3%) were transferred to another hospital institution. Notably, despite a smaller number of admissions, Mechanical Disorders have a significant number of deaths as clinical (29 deaths representing 36.3%).

In this study, the main cardiovascular diseases observed represent two major groups: Coronary Artery Disease (CAD) and Mechanical Disorders, since they present the highest percentage of admissions and the highest number of deaths among those admitted to the unit; results that corroborate another study conducted in the state of Goiás¹⁴, which indicates AMI and CHF as prevalent cardiovascular morbidities, diseases that fall respectively under the most prevalent groups in this study as well. CADs have a considerable mortality rate in developing countries, such as Brazil, as their prevalence in the adult population is estimated to be between 5% and 8%.¹⁷ Heart Failure, which stands out in the Mechanical Disorders set, is a consequence of most heart diseases, resulting in high rates of hospitalization and frequent readmissions.¹⁸

According to the length of hospitalization, this study suggests that the relationship between the number of discharges and the number of deaths, from the sixteenth day of hospitalization on, converge, showing that the longer the stay, the greater the possibility of unfavorable outcomes, which corroborates with a study conducted in the Brazilian Midwest, that demonstrated that 27% of hospitalizations longer than 8 days had a death outcome, indicating as a complication the prolonged hospitalization.¹⁴

The study has limitations in terms of its sample, since it reflects local reality in a single reference municipality in the southern region of Mato Grosso State, in treating patients who need intensive care in a Specialized Intensive Care Unit.

CONCLUSION

This study allowed verifying that the clinical outcome of death is presented mostly in male patients, with a significant proportion in the age group of 70 to 79 years, when coming from urgency and emergency units with the main diagnostic hypothesis of CAD and Mechanical Disorders proportionally increasing the length of stay in intensive care units. A limitation of the study is that such characteristics reflect local reality only.

We expect that based on the sociodemographic and clinical data of the patients treated, the institution will be able

to implement the assistance offered with focus on specialized care, in order to reduce mortality rates in the Coronary Unit. One of possible strategies to try and achieve this result is to hire specialized professionals; offer both continuing education and professional development programs developed in a way that encourages professionals to participate and ultimately put into practice knowledge acquired.

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