Systemic arterial hypertension and hospital admissions: improving care in primary care

Hipertensão arterial sistémica e internamentos hospitalares: melhorar os cuidados nos cuidados primários

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ABSTRACT
BACKGROUND: Systemic Arterial Hypertension is a chronic disease that affects the global population and can cause serious harm when not controlled. The prevalence is high and it is one of the conditions that most leads people to death. Therefore, multiprofessional care ensures a better integrality of care and avoids high direct and indirect costs. OBJECTIVE: Describe the context of hospital admissions for Systemic Arterial Hypertension and its consequences for the brazilian national health system. MATERIAL AND METHODS: Descriptive epidemiological study, which used public domain data of the authorization of hospital admissions for hypertension, available in the Hospital Information System of the Brazilian regions, in the period from 2014 to 2020. RESULTS: Were reported, 403,181 hospitalizations for Systemic Arterial Hypertension with an annual mean of 57,597 (σ=12,319.9). The North east region (μ=39.3, σ=9.0 per 100,000 inhabitants, significant temporal decrease) and North region (μ=37.3, σ=8.9 per 100,000 inhabitants, significant temporal decrease) expressed the highest coefficients. Stood out the female population (μ=58.5%, σ=1.01%, significant temporal decrease), the elderly (μ=56.7%, σ=0.79%, stable) and brown people (μ=39.1%, σ=1.2%, stable). The national annual average costs are close to \$3.6 million (σ=736.7 thousand). CONCLUSION: Improving the actions of Primary Health and knowing the consequences can support the planning and implementation of actions, impact the costs to the health system, as well as ensure that other levels of care perform the respective care, avoiding worsening of the clinical Picture.

Keywords: hypertension; noncommunicable chronic disease; public health.

ABSTRACT
ANTECEDENTES: A Hipertensão Arterial Sistémica é uma doença crónica que afecta a população global e pode causar danos graves quando não é controlada. A prevalência é elevada e é uma das condições que mais leva as pessoas à morte. Portanto, os cuidados multiprofissionais asseguram uma melhor integralidade dos cuidados e evitam custos directos e indirectos elevados. OBJECTIVO: Descrever o contexto das admissões hospitalares para Hipertensão Arterial Sistémica e as suas consequências para o sistema nacional de saúde brasileiro. MATERIAL E MÉTODOS: Estudo epidemiológico descritivo, que utilizou dados de domínio público da autorização de internamentos hospitalares para hipertensão, disponíveis no Sistema de Informação Hospitalar das regiões brasileiras, no período de 2014 a 2020. RESULTADOS: Foram notificados 403.181 internamentos por Hipertensão Arterial Sistémica com uma média anual de 57.597 (σ=12.319,9). A região Nordeste (μ=39,3, σ=9,0 por 100.000 habitantes, decréscimo temporal significativo) e a região Norte (μ=37,3, σ=8,9 por 100.000 habitantes, decréscimo temporal significativo) expressaram os coeficientes mais elevados. A população feminina (μ=58,5%, σ=1,01%, decréscimo temporal significativo), os idosos (μ=56,7%, σ=0,79%, estável) e os pardos (μ=39,1%, σ=1,2%, estável). Os custos médios anuais nacionais aproximam-se dos \$3,6 milhões (σ=736,7 mil). CONCLUSÃO: Melhorar as acções de Saúde Primária e conhecer as consequências

pode apoiar o planeamento e implementação de acções, ter impacto nos custos para o sistema de saúde, bem como assegurar que outros níveis de cuidados de saúde executem os respectivos cuidados, evitando o agravamento do quadro clínico.

Palavras-chave: hipertensão; doença crónica não transmissível; saúde pública.

1 INTRODUCTION

Systemic arterial hypertension (SAH) is a chronic non-communicable disease (NCD), being defined in the healthcare network for people with chronic diseases in the Unified Health System (SUS). It is essential to highlight that SAH is a major public health problem, due to its high prevalence and incipient power of control, it actively contributes to cardiovascular problems and even morbidity and mortality, which causes numerous expenses for the Brazilian public health.[1]

Non-adherence to treatment for this disease is recurrent among patients. Among several reasons we highlight: long duration and complexity of treatment; insecurity about the treatment; lack of access to medication; complexity of the therapeutic regimen; high cost of drugs and; appearance of side effects. Thus, the professionals' active role in people's lives, as well as participation in the formulation of strategies with health professionals to meet the entire demand is a challenge that must be faced.[2; 3]

Therefore, it is important to point out the impact of SAH on the population as well as on the health system's economic fund, in which it is responsible for a social and economic burden on the health sector, with clear repercussions on social security and society. Thus, the economic burden of SAH produces high costs for the SUS and social security, due to hospitalizations for this cause sensitive to basic care and early disability of the individual.[4]

From this perspective, the need for a multidisciplinary work facing this problem is essential, so that it is possible to reduce the risks of cardiovascular diseases, the mortality rate due to SAH and improvement in quality of life is also of great importance. Thus, despite the diagnosis being considered easily accurate, with no need for confirmatory tests in most cases, controlling this disease has been a difficult task for professionals, as well as for the sick individual himself.[5]

Despite the financial impact of hospitalizations for this sensitive cause to PHC, in addition to the scarcity of health technologies for a better integrality of care, there are few studies that point to the importance of discussing the costs of the Unified Health System (SUS) with SAH. This study aims to describe the context of hospital admissions for SAH and its consequences for the Unified Health System.

2 MATERIALS AND METHODS

This is a descriptive epidemiological study of temporal trend of the records of hospital admissions for primary essential hypertension (PAH), whose International Classification of Diseases (ICD-10) code is I10 of the five major Brazilian regions in the period from 2014 to 2020, available in the Hospital Information System (SIH).[6]

Data were tabulated online in *TabNet* (http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sih/cnv/nruf.def) made available by the Computer Department of SUS (Datasus/Ministry of Health) on January 15, 2021, data on variables such as number of hospitalizations by region, age group, gender and race/colour were processed. The dependent variables were defined as sex, age group, race and value of specific hospital admissions for SAH (CIHAS), defined as the ratio of the number of hospital admissions for SAH divided by the estimated population by IBGE[7] of the year, multiplied by 100,000.

Data were organized in Microsoft Office Excel® 2016 spreadsheets for the preparation of figures and basic calculations of percentage and coefficient of specific hospitalization for SAH. The statistical analytical method used to assess the time trend was simple linear regression, where the time variable was defined as independent. The appreciation of the temporal trend considered model adequacy (r), the slope coefficient (β) and a cut-off point for significance level for the t-test was 0.05 (ρ-value). The statistical program used was Bioestat.[4; 5; 8]

This study did not need to be submitted to and approved by the Research Ethics Committee (CEP), as data and information in the public domain were recorded.

3 RESULTS

The total number of hospital records for SAH processed by the national health system between the years 2014 to 2020 was 403,181 with an annual average of 57,597 ($\pm$ 12319.9), corresponding to 5.1%₀ of total general admissions. The national scenario is epidemiologically diverse. The Northe ast ($\mu=39.3$, $\sigma=9.0$) and North ($\mu=37.3$, $\sigma=8.9$)

regions expressed the highest CIHAS, above the national average, with values of more than 50.0 hospitalizations for SAH/100,000 inhabitants in 2014 to less than 25.0, in 2020, also expressing the highest declines and greatest impact in the country. All regions had statistically significant decrease (ρ-value<0.05) (Figure 1).

Figure 1. Coefficient of specific hospital admissions for SAH according to large geographic regions of Brazil, 2014 to 2020.
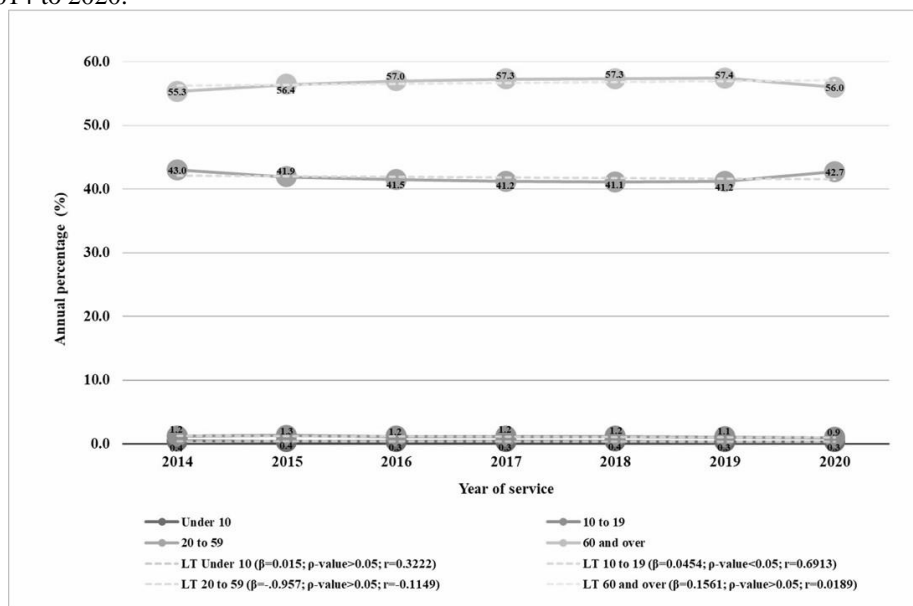
Source: Prepared by the authors based on data from the Hospital Information System/Datasus/Ministry of HealthNote: CIHAS - Coefficient of hospital admissions specific for SAH.
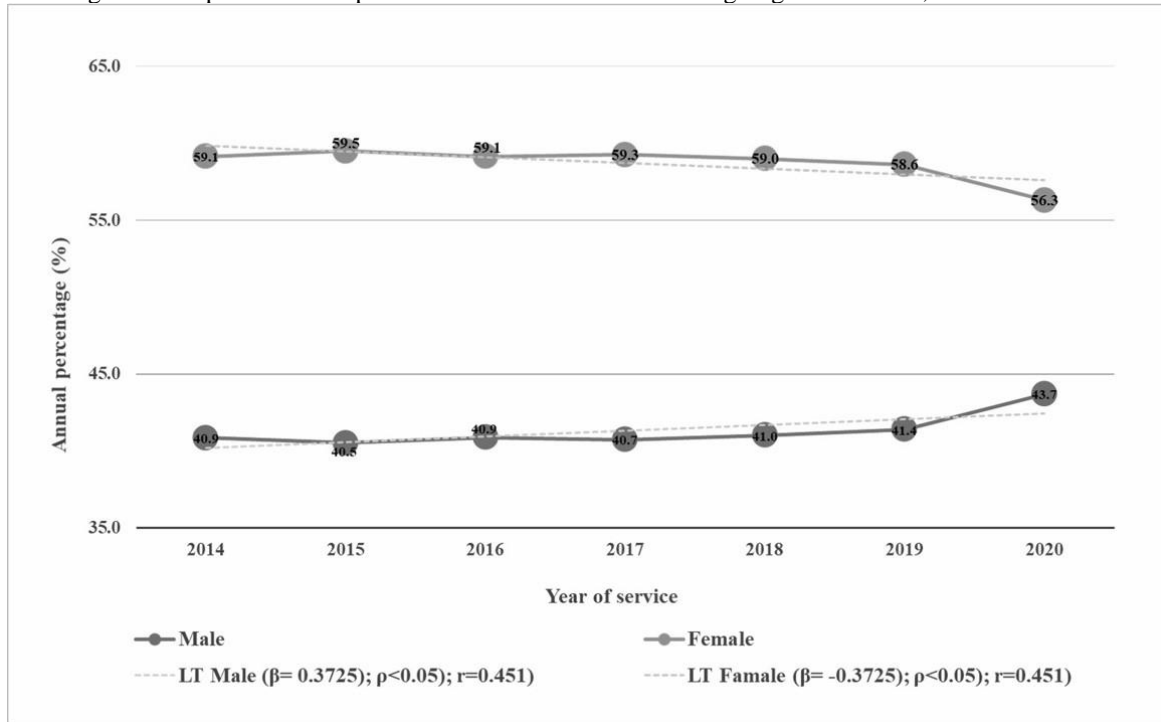Note: LT - Time trend line
β - Time trend slope coefficient
ρ-value - t-test of temporal trend β
r - adjusted percentage of adequacy of the linear regression model.

It was observed that the greatest impact of hospitalizations for SAH is in females (μ=58.5%, σ=1.01%), with a significant temporal decrease, highlighting a greater fall of the curve for the year 2020 (Figure 2).

Figure 2. Proportion of hospital admissions for SAH according to gender. Brazil, 2014 to 2020.

Source: Prepared by the authors based on data from the Hospital Information System/Datasus/Ministry of Health

Note: LT - Time trend line

β - Time trend slope coefficient

ρ-value - t-test of temporal trend β

r - adjusted percentage of adequacy of the linear regression model

As for the age characteristic, the age group that demanded more hospitalizations was in the elderly (60 years and over), with an annual average (μ) of 6.7% (σ=0.79%), but there was no significant temporal change over the years. Highlighted in this feature of a significant decrease in the adolescent population of 0.045 average percentage points, ranging from 1.2% in 2014 to 0.9% in 2020 (Figure 3).

Figure 3. Proportion of hospital admissions according to age group. Brazil, 2014 to 2020.

Source: Prepared by the authors based on data from the Hospital Information System/Datasus/Ministry of Health
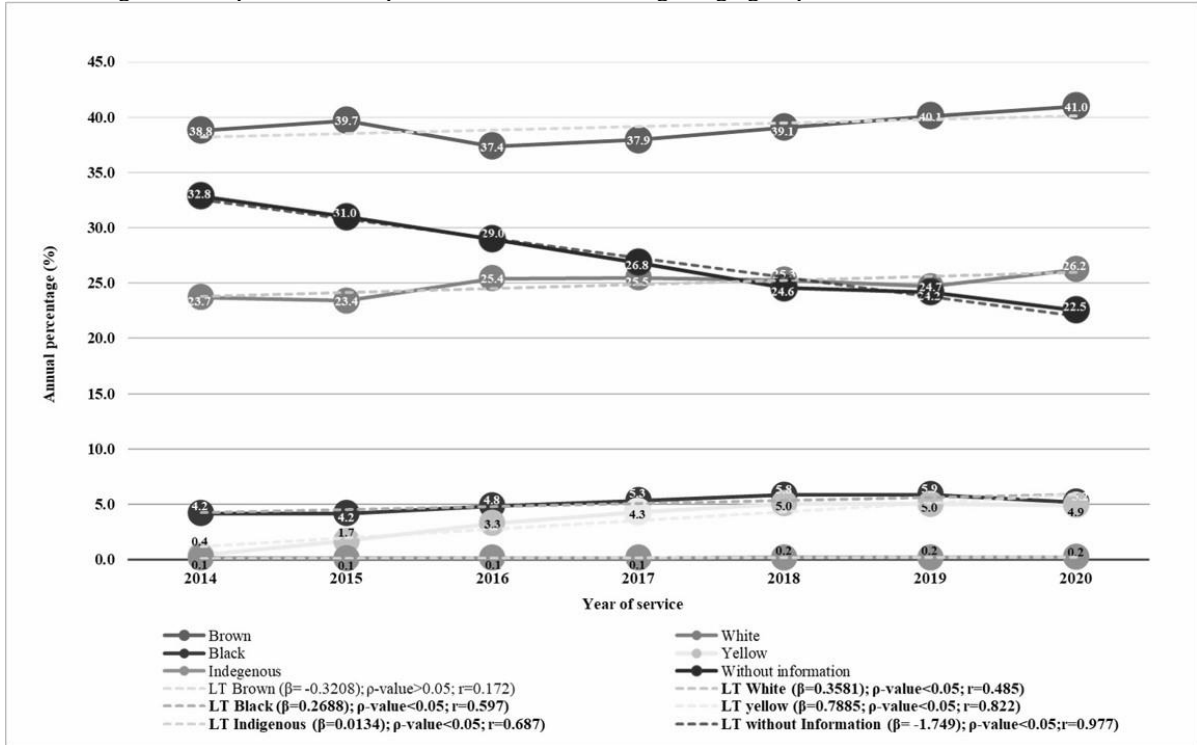
Note: LT - Time trend line

β - Time trend slope coefficient

ρ-value - t-test of temporal trend β

r - adjusted percentage of adequacy of the linear regression model

In this epidemiological scenario, it is observed that individuals of race/colour brown was that which obtained the highest percentage expression of hospitalization (μ=39.1%, σ=1.2%) despite the statistical stability. Compensatory, all other characteristics had a percentage increase over the period, probably due to the qualification of the variable "no information", which decreased (Figure 4).

Figure 4. Proportion of hospitalizations according to race. Brazil, 2014 to 2020.

Source: Prepared by the authors based on data from the Hospital Information System/Datasus/Ministry of Health
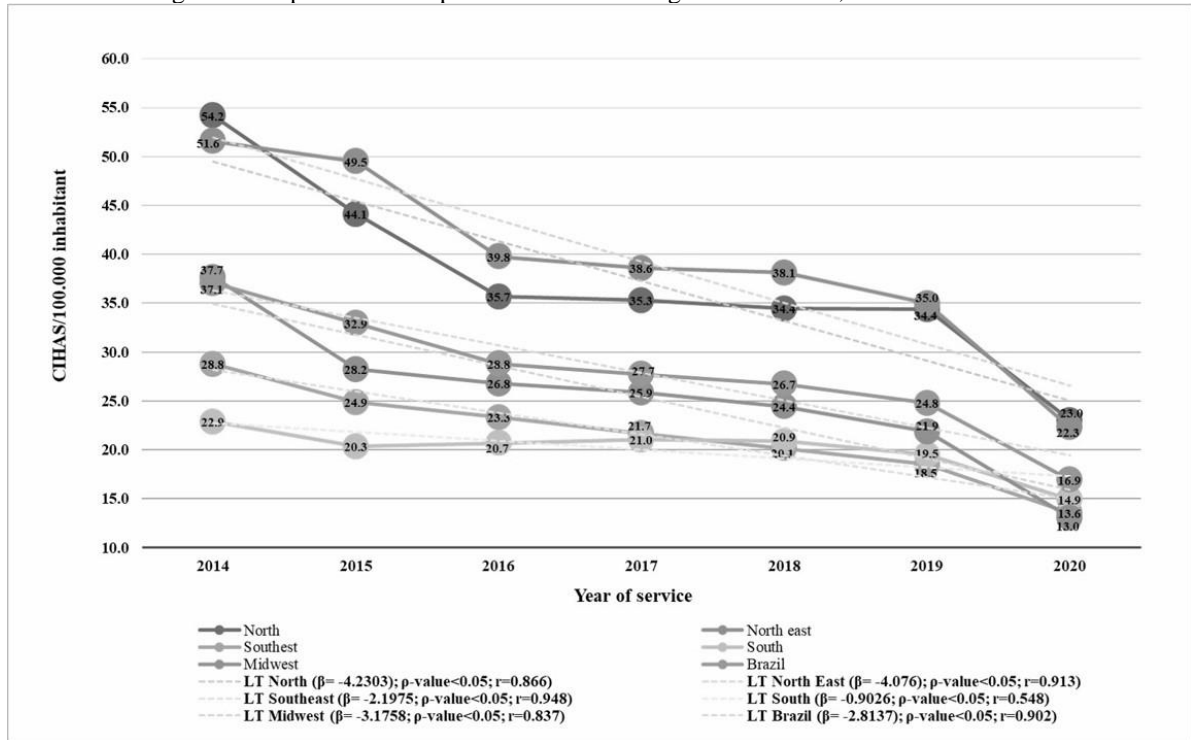
Note: LT - Time trend line

β - Time trend slope coefficient

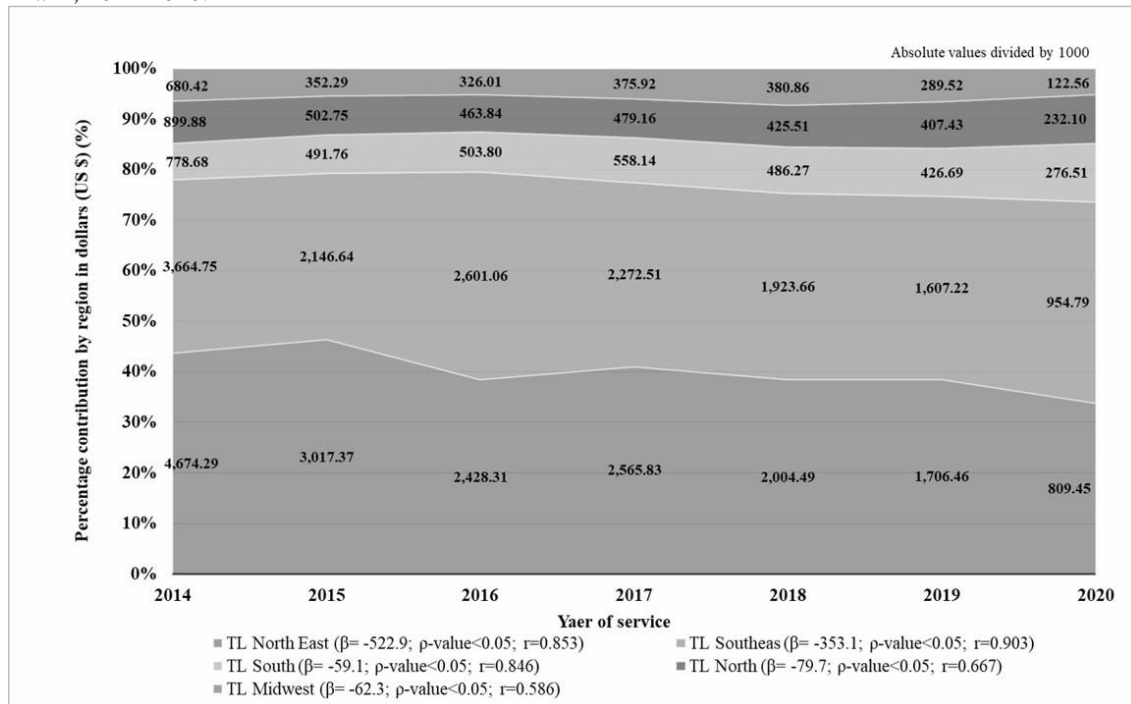ρ-value - t-test of temporal trend β

r - adjusted percentage of adequacy of the linear regression model

Systemic Arterial Hypertension hospitalizations generated a total cost of US$ 41,836,926.97, between the years 2014 and 2020, with an annual average of US$ 5,976,703.85, with a reduction of 77.61% in the last 7 years, statistically significant in the temporal trend. The large North east and Southeast regions, as expected due to the higher volume of hospitalizations for SAH, had the highest costs, remaining in this ranking over the years. An important observation should be highlighted for the reference costs from 2019 to 2020, which presented a greater reduction among the years with an average of 45.9% among the regions (Figure 5).[9]

Figure 5. Average annual cost and percentage contribution (in US$*) of hospital admissions for SAH. Brazil, 2014-2020.

Source: Prepared by the authors based on data from the Hospital Information System/Datasus/Ministry of Health

Note: *Average annual value of the dollar (US$) for the years 2014 to 2020, according to the Central Bank of Brazil[9].

Note:

LT - Time trend line

β - Time trend slope coefficient

ρ-value - t-test of temporal trend β

r - adjusted percentage of adequacy of the linear regression model

4 DISCUSSION

Hospitalizations for SAH generate a high social and financial cost, since they impact the hypertensive individual's social life. They also reconfigure some of their daily practices, which generates additional costs to SUS with hospitalizations for an issue that can be prevented in the spectrum of primary care. As there are difficulties in managing the Health System, medium and high complexity procedures, as well as beds prepared to serve users, inputs and professionals are triggered to solve what the first level of care is unable to meet.[10]

So many hospitalizations for SAH often associated with other clinical conditions such as diabetes and dyslipidemias,[11] reflect a PHC still fragile in the ability to identify and monitor patients in order to avoid more frequent complications such as stroke, congestive heart failure, renal failure and consequently hospitalizations. Considering the risk factors for SAH, such as the consumption of alcoholic beverages, and the association of its development with advancing age,[12] primary care plays an important role, as it has

light technologies in health capable of effective actions of control, prevention, diagnosis and treatment.[13; 14]

This context shows that the disease is relevant for defining the epidemiological profile of the Brazilian population and, in the field of public policies in the national scenario, Primary Health Care plays a key role in the system due to its capillarity and technical capacity to develop control, prevention, diagnosis and treatment actions.[13]

As a mechanism to strengthen PHC and achieve the objectives of the SUS, the Family Health Strategy (FHS) was created, which is a primary care model to improve the monitoring of chronic conditions, in the improvement of diagnosis and accessibility to health services.[4]

However, even with all the PHC care line, it is still noticeable people with high blood pressure who remain without diagnosis and treatment, which actively contributes to the probability of increased hospitalizations.[10]

Previous studies state that many hospitalizations could be avoided from an adequate and effective assistance in PHC, which represents an important indicator of the quality of health care at this level of care.[13; 15] Furthermore, the impacts of the difficulty in performing early diagnosis and treatment of hypertension which could have been treated in primary care, trigger stressful situations for family members as well as risk to the patient.[13]

It is important to emphasize that strategies interconnected with PHC present the best health indicators, such as cost reduction, as well as greater access to primary health care services, decompressing the demand for urgency and emergency networks.[16] Even so, when considering the health costs, the federal values invested in PHC were 21.0%, even though this care service is responsible for 80.0% of health demands.[17]

In Brazil, any person, based on numerous classifications that circulate, both from common sense and academic knowledge, can clearly recognize and identify someone as black, white, indigenous, brown, yellow.[18] However, the inappropriate filling of data in these systems still happens, which causes great impact on decision making, since the use of information subsidizes indicators to achieve better performance of services.[19]

Therefore, in 2017, Ordinance No. 344/2017 was implemented, which deals with the mandatory completion of the question race/colour in the systems as a way to improve the studies of epidemiological profiles and other subsidies for research, formulation and implementation of public health policies, thus allowing basis for the manager to make decisions in the health services.[20; 21]

The collection of reliable statistical data on vital events actively contributes to the development of improvements in the population's health, and disseminating them favours the social control of the implemented actions. However, health information does not always present good quality, which directly depends on the coverage of the events recorded and the reliability of the data collected.[22]

Another important aspect is the relationship between the poorly qualified filling out of the race field and the cultural relations that still exist in society. Corroborating this observation, we highlight a study in which many health professionals report that it is not relevant to declare the colour of the deceased, because it is already "*known in advance*" that "*blacks die more*" and they die more because they are poor. They are black and poor, but, in the professionals' opinion, it was only there because they were poor.[23]

Similarly, the declaration of colour of people hospitalized for hypertension may be properly correlated to this aspect, in which many professionals judge as irrelevant the notification, which corroborates to inconsistencies both in the formulation of indicators and in the implementation of measures to improve the quality of life of the population.[24] Faced with such a problem, the costs with hospitalizations and high-complexity procedures increase and impact the budget of the health financing agencies, since they are avoidable expenses if perpetuated for more emergency demands.[25]

Health promotion involves many other aspects besides the health sector, however, having this understanding does not exempt the responsibility of the sector facing the problems detected in order to intervene in a preventive way, avoiding a greater wear for the health sector and especially for the hospitalization considered avoidable.[26]

5 CONCLUSION

From this study, it became evident the urgent need to improve the actions and services of PHC, as a way to ensure the diagnosis and monitoring of hypertensive people in this level of care, in order to prevent the worsening of the condition in order to reduce hospitalizations for this and other causes sensitive to AB and consequently reduce costs.

Considering that SAH has a strong social impact and reshapes the lives of hypertensive people, it is necessary to strengthen the PHC, to enhance the health care of users, due to its proximity to the territory and have health technologies for the promotion and protection of health and prevention of diseases and thus be able to closely monitor the user.

Knowing the consequences of hospitalizations for SAH for the SUS can generate subsidies for the planning and implementation of actions aimed at the disease, provide managers in the decision-making process, strengthening the health care network, primary care and epidemiological surveillance in the country.

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