Journal of Nursing

Revista de Enfermagem

UFPE On Line

ISSN: 1981-8963

INFORMATIONAL ARTICLE

MORTALITY BY AN ACUTE MYOCARDIAL INFARCTION

MORTALIDADE POR INFARTO AGUDO DO MIOCÁRDIO

MORTALIDAD POR INFARTO AGUDO DEL MIOCARDIO

Tatiana Laís Fonsêca de Medeiros¹, Paloma Cibelle Nascimento Silva de Andrade², Rejane Marie Barbosa Davim³, Nicelha Maria Guedes dos Santos⁴

ABSTRACT

Objective: To describe mortality due to an acute myocardial infarction. **Method:** this is a quantitative, descriptive, exploratory, ecological, time series study with the population aged 30 to 59 years old in the Brazilian Region from 2008 to 2016 according to data from the Department of Information Technology of the Unified Health System. **Results:** high mortality rates due to acute myocardial infarction in men and women between 30 and 59 years old was verified. The Southeast Region had the highest percentage of deaths (47.9%), then the Northeast followed (20.2%), the South Region (14.8%), the Central West (9.1%) and the North (8%). **Conclusion:** the results show high mortality rates due to acute myocardial infarction in men and women in the age groups between 30 and 59 years old, revealing the Southeast Region with the highest percentage (47.9%), leading all regions and age groups. It is concluded that acute myocardial infarction is a disease triggered by intrinsic factors and these factors can be modified from preventive programs and measures. **Descriptors:** Heart Congenital; Myocardial Infarction; Chagas Cardiomyopathy; Chronic Disease; Chest Pain; Ventricular Fibrillation.

RESUMO

Objetivo: descrever a mortalidade por infarto agudo do miocárdio. **Método:** estudo quantitativo, descritivo, exploratório, ecológico de série temporal, com a população de 30 a 59 anos de idade nas regiões do Brasil, no período de 2008 a 2016, de acordo com dados no Departamento de Informática do Sistema Único de Saúde. **Resultados:** verificou-se elevadas taxas de mortalidade por infarto agudo do miocárdio em homens e mulheres entre 30 e 59 anos. A região Sudeste com maior percentual de óbitos (47,9%), a Nordeste vem em seguida (20,2%), a região Sul com 14,8%, Centro-Oeste 9,1% e a Norte com 8%. **Conclusão:** os resultados mostram elevadas taxas de mortalidade por infarto agudo do miocárdio em homens e mulheres nas faixas etárias entre 30 e 59 anos revelando a região Sudeste com maior percentual (47,9%), liderando todas as regiões e faixas etárias. Conclui-se que o infarto agudo do miocárdio é uma doença desencadeada por fatores intrínsecos e que estes fatores podem ser modificados a partir de programas e medidas preventivas. **Descritores:** Cardiopatias Congênitas; Infarto do Miocárdio; Cardiopatia Chagásica; Doença Crônica; Dor no Peito; Fibrilação Ventricular.

RESUMEN

Objetivo: describir la mortalidad por infarto agudo del miocardio. **Método:** estudio cuantitativo, descriptivo, exploratorio, ecológico de serie temporal, con la población de 30 a 59 años de edad en las Regiones de Brasil en el período de 2008 a 2016 de acuerdo con datos en el Departamento de Informática del Sistema Único de Salud. **Resultados:** se verificaron elevadas tasas de mortalidad por infarto agudo del miocardio en hombres y mujeres entre 30 y 59 años. La Región Sudeste tuvo la mayor porcentaje de óbitos (47,9%), el Nordeste viene en seguida (20,2%), Región Sur con 14,8%, Centro-Oeste 9,1% y Norte con 8%. **Conclusión:** los resultados muestran elevadas tasas de mortalidad por infarto agudo del miocardio en hombres y mujeres en las edades entre 30 y 59 años revelando la Región Sudeste con mayor porcentaje (47,9%), liderando todas las regiones y edades. Se concluye que el infarto agudo del miocardio es una enfermedad desencadenada por factores intrínsecos y estos factores pueden ser modificados a partir de programas y medidas preventivas. **Descriptores:** Cardiopatías Congénitas; Infarto del Miocardio; Cardiomiopatía Chagásica; Enfermedad Crónica; Dolor del Pecho; Fibrilación Ventricular.

^{1,2}Nurses (graduated), Universidade Potiguar/UnP. Natal (RN), Brazil. E-mails: tatiannalais@hotmail.com; ORCID iD: <http://orcid.org/0000-0002-3190-5262>; paloma_cibele@hotmail.com; ORCID iD: <http://orcid.org/0000-0003-2800-1788>; ³Ph.D., Federal University of Rio Grande do Norte/UFRN. Natal (RN), Brazil. E-mail: rejanemb@uol.com.br; ORCID iD: <http://orcid.org/0000-0002-0399-0113>; ⁴Master degree, Universidade Potiguar/UnP. Natal (RN), Brazil. E-mail: nicelha@unp.br; ORCID iD: <http://orcid.org/0000-0003-4287-1659>

INTRODUCTION

Cardiovascular diseases (CVD) affect a large part of the Brazilian population. The acute myocardial infarction (AMI) is one of the main cause. Data from the Department of Informatics of the Unified Health System (DATASUS) of 2013 show that AMI was the main cause of death due to heart disease in Brazil, with an increase of 48% between 1996 and 2011. "If this trend persists, AMI is predicted to become the leading single cause of death by 2020."^{1:120}

According to the literature, CVDs are highlighted among all the chronic diseases as the main ones that cause death in both developed and developing countries. The global epidemiological profile has been changing over the years and since the 1960, there has been a decrease in infectious and parasitic diseases (PD) and an increase in Non-communicable Chronic Diseases (CNCD) in a marked manner, circulatory system due to its great magnitude. Research has been observed that CNCDs are the cause in 80% of the deaths that occur in low-income countries because they are more exposed to risk factors and have less access to health services than in high-income countries per capita.²⁻³

CVDs are chronic, characterized by a long period of latency, causing victims to only perceive late symptoms at an advanced stage with irreversible lesions that lead to major complications, occupying more and more space in the epidemiological profile of morbidity and mortality due to cardiopathy.⁴

In the last decades, the worldwide epidemiological scenario has revealed the growth of CVDs, of which AMI is the pathology that most affects and deserves attention due to its severity. "In 2011, about 20 million people suffered from cardiovascular diseases worldwide, and approximately 12 million were fatal."^{5:230}

CVDs are also the leading mortality agents in the world, with estimates of approximately 25 million deaths for 2020, with 19 million of them in low-income and middle-income countries.⁶ The high mortality rate in the Unified Health System (SUS) is mainly attributed to the difficulties of treatment in the Intensive Care Unit (ICU), methods of reperfusion as well as established therapeutic measures for AMI.⁷

Brazil has revealed alteration in the morbidity and mortality profile of its population, similar to what has been occurring worldwide. The number of deaths from diseases of the circulatory system has been increasing, although of progressive decline in

mortality rates. However, epidemiological data show that CVD is the main cause of death in Brazil, accounting for about 29% of deaths in 2009, representing the third largest cause of hospitalization in the SUS with more than 1 million hospitalizations and total expenditures around 1.9 billion reais. These values have a high financial impact on the health system, constituting approximately 5% of the hospitalized costs in the beginning of the decade of 2000, until the current moment.⁵

The Brazilian population follows the international trend in the growth of the aging rate, driven by the fall in fertility and mortality, together with the increase in life expectancy. "Only in Brazil, there are more than 15 million elderly people, with Porto Alegre being the second largest Brazilian capital, behind only Rio de Janeiro"⁸⁻²⁹¹ This demographic transition provides an increase in the prevalence of CNCD and, consequently, mortality related to these diseases.

Atherosclerosis and aortic stenosis are the main causes of coronary myocardial ischemia and its complications such as spasm and thrombosis, assuming specific clinical features in angina pectoris and AMI. The retrosternal pain is typical of myocardial ischemic pain on the left side or rarely on the right side of the sternal line restricting the whole region or a small anginal area. Anginal pain is the sensation that something tightens the retrosternal region and certain patients report a tightening sensation in the throat. In a stable angina, the pain has a short duration and may vary from two to three minutes and it is associated with physical exertion. This is because pain is related to myocardial hypoxia and not to necrosis. In unstable angina, pain is more prolonged and intense lasting up to 20 minutes or several hours, appearing even at rest caused by necrotic changes suggesting AMI. Although it is one of the clinical signs of the disease, the duration of pain is not enough to diagnose an infarct.⁹

The precordial pain may also radiate to the mandible exclusively to the left upper limb in the epigastric region and less frequently in the dorsal region. In addition to pain, other symptoms such as nausea, malaise, sweating, dyspnea, tachycardia and even mental confusion occur.¹⁰

It is important to obtain fast and efficient pre-hospital care, reducing the time between onset of the ischemic event and necrosis until treatment. Mortality can also be reduced by reversing ventricular fibrillation through defibrillation.¹¹

The diagnosis of AMI occurs with the Electrocardiogram (ECG), clinical history and

analysis of cardiac enzymes CK-MB, Myoglobin, and Troponin. Another form of diagnosis in the possibility of AMI is catheterization, a percutaneous examination detecting location and obstructive gravity in the arteries of the heart. Detecting the disease early is the best way to help with treatment. It occurs from several angles: through fibrinolytic and antithrombotics used to dissolve the thrombus that occludes the artery through reperfusion of primary angioplasty which is a less invasive intervention or by stent implantation in the vessel wall treating various types of obstructions. Another form of treatment is surgical revascularization, indicated on an elective and emergency basis when other types of interventions fail, that is, it is contraindicated since it is more invasive and presents risks to the patient.¹²

There are several factors that predispose to CVD such as systemic arterial hypertension (SAH), diabetes mellitus, dyslipidemia and obesity. Behavioral factors depend on lifestyle and can be modified such as smoking, unhealthy diet, excessive alcohol intake and sedentary lifestyle. There are also inheritance factors such as gender, age and family history that are not modifiable and, therefore, independent of the patient. Although AMI is a disease that, depending on extrinsic factors, predominates in the higher age groups, but the intrinsic ones are determinant in some cases. Therefore, this disease does not only affect the elderly, nevertheless, it is increasingly reaching the age range of young adults.¹³

Every patient with AMI must necessarily be treated in the hospital environment, preferably in the ICU or other specific units. On average, during the first three days, the patient is continuously monitored so any complications such as arrhythmias are immediately identified and treated.¹⁴

Eating healthy from childhood is essential to health and decreases the risk of CVD in the future. Young people's eating habits have changed significantly in recent decades by eating foods high in fat, cholesterol and carbohydrate. Consequently, these people are at greater risk of developing CVD in adulthood.¹⁵

Attention to this situation and realizing during the hospital practice in the graduation great morbimortality by cardiopathies, in addition to family and friends victims of this disease, it was decided to study this theme. When the problem reaches close people, there is a clearer view of the problem that is in fact very worrying.

Thus, this study will contribute to nursing through a reflection on the situation, knowing the Brazilian reality about AMI mortality, favoring decision making in patients and promoting preventive measures to reduce their incidence favoring improvements to the patients given that being clarified about their gravity, it may seek to minimize the extrinsic factors that depend on each person and also contribute to further research. Thus, the question is: what is the mortality rate for AMI in Brazil in the last nine years?

OBJECTIVE

- To describe mortality from acute myocardial infarction.

METHOD

This is a quantitative, descriptive, exploratory, ecological time series study with the population aged 30 to 59 years old in the Brazilian Regions from 2008 to 2016 according to data found in the Department of Informatics of the Unified Health System (DATASUS). Most ecological studies refer to the analysis of published official statistics or data available in bodies responsible for the information systems of a given population. It is descriptive for researching general characteristics of a particular disease with respect to people, geographic distribution and time of occurrence. It is a time series, characterized by variations in incidence/prevalence or mortality/lethality of diseases observed over a long period of time, decades or even centuries.¹⁶

The DATASUS website was used as a database, using the five regions of Brazil as a geographical basis whose subjects are from cases of AMI mortality from 2008 to 2016 in the population of men and women between 30 and 59 years old. In DATASUS, the statistical segment of hospital mortality of SUS was searched for the place of hospitalization in Brazil. Inclusion criteria were the five geographic regions, the population of both genders and number of deaths due to AMI in the nine-year period in three age groups, ranging from 30 to 39, 40 to 49 and 50 to 59 years old. DATASUS provides data on AMI mortality only from 2008, hence the definition of the nine-year period in this study.

Data were collected according to Figure 1.

Database	Place of hospitalization	Region	Content	Period	AMI Age Gender
Datatus	Sus	North	Hospitalization	2008/2016	30-39
		South	Hospital expenses		40-49
		Southeast	Deaths		50-59
		Midwest			Male
		Northeast			Female

Figure 1. Search flow and data extraction in the DATASUS database. Natal (RN), Brazil, 2016

In DATASUS, the SUS hospital morbidity page was chosen for the place of hospitalization in Brazil. Then, the five geographic regions were selected: North, Northeast, South, Southeast, and Midwest; the contents with hospitalizations, hospital expenses, deaths, and others, being the death of the option selected in the periods available from 2008 to 2016. The available selections composed of the pathology in the case of this study, AMI with age range between 30 and 59 years old, to 39, 40 to 49 and 50 to 59 years old and both genders. Data were collected and later presented in a descriptive way. Due to the fact that the study was based on DATASUS with secondary data and universal access, it was not necessary to be referred to the Research Ethics Committee. The Virtual Health Library, SciELO, MEDLINE, and LILACS were used as a theoretical basis, as well as textbooks on the subject with the following descriptors: Congenital Heart Disease; Myocardial Infarction; Chagasic Cardiopathy; Chronic disease; Chest Pain and Ventricular Fibrillation. The data collection period was from August 2016 to May 2017.

RESULTS

After analysis in the database, notifications of 21,398 cases of AMI deaths occurring in Brazil between men and women aged 30 to 59 years were identified in the period from 2008 to 2016. In most regions, males had the highest number of reported deaths with 13,587 deaths and 7,811 females. Among these deaths, there was a higher incidence in the age group of 50 to 59 years old, in both the male and the female.

The Southeastern region has the highest number of deaths (47.9%) followed by the Northeast (20.2%), the South (14.8%), the North and Midwest regions approach with 8.0% and 9, 1% respectively, although it shows alternation between the years 2010, 2014 and 2015. The Southeast also leads in 46.6% of female deaths, the Northeast with 23.5%, although a lower number of deaths can be identified in 2008, 2009 and 2015, in relation to the South, which represents 15.9%. The Midwest had 9.2%, the North had 4.8% and alternation between regions in 2011 and 2012.

Mortality due to AMI was also identified in the regions of Brazil, by gender, in the age group between 40 and 49 years.

The Southeast region had the highest number of deaths due to AMI (47.8%), Northeast (21.7%), South (19.6%), and there was a slight oscillation between the South and Northeast regions in 2008 and 2015. the Midwest and North regions had with 6.2% and 4.1%, respectively, and the AMI mortality in the Brazilian regions, by gender, in the age group of 50-59 years.

Mortality due to AMI among males aged 50-59 years was 53.5% in the Southeast, 19.7% in the South, and 16.7% in the Northeast. The North presented 4.7% and Center-West 7.2%, with a lower number of deaths.

Mortality due to AMI in the 50-59 age group in the Brazilian regions is highest in the Southeast (50.8%), followed by the Northeast (20.6%), the South (18.5%) and the Midwest and North with 6.4% and 3.7% respectively.

DISCUSSION

The analysis in the data allowed observing that there was predominance in the male sex with 13,587 deaths in 21,938 deaths occurred in the period from 2008 to 2016 in the regions of the country, representing 63.4% with 5,776 deaths more than among the women. Among the age groups evaluated, the highest number of deaths was 50 to 59 years (68.7%) followed by the age group from 40 to 49 (24.9%) and 30 to 39 with 6.2%.

Comparing the regions, the Southeast was the most affected by AMI mortality, maintaining prevalence in all age groups and in both genders, with 10,873 deaths representing 50.8% in the whole period analyzed.

According to the literature, CVD occupy a prominent place in morbidity and mortality in Brazil appearing first in the causes of death. For MS, the Southeast Region has a higher mortality rate due to diseases of the circulatory system (207 deaths/100 thousand inhabitants), given that the Brazilian average is 169 deaths/100 thousand inhabitants. Faced with this fact, genetics and advanced age are important risk factors besides to lifestyle habits that can be modified.¹⁷

The South region reached the second place with 19.1% of deaths due to AMI and the Northeast in third (18.4%). Although the South region occupies the second place in a number of deaths due to AMI, the Northeast was lower than the South in the age groups from 40 to 49 years and from 50 to 59 years in the male patients. That is, in this region, there was a significant increase in male deaths between 40 and 59 years old. The regions less affected by AMI mortality were the Midwest (7.1%) and the North (4.6%).

Corroborating with these results, a study showed that in the largest emergency room in the South of the country, where 152 patients with the acute coronary syndrome (ACS) were evaluated, 67.6% of the cases were male and 32.4% were female with an average of 61 years old.¹⁸ Another study carried out in the city of Teresina (PI) regarding gender did not show significant differences between men and women, although there was a predominance of 56.2% in males.¹⁹

Regarding the diagnosis, ECG is indeed the most important test to confirm AMI, which should be performed within 10 minutes of the emergency presentation, since it is the center of the initial decision-making process in patients with suspected ischemia.²⁰

The results of this study suggest a progressive increase in AMI mortality in the Brazilian regions, especially in the age group between 50 and 59 years old. However, it should be observed that the geographic regions of Brazil and their respective capitals have their populations submitted to different risk factors due to their cultural, demographic, socioeconomic and political heterogeneity.

A descriptive retrospective cohort study performed at a cardiological emergency hospital in the municipality of São José (SC) from January 2013 to January 2014, with a collection of 349 medical records of patients hospitalized during this period analyze the profile and factors associated with death hospitalizations for AMI and identified 16 deaths in the period with a rate of 4.58% of the cases. The authors report that the reduced percentage of deaths (4.58%) actually reduced the possibility, in some variables, of obtaining a statistically significant result. However, the mortality rate for AMI in the previous studies had a variance of 3.2 a 20.6% lethality.²¹

Regarding comorbidities, systemic arterial hypertension (SAH) appears in other studies on the prevalence of AMI, such as occurring in a survey carried out in the Emergency Care Unit of the University Hospital in the Municipality

of Belo Horizonte (MG), in 71% of infarcted patients.²² This chronic comorbidity represents one of the main risk factors for CVD, contributing to a two to three times increase in the chance of AMI when compared to individuals who do not present them.²³

In a descriptive, retrospective, documental study with a quantitative approach developed at the Emergency Unit of Prado Valadares General Hospital of Jequié, Brazil, aiming to characterize the profile of the population affected by AMI in a sample of 106 medical records, the results showed the SAH as the most prevalent risk factor, besides showing a significant index of hospital mortality in patients with a definitive diagnosis.²⁴

The multiple factors influencing the occurrence of hypertension among those that are modifiable by the high index in the population and also the main concern of public health policies are noteworthy.²⁵ These factors are influenced by the living conditions of the population and propagate in their population life relationships, in the established personal relationships, and in their sociocultural context.

Because the different quality of the care provided in the regions, the diagnostic capacity and the quality of the information provided are important to reduce mortality rates, intensify control of risk factors, and increase the population's access to health services. It is also necessary to educate individuals about the risk factors, signs and symptoms of AMI to identify it early since 40% to 60% of deaths occur in the first hour and approximately 80% in the first 24 hours.²⁷

In a cross-sectional descriptive study with a population base focused on the home visit developed in three UBS and areas of coverage with data collection from June 2010 to July 2011 with 258 elderly people over 60 years old enrolled in Hiperdia Programs, in the city of Guarapuava/PR - Brazil, the research found that most of the elderly were smokers, used alcoholic beverages and hypercaloric foods associated with sedentary lifestyle. The study revealed a non-effective action in the control of risk factors among the surveyed elderly. They concluded that activities focused only on drug distribution without fully acting on the proposal of the Hiperdia Program are not effective for success in the prevention of AMI.²⁸

It is necessary to identify the profile of the population affected by AMI, given that each individual has limitations and characteristics, influenced by the habitat in which they cohabit, contributing to the implementation of health policies for the prevention of risk

Medeiros TLF de, Andrade PCNS de, Davim RMB et al.

factors and reduction of the incidence of this disease in the city and region.

CONCLUSION

The results showed high mortality rates due to AMI in men and women between 30 and 59 years old. The southeastern region with the highest percentage (50.8%) leads all regions and age groups, and the 50-59 age group has the highest number of deaths. Then, there was the South (19.1%), the Northeast (18.4%), the Midwest (7.1%) and the North with 4.6%. It is important to emphasize that the mortality rate due to AMI was higher for the population aged 50 to 59 years old, mainly affecting males.

Regarding the theoretical and/or practical implications of the results, it is important to emphasize that AMI is a disease triggered by intrinsic and extrinsic factors, and it is possible to modify this scenario from preventive measures with programs to prevent risk factors, including economically feasible approaches and cost-effective interventions to reduce mortality.

The study may contribute in a way to directing policies in preventive cardiology aimed at reducing the incidence of AMI and its mortality through effective control of the identified risk factors, health promotion strategies, changes in the population's life habits, abandonment of routines such as inadequate nutrition, sedentary lifestyle, obesity, modern life stress, illicit drug abuse, tobacco and alcohol consumption.

REFERENCES

1. Schmidt MM, Quadros AS, Martinelli ES, Gottschall CAM. Prevalência, etiologia e características dos pacientes com infarto agudo do miocárdio tipo 2. *Rev Bras Cardiol Inv* [Internet]. 2015 [cited 2017 Oct 10];23(2):119-23. Available from: <http://www.sciencedirect.com/science/article/pii/S0104184315000429>
2. Duncan BB, Chor D, Aquino EML, Benson IM, Mill JG, Schmidt MI, et al. Doenças crônicas não transmissíveis no Brasil: prioridade para enfrentamento e investigação. *J public health* [Internet]. 2012 [cited 2017 Oct 10];46(supl.1):126-34. Available from: <http://www.scielo.br/pdf/rsp/v46s1/17.pdf>
3. Organização Mundial de Saúde (OMS). Global status report on non communicable diseases 2010. Geneva: World Health Organization [Internet]. 2012 [cited 2017 Oct 15]. Available from: <http://www.who.int/mediacentre/factsheets/fs317/en/index.html>

Mortality by an acute myocardial infarction.

4. Martins LN, Souza LS, Silva CF, Machado RS, Silva CEF, Vilagra MM et al. Prevalência dos fatores de risco cardiovascular em adultos admitidos na unidade de dor torácica em Vassouras, RJ. *Rev Bras Cardiol* [Internet]. 2011 [cited 2017 Oct 15];24(5):299-307. Available from: <http://www.rbconline.org.br/wp-content/uploads/r5-04-AO-LMartins.pdf>
5. Huguenin FM, Pinheiro RS, Almeida RMVR, Infantsi AFC. Characterization of the variation of health care taking into account the costs of hospital admissions for acute myocardial infarction in Brazilian Unified Health System. *Rev bra epidemiol* [Internet]. 2016 [cited 2017 Oct 15];19(2):229-42. Available from: http://www.scielo.br/scielo.php?pid=S1415-790X2016000200229&script=sci_arttext&tlng=en
6. Servinc S, Akyol AD. Cardiac risk factors and quality of life in patients with coronary artery disease. *J Clin Nurs* [Internet]. 2010 [cited 2017 Oct 15];19(9-10):1315-25. Available from: <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2702.2010.03220.x/abstract>
7. Ribeiro AL. The two Brazils and the treatment of acute myocardial infarction. *Arq Bras Cardiol* [Internet]. 2009 [cited 2017 Oct 15];93(2):83-4. Available from: http://www.scielo.br/pdf/abc/v93n2/en_v93n2a03.pdf
8. Espinosa G, Porto F, Gurgel JL. Influência do exercício físico em Indicadores antropométricos de risco cardiovascular em idosos. *Int J Cardiovasc Sci* [Internet]. 2015 [cited 2017 Oct 15];28(4):290-7. Available from: <http://pesquisa.bvs.br/riipsa/resource/pt/lil-776153>
9. Porto CC. Exame clínico Porto & Porto. 7ª ed. Rio de Janeiro: Guanabara Koogan Ltda, 2013.
10. Siervuli MTF, Silva AS, Silva AC, Muzzi RAL, Santos GAB. Infarto do miocárdio: alterações morfológicas e breve abordagem da influência do exercício físico. *Rev Bras Cardiol* [Internet]. 2014 [cited 2017 Oct 18];27(5):349-55. Available from: <http://www.rbconline.org.br/artigo/infarto-do-miocardio-alteracoes-morfologicas-e-breve-abordagem-da-influencia-do-exercicio-fisico/>
11. Piegas LS, Timerman A, Feitosa GS, Nicolau JC, Mattos LAP, Andrade MD et al. V Diretriz da Sociedade Brasileira de Cardiologia sobre tratamento do infarto agudo do miocárdio com supradesnível do segmento ST. *Arq Bras Cardiol* [Internet]. 2015 [cited

Medeiros TLF de, Andrade PCNS de, Davim RMB et al.

Mortality by an acute myocardial infarction.

2017 Oct 18];105(2):1-121. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0066-782X2009001400001

12. Gonzales MM, Timerman S, Gianotto-Oliveira R, Polanstri TF, Canesin MF, Schimidt A, et al. I Diretriz de ressuscitação cardiopulmonar e cuidados cardiovasculares de emergência da Sociedade Brasileira de Cardiologia. Arq Bras Cardiol [Internet]. 2013 [cited 2017 Oct 18];101(2):1-221. Available from:

http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0066-782X2013000200001

13. Pereira NR, Agapito NC, Anatos CRF, Souza JC, Oliveira URS. Análise da prevalência de infarto agudo do miocárdio em Montes Claros, MG. Rev Elet Mult [Internet]. 2015 [cited 2017 Oct 18];1(1). Available from:

<http://clinicamedica2017.com.br/evento/2017/trabalhosaprovados/naintegra/1236>

14. Piegas LS, Feitosa G, Mattos LA, Nicolau JC, Rossi Neto JM, Timerman A, et al. Sociedade Brasileira de Cardiologia. IV Diretriz da Sociedade Brasileira de Cardiologia sobre Tratamento do Infarto agudo do Miocárdio com Supradesnível do Segmento ST. Arq Bras Cardiol [Internet]. 2009 [cited 2017 Oct 18];93(6supl.2):e179-e264. Available from: http://publicacoes.cardiol.br/consenso/2009/diretriz_iam.pdf

15. Pinasco GC, Silva JP, Almeida CDA, Silva VR, Arruda BF, Lopes BP, et al. Associação entre consumo alimentar de risco cardiovascular e aumento de circunferência abdominal em adolescentes. J Hum Growth Dev [Internet]. 2015 [cited 2017 Oct 20];25(3):319-24. Available from:

http://pepsic.bvsalud.org/scielo.php?pid=S0104-12822015000300011&script=sci_arttext&tlng=pt

16. Rouquayrol MZ, Gurgel M. Epidemiologia & Saúde. 7ª ed. Rio de Janeiro: Medbook Editora Científica Ltda, 2013.

17. Ferreira AIS, Ferreira G. Prevalência de mortalidade por doenças cardiovasculares em uma cidade do sul de Minas Gerais nos anos de 1999 a 2008. Rev ciênc saúde [Internet]. 2012 [cited 2017 Oct 20];2(2):57-66. Available from:

https://www.researchgate.net/publication/309000503_Prevalencia_de_mortalidade_por_doenças_cardiovasculares_em_uma_cidade_do_sul_de_Minas_Gerais_nos_anos_de_1999_a_2008Prevalence_of_cardiovascular_mortality_in_a_southern_city_of_Minas_Gerais_in_the_year

18. Lemos KF, Davis R, Moraes MA, Azzolin K. Prevalência de fatores de risco para síndrome coronariana aguda em pacientes atendidos em uma emergência. Rev Gaúcha Enferm

[Internet]. 2010 [cited 2017 Oct 20];31(1):129-35. Available from:

http://www.scielo.br/scielo.php?pid=S1983-14472010000100018&script=sci_arttext

19. Jesus AV, Campelo V, Silva MJS. Perfil dos pacientes admitidos com Infarto Agudo do Miocárdio em Hospital de Urgência de Teresina-PI. Rev Interd [Internet]. 2013 [cited 2017 Oct 20];6(1):25-33. Available from: http://revistainterdisciplinar.uninovafapi.edu.br/index.php/revinter/article/viewFile/8/pdf_2

20. Piegas LS, Timerman A, Nicolau JC, Mattos LA, Rossi Neto JM, Feitosa GS. III Diretriz Sobre Tratamento do Infarto Agudo do Miocárdio - Sociedade Brasileira de Cardiologia. Arq Bras Cardiol [Internet]. 2004 [cited 2017 Oct 20];83:1-86. Available from: http://publicacoes.cardiol.br/consenso/2004/DirIII_TratalAM.pdf

21. Mattos LAIP, Berwanger O, Santos ES, Reis HJL, Romano ER, Petriz JLF, et al. Clinical outcomes at 30 days in the Brazilian Registry of Acute Coronary Syndromes (ACCEPT). Arq Bras Cardiol [Internet]. 2013 [cited 2017 Oct 20];100(1):6-13. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0066-782X2013000100003

22. Luz AR, Corrêa AR, Silqueira SMF. Características do atendimento inicial a pessoas com Síndrome Coronariana Aguda. J Nurs UFPE on line [Internet]. 2015 [cited 2017 Oct 22];9 (11):9763-70. Available from: http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/view/6726/pdf_8838

23. Polanczyk CA. Fatores de risco cardiovascular no Brasil: os próximos 50 anos. Arq Bras Cardiol [Internet]. 2005 [cited 2017 Oct 22];84(3):199-201. Available from: <http://www.scielo.br/pdf/abc/v84n3/a01v84n3.pdf>

24. Araújo IFM, Santos ISC, Longuiniere ACFL, Valença Neto PF, Franklin TA. J Nurs UFPE on line [Internet]. 2016 [cited 2017 Oct 22];10(7):2302-9. Available from: <https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/11284/12934>

25. Ministério da Saúde (BR). Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Hipertensão arterial sistêmica para o Sistema Único de Saúde: Cadernos de atenção básica. Brasília: Ministério da Saúde (Cadernos de Atenção Básica, n. 15) [Internet]. 2006 [cited 2017 Oct 22]. Available from: <http://dab.saude.gov.br/portaldab/biblioteca.php?conteudo=publicacoes/cab15>

26. Silva FM, Budó MLD, Garcia RP, Sehnem GD, Schimith MD. Práticas de vida de

Medeiros TLF de, Andrade PCNS de, Davim RMB et al.

Mortality by an acute myocardial infarction.

portadores de hipertensão arterial. Rev enferm UERJ [Internet]. 2013 [cited 2017 Oct 22];21(1):54-9. Available from: <http://www.facenf.uerj.br/v21n1/v21n1a09.pdf>

27. Sampaio E, Mussi F. Cuidado de Enfermagem: evitando o retardo pré-hospital face o infarto agudo do miocárdio. Rev Enferm UERJ [Internet]. 2009 [cited 2017 Oct 22];17(3):442-6. Available from: <http://www.facenf.uerj.br/v17n3/v17n3a25.pdf>

28. Pinheiro RHO, Vieira MCU, Pereira MEMB. Fatores de risco para infarto agudo do miocárdio em pacientes idosos cadastrados no Programa Hiperdia. Cogitare Enferm [Internet]. 2013 [cited 2017 Oct 22];18(1):78-83. Available from: <http://revistas.ufpr.br/cogitare/article/view/File/26366/20017>

Submission: 2017/11/05

Accepted: 2018/12/15

Publishing: 2018/02/01

Corresponding Address

Rejane Marie Barbosa Davim
Avenida Amintas Barros, 3735
Condomínio Terra Brasília, Bloco A, Ap. 601
Bairro Lagoa Nova
CEP: 59056-215 – Natal (RN), Brazil