

HOSPITAL MORBIDITY AND MORTALITY OF ELDERLY PEOPLE WITH HEART FAILURE
ACCORDING TO BRAZILIAN REGIONS
MORBIMORTALIDADE HOSPITALAR DE IDOSOS COM INSUFICIÊNCIA CARDÍACA
CONFORME AS REGIÕES BRASILEIRAS
MORBILIDAD Y MORTALIDAD HOSPITALARIA DE ANCIANOS CON INSUFICIENCIA
CARDÍACA SEGÚN REGIONES BRASILEÑAS

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ABSTRACT

Objective: to understand data on hospital morbidity and mortality of elderly patients with Heart Failure, according to Brazilian regions. **Method:** this is a quantitative, descriptive, epidemiological, historical series study from 2014 to 2018, with secondary data obtained from DATASUS. Some variables were selected according to the Brazilian regions. The results were presented in the form of figures. **Results:** It is informed that diseases of the circulatory system represent 23% of the total hospitalizations and, among them, the Heart Failure has the highest rates of hospitalizations and, among the regions, the Southeast presents the highest rate. It is added that the number of hospitalizations, the mortality rate and the average length of stay due to Heart Failure have been decreasing, however, only the North region increased 9.1% mortality and the South region increased 0.1 day the length of hospital stay. The highest rates of hospitalization and mortality are presented by the female gender. **Conclusion:** it is concluded that hospital morbidity and mortality due to Heart Failure has been improving and knowing these results makes it possible to seek an improvement in the quality of care for these patients.

Descriptors: Cardiovascular Diseases; Heart Failure; Hospitalization; Morbidity; Mortality; Nursing.

RESUMO

Objetivo: conhecer os dados da morbimortalidade hospitalar de pacientes idosos com Insuficiência Cardíaca, de acordo com as regiões brasileiras. **Método:** trata-se de um estudo quantitativo, descritivo, epidemiológico, de série histórica, no período de 2014 a 2018, com dados secundários obtidos do DATASUS. Selecionaram-se, algumas variáveis conforme as regiões brasileiras. Apresentaram-se os resultados em forma de figuras. **Resultados:** informa-se que as doenças do aparelho circulatório representam 23% do total das internações e, entre elas, a Insuficiência Cardíaca é que possui as maiores taxas de internações e, entre as regiões, a Sudeste apresenta a maior taxa. Acrescenta-se que, o número de internações, a taxa de mortalidade e a média de

permanência por Insuficiência Cardíaca vem diminuindo, no entanto, apenas a região Norte aumentou em 9,1% mortalidade e a região Sul aumentou 0,1 dia o tempo de permanência hospitalar. Apresentam-se, pelo sexo feminino, as maiores taxas de internação e mortalidade. **Conclusão** conclui-se que a morbimortalidade hospitalar por Insuficiência Cardíaca vem melhorando e conhecer esses resultados possibilita buscar a melhora na qualidade da assistência a estes pacientes.

Descritores: Doenças Cardiovasculares; Insuficiência Cardíaca; Hospitalização; Morbidade; Mortalidade; Enfermagem.

RESUMEN

Objetivo: conocer los datos de morbilidad y mortalidad hospitalaria de pacientes ancianos con insuficiencia cardíaca, según regiones brasileñas. **Método:** se trata de un estudio epidemiológico, cuantitativo, descriptivo, a partir de una serie histórica, de 2014 a 2018, con datos secundarios obtenidos de DATASUS. Algunas variables fueron seleccionadas según las regiones brasileñas. Los resultados se presentaron en forma de cifras. **Resultados:** se reporta que las enfermedades del aparato circulatorio representan el 23% del total de hospitalizaciones y, entre ellas, la Insuficiencia Cardíaca es la que presenta mayores tasas de hospitalizaciones y, entre las regiones, el Sudeste tiene la mayor tasa. Cabe agregar que el número de hospitalizaciones, la tasa de mortalidad y el tiempo promedio de estadía por Insuficiencia Cardíaca ha ido disminuyendo, sin embargo, solo la región Norte aumentó en 9.1% la mortalidad y la región Sur aumentó 0.1 día el tiempo de estancia en el hospital. Las tasas más altas de hospitalización y mortalidad corresponden a mujeres. **Conclusión:** se concluye que la morbilidad y mortalidad hospitalaria por Insuficiencia Cardíaca ha ido mejorando y conocer estos resultados permite buscar una mejora en la calidad de la atención de estos pacientes.

Descriptores: Enfermedades Cardiovasculares; Insuficiencia Cardíaca; Hospitalización; Morbilidad; Mortalidad; Enfermería.

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Cardiovascular diseases are currently considered one of the public health problems around the world. This is due to the fact that they are related to high numbers of hospital admissions and deaths. According to information from the World Health Organization (WHO), cardiovascular diseases are the main cause of death in the world, with an estimated 17.7 million in 2015, representing 31% of total deaths globally.¹ It is noted that another important fact is that more than $\frac{3}{4}$ of deaths from these diseases occur in countries with low and medium incomes.¹

It is known that among cardiovascular diseases, Heart Failure (HF) is the most common cause of hospitalizations, especially in elderly patients.²⁻³ The following are the prevalence and survival of patients with this disease increasing.⁴ HF is characterized by the inability of the heart to pump the amount of blood needed to meet the oxygen and nutrient requirements of tissues and organs, and thus to compensate for these, it uses abnormally increased diastolic pressures or volumes.⁵

The American Heart Association report published that 6.5 million adults aged 20 years or older were diagnosed with HF from 2011 to 2014, an increase of 1.14% over the period analyzed previously, from 2009 to 2012,⁴ and, according to this report projections, the prevalence of HF will increase 46% between 2012 and 2030.⁴ However, survival in the elderly with HF has improved and this fact is attributed to the prevention/treatment of risk factors and improvements in the forms of treatment of the disease.⁴

Strategies to improve this reality have been created by WHO, such as the "Global action plan for the prevention and control of CNCDs 2013-2020", which aims to reduce the preventable burden of Chronic Noncommunicable Diseases (CNCDs) and has nine global goals, two of which are directly linked to the prevention and control of cardiovascular diseases,¹ being them: a 25% reduction in the prevalence of increased blood pressure and access to drug therapy and counseling to prevent heart attacks and stroke in at least 50% of people who need it.¹

It is noted that Brazil already has positive results with the adoption of this strategy proposed by WHO⁶ and, among them, the reduction of premature mortality (30 to 69 years) by CNCD, the reduction of tobacco and alcohol use, the increase of physical activities and the consumption of fruits and vegetables.⁶

Even if the adult population shows an increase in the prevalence of cases of heart failure, it is verified that the elderly population continues with an even higher prevalence, which leads to higher numbers of hospitalizations and deaths in this population.^{3,7-12} It is therefore important to obtain information on the main causes of hospitalisation of the elderly population and, from this, to seek strategies to improve the quality of care for these patients.

It becomes the knowledge of this data essential for the multidisciplinary teams and managers of the health area, because it enables the creation and/or adequacy of health practices that meet the problems and demands of population health. It is perceived that the nurse is one of the main parts of these teams and is fundamental in this process of elaboration and adequacy of strategies for improvements in the quality of life of patients due to their technical knowledge, their skills and the capacity of the holistic look on the health process and disease. The nurse, in his/her role as educator in all levels of health care, still during hospitalization, should initiate the process of educating the patient about his/her health problem.¹³ It is essential that this activity continues after discharge, because thinking about the safe dehospitalization of patients is a strategy that can prevent readmissions.

In face of all this, the questioning about the hospital morbidity and mortality of elderly people with HF in Brazil and the differences between their regions arises. The objective of this study is to know and discuss the data on hospital morbidity and mortality of the elderly with HF, according to the Brazilian regions, from 2014 to 2018.

METHOD

It is a quantitative, descriptive, epidemiological, historical series study with secondary data from the Morbidity Information System (MIS) database of the Department of Informatics of the Unified Health System (DATASUS) of the Ministry of Health.

The following variables were selected in the database: hospital admissions according to ICD Chapter 10 - IX Circulatory Diseases; admissions per HF; number of admissions; mortality rate; mean stay; gender and age group above 60 years in the five regions of Brazil from 2014 to 2018.¹⁴ Data was collected from August to November 2019.

The data collected were saved in *.csv (Comma-Separated Values) and then organized using the Excel Microsoft® program. Calculations of relative frequency and average of the cases were made and later graphs of the results were made.

It is reminded that there was no need to request authorization from Research Ethics Committees, since the data are public and accessible on the DATASUS website, being respected all the ethical precepts established by Resolution nº 466/2012, of the National Health Council.¹⁵

RESULTS

It is revealed that hospital admissions of patients over 60 years old, in the period analyzed, totaled 14,282,950 and circulatory system diseases represented 23% of the total hospitalizations in Brazil (Figure 1).

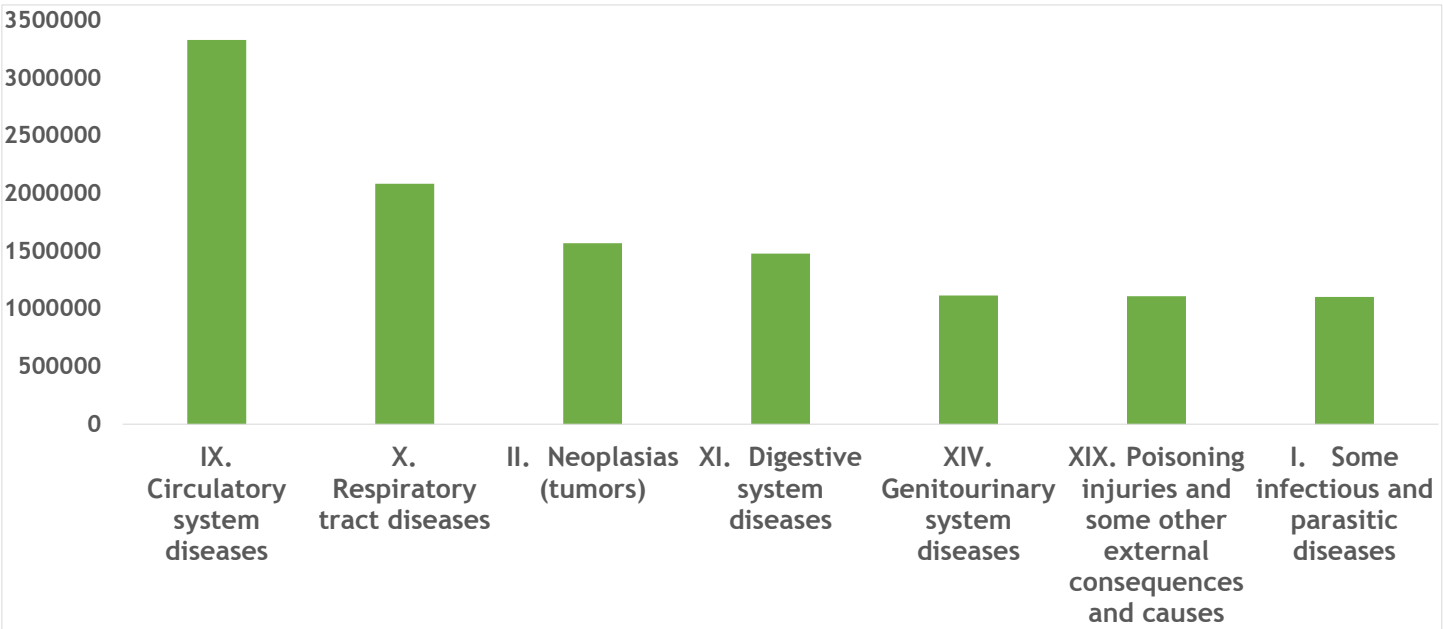


Figure 1. Total of the main hospitalizations of patients over 60 years old, due to circulatory system diseases, from 2014 to 2018, in Brazil. Porto Alegre (RS), Brazil, 2019. Source:¹⁴

It is pointed out that, when its distribution by regions was analyzed, the largest number of hospitalizations for diseases of the circulatory system of elderly patients is concentrated in the Southeast region, followed by the South and Northeast regions (Figure 2). It is detailed that, in the analyzed period, the total of hospitalizations in Brazil was 3,284,551, thus, the Southeast region represents 44% of the total.

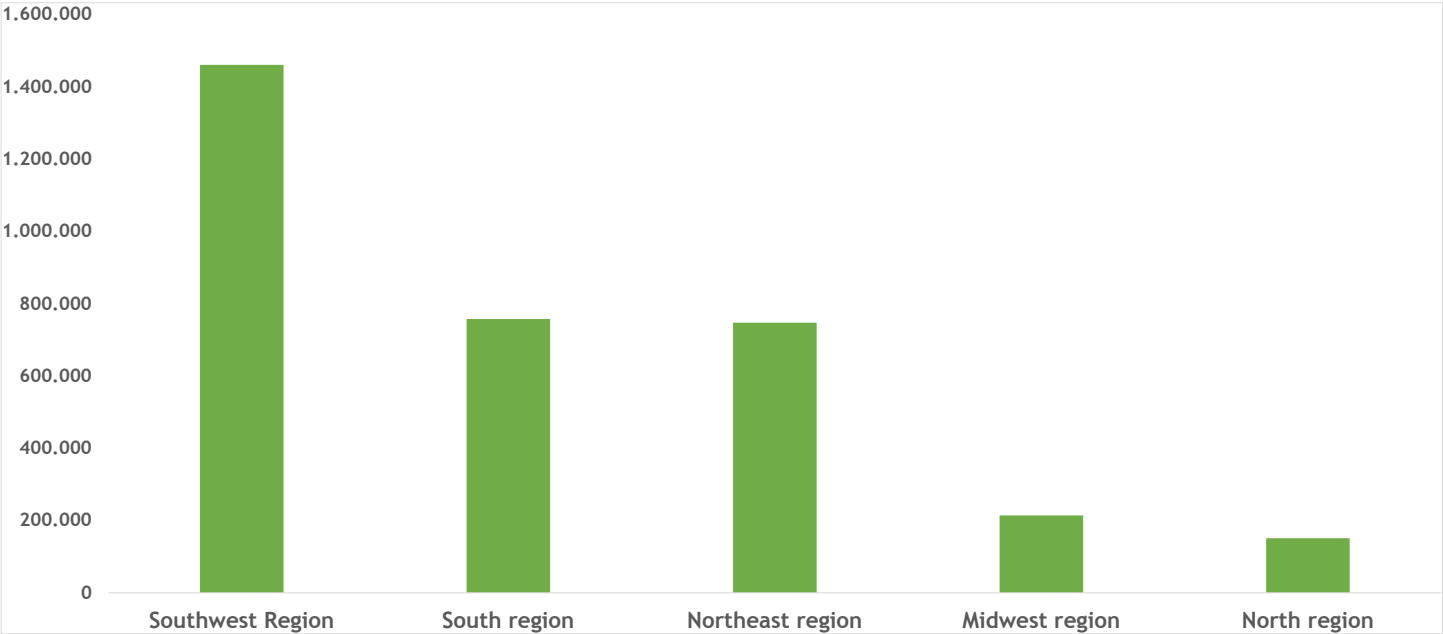


Figure 2. Total hospitalizations of patients over 60 years old, due to circulatory system diseases, from 2014 to 2018, according to the Brazilian regions. Porto Alegre (RS), Brazil, 2019. Source:¹⁴

It is verified that, when the average of hospitalizations by regions of elderly is analyzed, the Southeast has the highest average, with 288.4 hospitalizations in five years, followed by the South and Northeast regions. It is observed, from the analysis of the average of hospitalizations, that the regions maintained the trend in relation to the absolute numbers of hospitalizations.

It is evident, among circulatory system diseases, that HF has the highest hospitalization rates and, in Brazil, from 2014 to 2018, there were 3,284,539 hospitalizations for circulatory system diseases in patients over 60 years of age, with hospitalizations for HF corresponding to 23% of the total (Figure 3).

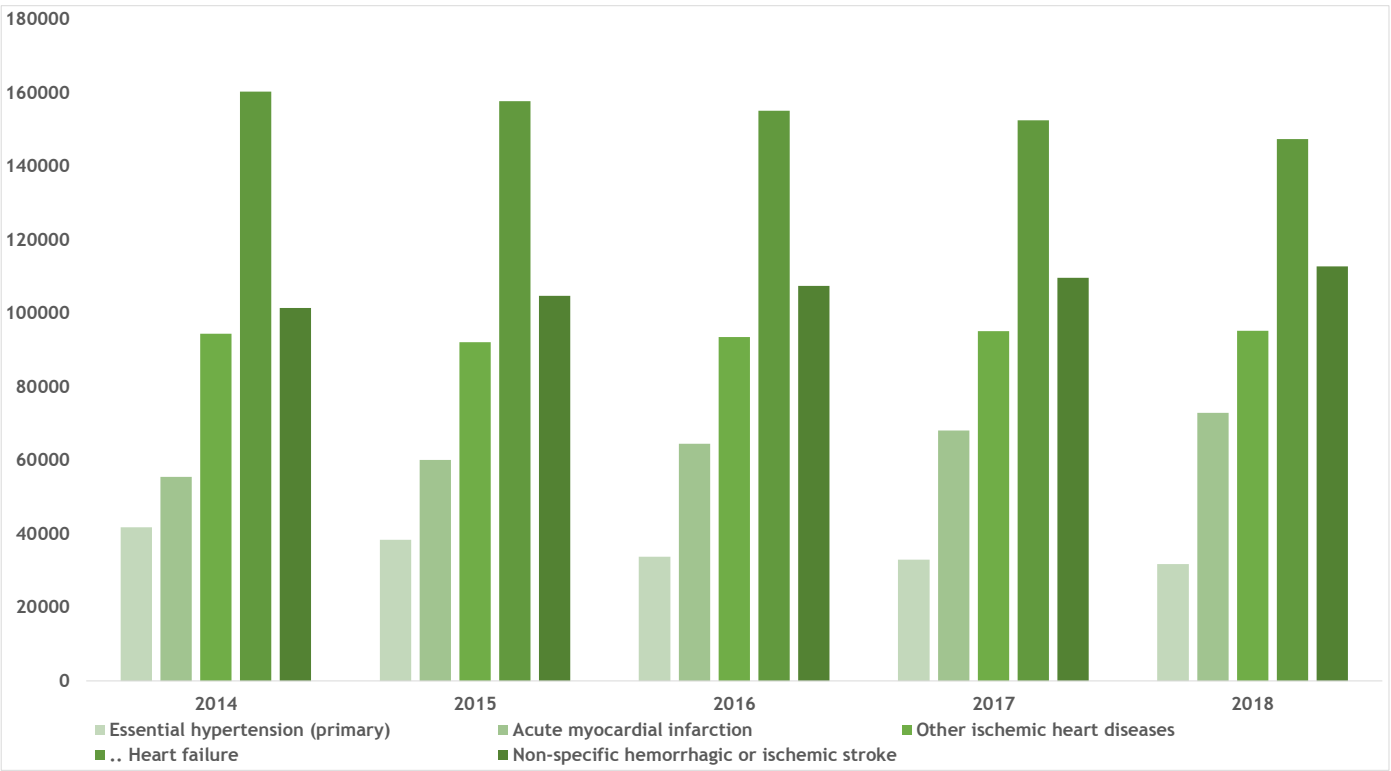


Figure 3: Total hospitalizations of patients over 60 years of age, of the main diseases of the circulatory system, from 2014 to 2018, in Brazil. Porto Alegre (RS), Brazil, 2019. Source:¹⁴

It is presented, in relation to hospitalizations for HF in patients over 60 years, from 2014 to 2018, that they totaled 763,330 and, according to the regions of the country, it is observed that the Southeast represents 42% of the total hospitalizations, and the South and Northeast regions represent 24% and 22% of the hospitalizations, respectively.

It is also shown by the results that the number of hospitalizations per HF in the Brazilian population decreased 13% over the five years, and in none of the five regions of Brazil did the number of hospitalizations increase (Figure 4), with the greatest reduction being 23%, found in the Northeast region (from 37,071 to 29,966 hospitalizations). It was reduced, in the Southeast region, which concentrates the largest number of hospitalizations, in 17% (from 67,130 to 57,282 hospitalizations) this number and already the South region was the one that presented the smallest difference, because it decreased the number of hospitalizations by only 4% in five years (from 36,697 to 35,266).

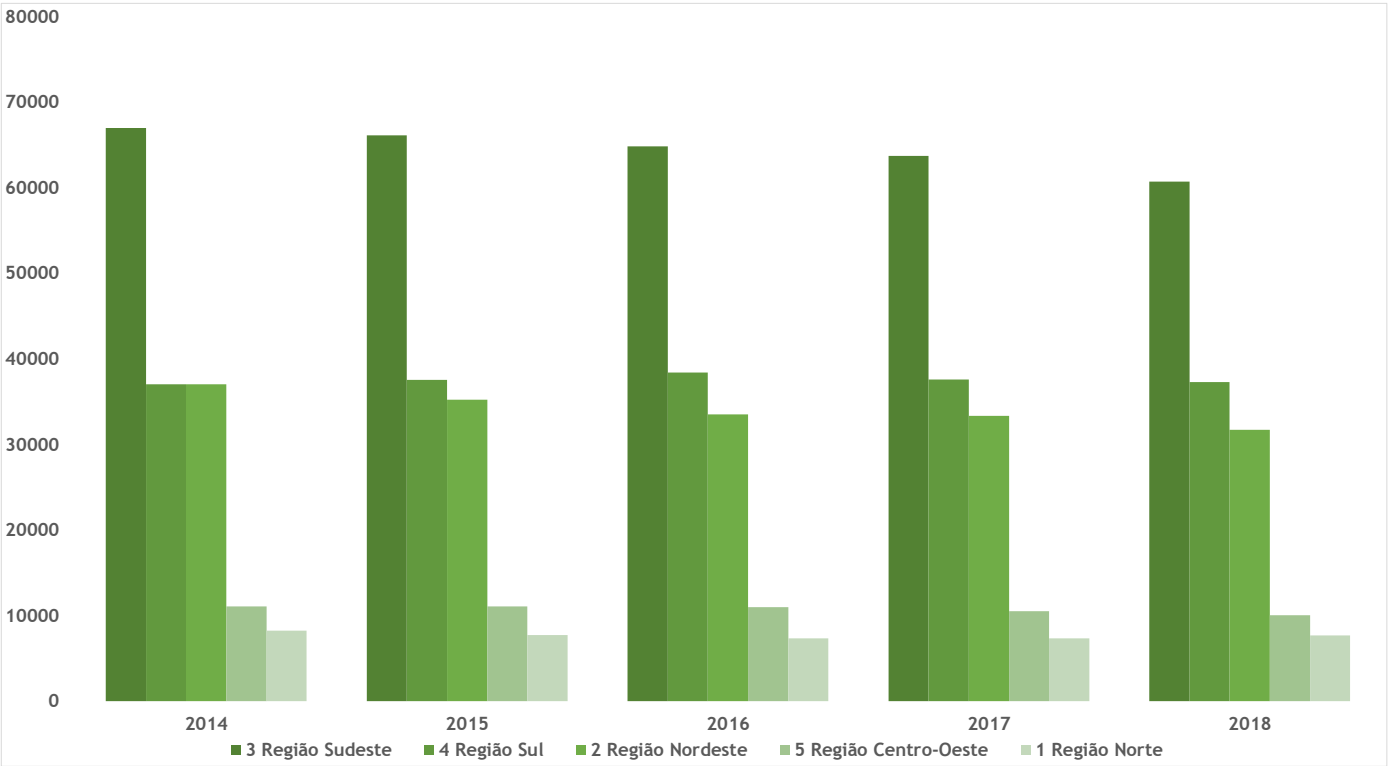


Figure 4: Total hospitalizations per HF in patients over 60 years of age, from 2014 to 2018, according to regions of Brazil. City (UF), Brazil, Year. Source: Datasus.

It is also described, in relation to the internments, when analyzed according to the sex, in the country, that they are a little more frequent in the female sex (50.5% of the total internments), however, in the North, Northeast and Midwest regions, the male sex presents greater numbers of internments.

It is reported that the in-hospital mortality rate per HF in Brazil in the last five years is 12.13%, and this rate decreased approximately 7% in this period, with the Southeast region having the highest mortality rate, which is 13.74%, and the South region having the lowest, 9.73%. It can be seen that all regions of Brazil reduced their mortality rates in the period analyzed, except the North region, which presented an increase of 9.1% (Figure 5).

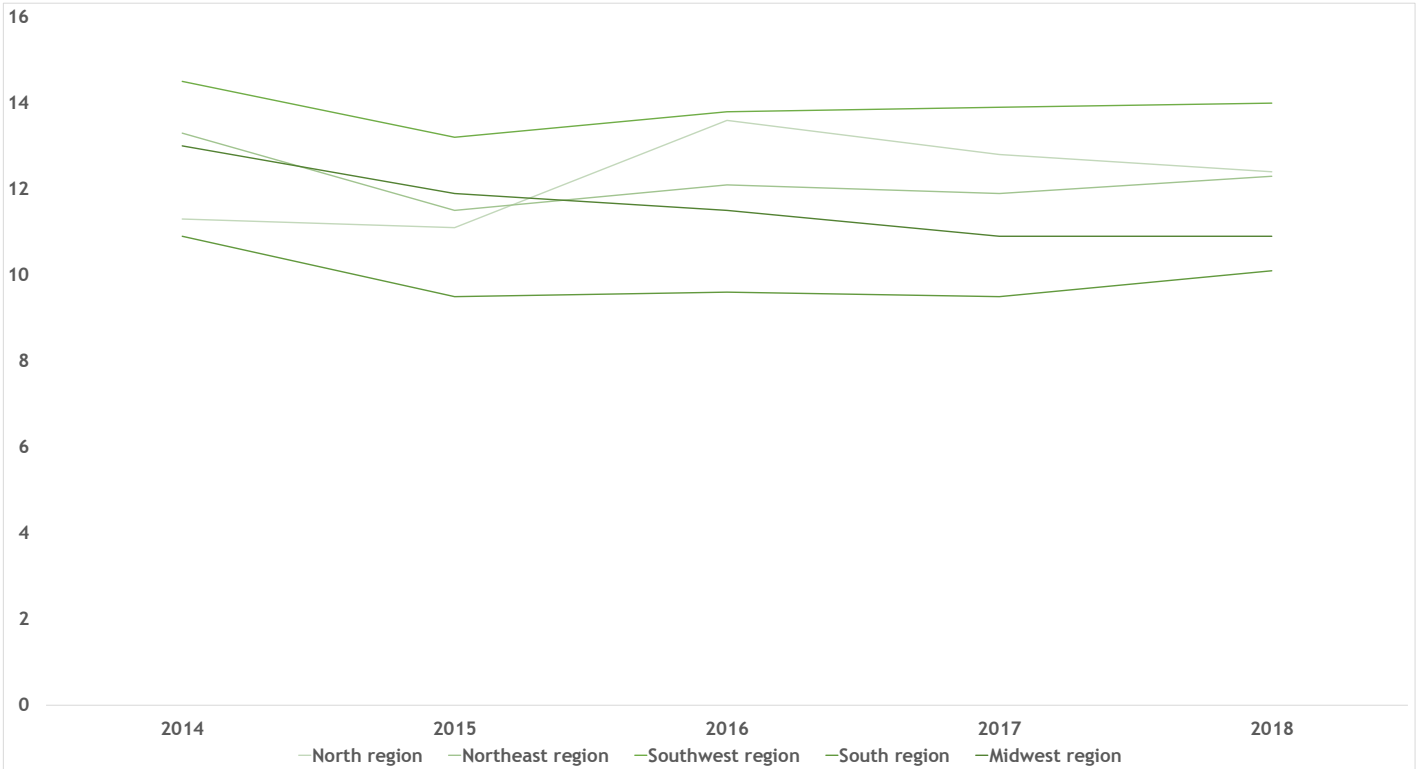


Figure 5: HF mortality rate in patients over 60 years of age, from 2014 to 2018, according to regions of Brazil. Porto Alegre (RS), Brazil, 2019. Source:¹⁴

It is pointed out that, in the analysis of the mortality rate by sex, in Brazil and in all regions, the female sex has the highest rates; thus, in Brazil, this rate for the female sex corresponds to 51.8%.

It is verified, in relation to the average of permanence, that in Brazil is of 7,1 days, that it diminished along the five years in all the regions, except in the South region. It is added that, in these four regions, the decrease was discrete, of only 0.4 days, and, in the South region, the increase of the average stay was 0.1 day. It can be observed, in the analysis by regions, that the Southeast has the highest average stay, which is 7.7 days, while the South region has the lowest average, with six days.

It is warned, regarding sex and length of stay, that despite a slight difference between them, the male sex has a higher average stay in Brazil and in its regions, because the general average in Brazil for the male sex is 7.2 days and for the female sex is seven days.

DISCUSSION

The increase in the prevalence of HF is related to the growth of life expectancy, affecting higher age groups.^{7,16}

This study confirms that diseases of the circulatory system, especially HF, have high rates of hospitalizations. They represent, for such diseases, 23% of the total hospitalizations in Brazil in the studied period and, when analyzed by regions, the Southeast presents a high percentage, being 44% of the total hospitalizations for diseases of the circulatory system. These numbers reinforce the concern that the country must have with cardiovascular diseases as a public health problem. It is estimated by the WHO that in 2015 cardiovascular diseases accounted for 31% of all deaths in the world.¹ In a recent study, a crude mortality rate for circulatory system diseases of 13% was identified among hospitalized patients.⁸

The highest hospitalization rates among circulatory system diseases in Brazil, corresponding to 23% of the total, are presented by HF. It was concluded in a study⁷ that analyzed 385,784 hospitalizations of the elderly, which occurred in hospitals of the UHS in the Southeast region between 2011 and 2012, that 36.8% of hospitalizations were for HF and in countries in Africa, hospitalizations for HF range from 31 to 47%.¹⁷ It is noticeable that, unlike this study, which shows low-income countries with high rates of hospitalization per HF, in Brazil, the Southeast region is the most developed in the country and presents the highest rate of hospitalization compared to other regions. This can be related to the fact that the Southeast region has the largest centers of

reference for treatment of cardiovascular diseases and the largest number of hospitals, causing migration of care.^{9,16}

It can be seen that, although HF has the highest hospitalization rates, this number has been decreasing in Brazil and in all its regions.^{10,12} In a survey that evaluated the evolution of morbidity and mortality in patients with HF, from 2007 to 2016, in Brazil, Rio Grande do Sul and Porto Alegre, it was also shown a reduction in hospitalizations of 25%, 24% and 15%, respectively.¹⁰ In this study, a 13% reduction was obtained in Brazil in the last five years. This can be attributed to the advance of therapies for the disease, greater access to medications, patient education to raise awareness about the harm caused by smoking and excessive consumption of alcohol and the need to control SAH.^{9,11} It is known that the Strategic Action Plan for the Coping with CNCD in Brazil has already achieved positive goals, with a 19.8% reduction in tobacco consumption and 9.3% in alcohol abuse, a 21% increase in fruit and vegetable consumption and a 12.3% increase in physical activities.⁶

It was observed, with this research, that women hospitalize with a discrete frequency higher than men in Brazil, and other findings corroborate this data, as in the study BREATHE (Brazilian Registry of Acute Heart Failure), the first national and multicenter register of acute HF, which included all regions of Brazil, where 60% of patients were women.^{4,7} In this study, however, in the North, Northeast and Midwest regions, the male gender predominates in the number of hospitalizations. It was found in a survey conducted at a hospital in Teresina - Piauí, in this sample, that 59% of patients hospitalized for HF were male.¹⁸ Other studies also observed higher rates of hospitalization for males, staying between 50.8 and 52%.^{3,9-11,16,18}

It is detailed that the mortality rate found for Brazil in the last five years was 12.13%, with a decrease of 7%, and the Southeast region had the highest mortality rate (13.74%) and the South, the lowest rate (9.73%). In studies conducted in the Southeast region of Santa Catarina and the BREATHE study, death rates were also found to be close to those of this study (from 11.2% to 13%).^{7-8,11,16} It was concluded in the BREATHE study that the high intra-hospital mortality rates are related to the therapies prescribed during hospitalization, which do not follow evidence-based guidelines, and also to the low percentage of medical guidelines at hospital discharge.⁷

It is noticeable, in the period analyzed in this study, in all regions of Brazil, that the in-hospital mortality rate decreased, except in the North region, which increased by 9.1% and, contrary to the result found, previous researches, which analyzed the mortality by HF in periods of ten years (2004 to 2011 and 2001 to 2012), showed that the in-hospital mortality increased.^{9,19} It is examined that the advance of therapies and management of HF has increased the survival of patients, however, they are more and more severe due to the progression of the disease, evolving to pump failure and intra-hospital death.⁹ One can think, however, that in the last years the search for the

improvement of the practices for the care of patients with HF with adequate prescriptions during hospitalization and the accomplishment of the transition of care with quality is increasing.

It is also shown, in relation to mortality, that females have the highest rates in all regions of Brazil and articles on in-hospital mortality also bring females with the highest rates.^{8,16,19} This can be attributed to the fact that women have a longer life expectancy than men and, as HF predominates in the higher age groups, the deaths from the disease in women are higher.

It is exposed that, contrary to what other studies have found, with higher average stays,^{8,11} reaching up to 11 days, in this study, the average length of stay in Brazil and its regions is approximately seven days, and the South region has the lowest average, of six days.

It should be noted that the South region, despite having high hospitalization rates per HF and having reduced by only 4% the number of hospitalizations in five years (the smallest reduction among the regions), presents the lowest mortality rate and average stay among the regions of Brazil. This may be related to the still slow progress of the strategies adopted for the transition of care, with guidance and preparation of the patient for discharge and follow-up care by the health network, with multidisciplinary teams of basic care, which accompany the patients after discharge.

It is specified that the Southeast region has the highest hospitalization and mortality rates for HF, despite the 17% reduction in the number of hospitalizations in five years. These results can be justified, as mentioned earlier, by the fact that the region is where the largest centers specializing in the treatment of cardiovascular diseases are concentrated and, probably, more severe patients from other regions are seen at these centers.

It is warned that in the North region, despite having the lowest number of hospitalizations, it increased the HF mortality rate by 9.1%. These results are related to the geographic, socioeconomic and health characteristics, because the States of the North region present low socioeconomic development, higher geographic barriers, lower offer of health services, less tradition of participation of the States and higher management difficulties.²⁰

It is believed that an important strategy, which is being adopted and needs to be expanded, is the follow-up of patients with HF by multidisciplinary teams. The management of self-care is improved by structured follow-ups for the education of the patient, during hospitalization and after discharge, and can avoid readmissions.^{3,10,18,21}

Many results found in this research corroborate other scientific evidence such as: the concern with cardiovascular diseases, especially HF, being a public health problem; mortality rates, because, also, despite the high rates of hospitalization for HF, they decreased over five years. It is revealed, however, that some positive results of this research had not been found in previous

researches, such as the decrease of in-hospital death rate over five years and shorter hospital stays.

CONCLUSION

HF continues in patients over 60 years of age, being the disease with the highest hospitalization rates. It is observed, however, that the number of hospitalizations, in-hospital mortality and the average length of stay of elderly with HF are decreasing in Brazil and in most of its regions, except in the North region, where mortality increased in the period studied, and in the South region, where there was a slight increase in the average hospital stay, that the female gender presents higher number of hospitalizations and higher mortality rates.

Among the limitations of the study, the use of secondary data is identified, since the results depend on the adequate records of the primary source, and the fact that the study is merely descriptive.

It is revealed that the evolution in the treatment and management of HF decreased morbidity and mortality and provided improved quality of life and survival of patients, in addition, the improved control of risk factors for HF also contributed to positive results. It is important to emphasize that the differences between the regions can be explained by socioeconomic differences and in the structuring of health care, depending on the access and quality of care.

By knowing this information, it is possible to improve the quality of care for these patients and the health team plays a key role in this process, especially the nurse. The education and health activities must start while the patient is still hospitalized, as well as the construction of a care plan to be followed after the discharge. It is informed that the organization of a safe discharge and the continuity of care by the other levels of health care are strategies that can avoid readmissions. It is also possible, based on these results, that multidisciplinary teams and health managers create and/or improve actions directed to these diseases and specific population according to the needs of each region.

CONTRIBUTIONS

It is informed that all authors contributed in the conception of the research project, collection, analysis and discussion of the data, as well as in the writing and critical review of the content with intellectual contribution and in the approval of the final version of the study.

CONFLICT OF INTERESTS

There are n conflicts of interest

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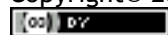
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