

Survival rate and readmission rate after the first episode of myocardial infarction

Taxa de sobrevida e taxa de reinternação após primeiro episódio de infarto do miocárdio

Tasa de supervivencia y tasa de reingreso tras el primer episodio de infarto de miocardio

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Resumo O objetivo é estimar sobrevida global em um ano e taxa de reinternação após primeiro infarto do miocárdio. Estudo de coorte com 689 pacientes acompanhados entre agosto de 2016 e março de 2022. Foram utilizados o estimador de Kaplan-Meier e o teste de log-rank. O modelo semiparamétrico de Cox foi empregado para estimar o risco de óbito e readmissão. A média de idade foi de 60,0 (DP 11,0) anos, 67,9% homens e 50,7% de infarto agudo do miocárdio com supradesnívelamento de ST. A taxa de sobrevida global foi de 96,3%, com a mediana de tempo de óbito de 41,5 dias. A taxa de sobrevida livre de reinternação foi de 83,3%, com a mediana de tempo de readmissão de 54 dias. Idade igual ou superior a 60 anos aumentou o risco de morte em 10,01 e a presença de hipertensão arterial sistêmica aumentou o risco de readmissão em 1,52. A taxa de sobrevida global foi de 96,2%, com diferença entre grupos de idade. A taxa de sobrevida livre de reinternação foi de 83,3%, com diferença pela presença de hipertensão arterial sistêmica. Como os eventos são bastante prevalentes, faz-se necessária melhor avaliação da efetividade dos cuidados de saúde prestados e das ações que devem ser tomadas para reduzir a incidência e consequente morbidade e mortalidade.

Palavras-chave Doenças cardiovasculares, Infarto do miocárdio, Taxa de sobrevida

Abstract The aim is to estimate the overall one-year survival rate and readmission rate after the first myocardial infarction. A cohort study involving 689 patients followed up between August 2016 and March 2022. The Kaplan-Meier estimator and the log-rank test were used. Cox semiparametric model was used to estimate death and readmission risk. The mean age was 60.0 (SD 11.0) years old, 67.9% men and 50.7% with ST-elevation myocardial infarction. The overall survival rate was 96.3%, with median time of death of 41.5 days. The readmission-free survival rate was 83.4%, with median time of readmission of 54 days. Age of 60 years and over increased death risk by 10.01 and the presence of systemic arterial hypertension increased readmission risk by 1.52. The overall survival rate was 96.2% with difference in age groups. The readmission-free survival rate was 83.4%, with difference by the presence of systemic arterial hypertension. As these events are quite prevalent, a better assessment of the effectiveness of the health care provided and the actions that must be taken to reduce the incidence and consequent morbidity and mortality is necessary.

Key words Cardiovascular diseases, Myocardial infarction, Survival rate

Resumen El objetivo es estimar la supervivencia global a un año y la tasa de reingreso después del primer infarto de miocardio. Estudio de cohorte con 689 pacientes seguidos entre agosto de 2016 y marzo de 2022. Se utilizó el estimador de Kaplan-Meier y la prueba de log-rank. Se utilizó el modelo semiparamétrico de Cox para estimar el riesgo de muerte y reingreso. La edad media fue 60,0 (DE 11,0) años, el 67,9% eran hombres y el 50,7% presentaron infarto agudo de miocardio con elevación del ST. La tasa de supervivencia general fue del 96,3%, con una mediana de tiempo hasta la muerte de 41,5 días. La tasa de supervivencia libre de reingreso fue del 83,3% con una mediana de tiempo de reingreso de 54 días. La edad de 60 años o más aumentó el riesgo de muerte en 10,01 y la presencia de hipertensión arterial sistémica aumentó el riesgo de reingreso en 1,52. La tasa de supervivencia global fue del 96,2%, con diferencias entre grupos de edad. La tasa de supervivencia libre de reingreso fue del 83,3%, con diferencias por la presencia de hipertensión arterial sistémica. Como los eventos son bastante frecuentes, es necesario evaluar mejor la efectividad de la atención médica brindada y las acciones que deben tomarse para reducir la incidencia y la consiguiente morbilidad y mortalidad.

Palabras clave Enfermedades cardiovasculares, Infarto de miocardio, Tasa de supervivencia

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Introduction

Cardiovascular diseases (CVDs) are the leading cause of death in most countries¹. Coronary artery disease (CAD) stands out among them, a chronic pathology that in course of its evolution may present acute events known as acute coronary syndromes (ACS), with acute myocardial infarction (AMI) as the main presentation^{2,3}. In Brazil, the mortality rate due to AMI decreased between 1996 and 2016 from 79.1% to 42.7% in the capital cities, mainly among women (-2.2%) when compared to men (-1.7%), although this trend is uneven according to region and sex⁴.

The main risk factors associated with CVDs account for approximately 80% of the attributable risk of AMI, with emphasis on smoking, dyslipidemia, hypertension, diabetes, and abdominal obesity. The most important are smoking and dyslipidemia, mainly hypercholesterolemia⁵.

Many countries have achieved significant advances in treating AMI, with considerable decrease in mortality rates and related morbidity⁶⁻⁹. On the other hand, in underdeveloped and developing countries, this reduction was smaller or did not occur, as in many countries from Latin America and Africa².

Brazil has achieved discreet progress in reducing mortality due to AMI and it has been very heterogeneous. This decrease was mainly observed in males and was less evident in older age groups. In addition, there are marked regional differences in the evolution, probably linked to socioeconomic differences across the regions, with higher mortality rates in states from the North and Northeast, for example¹⁰.

AMI is the leading cause of death or disability in low- and middle-income countries. Consequently, an annual production loss of around 2.5 billion Brazilian *reais* is calculated using the disability-adjusted life years lost as the parameter, comprising the sum of the years lost due to premature death and years lived with disability¹¹.

In a study carried out in a medium-sized city of southern Brazil, 8.9% in-hospital mortality was observed in patients with AMI. The readmissions of these individuals were related to procedural complications, the most important being thrombosis, which occurs in the acute phase, and restenosis in the later stage. A 15.8% readmission rate within one year was estimated. The cumulative incidence of Major Adverse Cardiovascular Events (MACE: a composite indicator that includes cardiovascular death, AMI or stroke) through the end of the first year of follow-up after hospital discharge was 6.1%^{12,13}.

Despite the subject enormous relevance, there is little data on the topic in the Brazilian literature. The ACCEPT (Acute Coronary Care Evaluation of Practice Registry) Brazilian multicenter study was the first to evaluate patients with ACS. This is a prospective registry designed by the Brazilian Society of Cardiology and carried out in 47 Brazilian hospitals. It also evaluates patients with recurrent AMI episodes and ACS cases that do not meet the criteria for AMI^{14,15}. Among the findings of this study, at the end of one year, a significant reduction in the occurrence of MACE and mortality was observed among patients affected by AMI in those who underwent coronary artery bypass grafting when compared to those that were not subjected to the procedure, with a risk for MACE within a year of 13.6 per 100 people-years¹⁵. Thus, the present study seeks to contribute with data and information from a longitudinal study, rarely found in the national literature.

Thus, estimating the patients' survival after a first AMI episode and the associated factors allows for a better assessment of the effectiveness of the health care provided and the actions that should be taken to reduce the incidence and consequent morbidity and mortality of the disease. Thus, the current study aims at estimating the patients' one-year survival rate and the readmission-free survival rate after a first AMI episode.

Methods

This prospective cohort study analyzes part of the data obtained by the study entitled "Catarina Cohort – Follow-up of patients after a first myocardial infarction in the state of Santa Catarina (SC): a prospective cohort study". This cohort has been ongoing since the first half of 2016 and is the source of several studies that have been recently published¹⁶⁻²⁰ or are in progress.

Data were collected between August 2016 and March 2022 in the emergency departments of *Instituto de Cardiologia de Santa Catarina* (ICSC), a state reference in Cardiology, located in the city of São José/SC, Brazil and of *Hospital Universitário Professor Polydoro Ernani de São Thiago* (HU-UFSC) in Florianópolis/SC, Brazil. The sample size was calculated based on an unknown incidence of deaths one year after the first episode of AMI and a relative error of 4%, resulting in a total of 600 patients. 10% was added to compensate for losses, totaling 660 patients.

The inclusion criteria were age over 18 years old, no previous history of AMI and presence of precordial pain suggestive of AMI associated with ECG with typical alterations or associated with increased myocardial necrosis markers. The exclusion criteria corresponded to patients with health conditions that prevented the possibility of recruiting and signing a Free and Informed Consent Form. The patients that met the inclusion criteria were invited to participate and signed the Free and Informed Consent Form after been explained the purpose and importance of the research.

The patients were evaluated upon arrival at the hospitals and treated according to the specific protocols of each service. Those who chose to participate in the study were followed-up and reassessed through outpatient consultations at the end of the first and twelfth months after the first episode of AMI. Those who died during follow-up or were readmitted were considered failures. Losses during the follow-up period or those who died from external causes were considered censored.

A research instrument developed for data collection was applied, which included sociodemographic variables, cardiovascular risk factors and the occurrence of cardiovascular events after the first AMI. After collection, the data were entered into Windows Excel spreadsheets and subsequently exported for analysis to the SPSS Statistics for Windows, version 18.0 (SPSS Inc., Chicago, Ill., USA). The one-year survival rate and one-year readmission rates after the first AMI episode were estimated using Kaplan-Meier curves²¹. Survival was calculated as the interval between the day of the first AMI episode and date of death, readmission or last date of follow-up. The maximum follow-up was one year (365 days). Patients who did not die and who were not readmitted were censored at the last follow-up date. The median times of occurrence of each outcome and their interquartile range were calculated. The survival curves were estimated without stratification and stratified by variables that were statistically different at the level of significance of 0.05 in the log-rank test.

In survival analyses, the Cox proportional hazards model²¹ was adopted to evaluate the impact of predictor variables on patient survival. For this purpose, rigorous verification was conducted using the Grambsch and Therneau test, which evaluates the hypothesis that risk ratios are constant over time, which is a central assumption of the model. It was possible to verify the adequacy of the proportional hazards model for the data, ensuring the reliability of

the estimated coefficients and the validity of the conclusions derived. The variables included in the model were those that presented a p-value < 0.20. All analyses were carried out for death and readmission in one-year-time.

The study was submitted to and approved by the Ethics Committee for Research Involving Human Beings of *Instituto de Cardiologia de Santa Catarina* under CAAE No. 55450816.0.1001.0113 and in the Research Ethics Committee of *Universidade Federal de Santa Catarina*, under CAAE No. 55450816.0.2001.0121, carried out according with the guidelines of the 1975 Declaration of Helsinki.

Results

A total of 686 patients with AMI were included in the research. The mean age of patients was 60.0 (DP 11.0) years old with higher prevalence of males (67.9%). Of the total number of AMI cases, 50.7% were with ST-elevation. Of the total, 25 patients died and 661 (96.3%) were censored at the end of the follow-up period. The number of readmission cases was 114, and therefore, 572 (83.4%) were censored in the same period. The incidence rate of death within one year was 3.7% (95%CI: 2.4; 5.2). In the same period, the incidence rate of readmission was 16.6% (95%CI: 13.9; 19.5).

The one-year survival rate after the first AMI was 96.3% (95%CI 94.8; 97.3) with median time of death of 41.5 days (interquartile range, 20 to 130) (Figure 1A). One year after the first AMI, the readmission-free survival rate was 83.4% (95%CI 88.8; 93.0) with median time of readmission of 54 days (interquartile range, 24 to 145) (Figure 2A).

The variable age was statistically and independently associated with death within one year after the first AMI. Patients aged 60 years or older had an adjusted risk of death of 10.01 times compared to those with younger age (HR = 10.01; 95% CI 2.37; 43.09). Other studied variables were not statistically associated with death (Table 1 and Figure 1B).

The variable presence of systemic arterial hypertension was statistically and independently associated with readmission within one year after the first AMI. Patients with systemic arterial hypertension had an adjusted risk of readmission of 1.52 times compared to those without hypertension (HR = 1.52; 95%CI 1.01; 2.29). Other variables studied were not statistically independently associated with death (Table 2 and Figure 2B).

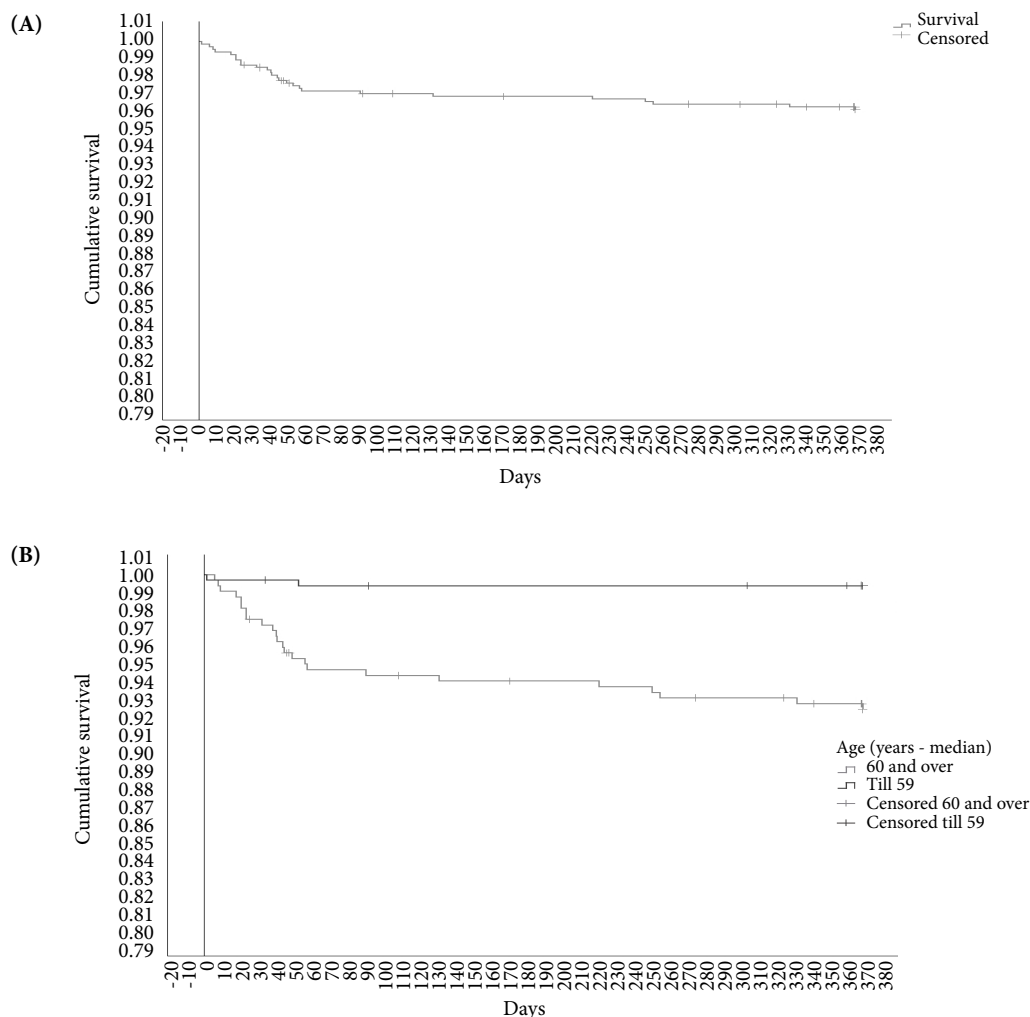


Figure 1. Deaths after the first acute myocardial infarction: overall one-year survival function (A) and by age (B).

Source: Authors.

Discussion

During the research, 686 patients with a first episode of AMI were followed up. The results showed a one-year survival rate of 96.3% and a one-year readmission-free survival rate of 83.4%.

AMI has its highest prevalence associated with men²², although the difference between sexes is discreet²³. Despite this, although discrepant from the findings of the current study, which did not observe differences between sexes, women present a higher mortality rate in the first year after AMI²³, a fact that is partially

explained by differences in age and prevalence of risk factors and comorbidities²⁴. In Brazil, men are more susceptible to AMI in all regions of the country in relation to women, with a higher mortality rate among males, increasing as the age group increases, in white-skinned individuals with low schooling levels²⁵. In Brazil, there has been a considerable decrease in mortality due to AMI among women when compared to men in recent decades, in addition to higher mortality rates among men living in the North and Northeast when compared to other regions²⁶. Thus, the influence of sex as the sole predictor of worse prognoses in CVDs is still

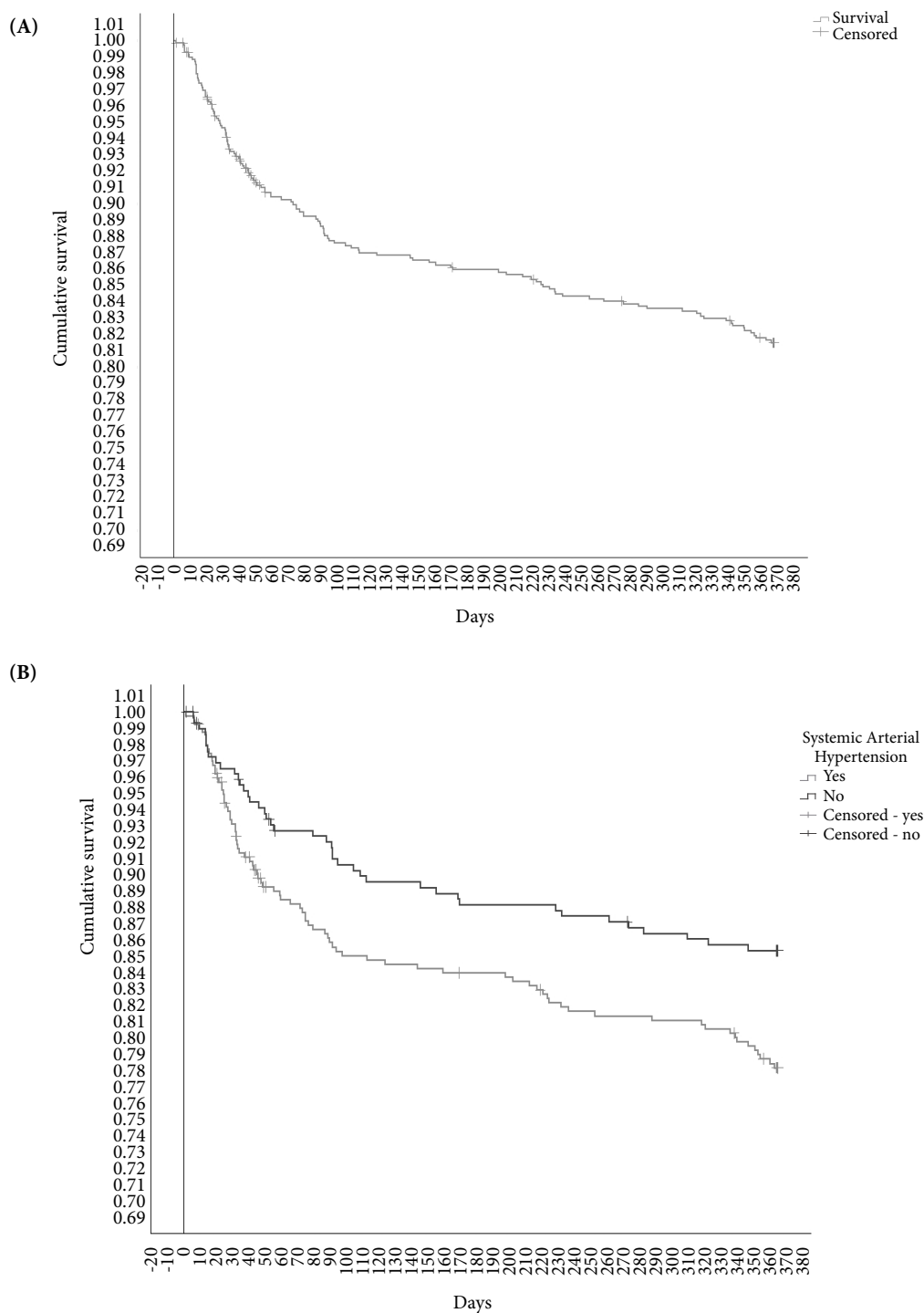


Figure 2. Readmission after the first acute myocardial infarction: overall one-year survival function (A) and by diagnostic of systemic arterial hypertension (B).

Source: Authors.

Table 1. Deaths, readmission, chance of one-year survival rate after the first acute myocardial infarction and crude and adjusted hazard ratio.

	n (%)	Deaths (%)	Chance of one-year survival (95%CI)	p (log-rank)	Crude hazard ratio (95%CI)	Adjusted hazard ratio (95%CI)
Sex (n = 686)				0.964		
Male	465 (67.8)	17 (3.7)	96.3 (94.6; 98.0)		1.02 (0.44; 2.36)	
Female	221 (32.2)	8 (3.6)	96.4 (93.9; 98.8)		1.00	
Age (n = 686)				0.001		
Up to 59 years	330 (48.1)	2 (0.6)	99.4 (98.6; 100.0)		1.00	1.00
60 years and over	356 (51.2)	23 (6.5)	93.5 (91.0; 96.0)		11.00 (2.59; 46.66)	10.01 (2.37; 43.09)
Skin color (n = 685)				0.554		
White	604 (88.2)	23 (3.8)	96.2 (94.7; 97.7)		1.55 (0.36; 6.56)	
Nonwhite	81 (11.8)	2 (2.5)	97.5 (94.1; 100.0)		1.00	
Marital status (n = 683)				0.427		
Single/Divorced/ Widowed	204 (29.9)	9 (4.4)	95.4 (92.6; 98.2)		1.40 (0.61; 3.19)	
Married	479 (70.1)	15 (3.1)	96.9 (95.6; 98.2)		1.00	
Schooling (years) (n = 684)				0.600		
Till 8	480 (70.2)	18 (3.8)	96.2 (94.5; 97.9)		1.28 (0.51; 3.22)	
Up to 8	204 (29.2)	6 (2.9)	97.1 (94.8; 99.4)		1.00	
Family history of cardiovascular diseases (n = 684)				0.816		
Yes	286 (41.8)	11 (3.8)	96.2 (94.0; 98.4)		1.10 (0.50; 2.42)	
No	398 (58.2)	14 (3.5)	96.5 (94.7; 98.3)		1.00	
Obesity (n = 673)				0.914		
Yes	194 (28.8)	7 (3.6)	96.4 (93.8; 99.0)		0.95 (0.40; 2.28)	
No	479 (71.2)	18 (3.8)	96.2 (94.5; 97.9)		1.00	
Systemic arterial hypertension (n = 684)				0.141		
Yes	393 (57.4)	18 (4.6)	95.4 (93.3; 97.5)		1.93 (0.80; 4.61)	1.47 (0.59; 3.67)
No	291 (42.6)	7 (2.4)	97.6 (95.8; 99.3)		1.00	1.00
Diabetes mellitus (n = 683)				0.103		
Yes	176 (25.8)	10 (5.7)	94.3 (90.9; 97.7)		1.94 (0.87; 4.33)	1.35 (0.58; 3.12)
No	507 (74.2)	15 (3.0)	97.0 (95.5; 98.5)		1.00	1.00
Dyslipidemia (n = 683)				0.478		
Yes	227 (33.2)	10 (4.4)	95.6 (92.9; 98.3)		1.34 (0.60; 2.97)	
No	456 (66.8)	15 (3.3)	96.7 (95.1; 98.3)		1.00	
History of smoking (n = 682)				0.430		
Yes	224 (32.8)	10 (4.5)	95.5 (92.8; 98.2)		1.38 (0.62; 3.01)	
No	458 (67.1)	15 (3.3)	96.7 (95.1; 98.3)		1.00	
Physical activity (n = 684)				0.889		
Yes	255 (37.3)	9 (3.5)	96.5 (94.0; 98.7)		1.00	
No	429 (62.7)	16 (3.7)	96.9 (94.2; 97.2)		1.06 (0.47; 2.40)	

Source: Authors.

controversial in the literature, requiring statistical adjustment of baseline and clinical characteristics of individuals in future studies.

In this study, it was observed that the incidence of mortality was 3.7% and 16.6% for readmissions in the first year after the AMI. Characterizing the clinical evolution of ACS and identifying the precursors of these events allows for an individualization of clinical follow-up,

better assessment of therapeutic efficacy and optimization of resource use²⁴.

Law *et al.*²⁷ following up 14,211 patients affected by the first AMI episode observed a mortality rate of 10% in the first year and 5% in each subsequent year, with no association to age, differing from the findings of this study, in which a ten times greater risk of death was observed in patients aged 60 or over, compared

Table 2. Readmission, chance of one-year no-readmission rate after the first acute myocardial infarction and crude and adjusted hazard ratios.

	n (%)	Readmission (%)	Chance of one-year no-readmission (95%CI)	p (log-rank)	Crude hazard ratio (95%CI)	Adjusted hazard ratio (95%CI)
Sex (n = 686)				0.921		
Male	465 (67,8)	76 (16,3)	83.7 (80.4; 87.0)		0.98 (0,66; 1.45)	
Female	221 (32,2)	38 (17,2)	82.8 (77.8; 87.8)		1.00	
Age (n = 686)				0.447		
Up to 59 years	330 (48,1)	51 (15,4)	84.2 (80.3; 88.1)		1.00	
60 years and over	356 (51,0)	63 (17,7)	82.6 (78.6; 86.5)		1.15 (0.80; 1.67)	
Skin color (n = 685)				0.392		
White	604 (88,2)	98 (16,2)	83.8 (80.9; 86.7)		0.79 (0.47; 1.35)	
Nonwhite	81 (11,8)	16 (19,8)	80.2 (71.5; 88.9)		1.00	
Marital status (n = 683)				0.476		
Single/Divorced/ Widowed	204 (29,9)	37 (18,1)	81.9 (76.6; 87.2)		1.15 (0.78; 1,71)	
Married	479 (70,1)	77 (16,1)	83.9 (80.6; 87.2)		1.00	
Schooling (years) (n = 684)				0.565		
Till 8	480 (70,2)	82 (17,1)	82.9 (79.5; 86.3)		1.13 (0.75; 1.71)	
Up to 8	204 (29,8)	32 (15,7)	84.3 (79.3; 89.3)		1.00	
Family history of cardiovascular diseases (n = 684)				0.500		
Yes	286 (41,8)	44 (15,4)	84.6 (80.4; 88.8)		0.88 (0.60; 1.28)	
No	398 (58,2)	70 (17,6)	82.4 (78.7; 86.1)		1.00	
Obesity (n = 673)				0.240		
Yes	194 (28,8)	39 (20,1)	79.9 (74.3; 85.5)		1.26 (0.85; 1.87)	
No	479 (71,2)	75 (15,7)	84.3 (81.1; 87.5)		1.00	
Systemic arterial hypertension (n = 684)				0.019		
Yes	393 (57,4)	76 (19,3)	80.7 (76.8; 84.6)		1.60 (1.08; 2.37)	1.52 (1.01; 2.29)
No	291 (42,5)	38 (13,1)	86.9 (83.0; 90.8)		1.00	1.00
Diabetes mellitus (n = 683)				0.094		
Yes	176 (25,8)	36 (20,5)	79.5 (73.5; 85.5)		1.40 (0.94; 2.08)	1.22 (0.81; 1.85)
No	507 (74,3)	78 (15,4)	84.6 (81.5; 87.4)		1.00	1.00
Dyslipidemia (n = 683)				0.225		
Yes	227 (33,2)	43 (18,9)	81.1 (76.0; 86.2)		1.26 (0.86; 1.85)	
No	456 (66,8)	71 (15,6)	84.4 (81.1; 87.7)		1.00	
History of smoking (n = 682)				0.449		
Yes	224 (32,9)	34 (15,2)	84.8 (80.1; 89.5)		1.17 (0.78; 1.75)	
No	458 (67,1)	80 (17,5)	82.5 (79.0; 86.0)		1.00	
Physical activity (n = 684)				0.280		
Yes	255 (37,3)	38 (14,9)	85.1 (80.7; 89.5)		1.00	
No	429 (62,7)	75 (17,5)	82.5 (78.9; 86.1)		1.24 (0.84; 1.84)	

Source: Authors.

to those younger. They also highlighted that mortality after AMI recurrence was 33% in the patients who did not arrive at the hospital, 20% in-hospital and 20% within the first year after discharge. However, authors²⁷ evaluated only patients without interventions for appropriate

AMI treatment. On the other hand, studies such as the CRUSADE (Can Rapid Risk Stratification of Unstable Angina Patients Suppress Adverse Outcomes with Early Implementation of the ACC/AHA Guidelines) study, which evaluated patients with non-ST-segment-elevation myo-

cardial infarction, showed that the observed eight-year mortality rate was 45% among patients aged 65 to 74 years and 77% among patients aged 75 years and older²⁸.

A prospective study carried out in southern Brazil with patients with a first ST-elevation myocardial infarction episode showed an annual incidence of hospitalization of 108 cases per 100,000 inhabitants. Rates of in-hospital mortality and cardiovascular events during the first year of follow-up were 8.9% and 6.1%, respectively, with greater involvement of older individuals¹³. Thus, the data from this study show a mortality rate like the one found in developed countries, although with a higher hospitalization rate.

Although the incidence and mortality rates after AMI are decreasing, mainly in high-income countries, the impact of the disease has increased due to population aging and to a higher prevalence of survivors after AMI²⁹. Especially in the first year, individuals affected by the disease present a higher risk of infarction recurrence, in addition to other diseases, such as stroke, in relation to the general population³⁰. This risk is higher in the presence of risk factors such as advanced age, hypertension or diabetes, leading to worse outcomes³².

A population-based cohort study conducted in the United Kingdom between 2000 and 2017 showed, through the survival rates after AMI, a modest enhancement concerning the improvement observed in other diseases, such as cancer, during this period, observing an increase from 74.2% in 2000 to 80.8% in 2016 after the first year since AMI³³.

Similarly to the results of this study, Griffith *et al.*³³ found no differences in mortality between men and women after AMI after adjusting for age and other confounding variables such as smoking, previous vascular diseases, diabetes, hypertension and social deprivation. These findings were contrary to earlier studies of survival after AMI that did not consider this bias, stating a lower probability of women developing CVDs, but worse outcomes after AMI³⁴. In this context, these findings denote that new strategies for early diagnosis and treatment in Primary Care for sexes should still be a priority for public health policies.

In addition, although it usually involves preventable outcomes, ACS is responsible for high hospitalization and rehospitalization rates, associated with high costs for patients and public health services and high in-hospital mortality rates^{35,36}. In this study, the readmission-free survival rate after the first year since AMI was

83.4%, with a median time of readmission of 54 days. Patients with systemic arterial hypertension had a 52% higher risk of readmission.

The presence of hypertension is a recognized cardiovascular risk factor⁵. However, this study demonstrates that in patients with AMI, the presence of hypertension emerges as an independent risk factor for readmission. These findings are similar to those of a post hoc analysis of the *Assessment of Pexelizumab in Acute Myocardial Infarction Trial*, which evaluated 5,745 patients with STEMI and demonstrated that hypertension is an independent risk factor for readmission for any cause within 30 days (OR 1.28; 95%CI 1.07-1.52)³⁷.

Similarly, data analysis from the *Treatment With Adenosine Diphosphate Receptor Inhibitors: Longitudinal Assessment of Treatment Patterns and Events After Acute Coronary Syndrome (TRANSLATE-ACS) study* demonstrated that patients with AMI and hypertension had an OR of 1.17 (1.00-1.36, $p=0.046$) for unplanned rehospitalizations within 30 days after the discharge³⁸.

Oliveira *et al.*³⁹ observed a readmission rate of 21.5% and a mean time between admissions of approximately four months, with predominance of males (64%) and a mean age of 63 years old. Similarly, the authors report 7% of deaths in readmitted patients, with ACS as the leading reason for hospitalization.

It is important to emphasize that readmissions involve a broad and multifactorial context related to the patients' clinical conditions, family and social issues, as well as to treatment conditions during hospitalization and after hospital discharge. In this sense, preventive actions at all levels are essential, considering their influence on the readmission rates of these individuals.

Some limitations of the current study must be acknowledged. A sample from a specific population for the research context was selected for convenience at two reference hospitals in Cardiology, limiting generalization of the findings. The study sample was restricted to individuals affected by a first AMI episode to reduce the possibility of prior CVD involvement and recent changes in lifestyle and risk factors before the cardiac injury.

Another issue to consider is that the Kaplan-Meier estimated curves show a plateau due to a significant amount of censored data. This suggests that the event of interest will not occur in all individuals sampled, and cure fraction models⁴⁰ would be appropriate for a more detailed analysis of the data. However, for the pur-

poses of this study, standard survival analysis techniques seemed sufficient for a satisfactory interpretation of the data. It is also important to note that the residual analysis was carried out to observe the goodness of fit of the regression models, with no trends being observed.

Conclusion

One year after AMI, the mortality-free survival rate was 96.3%, lower in individuals aged 60

years and over. The readmission-free survival rate was 83.4% lower in patients with systemic arterial hypertension.

The findings of this study demonstrate the need to: create age-specific care protocols due to the higher mortality risk in patients aged 60 and older; develop targeted interventions for patients with hypertension to reduce readmission risk; allocate healthcare resources based on readmission patterns, focusing on improving post-discharge care; implement post-AMI surveillances to monitor care trends beyond the first year.

Collaborations

R Cegielka, J Traebert and DM Moreira were the study main researchers responsible for its design and data acquisition. R Cegielka formulated the research question. J Traebert and DM Moreira performed the statistical analysis. All authors participated in writing and review of the manuscript and approved its final version.

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