RESS | REVISTA DO SUS

ORIGINAL ARTICLE

doi 10.1590/S2237-96222022000200005

Adequacy of care for people with arterial hypertension in Brazil: National Health Survey, 2013 and 2019

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ABSTRACT

Objective: To analyze adequacy of care received by adults and elderly people with arterial hypertension, and its association with region of the country, demographic, socioeconomic and health system characteristics in Brazil in 2013 and 2019. **Methods:** This was a cross-sectional study using National Health Survey data. People aged ≥18 years with diagnosis of hypertension and medical consultation for this reason in the last three years were included. Adequacy of care was analyzed based on 11 indicators and using Poisson regression. **Results:** Adequate care was provided to 11,129 people with hypertension (25.3%; 95%CI 24.5;26.1) in 2013 and to 19,107 (18.8%; 95%CI 18.2;19.3) in 2019. Adequate care prevalence was 2.54 (95%CI 2.03;3.17) times higher in 2013, and 3.53 (95%CI 2.94;4.23) times higher in 2019 among individuals belonging to the highest socioeconomic quintile compared to those belonging to the poorest. **Conclusion:** We identified that care decreased, and economic inequalities intensified in the period 2013-2019.

Keywords: Hypertension; Noncommunicable Diseases; Health Services Research; Quality of Health Care; Cross-Sectional Studies.

INTRODUCTION

Arterial hypertension is a chronic noncommunicable disease (NCD) of importance for public health.[1,2] It is estimated that hypertension will affect around a third of the global population by 2025.[3] Complications arising from hypertension account for 9.4 million deaths worldwide annually.[4] In 2017, Brazil recorded 141,878 deaths due to hypertension, or due to causes attributable to hypertension complications.[5]

In Brazil, data from the National Household Sample Survey, conducted by the Brazilian Institute of Geography and Statistics (IBGE) in three editions, 1998, 2003 and 2008, showed that hypertension affected 18.0%, 19.2% and 20.9% of the population, respectively.[6] According to the 2013 National Health Survey, conducted jointly by the Ministry of Health and IBGE, self-reported hypertension prevalence in Brazil was 21.4%.[7] More recently the 2019 National Health Survey found 23.9% hypertension prevalence, providing evidence of the constant increase in the prevalence of this chronic disease.[7]

Hypertension and its public health consequences imply significant costs for the health system, in addition to reduced functional capacity and life expectancy.[8-11] In addition to pharmacological treatment, care provided by the health system to people with hypertension should include follow-up and support for lifestyle changes.[1] Correct diagnosis, awareness of the severity of the disease and its consequences, provision of guidance on healthy habits and regular follow-up with a health professional, who prescribes periodic recommended tests and examinations, can contribute to proper management of the disease and consequent reduction of hypertension-related morbidity and mortality.[1]

The literature indicates that the quality of care provided to this population is low and depends on individual characteristics, such as socioeconomic status.[12] A study conducted in Brazil in 2013 with elderly people with hypertension, found that a quarter of them reported receiving guidance and prescriptions for examinations, these being items that are indicators of this care.[12] In addition, inequalities in health care for those affected by hypertension were striking: those with higher levels of education received better quality care.[12]

It is therefore necessary to periodically evaluate and monitor the indicators of care provided to people with hypertension, in view of increased prevalence of the disease and growth of this demand on health services.[6,7]

The objective of this article was to analyze adequacy of care received by adults and elderly people with hypertension in 2013 and 2019, and its association with region of the country, demographic, socioeconomic and health system characteristics.

Study contributions	
Main results	Hypertension care adequacy was 25.3% in 2013, and 18.8% in 2019. Prevalence of adequate care was higher among people living in the Midwest and Southeast regions of Brazil, with higher socioeconomic status and receiving care in private services.
Implications for services	In the face of increasing occurrence of hypertension, monitoring of care quality indicators over time is needed in order to identify shortcomings in services and guide implementation of policies directed towards this population.
Perspectives	Literature on evaluation of health services for people with hypertension is still incipient. Further studies evaluating care quality in more depth, using qualitative and quantitative approaches, are needed.

METHODS

This was a cross-sectional population-based study, using data from the 2013 and 2019 National Health Surveys, conducted by IBGE and the Ministry of Health.[13]

The National Health Survey samples were representative of people living in permanent households, located in urban or rural areas of municipalities in Brazil's five geographic regions, covering all 26 states of the Federation and the Federal District. Multi-stage sampling was used in both surveys. Initially, census sectors were selected, followed by households and, finally, individuals aged 18 years or older, totaling 64,348 households in 2013 and 108,457 in 2019. A total of 60,202 people from those households were interviewed about chronic diseases in 2013 and 88,736 in 2019.

For this study, data were collected on persons 18 years of age or older who reported medical diagnosis of hypertension and who had had a medical consultation due to hypertension within the last three years.

National Health Survey data collection was performed by trained interviewers, equipped with hand-held computers for saving data. The questionnaire consisted of three parts. Initially, household variables were collected. The second part of the questionnaire was about the general characteristics of household residents, including education, work and income, among other information. The third part of the instrument contained questions for a randomly selected adult household resident (18 years or older) about self-perception of health status, accidents and violence, lifestyles and chronic diseases, among others. More details about the 2013 and 2019 National Health Surveys can be found in articles about the methods used in the surveys.[13,14]

The outcome analyzed was adequacy of care received from health services by respondents who reported medical diagnosis of hypertension and who had had medical consultation(s) about hypertension. The indicators used to arrive at the outcome were the recommendations given on healthy eating, maintaining adequate weight, lower salt intake, physical activity, not smoking, not drinking alcoholic beverages excessively, and regular follow-up, by asking the following question: *Has a doctor or other health professional made any of these recommendations to you during a medical consultation about hypertension?* Blood and urine tests, electrocardiograms and stress tests having been prescribed were also used as indicators of care adequacy, by asking the following question: *Were any examinations or tests prescribed during any medical consultation about arterial hypertension?* The 'adequacy of care received' outcome was arrived at based on affirmative answers to the 11 indicators mentioned (respondents could answer 'yes' or 'no), whereby respondents reporting having received all the indicators we evaluated was considered to be positive. All questions kept the same format in both surveys.

The following exposure variables were investigated:

a) region of residence in Brazil (North; Northeast; Midwest; Southeast; South);
b) sex (male; female);
c) age group (in full years: 18-49; 50-64; 65 or over);
d) race/skin color (self-reported: White; Black; Brown/Asian/Indigenous);
e) economic class (in quintiles, ranging from the 1st quintile, indicating the poorest, to the 5th quintile, indicating the wealthiest,[15] built by adding together the scores for the following variables: type of residence, number of bedrooms, bathrooms, television, refrigerator, video/DVD, washing machine, landline telephone, cellular telephone, microwave oven, computer, motorcycle, automobile, access to internet and domestic servant);
f) care provision service (divided into three groups: public hospital/emergency care center/emergency care/accident and

emergency; primary health care center/family health center; and private services); and

g) type of care (Brazilian National Health System – SUS; non-SUS).

The analyses were performed using the Stata/SE 15.1 statistical package (StataCorp LP, College Station, United States), using the *svy* command, for the multi-stage sampling design and different levels of aggregation, in both samples. Initially, a description of the sample was given in absolute (n) and relative (%) numbers, according to exposure and outcome variables. We used Poisson regression to estimate the unadjusted and adjusted prevalence ratios (PR) of respondents having received the 11 indicators.[16] The adjusted analysis was conducted based on a hierarchical model: at the most distal level, we input the 'region' variable, followed by the 'economic classification', 'sex', 'age' and 'race/skin color' variables; finally, at a level more proximal to the outcome, we input the 'care provision service' and 'type of care' variables. Adjustment was made for variables on the same level and above, whereby all variables with a significance level of less than 0.05 were kept in the model.

The National Health Survey project was submitted to the National Research Ethics Committee, which is linked to the National Health Council. The project was approved as per Protocol No. 10853812.7.0000.0008 (2013) and Protocol No. 3.529.376 (2019). All participants signed a Free and Informed Consent form. The National Health Survey data are public, so that no personal information on survey participants is disclosed.

RESULTS

Of the 58,415 individuals included in the 2013 National Health Survey, 12,500 reported having medical diagnosis of hypertension (21.4%); of these, 11,129 had had a medical consultation regarding this condition in the past three years and were included in the present analysis. Of the 88,736 individuals included in the 2019 Survey, 23,851 reported having medical diagnosis of hypertension (26.9%) and of these, 19,107 had had a medical consultation for this reason in the past three years and were also included in the analysis. The characteristics of the sample were similar in both periods, with a predominance of residents in the Northeast and Southeast regions, females, people aged 50 years or older, and people of White race/skin color. Around half the sample reported primary health care centers or family health centers as being their hypertension care provision service; just under a third reported private services. Most received this care on the SUS (Table 1).

The guidance the respondents most frequently reported receiving was to reduce salt intake (91.2% in 2013 and 87.8% in 2019), maintaining a healthy diet (88.3% in 2013 and 87.2% in 2019), having regular follow-up (87.5% in 2013 and 85.3% in 2019), and keeping their weight adequate (84.8% in 2013 and 84.3% in 2019); the least reported guidance was practicing regular physical activity (81.8% in 2013 and 81.7% in 2019), not smoking (76.1% in 2013 and 67.3% in 2019), and not drinking excessively (75.2% in 2013 and 66.6% in 2019) (Figure 1). With regard to economic classification, in both samples, except for guidance on reducing salt in food and not smoking, wealthier people had a significant advantage which followed a linear trend with regard to the other forms of guidance (Figure 2).

The tests and examinations most frequently prescribed for respondents with hypertension were blood tests (81.4% in 2013 and 80.2% in 2019) and urine tests (70.9% in 2013 and 70.2% in 2019); the least prescribed tests and examinations were electrocardiograms (65.5% in 2013 and 64.8% in 2019) and stress tests (36.5% in 2013 and 33.8% in 2019) (Figure 1). Stratification revealed the same profile of inequality found in the analysis of the guidance given by health services, whereby tests and examinations were prescribed least for the poorest in both 2013 and 2019 (Figure 3).

Prevalence of adequate care provision, considering all seven items of guidance and all four tests and examinations, fell from 25.3%

Table 1 – Distribution of the sample of people with medical diagnosis of arterial hypertension and prevalence of adequate care received from the health system, National Health Survey, Brazil, 2013 and 2019

Variable	2013 (n = 11,129)		2019 (n = 19,107)	
	n (%)	Adequate care (%)[a]	n (%)	Adequate care (%)[a]
Region				
Northeast	3,242 (29.1)	20.0	6,639 (34.8)	13.7
North	1,719 (15.5)	22.5	2,983 (15.6)	17.4
Southeast	3,111 (27.9)	27.2	4,867 (25.4)	20.5
South	1,597 (14.4)	22.5	2,545 (13.3)	19.7
Midwest	1,460 (13.1)	27.4	2,073 (10.9)	24.6
Sex				
Male	3,898 (35.0)	29.9	7,717 (40.4)	20.7
Female	7,231 (65.0)	21.4	11,390 (59.6)	17.4
Age (years)				
18-49	3,441 (30.9)	21.3	4,249 (22.2)	16.0
50-64	4,099 (36.8)	27.7	7,160 (37.5)	21.9
≥65	3,589 (32.3)	23.8	7,698 (40.3)	17.2
Race/skin color				
White	4,724 (42.5)	26.5	7,201 (37.7)	21.8
Black	1,159 (10.4)	24.0	2,472 (12.9)	18.5
Brown/Asian/Indigenous	5,246 (47.1)	22.3	9,434 (49.4)	15.7
Economic class (quintiles)				
1 (poorest)	2,394 (26.6)	15.3	5,201 (27.2)	9.1
2	2,106 (23.5)	20.8	4,715 (24.7)	15.2
3	1,423 (15.8)	25.7	3,679 (19.3)	18.1
4	1,705 (19.0)	27.9	2,910 (15.2)	24.1
5 (wealthiest)	1,357 (15.1)	39.9	2,602 (13.6)	33.0
Care provision service				
Public hospital/UPA[b]/PA[c]/PS[d]	2,466 (22.1)	18.7	3,825 (20.0)	14.5
UBS[e]/USF[f]	5,513 (49.6)	19.2	9,526 (49.9)	13.2
Private services	3,150 (28.3)	41.1	5,756 (30.1)	29.5
Type of care				
SUS[g]	7,605 (68.3)	18.8	12,909 (67.7%)	13.4
Non-SUS[g]	3,524 (31.7)	35.8	6,161 (32.3%)	29.1
Total	**11,129 (100.0)**	**25.3**	**19,128 (100.0)**	**18.8**

a) Weighted proportion; b) UPA: Emergency Care Center; c) PA: Emergency Care; d) PS: Accident and Emergency; e) UBS: Primary Health Care Center; f) USF: Family Health Center; g) SUS: Brazilian National Health System.

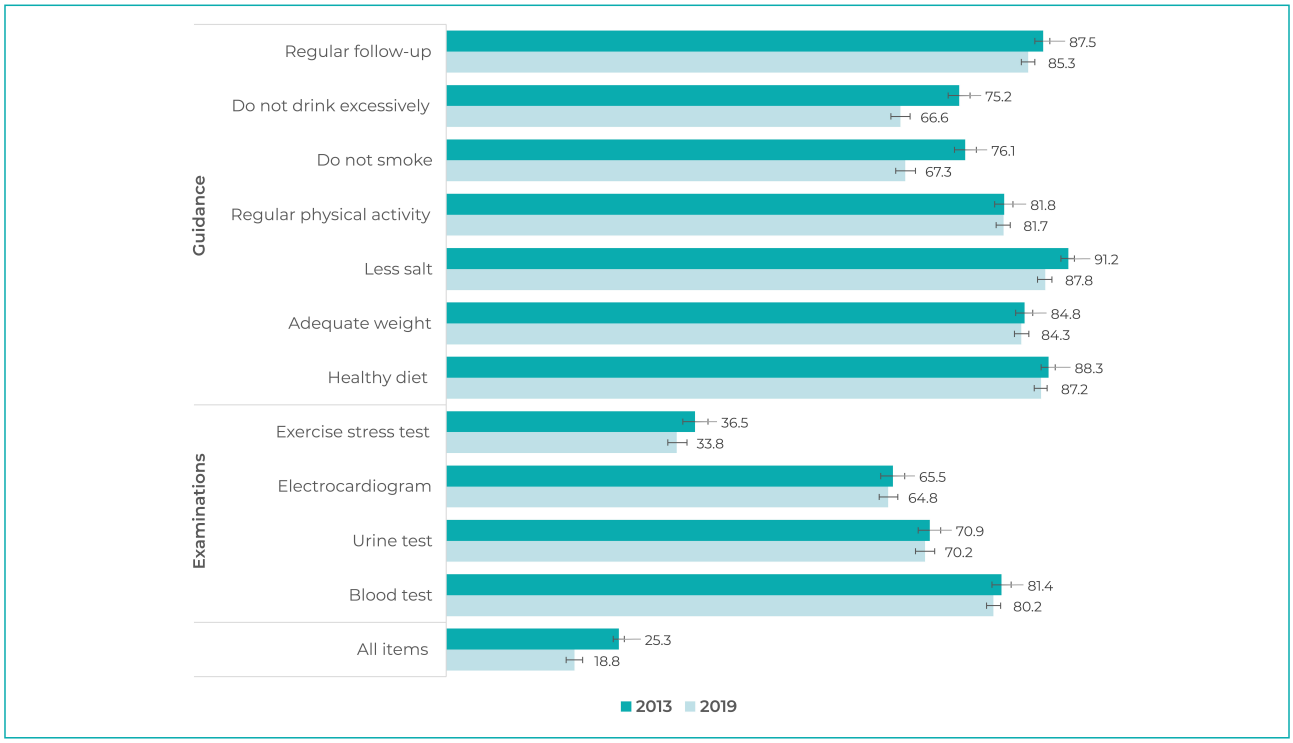

Figure 1 – Prevalence (%) of adults and elderly people under care for arterial hypertension who reported receiving guidance and having examinations prescribed, National Health Survey, Brazil, 2013 (n = 11,129) and 2019 (n = 19,107)

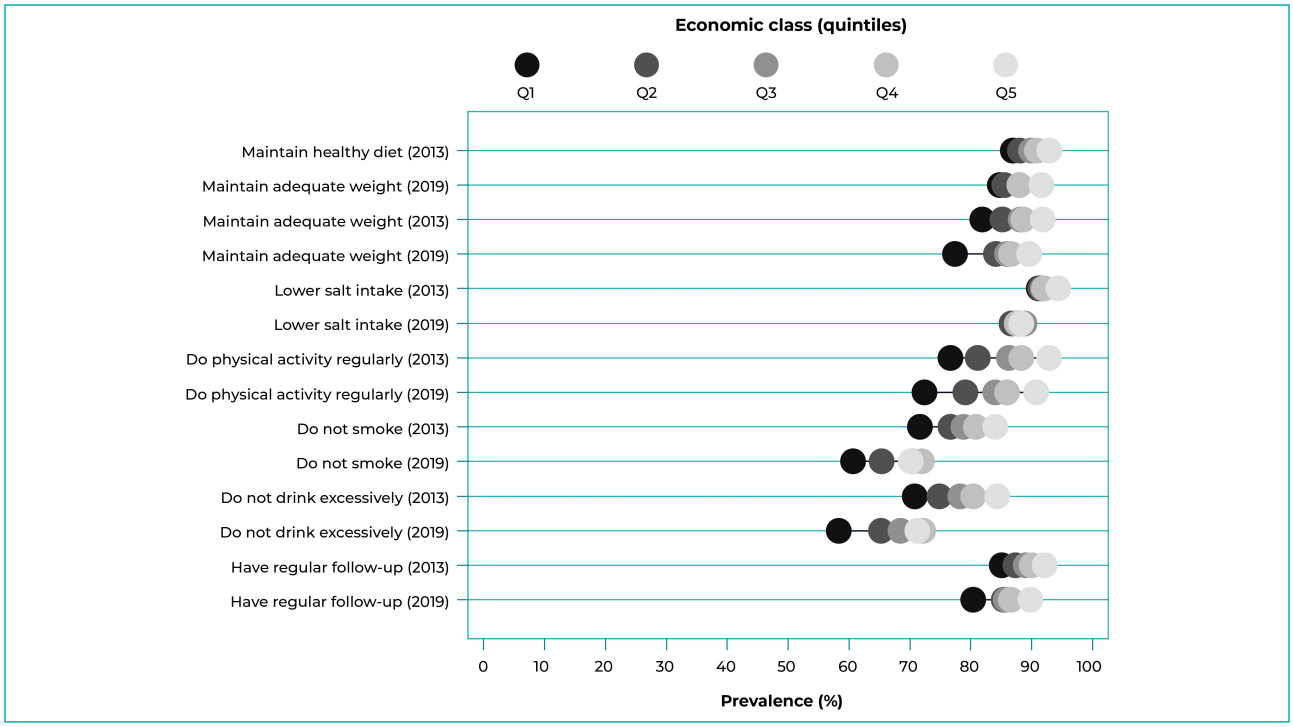

Figure 2 – Prevalence of adults and elderly people under care for arterial hypertension who reported receiving guidance, according to economic class quintiles, National Health Survey, Brazil, 2013 (n = 11,129) and 2019 (n = 19,107)

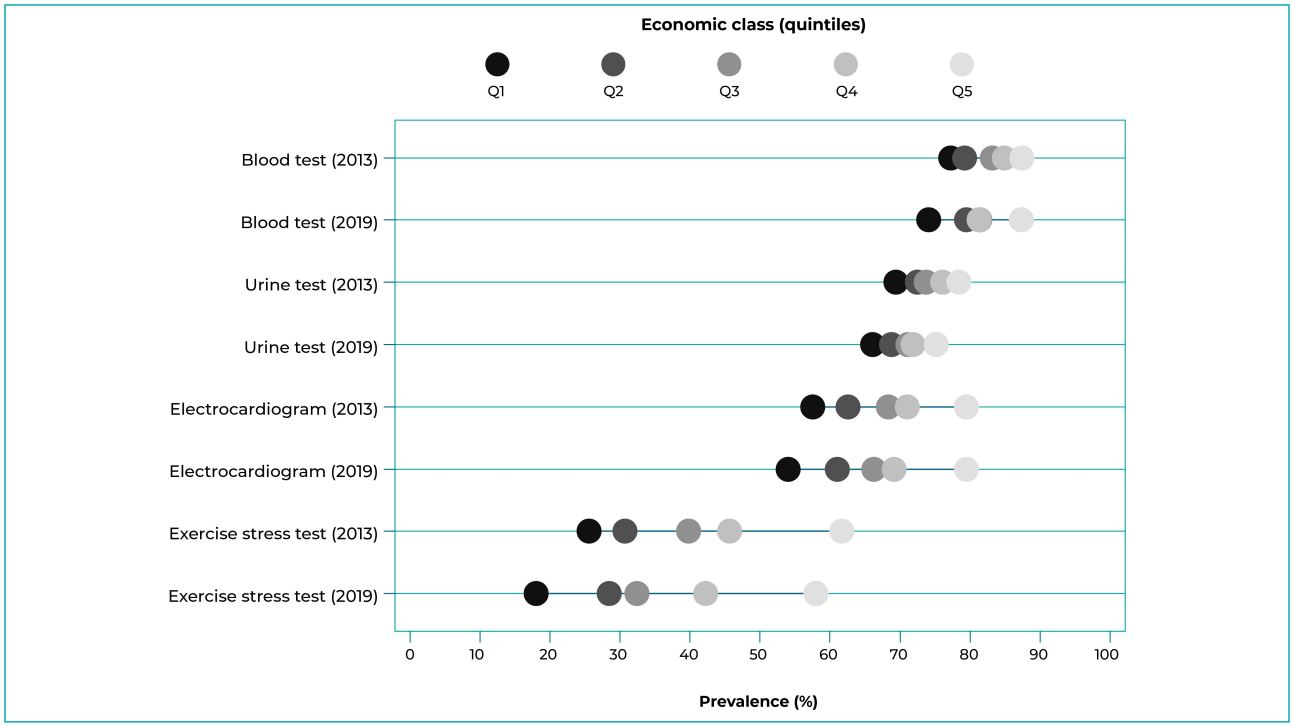

Figure 3 – Prevalence of adults and elderly people under care for arterial hypertension who reported having examinations prescribed, according to economic class quintiles, National Health Survey, Brazil, 2013 (n = 11,129) and 2019 (n = 19,107)

(95%CI 24.5;26.1) in 2013 to 18.8% (95%CI 18.2;19.3) in 2019. Adequate care provision was lowest for those living in the Northeast region of Brazil in both surveys, alongside those living in the North, while those living in the Midwest and Southeast had the highest proportion of adequate care (Tables 1 and 2).

In 2013, receipt of adequate care by female participants with hypertension was 24% lower (PR = 0.76; 95%CI 0.68;0.86) when compared to male participants; in 2019, it was 12% lower (PR = 0.88; 95%CI 0.79;0.97), after adjusting for economic status and region of the country. In both samples, people in the 50-64 age group had a higher proportion of adequate care compared to younger and older people. In the unadjusted analysis, people with hypertension and aged 65 and older had higher prevalence ratios in 2013 and 2019. Outcome prevalence differences related to race/skin color were only found in the unadjusted analysis and disappeared in the adjusted analysis (Table 2).

The better the economic status, the higher the proportion of adequate care, in both samples. However, the data point to a resurgence of inequality in 2019: in 2013 prevalence of adequate care was 2.5 times higher among the wealthiest, and 3.5 times higher in 2019, compared to the poorest. Prevalence of receipt of adequate care among the poorest was 15.3% in 2013 and 9.1% in 2019 (Tables 1 and 2).

In 2013 adequate care was 48% higher among those using private services than among those using public services; in 2019, however, this association did not remain after adjustment. Care provided by the SUS only showed borderline significant difference (p-value = 0.053) in 2019, and prevalence of adequate care was 35% higher among non-SUS users (Table 2).

DISCUSSION

The study findings indicated that in 2013 health services provided only a quarter of Brazilian adults

Table 2 – Unadjusted and adjusted prevalence ratios of care provided by health professionals to adults and elderly people with arterial hypertension, National Health Survey, Brazil, 2013 (n = 11,129) and 2019 (n = 19,107)

Variable	2013		2019	
	PR[a] (95%CI)[b]	PR[a] (95%CI)[b]	PR[a] (95%CI)[b]	PR[a] (95%CI)[b]
	Unadjusted	Adjusted	Unadjusted	Adjusted
Region[c]	p-value < 0.001[l]		p-value < 0.001[l]	
Northeast	1.00		1.00	
North	1.12 (0.90;1.39)		1.27 (1.08;1.50)	
Southeast	1.36 (1.14;1.62)		1.49 (1.29;1.73)	
South	1.12 (0.91;1.38)		1.44 (1.24;1.67)	
Midwest	1.37 (1.14;1.64)		1.79 (1.53;2.10)	
Sex[d]	p-value < 0.001[l]	p-value < 0.001[l]	p-value < 0.001[l]	p-value = 0.014[l]
Male	1.00	1.00	1.00	1.00
Female	0.72 (0.64;0.81)	0.76 (0.68;0.86)	0.84 (0.76;0.93)	0.88 (0.79;0.97)
Age (years)[d]	p-value < 0.001[l]	p-value < 0.001[l]	p-value < 0.001[l]	p-value < 0.001[l]
18-49	1.00	1.00	1.00	1.00
50-64	1.30 (1.13;1.50)	1.32 (1.13;1.53)	1.37 (1.17;1.61)	1.38 (1.18;1.61)
≥65	1.12 (0.96;1.31)	1.28 (1.08;1.52)	1.08 (0.92;1.27)	1.16 (1.00;1.37)
Race/skin color[d]	p-value=0.041[l]	p-value=0.890[l]	p-value < 0.001[l]	p-value=0.090[l]
White	1.00	1.00	1.00	1.00
Black	0.91 (0.74;1.11)	1.05 (0.84;1.33)	0.85 (0.72;1.00)	1.05 (0.89;1.23)
Brown/Asian/Indigenous	0.84 (0.74;0.96)	0.99 (0.86;1.15)	0.72 (0.64;0.81)	0.90 (0.80;1.02)
Economic class (quintiles)[d]	p-value < 0.001[l]	p-value < 0.001[l]	p-value < 0.001[l]	p-value < 0.001[l]
1 (poorest)	1.00	1.00	1.00	1.00
2	1.36 (1.08;1.71)	1.35 (1.07;1.70)	1.68 (1.40;2.01)	1.63 (1.36;1.96)
3	1.68 (1.35;2.09)	1.65 (1.32;2.07)	2.00 (1.68;2.38)	1.93 (1.62;2.31)
4	1.83 (1.48;2.25)	1.80 (1.45;2.24)	2.66 (2.20;3.23)	2.58 (2.12;3.13)
5 (wealthiest)	2.60 (2.10;3.22)	2.54 (2.03;3.17)	3.64 (3.04;4.35)	3.53 (2.94;4.23)
Care provision service[e]	p-value < 0.001[l]	p-value = 0.043[l]	p-value < 0.001[l]	p-value = 0.377[l]
Public hospital/UPA[f]/PA[g]/PS[h]	1.00	1.00	1.00	1.00
UBS[i]/USF[j]	1.04 (0.85;1.26)	1.03 (0.84;1.27)	0.91 (0.77;1.09)	0.96 (0.81;1.14)
Private services	2.05 (1.71;2.45)	1.48 (1.11;1.98)	2.04 (1.74;2.38)	1.22 (0.90;1.66)
Type of care[e]	p-value < 0.001[l]	p-value = 0.117[l]	p-value < 0.001[l]	p-value < 0.053[l]
SUS[k]	1.00	1.00	1.00	1.00
Non-SUS[k]	1.91 (1.68;2.16)	1.14 (0.86;1.52)	2.17 (1.94;2.42)	1.35 (1.00;1.82)

a) PR: prevalence ratio; b) 95%CI: 95% confidence interval; c) First hierarchical level; d) Second hierarchical level; e) Third hierarchical level; f) UPA: Emergency Care Center; g) PA: Emergency Center; h) PS: Accident and Emergency; i) UBS: Primary Health Care Center; j) USF: Family Health Center; k) SUS: Brazilian National Health System; l) Wald test p-value, obtained through Poisson regression.

and elderly people who had medical diagnosis of hypertension with guidance and prescriptions for tests and examinations sufficient to ensure adequate management of their health condition. This situation worsened in 2019, when this quality of care was provided to less than a fifth of the population surveyed.

The process of demographic transition, coupled with the epidemiological transition that is being experienced in Brazil,[17] has affected the occurrence of NCDs,[6,7] including hypertension. According to the National Health Survey, hypertension prevalence increased from 21.4% in 2013 to 26.9% in 2019. This fact also contributes to increased demand for health services, with the possibility of this resulting in low-quality care. Moreover, in recent years, Brazil has faced an increase in SUS underfunding, notably after the enactment of Constitutional Amendment No. 95 by the National Congress, on December 15, 2016,[18] giving rise to a period in which there has been no public investment in the health sector, this being a determining factor for a predictable negative influence on the quality of the services provided.

Despite the fact that, according to both surveys, most respondents had received some guidance, one finding draws attention: the recommendations regarding healthy behaviors – physical activity, not smoking, and not drinking alcoholic beverages excessively – were less emphasized by health professionals, while maintaining a healthy diet and reducing salt intake were the most reported forms of guidance. Adopting such behaviors is known to have a positive effect on health, notably for people with hypertension.[2]

Likewise, the low prevalence of prescription of electrocardiograms and stress tests stands out, these being examinations and tests that help to monitor possible damage to the cardio-circulatory system caused by the disease[19] and should therefore be prescribed periodically for all individuals with hypertension.[1] Similarly, urine testing for analysis of physical characteristics, elements and sediments is essential for controlling hypertension[1] and, given the importance, low cost and simplicity of this test, it should be prescribed more, which did not occur in approximately one in four individuals diagnosed with hypertension in this study.

Regional inequalities, well documented by the literature in Brazil,[7,12,20,21] manifested themselves once more. The North and Northeast regions accounted for the lowest prevalence of adequate care for people with hypertension, while the other regions of the country maintained their indexes slightly above the national average. Socioeconomic level, besides affecting the health of the population, is reflected in health services, whether in their structures or in the processes that shape the provision of health actions.[12,21] In the case of the care provided to people with hypertension, this inequality is of even greater concern, since providing guidance does not depend on financial resources. Prescription of tests and examinations to control hypertension may have been affected by lower availability of facilities in many municipalities in poorer regions, fueling a perverse circle of poverty and poorer quality of health care.

Socioeconomic inequalities on the individual level were also found in both samples with regard to the majority of tests, examinations and forms of guidance, and were even made worse in some cases, such as there being more guidance on maintaining adequate weight, doing physical activity, not drinking excessively and having regular follow-up. The same was found overall for tests and examinations – with the exception of urine tests – when analyzing these same outcomes based on data from the 2013 National Health Survey only with regard to the elderly: the same pattern of inequalities was found,[12] which reinforces the findings of this study.

The behavior of the outcome according to socioeconomic status, after adjusting by region, points to a direct association: the better the economic classification, the better the provision of care. In addition to this effect having been found in both surveys, in particular inequality was more expressive in 2019 than in 2013, possibly attributed to the fact that poverty increased in the period between these years,[22,23] leading to

greater demand for health services, especially public health services. This overload can limit the time spent in consultations, reducing the opportunity for more comprehensive care. This is of even greater concern when one considers the increase in hypertension prevalence and, even though health services continue to have the same capacity, quality of care tends to fall, as suggested by the findings of this study.

More guidance and prescription of examinations were identified in the answers given by older people, this being a fact that indicates equity in health care. Older people need more care compared to younger people, as older people have a greater burden of disease. However, older people also use health care services the most, having more exposure to these services, with a consequent increase in the likelihood of receiving higher quality care.[7,24,25] After adjustment, there were no differences in care for men or women, which could be expected due to both sexes having equal needs. Similarly, in the crude analysis, race/skin color revealed greater adequate care for those of White race/skin color, although this effect disappeared in the adjusted analysis. This finding is important because, like age, it emphasizes equity in care. When studying a sample of the Brazilian population, Duro et al.[26] found higher prevalence of guidance on regular physical activity among people of White race/skin color. Research conducted with a sample of elderly people in Pelotas, a city in southern Brazil, found statistical difference regarding guidance on reducing salt intake, with prevalence being higher among non-Whites.[27]

As for the type of service providing care, public hospitals and emergency care services, which in this study were identified as having the worst performance, are considered not to have the profile necessary for provision of adequate care to people with chronic conditions, who most often seek these services due to complications arising from hypertension or other comorbidities. In 2013, care for people with hypertension seen in private services was found to be almost 48% more adequate than care provided to those seen in public hospitals, emergency care centers, emergency care or accident and emergency services. However, this association was not significant in 2019. A possible explanation for this result could be related to the drop in quality of the health system as a whole, also affecting private services.

Primary health care was responsible for half of the care provided to people with hypertension. Primary health care is the point of entry to the SUS, and its preferred model is the Family Health Strategy. Its guidelines include continuing linkage with health service users, this being essential for the prevention and correct management of conditions that can be lifelong, as is the case of hypertension.[1] However, the most recent edition of the National Primary Care Policy, published in 2017, introduced new arrangements for health teams and allowed reduction of staff and workload in health services.[28] Therefore, given the increase in demand due to the population becoming poorer,[22] the Policy has led to a greater workload and may therefore have caused the quality of primary care to fall.

Lack of association with type of care – SUS or other services – in 2013 and borderline association in 2019 may be explained by the analysis model used, with other variables hierarchically more determinant of the outcome, especially the care provision service. It is known that 20% to 30% of the population does not use the SUS, these being people, in general, with a better socioeconomic situation.[29] Thus, similar levels of care prevalence, according to type of care, may have been affected by adjustment for hierarchically higher variables.

The limitations of this study include the limited availability of questions in the National Health Survey questionnaires aimed at inferring quality of care. An example is that there are no questions about prescription of X-rays for people with hypertension with congestive heart failure. Also standing out among the limitations of this study is the generalized nature of the question about blood tests, which does not distinguish between the different types of blood tests prescribed.

Similarly, adequacy of care was evaluated as a whole, without considering differences in the profiles of people with hypertension with regard to its severity and comorbidities. It is possible that some answers were affected by recall bias, since the period of care to which the questions referred was up to three years prior to the interview.

Standing out among the strong points of this study is the national representativeness of the samples and the opportunity to compare the evolution of indicators at two different moments in time, thus enabling identification of trends and patterns in both the quality of care provided by the health system to people with hypertension and also its inequalities.

It is of concern to note that, in a space of six years, these health care indicators deteriorated as inequalities intensified. Given the fact that hypertension prevalence is on the increase in Brazil, we believe that if quality of care also increased, it would be possible to minimize the impact of the disease on the population.

Efforts to guide and qualify care for people with hypertension have been made, such as the recent Ministry of Health publication on the line of care for this population.[30] However, there are bottlenecks within the health system. Provision of guidance and prescription of routine tests are concrete manifestations of care for people with hypertension, and they should be more frequent. Health professionals should stress the importance of these behaviors whenever they have contact with these health service users. More continuing education actions, focused not only on health promotion in general but also on specific care, in the case of individuals with chronic diseases, can enhance improvement of health at all ages.

We hope that macro-level policies, such as increasing access to healthy food and ensuring safe practice of physical activity, will be strengthened. Furthermore, health services should encourage self-care and family engagement in lifestyle changes, helping to facilitate adherence of people with hypertension to non-pharmacological treatment. This support can mitigate the shortcomings in guidance on alcohol and tobacco use, which was less prevalent although it is just as important for the health of the population.

AUTHORS' CONTRIBUTION

Neves RG, Pereira DC, Santos AV and Tomasi E contributed to the concept and design of the study, analysis and interpretation of the results, drafting and critically reviewing the manuscript. All the authors have approved the final version of the manuscript and are responsible for all aspects thereof, including the guarantee of its accuracy and integrity.

CONFLICTS OF INTEREST

The authors declare they have no conflicts of interest.

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Received on: 18/10/2021 | **Approved on:** 28/02/2022
Associate editor: Doroteia Aparecida Höfelmann

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