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**ARTIGO ORIGINAL /** *ORIGINAL ARTICLE*

# Sources for obtaining drugs for hypertension in Brazil: results from the National Health Survey, 2013

## *Fontes de obtenção de medicamentos para tratamento de hipertensão arterial no Brasil: análise da Pesquisa Nacional de Saúde, 2013*

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**ABSTRACT:** ***Objective:*** To analyze the sociodemographic differences among adults with hypertension regarding the sources for obtaining drugs for hypertension treatment in Brazil. ***Methods:*** This is a secondary analysis of data from the National Health Survey 2013; the outcomes considered for the analysis were the sources for obtaining drugs for treating high blood pressure. ***Results:*** The great majority (74%) of patients with hypertension taking drugs use a single source for obtaining them, 7.3% (95%CI 6.4 – 8.4) reported getting all the drugs through private health plans, 22.7% (95%CI 21.0 – 24.4) by pharmacies of the public health system, 21.8% (95%CI 20.2 – 23.4) by the Popular Pharmacy Program, and about one-third (29.5%; 95%CI 27.7 – 31.4) exclusively by commercial pharmacies. Having the public health system as the single source for obtaining the drugs was found to decrease with age, was lower in white people, decreased strongly with increase in education, and was lower for residents in the North region. Exclusive obtainment through the Popular Pharmacy Program was lower for people with higher education. Obtainment in commercial pharmacies was positively associated with being male, with higher education level, being older, and having white skin color. Obtainment using more than one source was positively associated with increasing age and inversely associated with higher education levels. ***Conclusions:*** The results allowed the identification of a trajectory of patients in obtaining drugs for the treatment of hypertension, aiming at explaining how the drugs are obtained and the impact of public policies in this sector in the country.

***Keywords:*** Chronic disease. Hypertension. Health services accessibility. Drug utilization. Community pharmacy services. Health surveys.

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**RESUMO:** ***Objetivo*:** Analisar as diferenças sociodemográficas dos indivíduos adultos hipertensos, em relação às fontes de obtenção de medicamentos para tratar hipertensão arterial no Brasil. ***Métodos*:** Análise secundária dos dados oriundos da Pesquisa Nacional de Saúde, 2013; os desfechos considerados nas análises foram representados pelas fontes de obtenção de medicamentos para tratar a hipertensão arterial. ***Resultados:*** Foram entrevistados 10.017 indivíduos. A grande maioria dos hipertensos em uso de medicamentos (74,0%) utiliza uma fonte única de obtenção de medicamentos 7,3% (IC95% 6,4 – 8,4) referiu obter todos os medicamentos por meio dos planos de saúde privados; 22,7% (IC95% 21,0 – 24,4) em farmácias do sistema público de saúde; 21,8% (IC95% 20,2 – 23,4) no Programa Farmácia Popular do Brasil; e 29,5% (IC95% 27,7 – 31,4) exclusivamente pelas farmácias comerciais. A obtenção no sistema público de saúde como fonte única diminuiu com o avanço da idade, apresentou-se menor nas pessoas de cor da pele branca, diminuiu fortemente com o aumento da escolaridade e evidenciou-se menor entre os residentes na região Norte do país; no Programa Farmácia Popular do Brasil, a fonte única de obtenção também foi menor para as pessoas com maior escolaridade. A obtenção nas farmácias comerciais esteve associada positivamente com um perfil do sexo masculino, de maior escolaridade, de idade mais elevada, tendo declarado cor da pele branca. A ocorrência de mais de uma fonte de obtenção mostrou-se associada positivamente ao aumento da idade e inversamente ao aumento da escolaridade. ***Conclusões:*** Os resultados possibilitaram identificar diferentes estratégias para obtenção de medicamentos usados no tratamento da hipertensão, de modo a explicar como são obtidos os medicamentos no país e qual o impacto das políticas públicas nesse setor.

***Palavras-chave:*** Doença crônica. Hipertensão. Acesso aos serviços de saúde. Uso de medicamentos. Serviços comunitários de farmácia. Inquéritos epidemiológicos.

## INTRODUCTION

Chronic non-communicable diseases (NCDs) are a global health problem. Thus, they have received special attention to reduce their incidence and increase their control, leading the World Health Organization to launch, in 2012, the challenge of reducing mortality for these diseases by 25% by 2025[1]. Among the NCDs, hypertension is responsible for the largest number of patients[2], with an estimated prevalence of 21.4% in adults in Brazil, accounting for about 31.3 million people[3].

Hypertension is a treatable disease and, when properly controlled, the development of symptomatic cardiovascular disease can be delayed or even prevented[4]. Among the strategies aimed at controlling these diseases, there is drug treatment, which, when properly conducted, enables the control of diseases, reduces their morbidity and mortality, and improves the quality of life of users[5].

The Strategic Action Plan to Combat Chronic Non-Communicable Diseases (NCDs in Brazil), 2011 – 2022, actions and investments needed to cope with such diseases were defined and prioritized. Among the priorities of the plan, there is comprehensive care to patients, which includes expanding access to medicines for the treatment of NCDs in the country[6].

In Brazil, a set of several actions has been developed to ensure the access to medicines to the country's population, which was an objective of the National Drug Policy (PNM), 1998, and the National Pharmaceutical Assistance Policy (PNAF), 2004. Among the strategies undertaken to enforce the two public drug policies, are decentralization of pharmaceutical care and

access to a range of medicines for priority diseases such as NCDs in the primary health-care network[7]. To increase access to medicines, in 2004, in a complementary manner, the Popular Pharmacy Program in Brazil was instituted, which, in 2011, incorporated a new action called Health Has No Price. Through this action, drugs indicated for the treatment of hypertension and diabetes began to be provided for free to the population, in the pharmacies of Popular Pharmacy Program's units, through a partnership with private drugstore networks[8].

The knowledge on the sources for obtaining drugs for the treatment of NCDs that are considered priorities, such as high blood pressure, allows the assessment of the extent to which public and private health services are being able to provide pharmaceutical care services to patients with these diseases. Thus, the aim of this study was to examine the sociodemographic characteristics of individuals with hypertension (aged 18 years and older) in relation to the sources for obtaining drugs used for the treatment of hypertension in Brazil.

## METHODS

This is a secondary analysis of from the National Health Survey 2013 (PNS 2013), conducted by the Brazilian Institute of Geography and Statistics (IBGE), in partnership with the Ministry of Health. The study population was comprised of residents of private homes in Brazil, except those located in special census tracts (barracks, military bases, lodges, camps, boats, prisons, penal colonies, jails, nursing homes, orphanages, convents, and hospitals). The sample of PNS 2013 composes the IBGE Integrated Research System, whose scope corresponds to census tracts of the Geographic Operational Base of the 2010 Population Census, except for those with a very small number of households and the aforementioned special census sectors[3].

The sample design used was cluster sampling in three stages, with stratification of primary sampling units (PSUs). Census tracts or set of tracts form the PSUs; households represent the secondary sampling units; and adult residents define the tertiary sampling units. The sample size was defined based on the desired accuracy level for estimating the number of indicators of interest. A complete description of the survey sampling plan is available on a publication by IBGE[3,9].

The organization and coordination of field work were carried out under the supervision of IBGE. All those responsible for data collection, supervisors and coordinators of PNS 2013, were trained for this work. The questionnaire was administered by the IBGE interviewers, with the help of handheld computers to record the data collected. Initially, the collection agents presented the study objective; then, the person who responded to the household questionnaire was identified, and, then the adult resident who would respond to the individual questionnaire (a resident of the household, chosen by the random selection program) was identified.

The analyses of this study were conducted with the sample of individuals aged ≥ 18 years who reported having physician-diagnosed hypertension and having used drugs to treat hypertension in the last 2 weeks prior to the interview (n = 10,017). They were asked about source for obtaining the drugs with the following questions:

1. Were any of the drugs for high blood pressure covered by private health insurance?
2. Were any of the drugs for high blood pressure obtained in the Popular Pharmacy Program (PFP)?
3. Were any of the drugs for high blood pressure obtained in the public health system?

The response options were: *Yes, all of them; Yes, some of them;* and *No, none of them.*
The following outcomes were considered:

1. the Unified Health System (SUS) as the exclusive source, when the respondent answered "Yes, all of them" for drugs obtained in the public health system;
2. the Popular Pharmacy Program in Brazil as the exclusive source, when the respondent answered "Yes, all of them" for drugs obtained in the Program;
3. commercial pharmacies as the exclusive source, when the respondent said "no, none of them" for high blood pressure drugs obtained in the options presented (private health insurance, Popular Pharmacy Program in Brazil, and the public health system); and mixed sources when the respondent answered "Yes, some of them" for drugs obtained in at least one of the investigated sources.

The prevalence of obtainment of drugs for treatment of hypertension was estimated according to the following variables: gender (male/female), age in years (18 to 39/40 to 59/60 or more), education (uneducated and incomplete primary education, complete primary education and incomplete secondary education; complete secondary education and incomplete superior education; and complete superior education), and macroregion of residence (North, Northeast, Midwest, Southeast, and South).

Analyses were performed using Stata Data Analysis and Statistical Software version 13.0 (Stata Corp LP, College Station, TX, USA), using the appropriate set of svy commands for analyzing complex samples and ensuring the necessary balance, due to the sample design (prevalence calculated for the expanded sample). The Poisson regression model was used to estimate the crude and adjusted prevalence ratios (PR) and 95% confidence intervals (95%). When assessing the statistical significance of differences between groups, the significance level of 5% was considering.

The PNS 2013 was approved by the National Research Ethics Committee (CONEP) of the National Health Council (CNS) under protocol no. 328.159 in June 26, 2013. The participants signed an informed consent to participate in the study, whose ethical precepts were assured through compliance with the Resolution no. 466 of the CNS on December 12, 2012.

## RESULTS

The prevalence of reported diagnosis of hypertension was 21.4% (95%CI 20.8 – 22.0); of these, 81.4% (95%CI 80.1 – 82.7) were using drugs for their treatment 2 weeks preceding the interview (data not shown in tables).

Table 1 shows the sociodemographic distribution of individuals who reported medical diagnosis and use of drugs to treat high blood pressure in the country. As it can be observed,

Table 1. Sociodemographic characteristics of individuals aged 18 years and older who reported diagnosis and use of drugs to treat hypertension. National Health Survey, Brazil, 2013.

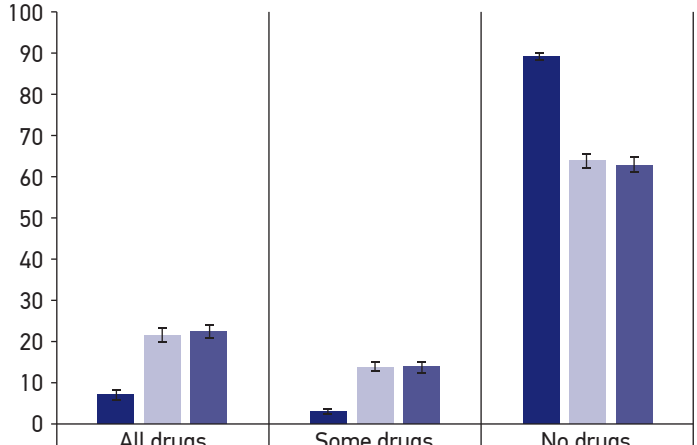
| Variable | Distribution | |
|---|---|---|
| | % | 95%CI |
| Gender | | |
| Male | 37.9 | 36.2 – 39.6 |
| Female | 62.1 | 60.4 – 63.8 |
| Age group (years) | | |
| 18 – 29 | 1.5 | 1.1 – 2.0 |
| 30 – 39 | 7.6 | 6.7 – 8.5 |
| 40 – 49 | 16.1 | 14.9 – 17.3 |
| 50 – 59 | 27.1 | 25.6 – 28.8 |
| 60 – 69 | 25.1 | 23.6 – 26.6 |
| 70 or over | 22.7 | 21.2 – 24.2 |
| Skin color or ethnicity (self-declared) | | |
| White | 50.9 | 48.9 – 52.9 |
| Black | 10.2 | 9.1 – 11.3 |
| Yellow | 0.8 | 0.6 – 1.2 |
| Brown | 37.7 | 35.9 – 39.6 |
| Indigenous | 0.3 | 0.2 – 0.6 |
| Education level | | |
| Uneducated or incomplete primary education | 58.2 | 56.1 – 60.2 |
| Complete primary education and incomplete secondary education | 10.6 | 9.5 – 11.8 |
| Complete secondary education and incomplete superior education | 19.9 | 18.5 – 21.4 |
| Complete superior education | 11.4 | 10.0 – 12.9 |
| Macroregion of Brazil | | |
| North | 4.4 | 3.9 – 5.0 |
| Northeast | 23.3 | 21.4 – 25.4 |
| Southeast | 48.8 | 46.0 – 51.7 |
| South | 16.2 | 14.4 – 18.2 |
| Midwest | 7.2 | 6.4 – 8.1 |

95%CI: 95% confidence interval.

most occurrences consist of women (62.1%; 95%CI 60.4 – 63.8); of people with low education levels, that is uneducated or with incomplete primary education (58.2%; 95%CI 56.1 – 60.2); and residents in the Southeast region of the country (48.8% 95%CI 46.0 – 51.7).

Figure 1 shows the distribution of the obtainment sources investigated by the PNS, 2013. Of the total patients with hypertension taking drugs, only 7.3% (95%CI 6.4 – 8.4) informed get all the drugs through private health plans. Approximately half of the individuals said that they get all the drugs through SUS, through pharmacies of the public health system (22.7%; 95%CI 21.0 – 24.4) or through the Popular Pharmacy Program in Brazil (21.8%; 95%CI 20.2 – 23.4).

Table 2 shows the prevalence of obtainment of drugs in the sources evaluated, according to sociodemographic characteristics of the patients with hypertension. It is observed that, from the total of patients with hypertension undergoing drug therapy, the majority (74.0%) reported getting drugs to treat hypertension from a single source (pharmacies of the public health system, the Popular Pharmacy Program, or commercial pharmacies). Regarding gender, no significant differences were found, with a higher prevalence of obtainment in commercial pharmacies as an exclusive source occurring in men, but this difference was not maintained in other sources evaluated. With pharmacies in the public health system as the exclusive source, non-whites (25.6%; 95%CI 23.3 – 28.0), the less educated (27.7%; 95%CI 25.3 – 30.2), and residents in the Northeast (25.5%; 95%CI 22.6 – 28.8), compared




| | All drugs | Some drugs | No drugs |
|---|---|---|---|
| Private health insurance | 7.3 | 3.2 | 89.5 |
| Popular Pharmacy Program | 21.8 | 14.1 | 64.1 |
| Public health service | 22.7 | 14.0 | 63.3 |

Figure 1. Sources for obtaining drugs for treating high blood pressure by adults (18 years and older) who reported medical diagnosis and medication use (n = 10,017). National Health Survey. Brazil, 2013.

Table 2. Prevalence of sources for obtaining drugs for treating hypertension, for adults aged 18 years and older, according to sociodemographic characteristics (n = 10,017). National Health Survey, Brazil, 2013.

| Variable | Exclusive source | | | | | | Mixed source | |
|---|---|---|---|---|---|---|---|---|
| | Pharmacies of the public health system | | Popular Pharmacy Program | | Commercial pharmacy | | | |
| | % | 95%CI | % | 95%CI | % | 95%CI | % | 95%CI |
| Total | 22.7 | 21.0 – 24.4 | 21.8 | 20.2 – 23.4 | 29.5 | 27.7 – 31.4 | 18.7 | 17.4 – 20.2 |
| Gender | | | | | | | | |
| Male | 20.2 | 17.9 – 22.8 | 21.1 | 18.6 – 23.8 | 33.0 | 30.1 – 36.0 | 17.9 | 15.7 – 20.3 |
| Female | 24.1 | 22.2 – 26.2 | 22.2 | 20.4 – 24.1 | 27.4 | 25.4 – 29.4 | 19.2 | 17.6 – 21.0 |
| Age group (years) | | | | | | | | |
| 18–39 | 28.6 | 23.5 – 34.3 | 22.4 | 18.1 – 27.3 | 30.4 | 25.3 – 36.2 | 10.3 | 8.0 – 13.3 |
| 40–59 | 21.4 | 19.3 – 23.8 | 24.1 | 21.6 – 26.7 | 30.1 | 27.6 – 32.8 | 18.8 | 16.7 – 21.1 |
| 60 or over | 21.9 | 18.9 – 25.4 | 18.1 | 15.3 – 21.2 | 31.5 | 28.4 – 34.8 | 20.2 | 17.6 – 23.0 |
| Skin color | | | | | | | | |
| White | 19.8 | 17.6 – 22.2 | 21.4 | 19.3 – 23.6 | 32.6 | 30.0 – 35.3 | 18.4 | 16.5 – 20.5 |
| Non-white | 25.6 | 23.3 – 28.0 | 22.2 | 20.1 – 24.4 | 26.3 | 24.2 – 28.5 | 19.0 | 17.3 – 21.0 |
| Education level | | | | | | | | |
| Uneducated or incomplete primary education | 27.7 | 25.3 – 30.2 | 22.2 | 20.3 – 24.3 | 22.1 | 20.1 – 24.1 | 20.6 | 18.8 – 22.4 |
| Complete primary education and incomplete secondary education | 20.4 | 16.8 – 24.6 | 23.1 | 18.2 – 28.8 | 27.6 | 23.1 – 32.5 | 21.1 | 16.7 – 26.2 |
| Complete secondary education and incomplete superior education | 17.4 | 14.4 – 20.8 | 24.5 | 21.2 – 28.1 | 36.7 | 33.2 – 40.4 | 14.6 | 12.1 – 17.5 |
| Complete superior education | 8.1 | 5.5 – 11.6 | 11.1 | 8.3 – 14.8 | 61.0 | 55.0 – 66.7 | 14.7 | 11.1 – 19.3 |
| Macroregion of Brazil | | | | | | | | |
| North | 18.5 | 14.9 – 22.6 | 19.3 | 15.6 – 23.8 | 36.1 | 31.3 – 41.2 | 21.2 | 17.6 – 25.2 |
| Northeast | 25.5 | 22.6 – 28.8 | 17.4 | 15.2 – 19.9 | 33.7 | 30.4 – 37.1 | 18.2 | 15.8 – 20.8 |
| Southeast | 21.3 | 18.5 – 24.4 | 22.9 | 20.3 – 25.7 | 28.1 | 25.2 – 31.2 | 19.1 | 16.8 – 21.6 |
| South | 24.7 | 21.4 – 28.3 | 25.2 | 21.5 – 29.4 | 24.4 | 20.8 – 28.3 | 18.7 | 16.1 – 21.6 |
| Midwest | 20.7 | 17.6 – 24.3 | 21.9 | 18.8 – 25.4 | 33.3 | 29.7 – 37.2 | 16.6 | 14.2 – 19.4 |

95%CI: 95% confidence interval.

to residents in the North, had higher rates for obtaining all of the drugs through the same source. The Popular Pharmacy Program in Brazil, as the exclusive source for obtaining drugs for hypertension, showed the highest percentage among individuals aged 40 – 59 years (24.1%; 95%CI21.6 – 26.7), when compared to the elderly and those living with hypertension in the Southern region of the country (25.2%; 95%CI 21.5 – 29.4) in contrast to residents in the Northeast (17.4%; 95%CI 15.2 – 19.9). With regard to commercial pharmacies, there were greater obtainment rates by whites (32.6%; 95%CI 30.0 – 35.3), individuals with higher education levels (36.7%; 95%CI 33.2 – 40.4), and residents of the Northern region (36.1%; 95%CI 31.3 – 41.2) in contrast with the Southeast and South of the country.

When analyzing the obtainment of drugs through combined (mixed) sources, obtainment by the elderly (20.2%; 95%CI 17.6 – 23.0) was approximately two times higher than in the younger individuals (10.3%; 95%CI 8.0 – 13.3); in the less educated (uneducated and incomplete primary education): 20.6% (95%CI18.8 – 22.4) in contrast with individuals with higher education levels (complete secondary education or superior education). There were no significant differences between the macroregions of the country and with regard to skin color (Table 2).

Table 3 presents the adjusted PR in each of the obtainment sources analyzed. After adjustment, obtainment in the public health system as the exclusive source was found to decrease with age; it was lower in people with self-declared white skin; decreased strongly with increasing education levels; and proved to be lower in residents in the North, compared with other regions; and higher in the Southeast region, compared to other regions. Obtainment of all drugs through the Popular Pharmacy Program was lower among people with higher education levels. However, the differences were not as significant as those seen in subjects who have obtained all drugs in the public health system. When considering the variables age, skin color, and macroregion of residence, no significant differences were found. Obtainment in commercial pharmacies was positively associated with gender (male), higher education levels, older age, and self-declared white skin. Obtainment of drugs using more than one source was positively associated with increasing age and negatively associated to the increase in education levels with no differences by gender, skin color, and macroregion of residence.

## DISCUSSION

This analysis indicates, from the population point of view, the role of different sources for obtaining drugs used in the treatment of hypertension. The great majority of patients uses a single source for obtaining drugs. A significant portion of the treatment for chronic diseases costs is due to the use of medication[10,11], so it is important to highlight that SUS was evident, in the study, as a key provider of access to all hypertension drugs in the country, either through pharmacies in the public health system or through the Popular Pharmacy Program of Brazil.

Table 3. Adjusted prevalence ratios of the sources for obtaining drugs, by adults aged 18 years or more, for treating hypertension, according to sociodemographic characteristics (n = 10,017). National Health Survey, 2013.

| Variables | Exclusive source | | | | | | Mixed source | |
|---|---|---|---|---|---|---|---|---|
| | Pharmacies of the public health system | | Popular Pharmacy Program | | Commercial pharmacy | | | |
| | PR | 95%CI | PR | 95%CI | PR | 95%CI | PR | 95%CI |
| Gender | | | | | | | | |
| Male | | | | | 1.13 | 1.01 – 1.27 | | |
| Female | | | | | 1 | – | | |
| Age group (years) | | | | | | | | |
| 18–29 | 1 | – | 1 | – | 1 | – | 1 | – |
| 30–49 | 0.70 | 0.56 – 0.87 | 1.12 | 0.88 – 1.42 | 0.98 | 0.81 – 1.20 | 1.77 | 1.32 – 2.37 |
| 60 or over | 0.62 | 0.49 – 0.79 | 0.80 | 0.60 – 1.06 | 1.26 | 1.01 – 1.56 | 1.77 | 1.28 – 2.45 |
| Skin color | | | | | | | | |
| White | 0.79 | 0.67 – 0.92 | | | 1.16 | 1.03 – 1.31 | | |
| Non-white | 1 | – | | | 1 | – | | |
| Education level | | | | | | | | |
| Uneducated or incomplete primary education | 1 | – | 1 | – | 1 | – | 1 | – |
| Complete primary education and incomplete secondary education | 0.71 | 0.56 – 0.89 | 0.92 | 0.69 – 1.22 | 1.26 | 1.01 – 1.58 | 1.13 | 0.85 – 1.49 |
| Complete secondary education and incomplete superior education | 0.60 | 0.48 – 0.73 | 0.97 | 0.80 – 1.17 | 1.73 | 1.49 – 2.01 | 0.77 | 0.61 – 0.97 |
| Complete superior education | 0.28 | 0.19 – 0.40 | 0.52 | 0.37 – 073 | 2.60 | 2.25 – 30.1 | 0.83 | 0.60 – 1.15 |
| Macroregion | | | | | | | | |
| North | 1 | – | | | 1 | – | | |
| Northeast | 1.21 | 0.93 – 1.57 | | | 0.99 | 0.82 – 1.19 | | |
| Southeast | 1.15 | 0.87 – 1.50 | | | 0.72 | 0.59 – 0.87 | | |
| South | 1.36 | 1.01 – 1.80 | | | 0.63 | 0.50 – 0.79 | | |
| Midwest | 1.11 | 0.83 – 1.48 | | | 0.85 | 0.70 – 1.03 | | |

PR: prevalence ratio; 95%CI: 95% confidence interval.

Previous studies have traditionally referred to public health services and the purchase with payment of the full amount by the patient, with the public system as the only source for obtaining drugs for free. This study demonstrates the leading role of the Popular Pharmacy Program in Brazil as an alternative supply of drugs. The study also showed that, even if still in an incipient way, private health plans have been supplying such drugs. This mode of supply is still not widely present in Brazil and, in some cases, specific policies are necessary for the supply of drugs, in a similar fashion to traditional health plans and dental plans. The measurement of the supply of drugs through private health plans should be interpreted with caution, because such an occurrence can be an expression of agreements between employers and drug suppliers, pharmacies that are owned or contracted out by health plans and have customer loyalty programs, offered by pharmacy chains that, in some cases, provided substantial discounts for prescription drugs.

The obtainment of the drugs used in the treatment for hypertension through more than one source was reported by approximately a quarter of surveyed patients, with a positive association to age and level of education of individuals. This result can be justified by the evidence observed in hypertension treatments, which become increasingly complex, requiring a greater number of drugs to treat the disease and prevent complications of this disease, particularly among the elderly[15].

When the sociodemographic characteristics of patients with hypertension were analyzed in relation to obtainment sources, greater obtainment was observed in the public health system pharmacies as the only source of obtainment among black individuals of non-white skin and lower education levels. Commercial pharmacies represented the source for obtainment for individuals who declared themselves white and more educated. This occurrence showed greater use among the poorer segments of the sources for obtaining drugs through SUS. This result corroborates with the results found in a study on data from the National Survey by Household Sampling (PNAD), conducted in 2008 in Brazil, as well the access to all the drugs prescribed by SUS users[14].

Regarding the regions of the country, obtainment through the public health system was higher in the Southeast, whereas getting all the drugs in the commercial pharmacies was higher in the less favored regions, which points to inequalities in access to medicines between regions in Brazil. For large parts of the country, obtainment through the public health system was higher in the Southeast, whereas obtaining all the drugs in commercial pharmacies was higher among socially and economically disadvantaged individuals, which points to inequalities in access to drugs between macro regions of Brazil. Such differences may result from differences in the organization of services, which impacts on pharmaceutical care in primary health care provided to SUS users, where drugs to treat hypertension are offered in different regions[16]. The findings of the previous studies that assessed access to medicines to treat hypertension in Brazilian macroregions, such regional differences, were found to be in line with those of this study[17,18].

Broadly speaking, the regional differences can be analyzed from the perspective of Hart, who studied in 1971, the law of inverse funds. In a country with the continental

dimensions of Brazil, the most underprivileged populations are concentrated in quantitative terms, in the most economically disadvantaged regions, which is why they rely on less organized health services and on less capacity to provide skilled care to the population[19].

By analyzing the obtainment of all drugs, through the Popular Pharmacy Program in Brazil, there is greater obtainment in individuals aged between 30 and 49 years, and those without superior education, with no significant regional differences. There is no research on the use of this program with national coverage. However, the results show an increase in use when compared with a population-based survey in which it was evaluated in 2008, knowledge of the Popular Pharmacy Program Brazil in Campinas, São Paulo. This increased use can be explained in part by the expansion of the program in 2011 with the introduction of gratuity in a list of drugs to treat hypertension, through their own network, which explains the differences in the estimates found[8].

PNS 2013, due to its nature as a general survey on health issues, has some limitations from the specific evaluation point of view regarding the use of drugs. The main limitation is the lack of identification of drugs used by individuals interviewed. Such identification would enable a clearer picture with regard to the territory in the country of the events related to the treatment of hypertension.

## CONCLUSIONS

The great majority of patients with hypertension taking drugs uses a single source for obtaining medicine, with about half of the drugs supplied by SUS (whether by pharmacies of the public health system or the Popular Pharmacy Program in Brazil); one-third, exclusively by commercial pharmacies and a small participation of private health plans. Obtainment using more than one source was positively associated with increasing age and inversely associated to increased education levels.

It should be noted that the treatment of hypertension is becoming more complex, either because it requires the use of more than one drug for the treatment or because of the increased opportunities for obtaining these drugs. Thus, in spite of the limitations that inherent to the very nature of the research method, this study contributes to the identification of the trajectory of patients with hypertension in the process of obtaining drugs for the treatment of that disease, and shows the important role of SUS as a provider of access to drug treatment of hypertension in the country. Such evidence points to the impact of public policies in this sector, developed in recent years, and therefore, improving coping with health conditions of the demanding population.

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