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SOCIODEMOGRAPHIC AND CLINICAL PROFILE OF PATIENTS HOSPITALIZED WITH ACUTE MYOCARDIAL INFARCTION IN THE STATE OF RONDÔNIA FROM 2014 TO 2023

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ABSTRACT

Acute myocardial infarction (AMI) remains one of the main medical emergencies and causes of mortality worldwide, despite significant advances in diagnosis and treatment. This condition not only profoundly impacts the quality of life of affected individuals, but also imposes a significant economic and social burden on health systems. This article seeks to analyze the epidemiological profile of patients hospitalized for acute myocardial infarction in the state of Rondônia, from 2014 to 2023, with the aim of providing a comprehensive overview that can inform both clinical practice and public health policymaking. The analysis of hospitalizations due to acute myocardial infarction in the state of Rondônia from 2014 to 2023 revealed a significant increase of 27.39% in hospitalizations in recent years and a considerable reduction in the mortality rate, which are important predictors of better health care and early diagnostic detection of this condition in order to avoid morbidity and mortality. Furthermore, regarding the sociodemographic profile of the affected population, there is a predominance of males with 67.13% of cases, brown race with 44.48% and the age group from 60 to 69 years as risk factors and predisposes to a higher number of hospitalizations due to AMI. In short, it is important to train health professionals, both for the active identification of cases and for the approach to suspected cases. This involves everything from awareness-raising actions to the correct

completion of the mandatory notification form, considering the relevance of these data for the implementation of measures based on the analysis of the sociodemographic profile and hospitalizations due to acute myocardial infarction in the state of Rondônia.

Keywords: Acute Myocardial Infarction, Sociodemographic and clinical profile, Rondônia.

INTRODUCTION

Acute myocardial infarction (AMI) remains one of the main medical emergencies and causes of mortality worldwide, despite significant advances in diagnosis and treatment. AMI is characterized by necrosis of myocardial tissue due to prolonged ischemia, typically resulting from the occlusion of a coronary artery, often caused by the rupture of an atherosclerotic plaque and subsequent formation of a thrombus. This condition not only profoundly impacts the quality of life of affected individuals, but also imposes a significant economic and social burden on health systems. Furthermore, the epidemiology of AMI reveals a high incidence in populations exposed to cardiovascular risk factors, such as arterial hypertension, type II diabetes mellitus, dyslipidemia, smoking, obesity and sedentary lifestyle.^{1,2}

In this context, understanding these risk factors is crucial for the development of effective primary and secondary prevention strategies for this condition, which can significantly contribute to reducing the incidence and severity of cardiac events. In Rondônia, according to data from the State Health Plan, ischemic heart disease remained the leading cause of death in the state, reflecting a profile similar to that of the North Region and Brazil.^{3,4} The highest number of deaths in the population aged 30 to 69 due to NCDs is related to heart disease, followed by neoplasms, Diabetes Mellitus and chronic respiratory diseases. The state of Rondônia is divided into several Health Regions, each responsible for managing and supporting health services in the municipalities within its area of coverage. These regions are essential for optimizing the distribution of resources and promoting the integration of health services between municipalities, improving coverage and efficiency of care for the population. Among the objectives of the latest health plan, we can mention the goal of Implementing the Chronic Conditions Care Network, which aims to reduce Premature Mortality due to Non-Communicable Chronic Diseases, including AMI, by 2% per year.^{5,6}

Management has evolved considerably, with the adoption of immediate reperfusion therapies, such as primary coronary angioplasty and pharmacological thrombolysis, which are crucial in reducing mortality and preserving myocardial function. In addition to acute interventions, long-term management includes the use of antiplatelet drugs, beta-blockers, angiotensin-converting enzyme inhibitors, and statins, as well as lifestyle modifications to mitigate the risk of recurrent events. Therefore, this article aims to analyze the epidemiological profile of patients hospitalized for acute myocardial infarction in the state of Rondônia, from 2014 to 2023, with the aim of providing a comprehensive overview that can inform both clinical practice and public health policymaking. In addition, it discusses recent epidemiological trends based on secondary data available at the Department of Informatics of the Unified Health System.^{7,8}

METHODOLOGY

This is a cross-sectional, quantitative, and retrospective study based on studies on the epidemiological profile of hospitalizations due to acute myocardial infarction in the state of Rondônia from 2014 to 2023. For this purpose, secondary data from TABNET were used, obtained through the Department of Information Technology of the Unified Health System (DATASUS), accessed in June 2024 and available on the website http://www.datasus.gov.br. In addition, the data collected through DATASUS were initially filtered using the Code of the International Classification of Diseases and Related Health Problems, tenth edition (ICD-10), specifically code I21, referring to Acute Myocardial Infarction (AMI). Then, inclusion and exclusion criteria were applied to select the most relevant information. In this sense, the inclusion criteria considered the population of Rondônia of all age groups, races, macro-regions and genders, with notifications of hospitalization for AMI during the period from 2013 to 2023, also including data on the clinical evolution of patients. The exclusion criteria involved notification data outside the period studied and that were not related to hospitalizations registered with the ICD-10 code I21. For data analysis, the Microsoft Excel 2016 program was used, and the results were presented in the form of tables and graphs by the same software. The study was developed in accordance with Resolution No. 466/2012 of the National Health Council, using exclusively secondary data in the public domain, which do not allow the identification of the subjects and are accessible for public consultation. Therefore, it was not necessary to submit it for approval by the Research Ethics Committee.

RESULTS AND DISCUSSIONS

From this study, it was possible to observe that there is a considerable incidence of hospitalizations due to acute myocardial infarction in Brazil, despite fluctuations in the number of cases due to inadequate completion of notification forms, an increase has been noted in recent years. In this context, in an analysis of patients hospitalized with AMI in the state of Rondônia, an increase of 27.39% was identified when comparing the results of hospitalizations in the years 2014 and 2023. Furthermore, the data demonstrate that the highest number of hospitalizations was in 2023 with 1,212 cases and the lowest was in 2017 with 331 cases reported, as shown in Table 1 and Graph 1.

It is worth mentioning that these results are similar to epidemiological studies ^{9,10} who attribute the high number of hospitalizations to a sedentary lifestyle and inadequate diet, chronic stress, which may be related to working conditions, economic and social pressures, contributing to the increase in heart disease, and the period of the COVID-19 pandemic that directly impacted cardiovascular health, both due to complications of the disease itself and indirect effects, such as the reduction in the demand for routine medical care, which may have increased the severity of cases and reflects the

mechanism of diagnostic improvement through complementary exams and early identification of the condition by health professionals. Furthermore, it is evident that the mortality rate due to AMI in the period studied has reduced significantly over the years, with the highest result in 2015 of 13.38 and the lowest of 7.59 in 2023, as shown in Table 1 and Graph 2. These data corroborate the analysis of the works^{11,12} that point to a combination of factors linked to the improvement of health services, prevention, and access to adequate treatment, such as the dissemination and coordination of angioplasty services and the availability of anticoagulant and thrombolytic drugs, in addition to the improvement of clinical guidelines for the management of infarction, such as the adoption of evidence-based protocols that allowed a more standardized and effective approach, with rapid measures that reduce damage to the heart and improve patient survival.^{13,14}

Year	Hospitalizations	Deaths	Mortality Rate
2014	533	71	13,32
2015	538	72	13,38
2016	515	67	13,01
2017	331	44	13,29
2018	550	56	10,1
2019	724	74	10,22
2020	726	70	9,64
2021	850	74	8,71
2022	1058	79	7,47
2023	1212	92	7 59

 Table 1- Number of hospitalizations and deaths due to acute myocardial infarction in

 Rondônia, between 2014 and 2023 and epidemiological indicators by year of occurrence.

Graph 1: Number of hospitalizations due to AMI per year, on an emergency basis, in the state of Rondônia between 2014 and 2023.



Graph 2: Mortality rate due to AMI per year in the state of Rondônia between 2014 and 2023.



Also in the analysis, there is a predominance of males in the number of patients hospitalized due to Acute Myocardial Infarction in Rondônia in the period from 2014 to 2023, corresponding to 4,724 cases (67.13%), and women appear right after with 2,313 cases (32.87%), as shown in Table 2. These results indicate that males are more predisposed to developing AMI due to several biological, genetic, behavioral and social factors, in agreement with studies^{15,16}.Furthermore, hormonal aspects stand out, such as estrogen, the predominant hormone in women of childbearing age, which has a protective effect on the cardiovascular system, which reduces the incidence of heart disease before menopause in females. Furthermore, there are other factors that make men more vulnerable, such as a greater propensity to alcoholism, sedentary lifestyle, smoking, chronic stress at work, fat distribution since men tend to accumulate visceral

fat, which is more strongly associated with cardiovascular diseases, while women accumulate more subcutaneous fat, which has less impact on cardiovascular risk, in addition to the fact that men historically show more resistance to seeking medical care early, which can lead to late diagnoses and hospitalizations in more severe stages of the disease.

Category	Ν	%
Male	4724	67,13
Female	2313	32,87

Table 2- Number of cases by sex and in percentage % in patients with AMI, in the public network of the state of Rondônia between 2014 and 2023.

Regarding the color/race variable, it was possible to show that the data had an impaired analysis due to the failure to fill out the notification form properly, with the ignored category presenting the largest number of cases with 3,294 (46.81%), followed by a predominance of the brown category with 3,130 cases (44.48%) and the smallest number of reported cases were indigenous with 10 cases (0.15%) as shown in Table 3. These data corroborate the works^{17,18} by ratifying the largest number of brown patients and the smallest number of indigenous patients hospitalized with acute myocardial infarction in the state of Rondônia between 2014 and 2023, which can be explained by a combination of socioeconomic, demographic, access to health and living conditions factors. Especially because, in Rondônia, the brown population represents a large portion of the demographics, reflecting the historical miscegenation of the region. As a result, the number of AMI cases among brown people may be higher simply because this population is numerically more significant.

Furthermore, brown individuals often belong to socioeconomically disadvantaged groups, which may mean less access to preventive care and appropriate treatments for health conditions. The lack of regular medical follow-up, prevention of risk factors and late diagnosis can increase the incidence of AMI. Furthermore, indigenous people account for a smaller number of hospitalized patients because they have different cultural conditions and access to the health system than other population groups. Indigenous people who maintain their traditional dietary practices tend to have diets richer in natural and less processed foods, with lower consumption of saturated fats, refined sugars and sodium, which reduces the risk of cardiovascular diseases. In addition, many indigenous communities have their own ways of dealing with health problems, using traditional medicine practices, which can limit contact with the health

system and, consequently, reduce the number of hospitalizations recorded for AMI in this ethnic group.^{19,20}

Category	Ν	%
White	360	5,11
Black	80	1,13
Brown	3130	44,48
Yellow	163	2,32
Indigenous	10	0,15
Ignored	3294	46,81
Total	7037	100%

Table 3 - Number of cases by color/race in patients with acute myocardial infarction, inRondônia between 2014 and 2023

The research also analyzed the number of AMI cases by age group in patients with AMI, showing a considerable incidence in the age groups of 50-59 years with 1,759 cases (24.43%) and 60-69 years with 2,097 cases (29.79%), the smallest affected group of 0-29 years with 98 cases (1.4%) as shown in Table 4. These conclusions are similar to epidemiological studies ^{6,21} that demonstrate a predominance in hospitalizations of patients between 50 and 69 years old due to a combination of physiological, behavioral and epidemiological factors that increase cardiovascular risk as age advances. These factors are due to the accumulation of atherosclerotic plaques in patients in this age group, which culminates in the blockage of the coronary arteries, in addition to the decline in vascular elasticity, making the blood vessels more rigid and prone to AMI. Individuals aged 50-69 have already been exposed to risk factors over several decades, such as smoking, sedentary lifestyle, poor diet, alcohol consumption and stress. In addition, metabolic changes are also an important factor in this scenario, since advancing age favors a natural slowdown in metabolism, which can increase the predisposition to obesity, insulin resistance and increased cholesterol levels, factors directly linked to the risk of heart attack.^{16,18}

In this context, it is confirmed that cumulative exposure to these factors increases the likelihood of developing heart disease and ischemic events in this age group. On the other hand, individuals aged 0-29 years have fewer hospitalizations due to this condition due to their metabolic condition. In general, young people have more flexible arteries and a better cardiovascular system. Therefore, the elasticity of the arteries helps regulate

blood pressure and reduce the strain on the heart, preventing AMI. In addition, this population has a low prevalence of chronic diseases and less time of exposure to risk factors.^{9,14}

Age Group	(N)	(%)
0-29	98	1,4
30-39	256	3,7
40-49	759	10,79
50-59	1719	24,43
60-69	2097	29,79
70-79	1470	20,89
80+	638	9
Total	7037	100%

Table 4- Number of cases of AMI by age group in patients with AMI, treated as an emergency, in the state of Rondônia between 2014 and 2023.

CONCLUSION

The analysis of hospitalizations due to Acute Myocardial Infarction in the state of Rondônia from 2014 to 2023 showed a significant increase of 27.39% in hospitalizations in recent years and a considerable reduction in the mortality rate, important predictors of better health care and early diagnostic detection of this condition in order to avoid morbidity and mortality. Furthermore, regarding the sociodemographic profile of the affected population, a predominance of males stands out, with 67.13% of cases, brown race with 44.48% and the age group of 60 to 69 years as risk factors and predisposing to a greater number of hospitalizations due to AMI based on genetic, behavioral and social factors.

In addition, the importance of training health professionals is undeniable, both for the active identification of cases and for the approach to suspected cases. This involves everything from awareness-raising actions to correctly filling out the compulsory notification form, considering the relevance of this data for the implementation of measures based on the analysis of the sociodemographic profile and hospitalizations due to acute myocardial infarction in the state of Rondônia.

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