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Sources of medicines for hypertension and diabetes in Brazil: results from the *National Health Survey*

Fontes de medicamentos para hipertensão e diabetes no Brasil: resultados da *Pesquisa Nacional de Saúde*

Fuentes de medicamentos para la hipertensión y diabetes en Brasil: resultados de la *Encuesta Nacional de Salud*

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Abstract

This study aims to analyze the sources people over 18 years of age use to obtain medication for the treatment of hypertension and diabetes, according to sociodemographic characteristics from 2013 to 2019. Data from the Brazilian National Health Survey were analyzed. Most individuals with diagnosis and prescription to pharmacological treatment reported obtaining medicines exclusively from one type of source. The percentage of people who acquired hypertension medicine exclusively from public pharmacies decreased, from 24.5% in 2013 to 16.2% in 2019; while there was an increase in those obtaining from the Popular Pharmacy program, from 23.5% to 31.4%; as well as for out-of-pocket payment, which rose from 30.9% to 35.5% The percentage of people who acquired diabetes medication exclusively from public pharmacies increased from 7.4% to 18.6% and with out-of-pocket payment increased from 21.6% to 26.8%, while the percentage of those who acquired from the Popular Pharmacy program decreased from 47.2% to 36.4%. The percentage of those who acquired medication from various sources decreased for both hypertension and diabetes. For men, white, and those with higher education, the source of medication acquisition, for both conditions, was mostly by out-of-pocket payment. The high number of medicine acquisition from public sources represents an advance in Brazil's response to the treatment of these conditions, but reducing regional differences still represents a challenge to be overcome by the healthcare system.

Chronic Disease; Hypertension; Diabetes Mellitus; Health Services Accessibility; Community Pharmacy Services

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Introduction

Chronic noncommunicable diseases (NCDs) represent a significant health problem, since they are the main cause of premature deaths and disabilities. Most deaths from NCDs are due to cardiovascular diseases, followed by cancer, respiratory diseases, and diabetes; and they especially affect the most vulnerable groups, such as the low-income and low-education population [1]. It is estimated that, in 2019, these four diseases were responsible for 33.2 million deaths worldwide [2].

In Brazil, in that same year, approximately 740,000 deaths from NCDs were recorded, of which 41.8% were premature, from 30 to 69 years of age [3]. The prevalence of arterial hypertension, associated with a higher risk of developing cardiovascular diseases was 23.9% in adults [4], corresponding to more than 38 million people. For diabetes, the percentage is 7.7%, which is equivalent to more than 12 million people [5].

Considering the implications related to an epidemiological transition, which leads to an increase in chronic diseases, the health system must be reorganized, demanding investments in research, surveillance, prevention of NCD, and for the promotion of healthier lifestyles [6]. To prepare the country to deal with and control these diseases, the Brazilian Ministry of Health published the Strategic Action Plan to Tackle NCDs in Brazil, 2011-2022, which foresees the expansion of free access to medications and other health products; it also aims, as an essential component of the NCD surveillance, to monitor the access to essential health services, including medication [7].

The sources for obtaining medication for hypertension and diabetes in Brazil include the basic health units (UBS) of the Brazilian Unified National Health System (SUS) (public pharmacies), the Popular Pharmacy program, and the pharmacies and drugstores of the private network; the first two being publicly funded and the last requiring out-of-pocket payments. The antihypertensive and oral hypoglycemic agents offered at the UBS are financed by Federal, State, and Municipal entities and purchased by the Municipalities and/or States [8]. The acquisition and distribution of NPH and regular human insulin is carried out by the Brazilian Ministry of Health and offered to users at UBS [9]. The medicines available at the Popular Pharmacy program are funded exclusively by the Federal Government and are offered among the private networks of pharmacies and drugstores accredited by the program [10].

According to population surveys, most individuals diagnosed with hypertension and diabetes use drugs to treat these diseases. In Brazil, antihypertensive and antidiabetic drugs are considered accessible and free, with Popular Pharmacy program and UBS as the main sources for obtaining these drugs [11,12,13,14,15,16,17].

Thu, to contribute to the production of evidence on the subject, this study aimed to analyze the sources for obtaining hypertension and diabetes medication by individuals aged 18 years or older, according to sociodemographic characteristics, from 2013 to 2019.

Methods

This is a cross-sectional study conducted using secondary data from the 2013 and 2019 *Brazilian National Health Survey* (PNS).

The PNS is part of the Integrated System of Household Surveys (SIPD), of which the sample structure is known as the Master Sample. The Master Sample is a set of census sectors or aggregates of selected sectors to meet the needs of various surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE). The target population is composed of people dwelling in permanent private households throughout Brazil.

The primary units of the Master Sample are stratified according to four criteria: administrative, geographic, urban or rural situation, and a statistical criterion, which subdivides the strata based on the three previous criteria into homogeneous strata, according to the total income of the households and the number of households [18].

In the first stage of selection, as part of the SIPD, the primary sampling units (PSU) are obtained by simple random sampling among those previously selected for the Master Sample, respecting the stratification of the PSUs of the Master Sample [18].

In the second stage, a fixed number of permanent households in each PSU selected in the first stage are then selected by simple random sampling. The selection of households is made based on the Brazilian National Address List for Statistical Purposes (CNEFE) in its last update before the conclusion of this stage of the sampling plan [18].

In the third stage, in each selected household, a resident from a list of eligible residents constructed at the time of the interview is randomly invited to answer the individual part of the questionnaire [18].

The PNS questionnaire is divided into three parts, namely: household information, information on all residents, and information about an individual selected among the household residents [19]. The PNS 2013 began data collection in August 2013 and ended in February 2014, collecting 6,069 PSU and 64,348 households with interviews, totaling 205,546 residents with a completed questionnaire. In this edition, individuals aged 18 or older were selected for individual interviews. In total, 60,202 individuals in this age group were interviewed and responded to the individual questionnaire [18].

To allow comparisons between the 2013 and 2019, the IBGE conducted a new calibration of the expansion factors of the PNS 2013, considering the revision of the Population Projection of the Federative Units by sex and age for the period 2010-2060, released in 2018. This same population projection was used to calibrate the weights of the PNS 2019, thus ensuring comparability between the two editions of the survey [5]. In this study, data from this version of the PNS 2013 were used.

The PNS 2019 had its data collected from August 2019 to March 2020. It has a sample design similar to the 2013 edition, but with some changes regarding the sample size of the PSU and households, in addition to changes in the eligible age group for individual interview, which changed to 15 years of age or more, different from 18 years of age in 2013.

The survey was conducted in 8,036 PSU and had 94,114 households with completed interviews. In these households, questionnaires were completed for 279,382 residents, and 94,114 individuals aged 15 years and over were randomly selected to answer specific interview questions [19].

The analyses of this article were conducted with the sample of individuals $\geq$ 18 years old who reported a medical diagnosis of arterial hypertension (2013: n = 10,017; 2019: n = 19,838) and/or diabetes (2013: n = 6,185; 2019: n = 6,338) and those who were using medication as a treatment. An important methodological difference appears in the PNS 2019, in which an intermediate question about the existence of medication prescriptions was included. This question enables identifying people who have the disease and a medical prescription but do not undergo the treatment, which was not possible to be evaluated in the previous survey.

The sources of medicines for hypertension and diabetes (oral medicines and/or insulin) were expressed as: (1) obtaining all from the Popular Pharmacy program; (2) obtaining all from the public pharmacies of the SUS; and (3) out-of-pocket payment of all medicines, when "none" was mentioned in the other sources and the individual paid for their medicines; and (4) various, when the medications were obtained from more than one source.

The proportions of medicine acquisition by source were estimated for both years of investigation and the prevalence ratios for obtaining medication for arterial hypertension and diabetes were estimated, according to the following variables: sex (male; female); age group, in years (18 to 39; 40 to 59; 60 or more); schooling level (no education or incomplete primary education; complete primary education and incomplete secondary education; complete secondary education and incomplete higher education; complete higher education); geographic region of residence (North; Northeast; Central-West; Southeast; South), whether or not they have health insurance, and per capita household income expressed in quartiles for each year (2013-2019). To enable the adjusted analysis, the skin color variable was grouped into whites and non-whites.

The analyses were performed using the statistical package Stata version 13.0 (https://www.stata.com), using the svy command set and considering the weight and the complex plane of the sample. Poisson regression model was used to estimate crude and adjusted prevalence ratios (PR) and 95% confidence intervals (95%CI); in the evaluation of the statistical significance of the differences between groups, a 5% significance level was considered. To define the final model, a "back-

ward" strategy was developed, in which all variables of interest were tested individually and intro-duced into the model, being removed one by one until only variables with significance greater than 95% remained.

The PNS 2013 was approved by the Brazilian National Ethics Research Committee (CONEP) of the Brazilian National Health Council (CNS) in June 2013 (opinion n. 328.159), and in August 2019 (opinion n. 328.159) for the 2019 edition. Respondents signed an informed consent form to partici-pate in the research, according to CNS Resolution n. 466, of December 12, 2012.

Results

In 2013, 81.4% (95%CI: 80.1-82.7) of the individuals with hypertension diagnosis were using medica-tion, and 80.2% (95%CI: 78.0-82.5) of those with diabetes used oral medications or insulin for their treatment. In 2019, from the total of individuals with diagnosis and treatment indication for hyper-tension, 98.8% (95%CI: 98.5-99.1) reported using medication. For those with diabetes, 95% (95%CI: 93.9-95.9) made use of oral medication and 69.3% (95%CI: 65.8-72.5) made use of insulin (data not shown in table).

The sociodemographic characteristics of individuals using medication for the treatment of either condition were similar in the two years investigated, being higher among women, in people aged 50 to 69 years, of white race/skin color, with incomplete primary education, without health insurance, in the upper middle-income quartile, and living in the Southeast Region (Table 1).

Table 1

Sociodemographic characteristics and macroregions of individuals aged 18 years or more who reported use of medications to treat hypertension and diabetes. *Brazilian National Health Survey*, 2013 and 2019.

	2013			2019		
	n	%	95%CI	n	%	95%CI
Hypertension						
Gender						
Female	15,842	62.4	60.7-64.0	20,055	60.6	59.3-61.8
Male	9,559	37.6	36.0-39.3	13,055	39.4	38.2-40.7
Age (years)						
18-39	2,298	9.0	8.2-10.0	2.235	6.8	6.1-7.5
40-59	10,981	43.2	41.5-45.0	13,038	39.4	38.1-40.7
60 or more	12,120	47.7	45.9-49.6	17,835	53.9	52.4-55.3
Race/Skin color *						
White	12,956	51.0	49.3-52.8	14,837	44.8	43.6-46.0
Others	12,442	49.0	47.2-50.7	18,273	55.2	54.0-56.4
Schooling level						
Incomplete primary education	14,867	58.5	56.6-60.4	18,039	54.5	53.2-55.8
Complete primary education	3,010	11.9	10.7-13.1	3,966	12.0	11.1-12.9
Complete secondary education	4,811	18.9	17.6-20.3	7,058	21.3	20.4-22.3
Complete higher education	2,713	10.7	9.4-12.1	4,046	12.2	11.3-13.2
Health insurance						
Yes	8,294	32.7	30.8-34-6	9,470	28.6	27.4-29.9
No	17,106	67.3	65.4-69.2	23,639	71.4	70.1-72.6

(continues)

Table 1 (continued)

	2013			2019		
	n	%	95%CI	n	%	95%CI
Income (quartiles) **						
Q1 (lowest)	4,153	16.4	15.1-17.6	4,980	15.0	14.2-15.9
Q2	5,729	22.6	21.1-24.1	7,608	23.0	21.8-24.2
Q3	8,523	33.6	32.0-35.1	11,087	33.5	32.3-34.7
Q4 (highest)	6,990	27.5	25.9-29.2	9,431	28.5	27.2-29.8
Region						
North	1,127	4.4	4.1-4.8	1,686	5.1	4.8-5.4
Northeast	5,880	23.1	22.0-24.3	8,381	25.3	24.5-26.2
Southeast	12,483	49.1	47.6-50.7	15,705	47.4	46.2-48.7
South	4,099	16.1	15.1-17.2	5,087	15.4	14.7-16.1
Central-West	1,812	7.1	6.7-7.6	2,249	6.8	6.4-7.2
Diabetes						
Gender						
Female	4,125	60.5	57.1-63.9	6,118	58.4	56.2-60.5
Male	2,690	39.5	36.1-42.9	44,359	41.6	39.5-43.8
Age (years)						
18-39	343	5.0	3.9-6.5	566	5.4	4.4-6.6
40-59	2,735	40.1	37.0-43.3	3,741	35.7	33.6-37.8
60 or more	3,735	54.8	51.7-57.9	6,171	58.9	56.8-61.0
Race/Skin color *						
White	3,608	53.0	50.0-55.9	4,672	44.6	42.5-46.7
Others	3,204	47.0	44.1-50.0	5,806	55.4	53.3-57.5
Schooling level						
Incomplete primary education	4,002	58.7	55.5-61.9	6,204	59.2	57.1-61.3
Complete primary education	949	13.9	11.5-16.8	1,180	11.3	10.0-12.6
Complete secondary education	1,222	17.9	15.8-20.3	2,098	20.0	18.4-21.8
Complete higher education	642	9.4	7.8-11.4	996	9.5	8.4-10.8
Health insurance						
Yes	2,362	34.7	31.7-37.7	2,900	27.7	25.7-29.7
No	4,453	65.3	62.3-68.3	7,577	72.3	70.3-74.3
Income (quartiles) **						
Q1 (lowest)	1,076	15.8	13.7-18.1	1.654	15.8	14.5-17.2
Q2	1,493	21.9	19.1-25.0	2,433	23.2	21.4-25.2
Q3	2,268	33.3	30.4-36.2	3,547	33.9	31.8-35.9
Q4 (highest)	1,978	29.0	26.4-31.8	2,843	27.1	25.2-29.2
Region						
North	335	4.9	4.4-5.4	559	5.3	4.9-5.8
Northeast	1,509	22.1	20.8-23.5	2,615	25.0	23.9-26.1
Southeast	3,520	51.7	49.7-53.6	5,009	47.8	46.3-49.4
South	969	14.2	13.1-15.5	1,548	14.8	13.8-15.8
Central-West	482	7.1	6.4-7.7	746	7.1	6.6-7.7

95%CI: 95% confidence interval.

* Included in the category others: black, Asian, mixed-race and indigenous;

** Range of income quartiles converted to USD in the years: 2013: Q1 – up to 160, Q2 – 161 to 306, Q3 – 307 to 553, Q4 – 554 or greater, 2019: Q1 – up to 129, Q2 – 130 to 259, Q3 – 260 to 434, Q4 – 434 or greater.

Most individuals reported obtaining medications for hypertension and diabetes from a single source in the two years analyzed. Obtaining medications for diabetes from a mixed source decreased from 23.8% (95%CI: 18.4-24.1) in 2013 to 18.2% (95%CI: 16.7-19.7) in 2019, as well as for hypertension, which ranged from 21.1% (95%CI: 19.7-22.6) to 16.9% (95%CI: 16.0-17.8) (Figure 1).

Differences were observed in our analysis from 2013 to 2019, with a decrease in acquisition for hypertension medicine exclusively from public pharmacies 24.5% (95%CI: 22.7-26.4) to 16.2% (95%CI: 15.3-17.3) and an increase for those obtained from the Popular Pharmacy program 23.5% (95%CI: 21.8-25.2) to 31.4% (95%CI: 29.9-32.9), as well as for out-of-pocket payments 30.9% (95%CI: 29.1-32.7) to 35.5% (95%CI: 34.3-36.7). For diabetes, on the other hand, an increase was observed for the obtainment exclusively from public pharmacies 7.4% (95%CI: 5.3-8.2) to 18.6% (95%CI: 15.5-18.6) and for out-of-pocket payment 21.6% (95%CI: 17.2-21.7) to 26.8% (95%CI: 23.8-27.5), with a decrease in those obtained from the Popular Pharmacy program 47.2% (95%CI: 39.3-45.4) to 36.4% (95%CI: 35.7-40.0) (Figure 1).

Tables 2 and 3 show the crude and adjusted prevalence ratios for each source analyzed as a single or mixed source in the years of 2013 and 2019.

Regarding the treatment of hypertension, after adjustment, the obtainment exclusively from public pharmacies was lower in males and in white individuals in 2019 and, for both years of investigation, it was lower in the age group of 40 years or more, and among the most educated, being 1.6 times higher in the South Region, when compared with the North Region. Obtaining through the Popular Pharmacy program was lower (40%) among people with complete higher education in 2013 and with health insurance, for both years; whereas it was higher in the South Region compared to the North Region for both years (1.4 and 1.6 times more, respectively). Obtainment exclusively through out-of-pocket payment was higher among men in 2019, and in individuals who self-reported as white, with complete higher education for both years investigated (1.5 and 1.6 times more, respectively) (Table 2).

Regarding the obtainment from various sources, hypertension medication was higher in the older age groups and lower in the more educated in the two years investigated, and 20% lower in the Central-West Region, when compared with the North in 2013 (Table 2).
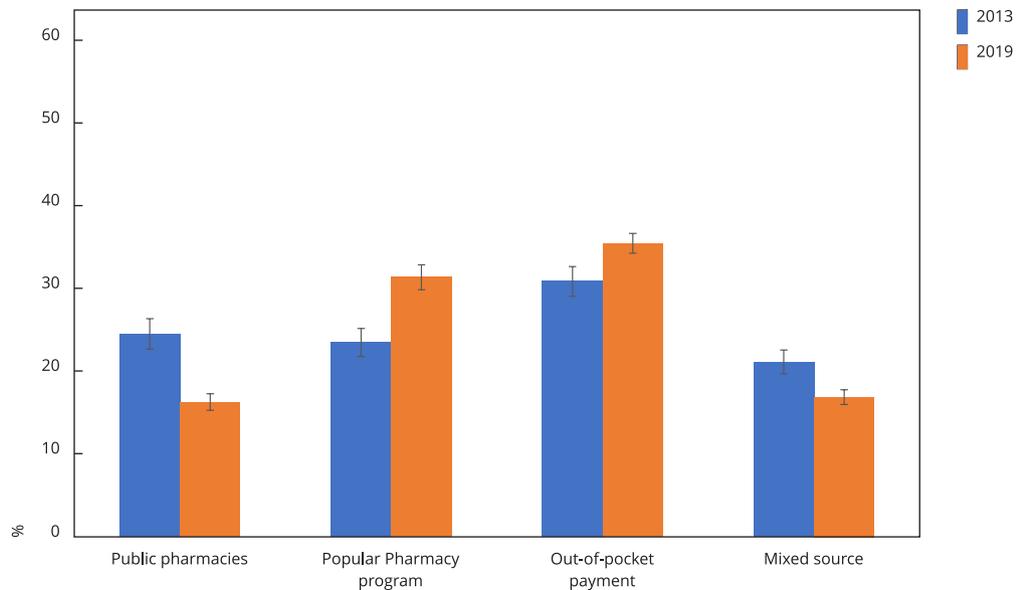
Obtaining oral medications and/or insulin for diabetes from public pharmacies, after adjustment, was 70% lower in individuals residing in the Northeast Region, when compared with the North; 50% in the lower and upper middle-income quartile in 2013; and 50% lower in individuals with health insurance and in upper quartile of income in 2019. Obtainment exclusively from the Popular Phramacy program, for the two years investigated, was lower in individuals aged 60 years or older (30% lower in 2013 and 20% in 2019); 40% and 20% lower in individuals with a complete higher education, with health insurance, and in the residents of the South Region in relation to the North (1.5 and 1.9 times more respectively). The acquisition of diabetes medication exclusively with out-of-pocket payments was 1.3 times higher in whites in 2013, and in the two years analyzed, it was higher in males (1.2 e 1.3 times more respectively), in individuals with complete higher education (1.3 and 1.2 times), and significantly higher in individuals with health insurance (2.9 times more in 2013 and 2 times more in 2019). A lower rate of this source of acquisition (60% less) was observed in residents in the South Region of the country, when compared with the North, both in 2013 and 2019 (Table 3).

Obtainment of diabetes medication through various sources was higher in men, among the most educated, in the elderly (aged 60 years or older) about 1.5 times more in individuals with health insurance, in the highest income quartile in 2019; and in whites in the two years investigated (Table 3).

Figure 1

Sources for the acquisition of hypertension and diabetes medication by adults aged 18 years or over. *Brazilian National Health Survey*, 2013 e 2019.
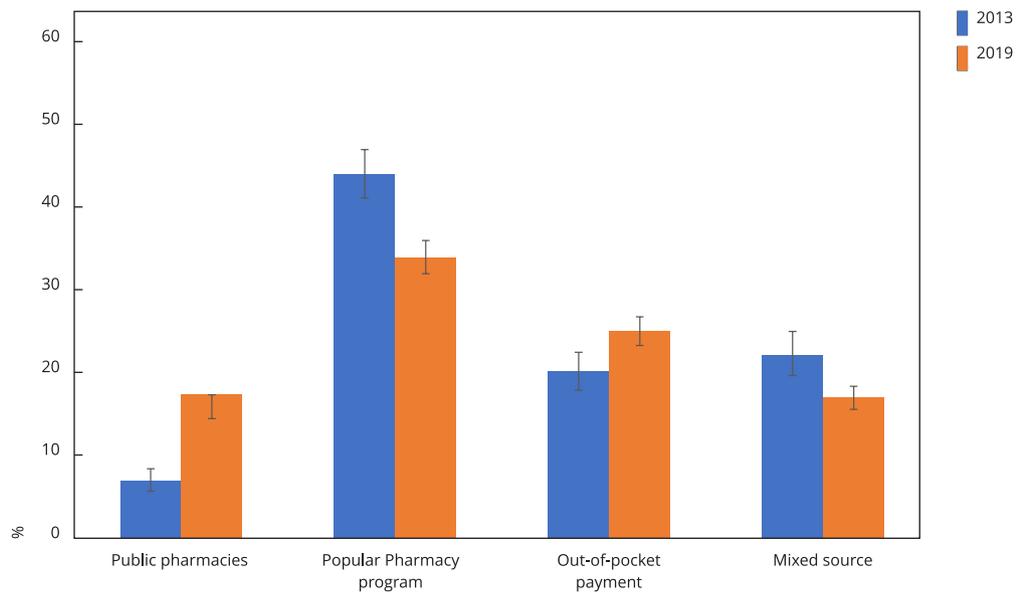
1a) Hypertension

1b) Diabetes

Table 2

Crude and adjusted prevalence ratios (PR) for the sources for the acquisition of hypertension medication by adults aged 18 years or over, according yo sociodemographic characteristics and macroregion. *Brazilian National Health Survey*, 2013 and 2019.

	Single source 2013			Various sources 2013	Single sources 2019			Various sources 2019
	Public pharmacies	Popular Pharmacy program	Out-of-pocket payment		Public pharmacies	Popular Pharmacy program	Out-of-pocket payment	
	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)
Hypertension (crude)								
Gender								
Female	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Male	0.9 (0.8-1.0)	0.9 (0.8-1.1)	1.2 (1.1-1.3)	1.0 (0.8-1.1)	0.8 (0.7-0.9)	1.0 (0.9-1.1)	1.1 (1.1-1.2)	0.9 (0.8-1.0)
Age (years)								
18-39	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
40-59	0.8 (0.6-0.9)	1.1 (0.8-1.3)	1.1 (0.9-1.3)	1.6 (1.2-2.1)	0.8 (0.6-1.0)	1.1 (0.9-1.3)	0.9 (0.8-1.0)	1.6 (1.2-2.2)
60 or more	0.8 (0.7-1.0)	0.9 (0.7-1.1)	1.0 (0.8-1.2)	1.7 (1.3-2.2)	0.8 (0.6-1.0)	1.0 (0.8-1.2)	0.9 (0.8-1.0)	2.0 (1.5-2.7)
Race/Skin color *								
White	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Others	0.8 (0.7-0.9)	1.0 (0.8-1.1)	1.3 (1.1-1.4)	0.9 (0.8-1.1)	0.7 (0.6-0.8)	1.0 (0.9-1.1)	1.2 (1.1-1.3)	0.9 (0.8-1.0)
Schooling level								
Incomplete primary education	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Complete primary education	0.8 (0.6-0.9)	1.1 (0.9-1.4)	1.2 (1.0-1.4)	0.9 (0.7-1.1)	0.7 (0.6-0.9)	1.1 (1.0-1.2)	1.2 (1.0-1.3)	0.9 (0.7-1.0)
Complete secondary education	0.6 (0.5-0.8)	1.1 (0.9-1.3)	1.7 (1.5-1.9)	0.7 (0.6-0.9)	0.6 (0.5-0.7)	1.0 (0.9-1.1)	1.6 (1.4-1.7)	0.7 (0.6-0.8)
Complete higher education	0.3 (0.2-0.4)	0.5 (0.4-0.7)	2.8 (2.4-3.2)	0.7 (0.6-1.0)	0.3 (0.2-0.4)	0.6 (0.0-0.7)	2.2 (2.1-2.4)	0.6 (0.5-0.7)
Region								
North	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Northeast	1.4 (1.1-1.8)	0.9 (0.7-1.2)	0.9 (0.8-1.2)	0.8 (0.7-1.0)	1.3 (1.1-1.5)	0.9 (0.8-1.0)	1.0 (0.9-1.1)	1.0 (0.9-1.2)
Southeast	1.2 (0.9-1.5)	1.2 (1.0-1.5)	0.8 (0.7-0.9)	0.8 (0.7-1.0)	1.0 (0.9-1.2)	1.2 (1.0-1.4)	0.8 (0.7-0.9)	1.0 (0.9-1.2)
South	1.3 (1.1-1.7)	1.3 (1.0-1.7)	0.7 (0.5-0.8)	0.9 (0.7-1.1)	1.3 (1.0-1.5)	1.5 (1.3-1.7)	0.6 (0.5-0.7)	0.9 (0.8-1.1)
Central-West	1.1 (0.9-1.4)	1.1 (0.9-1.5)	1.0 (0.8-1.1)	0.7 (0.6-0.9)	0.8 (0.6-1.0)	1.3 (1.0-1.5)	0.9 (0.8-1.0)	1.0 (0.9-1.2)
Health insurance								
Yes	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
No	0.3 (0.2-0.4)	0.8 (0.7-0.9)	2.2 (2.0-2.4)	0.9 (0.8-1.1)	0.3 (0.2-0.4)	0.7 (0.6-0.7)	1.9 (1.8-2.0)	1.0 (0.8-1.1)
Income (quartiles) **								
Q1 (lowest)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Q2	0.8 (0.7-1.0)	1.1 (0.9-1.3)	1.2 (1.0-1.4)	1.0 (0.8-1.2)	0.8 (0.7-0.9)	1.1 (1.0-1.2)	1.0 (0.9-1.2)	1.1 (0.9-1.3)
Q3	0.7 (0.6-0.9)	1.0 (0.8-1.2)	1.7 (1.5-1.9)	1.0 (0.8-1.3)	0.7 (0.6-0.8)	1.0 (0.9-1.1)	1.2 (1.0-1.3)	1.1 (1.0-1.3)
Q4 (highest)	0.4 (0.2-0.5)	0.7 (0.6-0.9)	2.8 (2.4-3.2)	0.9 (0.7-1.1)	0.4 (0.2-0.5)	0.8 (0.7-0.9)	2.0 (1.7-2.2)	0.8 (0.7-1.0)

(continues)

Table 2 (continued)

| | Single source 2013 | | | Various sources 2013 | Single sources 2019 | | | Various sources 2019 |
| | Public pharmacies | Popular Pharmacy program | Out-of-pocket payment | | Public pharmacies | Popular Pharmacy program | Out-of-pocket payment | |
	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)
Hypertension (adjusted)								
Gender								
Female					1.0	1.0	1.0	
Male					0.9 (0.8-1.0)	1.0 (0.9-1.1)	1.1 (1.0-1.1)	
Age (years)								
18-39	1.0			1.0	1.0			1.0
40-59	0.8 (0.6-0.9)			1.5 (1.1-2.0)	0.7 (0.6-0.9)			1.6 (1.1-2.1)
60 or more	0.8 (0.7-1.0)			1.5 (1.2-2.0)	0.7 (0.6-0.9)			1.7 (1.3-2.4)
Race/Skin color *								
White			1.0		1.0		1.0	
Others			1.1 (1.0-1.3)		0.9 (0.8-1.0)		1.1 (1.0-1.2)	
Schooling level								
Incomplete primary education	1.0	1.0	1.0	1.0			1.0	1.0
Complete primary education	0.8 (0.6-1.0)	1.1 (0.9-1.4)	1.1 (0.9-1.3)	0.9 (0.7-1.1)	0.8 (0.7-0.9)		1.1 (1.0-1.2)	0.9 (0.8-1.1)
Complete secondary education	0.8 (0.6-1.0)	1.2 (1.0-1.4)	1.3 (1.1-1.5)	0.8 (0.6-0.9)	0.7 (0.6-0.8)		1.3 (1.2-1.4)	0.7 (0.6-0.8)
Complete higher education	0.5 (0.4-0.8)	0.6 (0.5-0.9)	1.6 (1.4-1.9)	0.8 (0.6-1.0)	0.6 (0.4-0.8)		1.5 (1.3-1.6)	0.6 (0.5-0.7)
Region								
North	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Northeast	1.4 (1.2-1.7)	0.9 (0.7-1.1)	1.0 (0.8-1.1)	0.8 (0.7-1.0)	1.2 (1.0-1.4)	0.9 (0.8-1.0)	1.0 (0.9-1.1)	
Southeast	1.4 (1.1-1.8)	1.3 (1.0-1.6)	0.6 (0.5-0.7)	0.9 (0.7-1.1)	1.3 (1.1-1.6)	1.3 (1.1-1.5)	0.7 (0.6-0.7)	
South	1.6 (1.3-2.0)	1.4 (1.1-1.8)	0.5 (0.4-0.6)	0.9 (0.7-1.1)	1.6 (1.3-2.0)	1.6 (1.4-1.8)	0.5 (0.5-0.6)	
Central-West	1.3 (1.1-1.7)	1.2 (0.9-1.5)	0.8 (0.7-0.9)	0.8 (0.6-0.9)	1.0 (0.8-1.2)	1.3 (1.2-1.6)	0.8 (0.7-0.8)	
Health insurance								
Yes	1.0	1.0	1.0		1.0	1.0	1.0	1.0
No	0.4 (0.3-0.5)	0.8 (0.7-1.0)	1.6 (1.4-1.8)		0.5 (0.4-0.6)	0.6 (0.6-0.7)	1.5 (1.4-1.6)	1.1 (1.0-1.3)
Income (quartiles) **								
Q1 (lowest)	1.0	1.0	1.0		1.0		1.0	
Q2	0.9 (0.7-1.0)	1.0 (0.8-1.2)	1.2 (1.0-1.5)		0.9 (0.8-1.0)		1.0 (0.9-1.2)	
Q3	0.8 (0.7-0.9)	0.9 (0.8-1.1)	1.5 (1.2-1.9)		0.8 (0.7-0.9)		1.2 (1.0-1.3)	
Q4 (highest)	0.7 (0.6-0.8)	0.7 (0.6-0.9)	2.0 (1.6-2.4)		0.6 (0.5-0.8)		1.5 (1.3-1.7)	

95%CI: 95% confidence interval.

* Included in the category others: black, Asian, mixed-race and indigenous;

** Range of income quartiles converted to USD in the years: 2013: Q1 – up to 160, Q2 – 161 to 306, Q3 – 307 to 553, Q4 – 554 or greater; 2019: Q1 – up to 129; Q2 – 130 to 259; Q3 – 260 to 434; Q4 – 434 or greater.

Table 3

Crude and adjusted prevalence ratios (PR) for the sources of obtaining medicines by adults aged 18 years or over to treat diabetes, according to sociodemographic characteristics and macroregion. *Brazilian National Health Survey*, 2013 and 2019.

| | Single source 2013 | | | Various sources 2013 | Single source 2019 | | | Various sources 2019 |
| | Public pharmacies | Popular Pharmacy program | Out-of-pocket payment | | Public pharmacies | Popular Pharmacy program | Out-of-pocket payment | |
	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)
Diabetes (crude)								
Gender								
Female	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Male	0.9 (0.6-1.4)	0.8 (0.7-0.9)	1.3 (1.0-1.6)	1.2 (0.9-1.5)	0.8 (0.7-1.0)	0.9 (0.8-1.0)	1.4 (1.2-1.6)	1.1 (1.0-1.2)
Age (years)								
18-39	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
40-59	2.1 (0.8-5.5)	0.8 (0.6-1.1)	1.0 (0.6-1.7)	1.8 (0.8-3.9)	0.9 (0.7-1.3)	0.9 (0.7-1.1)	1.2 (0.8-1.8)	1.3 (0.9-1.6)
60 or more	1.5 (0.6-3.8)	0.7 (0.5-1.0)	1.4 (0.8-2.3)	1.7 (0.8-3.6)	0.9 (0.6-1.2)	0.8 (0.6-1.0)	1.5 (1.0-2.0)	1.5 (1.1-1.9)
Race/Skin color *								
White	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Others	1.1 (0.7-1.6)	0.7 (0.6-0.8)	1.4 (1.1-1.7)	1.3 (1.0-1.7)	0.8 (0.7-0.9)	1.0 (0.9-1.1)	1.2 (1.0-1.3)	1.1 (1.0-1.2)
Schooling level								
Incomplete primary education	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Complete primary education	1.3 (0.7-2.5)	0.7 (0.5-1.0)	1.2 (0.8-1.7)	1.3 (0.8-2.0)	0.7 (0.5-0.9)	1.1 (1.0-1.3)	0.1 (0.8-1.2)	1.0 (0.9-1.2)
Complete secondary education	1.8 (1.0-3.1)	0.7 (0.6-0.8)	1.3 (1.0-1.7)	1.4 (1.0-1.8)	0.6 (0.5-0.8)	0.9 (0.8-1.1)	1.5 (1.3-1.8)	1.3 (1.2-1.4)
Complete higher education	1.5 (0.8-3.0)	0.4 (0.3-0.6)	2.7 (2.0-3.5)	1.2 (0.9-1.7)	0.5 (0.3-0.7)	0.7 (0.6-0.8)	2.3 (2.0-2.7)	1.6 (1.4-1.8)
Region								
North	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Northeast	0.3 (0.2-0.6)	1.3 (1.0-1.6)	0.9 (0.7-1.2)	1.0 (0.7-1.6)	1.1 (0.9-1.3)	1.1 (0.9-1.3)	0.9 (0.8-1.1)	0.9 (0.8-1.0)
Southeast	0.7 (0.3-1.3)	1.1 (0.9-1.4)	0.6 (0.5-0.9)	1.4 (0.9-2.2)	0.9 (0.7-1.1)	1.7 (1.4-2.0)	0.6 (0.5-0.8)	0.7 (0.7-0.8)
South	0.6 (0.3-1.1)	1.2 (0.9-1.5)	0.6 (0.4-0.9)	1.2 (0.7-1.9)	0.9 (0.7-1.2)	1.9 (1.5-2.3)	0.5 (0.4-0.6)	0.6 (0.5-0.7)
Central-West	0.7 (0.4-1.4)	1.2 (0.9-1.5)	0.7 (0.5-1.0)	1.3 (0.8-2.1)	0.7 (0.6-1.0)	1.6 (1.3-1.9)	0.7 (0.5-0.8)	0.8 (0.7-1.0)
Health insurance								
Yes	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
No	0.3 (0.2-0.4)	0.5 (0.4-0.6)	2.4 (1.9-3.0)	1.2 (0.9-1.5)	0.3 (0.3-0.4)	0.8 (0.7-0.9)	2.4 (2.1-2.8)	1.7 (1.5-1.8)
Income (quartiles) **								
Q1 (lowest)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Q2	0.5 (0.2-0.9)	1.1 (0.9-1.4)	1.8 (1.2-2.7)	0.6 (0.4-0.9)	0.9 (0.7-1.1)	1.1 (1.0-1.3)	1.2 (0.9-1.6)	1.2 (1.0-1.4)
Q3	0.5 (0.3-1.0)	0.9 (0.8-1.1)	1.8 (1.2-2.6)	1.0 (0.7-1.5)	0.8 (0.7-1.0)	0.9 (0.8-1.1)	1.4 (1.1-1.8)	1.3 (1.1-1.5)
Q4 (highest)	1.2 (0.7-2.0)	0.6 (0.5-0.7)	3.7 (2.6-5.3)	0.9 (0.6-1.3)	0.3 (0.2-0.4)	0.7 (0.6-0.8)	2.7 (2.2-3.3)	1.8 (1.6-2.1)

(continues)

Table 3 (continued)

| | Single source 2013 | | | Various sources 2013 | Single source 2019 | | | Various sources 2019 |
| | Public pharmacies | Popular Pharmacy program | Out-of-pocket payment | | Public pharmacies | Popular Pharmacy program | Out-of-pocket payment | |
	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)
Diabetes (adjusted)								
Gender								
Female			1.0				1.0	1.0
Male			1.2 (1.0-1.5)				1.3 (1.1-1.4)	1.1 (1.0-1.2)
Age (years)								
18-39	1.0				1.0		1.0	1.0
40-59	0.8 (0.6-1.0)				0.9 (0.7-1.1)		1.1 (0.9-1.5)	0.8 (0.6-1.0)
60 or more	0.7 (0.5-0.8)				0.8 (0.6-0.9)		1.3 (1.0-1.7)	0.7 (0.5-0.8)
Race/Skin color *								
White		1.0	1.0	1.0				1.0
Others		0.8 (0.7-1.0)	1.3 (1.1-1.7)	1.3 (1.0-1.6)				1.1 (1.0-1.2)
Schooling level								
Incomplete primary education	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Complete primary education	0.7 (0.6-1.0)	1.0 (0.7-1.4)	1.3 (0.9-1.9)	0.8 (0.6-1.0)	1.1 (1.0-1.3)	0.8 (0.6-1.0)	1.0 (0.8-1.1)	0.7 (0.6-1.0)
Complete secondary education	0.8 (0.6-0.9)	0.9 (0.6-1.1)	1.4 (1.0-1.8)	0.8 (0.7-1.1)	0.9 (0.8-1.0)	1.0 (0.9-1.2)	1.1 (1.0-1.3)	0.8 (0.6-0.9)
Complete higher education	0.6 (0.4-0.8)	1.3 (1.0-1.7)	1.2 (0.9-1.8)	1.0 (0.7-1.5)	0.8 (0.6-0.9)	1.2 (1.0-1.4)	1.1 (1.0-1.3)	0.6 (0.4-0.8)
Region								
North	1.0	1.0	1.0			1.0	1.0	1.0
Northeast	0.3 (0.2-0.6)	1.3 (1.0-1.6)	0.9 (0.7-1.1)			1.1 (0.9-1.3)	0.9 (0.8-1.1)	0.9 (0.8-1.0)
Southeast	0.7 (0.4-1.3)	1.4 (1.1-1.7)	0.5 (0.3-0.6)			1.8 (1.5-2.1)	0.5 (0.4-0.6)	0.6 (0.6-0.7)
South	0.6 (0.3-1.1)	1.5 (1.1-1.9)	0.4 (0.2-0.5)			1.9 (1.6-2.3)	0.4 (0.3-0.5)	0.5 (0.4-0.6)
Central-West	0.7 (0.4-1.4)	1.4 (1.1-1.7)	0.5 (0.4-0.8)			1.6 (1.3-2.0)	0.5 (0.4-0.7)	0.7 (0.6-0.8)
Health insurance								
Yes		1.0	1.0		1.0	1.0	1.0	1.0
No		0.6 (0.5-0.8)	1.9 (1.5-2.5)		0.5 (0.4-0.6)	0.8 (0.7-0.9)	2.0 (1.7-2.4)	1.5 (1.4-1.7)
Income (quartiles) **								
Q1 (lowest)	1.0	1.0	1.0	1.0	1.0		1.0	1.0
Q2	0.5 (0.2-0.9)	1.2 (1.0-1.4)	1.9 (1.3-3.0)	0.6 (0.4-0.9)	0.9 (0.7-1.1)		1.2 (1.0-1.6)	1.2 (1.0-1.4)
Q3	0.5 (0.3-0.9)	1.0 (0.8-1.2)	1.9 (1.3-2.8)	1.0 (0.7-1.4)	0.9 (0.7-1.1)		1.4 (1.1-1.7)	1.2 (1.0-1.4)
Q4 (highest)	1.0 (0.6-1.7)	0.9 (0.7-1.1)	2.9 (2.0-4.3)	0.8 (0.5-1.1)	0.5 (0.3-0.6)		2.0 (1.6-2.5)	1.4 (1.2-1.7)

95%CI: 95% confidence interval.

* Included in the category others: black, Asian, mixed-race and indigenous;

** Range of income quartiles converted to USD in the years: 2013: Q1 – up to 160, Q2 – 161 to 306, Q3 – 307 to 553, Q4 – 554 or greater;
2019: Q1 – up to 129; Q2 – 130 to 259; Q3 – 260 to 434; Q4 – 434 or greater.

Discussion

The results of PNS, in the two years evaluated, show that most Brazilians with hypertension and diabetes use medication for their treatment, which reinforces the importance of monitoring the provision of medication responsible for controlling these conditions.

However, comparisons between the results regarding the sources for obtaining these medications in the PNS 2013 and 2019 should be done cautiously. This is a consequence of the differences in the questionnaires of the two surveys, which represent an improvement in the evaluation of the use of drugs for hypertension and, especially, for diabetes. The 2019 survey included a question about prescribed medications for both hypertension and diabetes. The previous format went from questioning disease diagnosis to questioning medication use, underestimating the proportion of use. It was necessary to assume that a fraction of the people with the diagnosis did not necessarily use any type of medication. The new question allow for evaluate people who had been prescribed the medication but did not adhere to the treatment. Another important change was that in 2019 oral medicines and insulin were evaluated in separate questions, regarding the prescription, obtainment, and use of these medications, while in 2013 there was only one question on the subject, without distinction. The analysis of the *Risk and Protective Factors Surveillance System for Chronic Noncomunicable Diseases Through Telephone Interview* (Vigitel) in 2011, 2014, and 2017 corroborates the results from the 2013 PNS, when, about 80% of individuals aged 20 years or older with a diagnosis of hypertension, reported using medicines for their treatment [16]. Considering the 2019 data, an increase in the use of drugs for the treatment of hypertension was observed, when compared with the national survey carried out in 2013 (94.6%; 95%CI: 93.5-95.5), which also investigated the use of pharmacological treatment among individuals who had had a medical prescription [12].

For diabetes, it is important to highlight the difference in the proportion of individuals with medical indication and use of oral hypoglycemic agents in relation to insulin, which was much lower. This difference may suggest barriers to access or adherence to insulin treatment, which can be explained by the fact that insulin dispensing is more restricted by the required storage conditions, its use depends on other supplies, in addition, to the discomfort which is inherent to its administration.

Analyzing the sources of obtainment, a large part of the population uses a single source to obtain all medication for the treatment of both chronic diseases herein investigated. For people with hypertension, the main single source of acquisition is out-of-pocket payment, with a decrease in the obtainment from public pharmacies and an increase in the obtainment from the Popular Pharmacy program from 2013 to 2019, which has also been observed in another study representative of the state's capitals and the Federal District [16] and that can be explained by the implementation of free antihypertensive drugs, through the campaign *Saúde Não Tem Preço* (Health is Priceless).

As for people being treated for diabetes, an increase was observed for the obtainment exclusively from public pharmacies, with a decrease from the Popular Pharmacy program, which was also observed in a study that analyzed data from sources for the obtainment for diabetes oral medications from 2012 to 2018 [17].

Despite the differences between the sources within the analyzed years, the free sources – those from the public pharmacies and from the Popular Pharmacy program – remains as the main source for acquiring medicines for the treatment of these conditions, especially for diabetes. However, it is worth noting that almost a third of Brazilians affected by these conditions pay for the treatment in full, evidencing the importance of strengthening public pharmaceutical policies and guaranteeing population's accesses to medication [15,16,17,20].

When analyzing the sources for obtaining hypertension medication, considering the sociodemographic characteristics, we observed that male individuals and self-declared white people were less adherent to public pharmacies. Additionally, there is a decrease in the use of this source with increasing age and schooling. Regarding the Popular Pharmacy program, the obtainment of antihypertensive drugs was lower among individuals with health insurance, and there was a difference between the South and the North individuals. On the other hand, the use of one's own funds for medication was positively associated with being male, having declared white skin color, and, significantly, with having completed higher education.

Notably, the sources of access to hypertension and diabetes medication have a social distribution. Those less educated and non-white seek free sources more, while the more educated, white people prefer the out-of-pocket payment sources.

The use of more than one source – be it SUS, Popular Pharmacy program, or private pharmacy networks – increased among older people. This was more intense in people with less education. This may be the result of a greater complexity of the treatment, resulting from aging and the consequent need for a greater number of medication.

Obtaining medication from one's own fund was higher in men than in women. This suggests a general male behavior of lower use of healthcare services.

The South Region concentrates the highest proportion of free sources of medicines (SUS and Popular Pharmacy program) for hypertension, which shows a certain contradiction, in which places with better economic conditions offer greater possibility of free access to medicines. The explanation for this significant difference can have several origins, one of which notes that the expansion of Popular Pharmacy program took place in regions with greater infrastructure and in larger pharmacies networks, due to the technological needs for implementing the sales system. The acquisition of diabetes medication from SUS is lower in this region. These regional differences are not restricted to medication, according to several authors. The study published by Viacava et al. [21] addresses the regional differences in the various aspects of the Brazilian health services. Regarding this issue, the classic text written by Hart [22] discuss the inverse care law, in which regions that need it most receive fewer medical resources. Although public policies toward medication accessibility may have reduced these differences in Brazil in recent decades, the situation still deserves attention.

It is also important to highlight the differences within the PNS questionnaires relating to the options offered as sources of medicines. In the 2013 survey, the first option was "Health plan", which did not occur in 2019. This is because the supply of medicines via health plans, except for some specific products, occurs only during hospitalization. The supply of medicines for outpatient use is restricted to very few plans and covered by reimbursement. The PNS questioning strategy is to not ask the next source when an individual answers that they acquire all their medication from one source. Thus, in 2013, those who answered that they obtained all their medication from the health insurance were not asked about obtaining them from the Popular Pharmacy program or from the public health system. This strategy is based on a logic aiming toward the coherence of the answers, since if everyone answered, there would be no logical possibility of another source of medication. However, the order in which the sources are presented may affect the answers when the first source is chosen. This may have underestimated the acquisition of medication from the SUS and the Popular Pharmacy program by presenting an option of access to hypertension and diabetes medication that, in practice, does not exist.

Among the limitations of our study, we highlight the use of self-reported morbidity, which may underestimate the prevalence of the diseases. Moreover, information bias may arise regarding the indication of drug treatment and the correct identification of the source of obtaining drugs.

The high availability of hypertension and diabetes medication from free sources, despite regional and sociodemographic differences, represents an advance in Brazil's response to the treatment of these conditions. On the other hand, simply obtaining the drugs does not guarantee their proper use. Those who seek to improve the population's health should focus on increasing adherence to treatments, promoting correct monitoring of the disease, and expanding health care to encompass changes to lifestyles. The reduction of regional differences, with the improvement of services in the most vulnerable areas still represents a challenge to be overcome by the Brazilian health system.

Contributors

S. S. Mengue contributed in the study design, data analysis, and text revision. V. L. Tierling and N. U. L. Tavares contributed in the study design, writing, and text revision. A. T. Fontanella contributed in the writing and revision of the final text. All authors approved the final version for publication.

Additional informations

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Acknowledgments

References

1. World Health Organization. World Health Statistics 2018: monitoring health for the SDGs, Sustainable Development Goals. Geneva: World Health Organization; 2018.
2. World Health Organization. World Health Statistics 2021: monitoring health for the SDGs, sustainable development goals. Geneva: World Health Organization; 2021.
3. Secretaria de Vigilância em Saúde, Ministério da Saúde. Panorama da mortalidade por doenças crônicas não transmissíveis no Brasil. Boletim Epidemiológico 2021; 52:13-20.
4. Barroso WKS, Rodrigues CIS, Bortolotto LA, Mota-Gomes MA, Brandão AA, Feitosa ADM, et al. Diretrizes brasileiras de hipertensão arterial – 2020. Arq Bras Cardiol 2021; 116:516-658.
5. Instituto Brasileiro de Geografia e Estatística. Pesquisa Nacional de Saúde 2019: percepção do estado de saúde, estilos de vida, doenças crônicas e saúde bucal. https://www.ibge.gov.br/estatisticas/sociais/saude/9160-pesquisa-nacional-de-saude (accessed on 10/Jun/2021).
6. Malta DC, Cezário AC, Moura L, Morais Neto OL, Silva Júnior JB. A construção da vigilância e prevenção das doenças crônicas não transmissíveis no contexto do Sistema Único de Saúde. Epidemiol Serv Saúde 2006; 15:47-65.
7. Secretaria de Vigilância em Saúde, Ministério da Saúde. Plano de ações estratégicas para o enfrentamento das doenças crônicas não transmissíveis (DCNT) no Brasil. Brasília: Ministério da Saúde; 2011.
8. Ministério da Saúde. Portaria de Consolidação nº 6, de 28 de setembro de 2017. Consolidação das normas sobre o financiamento e a transferência dos recursos federais para as ações e os serviços de saúde do Sistema Único de Saúde. Diário Oficial da União 2017; 3 oct.
9. Ministério da Saúde. Portaria de Consolidação nº 2, de 28 de setembro de 2017. Consolidação das normas sobre as políticas nacionais de saúde do Sistema Único de Saúde. Diário Oficial da União 2017; 3 oct.
10. Ministério da Saúde. Portaria de Consolidação nº 5, de 28 de setembro de 2017. Consolidação das normas sobre as ações e os serviços de saúde do Sistema Único de Saúde. Diário Oficial da União 2017; 3 oct.
11. Mengue SS, Tavares NUL, Costa KS, Malta DC, Silva Júnior JB. Fontes de obtenção de medicamentos para tratamento de hipertensão arterial no Brasil: análise da Pesquisa Nacional de Saúde, 2013. Rev Bras Epidemiol 2015; 18 Suppl 2:192-203.
12. Mengue SS, Bertoldi AD, Roberto LR, Farias MR, Oliveira MA, Tavares NUL, et al. Acesso e uso de medicamentos para hipertensão arterial no Brasil. Rev Saúde Pública 2016; 50 Suppl 2:8s.
13. Meiners MMMA, Tavares NUL, Guimarães LSP, Bertoldi AD, Pizzol TSD, Luiza VL. Acesso e adesão a medicamentos entre pessoas com diabetes no Brasil: evidências da PNAUM. Rev Bras Epidemiol 2017; 20:445-59.

14. Monteiro CN, Lima MG, Szwarcwald CL, Bastos TF, Barros MBA. Utilização de anti-hipertensivos e antidiabéticos no Brasil: análise das diferenças socioeconômicas. Pesquisa Nacional de Saúde 2013. Rev Bras Epidemiol 2019; 18 Suppl 2:E190014.SUPL.2.

15. Francisco PMSB, Rodrigues PS, Costa KS, Tavares NUL, Tierling VL, Barros MBA, et al. Prevalência de diabetes em adultos e idosos, uso de medicamentos e fontes de obtenção: uma análise comparativa de 2012 e 2016. Rev Bras Epidemiol 2019; 22:E190061.

16. Leitão VBG, Lemos VC, Francisco PMSB, Costa KS. Prevalência de uso e fontes de obtenção de medicamentos anti-hipertensivos no Brasil: análise do inquérito telefônico VIGITEL. Rev Bras Epidemiol 2020; 23:E200028.

17. Leitão VBG, Francisco PMSB, Malta DC, Costa KS. Tendência do uso e fontes de obtenção de antidiabéticos orais para tratamento de diabetes no Brasil de 2012 a 2018: análise do inquérito Vigitel. Rev Bras Epidemiol 2021; 24:E210008.

18. Souza-Jr PRB, Freitas MPS, Antonaci GA, Szwarcwald CL. Desenho da amostra da Pesquisa Nacional de Saúde 2013. Epidemiol Serv Saúde 2015; 24:207-16.

19. Stopa SR, Szwarcwald CL, Oliveira MM, Gouvea ECDP, Vieira MLFP, Freitas MPS, et al. National Health Survey 2019: history, methods and perpectives. Epidemiol Serv Saúde 2020; 29:e2020315.

20. Tavares NUL, Luiza VL, Oliveira M, Costa KS, Mengue SS, Arrais PSD, et al. Acesso gratuito a medicamentos para tratamento de doenças crônicas no Brasil. Rev Saúde Pública 2016; 50 Suppl 2:7s.

21. Viacava F, Bellido JG. Condições de saúde, acesso a serviços e fontes de pagamento, segundo inquéritos domiciliares. Ciênc Saúde Colet 2016; 21:351-70.

22. Hart JT. The inverse care law. Lancet 1971; 297:405-12.

Resumo

Este estudo buscou analisar as fontes utilizadas por pessoas com mais de 18 anos para obter medicamentos para o tratamento de hipertensão arterial e diabetes de acordo com características sociodemográficas de 2013 a 2019. Foram analisados dados da Pesquisa Nacional de Saúde. *A maioria dos indivíduos com diagnóstico e prescrição para tratamento farmacológico relatou a obtenção de medicamentos exclusivamente de um tipo de fonte. O percentual de pessoas que adquiriram medicamentos para hipertensão exclusivamente de farmácias públicas diminuiu de 24,5% em 2013 para 16,2% em 2019. Por outro lado, o percentual daqueles que adquiriram pelo Programa Farmácia Popular aumentou de 23,5% para 31,4% e gastos próprios foram de 30,9% para 35,5%. O percentual de pessoas que adquiriram medicamentos para diabetes exclusivamente de farmácias públicas aumentou de 7,4% para 18,6% e gastos próprios aumentaram de 21,6% para 26,8% enquanto o percentual dos que adquiriram da Farmácia Popular diminuiu de 47,2% para 36,4%. O percentual daqueles que adquiriram medicamentos de diversas fontes diminuiu tanto para hipertensão quanto para diabetes. Homens, pessoas brancas e pessoas com Ensino Superior adquiriram medicamentos para ambas as condições principalmente por gastos próprios. O alto número de aquisições de medicamentos de fontes públicas representa um avanço na resposta do Brasil ao tratamento dessas condições, mas reduzir as diferenças regionais ainda é um desafio a ser superado pelo sistema de saúde.*

Doença Crônica; Hipertensão; Diabetes Mellitus; Acesso aos Serviços de Saúde; Serviços Comunitários de Farmácia

Resumen

Este estudio buscó analizar las fuentes utilizadas por personas mayores de 18 años para obtener medicamentos para el tratamiento de la hipertensión arterial y la diabetes según las características sociodemográficas de 2013 a 2019. Los datos provienen de la Encuesta Nacional de Salud. *La mayoría de los individuos con diagnóstico y prescripción de tratamiento farmacológico reportaron obtener los medicamentos exclusivamente de un tipo de fuente. El porcentaje de personas que compraban medicamentos para la hipertensión exclusivamente en farmacias públicas disminuyó del 24,5% en 2013 al 16,2% en 2019. Por otro lado, el porcentaje de quienes lo compraban a través del programa Farmacia Popular aumentó del 23,5% al 31,4% , y el gasto pasó del 30,9% al 35,5%. El porcentaje de personas que compraban medicamentos para la diabetes exclusivamente en farmacias públicas aumentó del 7,4% al 18,6% y el gasto propio aumentó del 21,6% al 26,8%, mientras que el porcentaje de los que compraban en Farmacia Popular descendió del 47,2% al 36,4%. El porcentaje de quienes compraban medicamentos de diferentes fuentes disminuyó tanto para la hipertensión como para la diabetes. Los hombres, los individuos de raza blanca y las personas con educación superior adquirieron medicamentos para ambas afecciones a sus expensas.. El alto número de compras de medicamentos de fuentes públicas es un avance en la respuesta de Brasil al tratamiento de estas condiciones, pero la reducción de las diferencias regionales sigue siendo un desafío para ser superado por el sistema de salud..*

Enfermedad Crónica; Hipertensión; Diabetes Mellitus; Accesibilidad a los Servicios de Salud; Servicios Comunitarios de Farmacia