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ORIGINAL ARTICLE / *ARTIGO ORIGINAL*

Access to prescribed medicine in the Brazilian adult population

Acesso da população brasileira adulta a medicamentos prescritos

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ABSTRACT: ***Objective:*** To estimate the prevalence and check the factors associated with access to prescribed medicine by the Brazilian adult population; and to describe the distribution of the presence of monetary expenditure for the purchase, source of medicines, and the reasons for non-access. ***Methods:*** Based on a cross-sectional design, from the 2013 National Health Research data, we analyzed a representative sample of the population that comprised adults with prescriptions written by a health professional, in the two weeks prior to the survey. The dependent variable was the access to prescribed medicines (full access, partial access, no access). Data were analyzed using the multinomial logistic regression considering total access as the reference category. ***Results:*** The results showed high prevalence of full access to prescribed medicine in Brazil (83.0%; 95%CI 81.3 – 84.6). Most of the individuals had monetary expenditure on the purchase of medicines (63.9%), and the main reasons for no access were the lack of medicine in the public health service (57.6%) and having no money (11.9%). We found higher chances of partial access among individuals attending the public service (OR = 2.5; 95%CI 1.58 – 3.97). Greater chance of no access was associated with non-white skin color (OR = 1.43; 95%CI 1.03 – 1.99). ***Conclusion:*** The results revealed significant inequity in access to medicine, emphasizing the need to strengthen the Unified Health System for the free supply of medicines in order to reduce inequalities.

Keywords: Pharmaceutical services. Epidemiology. Access to essential medicines and health technologies.

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RESUMO: ***Objetivo:*** Estimar a prevalência e verificar os fatores associados ao acesso a medicamentos prescritos, pela população adulta brasileira, e descrever as distribuições de dispêndio monetário para acesso aos fármacos, fonte de obtenção e motivos para o não acesso. ***Métodos:*** Com base em um delineamento transversal, a partir dos dados da Pesquisa Nacional de Saúde de 2013, analisou-se uma amostra composta por indivíduos adultos que tiveram medicamentos prescritos por profissional de saúde, nas duas semanas anteriores à realização da pesquisa. A variável dependente foi o acesso a medicamentos prescritos (total, parcial, nulo). Os dados foram analisados por meio de regressão logística multinomial, considerando-se o acesso total como categoria de referência. ***Resultados:*** Os resultados mostraram alta prevalência de acesso total a medicamentos prescritos no Brasil (83,0%; IC95% 81,3 – 84,6). A maioria dos indivíduos teve dispêndio monetário com a obtenção dos fármacos (63,9%), sendo que os principais motivos para o não acesso foram a ausência do medicamento no serviço público de saúde (57,6%) e falta de dinheiro (11,9%). Foram observadas maiores chances de acesso parcial para os indivíduos atendidos no serviço público (OR = 2,5; IC95% 1,58 – 3,97). Maior chance de acesso nulo foi associada à cor de pele não branca (OR = 1,43; IC95% 1,03 – 1,99). ***Conclusão:*** Os resultados revelaram iniquidade no acesso a medicamentos, reforçando a necessidade de fortalecimento do Sistema Único de Saúde para o fornecimento gratuito de fármacos, de modo a reduzir as desigualdades.

Palavras-chave: Assistência farmacêutica. Epidemiologia. Acesso a medicamentos.

INTRODUCTION

The access to medications is considered by the United Nations as one of the indicators to measure the advances in the access to the right to health[1]. However, data from the World Health Organization show that only two thirds of the world's population have regular access to these items[1], and 15% of people living in developed countries consume more than 90% of the global production of pharmaceutical products, which shows that the access to medication is unequal, coexisting with major social inequities[2-4]. The lack of access to medications may lead to the aggravation of the diseases, and, consequently, people go back to health services, besides generating costs to secondary and tertiary care[5].

Studies show high prevalence rates of access to medication, ranging from 87 to 97.9%[2,6-9]. In Brazil, data from the last national research about access to medication showed that the prevalence of access to medicines prescribed to treat chronic non-communicable diseases and arterial hypertension was 94.3[6] and 97.9%[9], respectively. However, by observing the free access, there is an important reduction of these numbers, ranging between 45.3 and 56%.[9-11].

Besides, the literature points to associations between access to medicines and sociodemographic factors[3-5,10,12-16] and general health conditions[5,12,15]. Socioeconomic diferences related to access are also heterogeneous at regional levels, such as in the large Brazilian regions. Higher prevalence rates of access to medicine are observed in the South region, and lower rates are present in the North and Northeast[3,6,10].

The continuous evaluation of indicators of access to medication and associated factors is important to monitor and analyze public policies, aiming at equity and increased access. However, the objective of this study was to estimate the prevalence and verify the factors associated with the access to prescribed medication, by the Brazilian adult population, and to describe the distributions of monetary expenditure for the access to these drugs, source of acquisition and reasons for not accessing them.

METHODOLOGY

A cross-sectional study was carried out based on the data from the National Health Research (PNS), conducted in Brazil in 2013 by the Brazilian Institute of Geography and Statistics (IBGE). The sample size was approximately 80 thousand households, and at least 900 households in each geographical disaggregation of indicators (units of the federation, capitals, and metropolitan regions), considering an approximate loss of 20% in the selected households. Data collection was carried out by structured questionnaires, in the households of the people selected by trained interviewers. Details about the sampling plan and sample size can be obtained in an official IBGE document[17].

In this study, the analyzed population corresponded to all individuals participating in the study, aged 18 years or more, who had medications prescribed by a health professional in the 2 weeks prior to this study. The studied population was composed of 6,419 individuals (≥ 18 years).

STUDY VARIABLES

The dependente variable was the access to medication prescribed by health professionals, classified according to the response categories: total access (all), partial (some) and null (none), and assessed according to the proposition of other studies[3,4,6,18], by the following question: Could the "(person's name") obtain the prescribed medication?".

The prevalence rates related to the sources of acquisition of the medication, the presence of monetary expenditure to obtain the drugs and the reasons for not accessing all medications prescribed were described.

The source of acquisition was investigated for all individuals who obtained all or some of the prescribed medicines with three questions, as follows:

1. "Were any of the medications covered by a health insurance plan?" (response options: yes, all of them; yes, some; no, none);
2. "Were any of the medications obtained in the Popular Drugstore Program (PFP)?" (response options: yes, all of them; yes, some; no, none);
3. "Were any of the medications obtained in a public health service?" (response options: yes, all of them; yes, some; no, none).

The monetary expenditure was assessed by the following question: did ("person's name") pay any amount for the medications?", with two response options: yes; no. The reasons for not obtaining all of the prescribed drugs were assessed by the following question: "What is the main reason why (person's name) did not obtain all of the prescribed medications?", whose response options were the following:

1. it was not possible to obtain them at the public health service, because the drugstore was closed;
2. the medications were not available at the health service;
3. it was not possible to get the medication(s) at PFP;
4. there was no drugstore close by, or there was a difficulty with transportation;
5. it was not possible to find all of the medicines in the drugstore;
6. the person did not have money to buy them;
7. the person did not think they were necessary;
8. the person gave up looking for them, because he/she got better;
9. another reason (specify it).

To verify the factors associated with the access to prescribed medication, the following independente variables were considered: demographic [(sex (male; female); age (18 to 39; 40 to 59; 60 years or older); self-declared skin color (white; non-white)]; socioeconomic [macro-region of residence in the country (North; Northeast; Center-West; Southeast; South); schooling (0 to 3 years; 4 to 7 years; 8 to 11 years, 12 years or more)]; lilfestyle [practice of physical activity (no; yes)]; health status [number of chronic diseases (none; one or more)]; and access to health services [household registered in the Family Health Strategy program (no; yes; does not know); filiation to a medical health insurance (no; yes); and place of last appointment (private and public)].

People were considered to be physically active when they performed at least 150 minutes of mild or moderate aerobic physical activity per week, or 75 minutes of vigorous aerobic activity per week, including the practice of planned sports or exercises[19].

STATISTICAL ANALYSIS

The descriptive and the bivariate analyses were carried out, followed by a multiple analysis to test the association between access to medicines and the independent variables. The prevalence of access and the sources of acquisition were described for Brazil and the large regions. The association between categorical measures was tested using the χ^2 test with the Rao-Scott correction[20].

The association between the access and the independent variables was assessed using the multinomial logistic regression. The variables presenting significance level lower than 0.20 in the bivariate analysis were included in the multiple model, in a hierarchic block manner, in a decreasing order of significance, as follows: demographic, socioeconomic, lifestyle

aspects, health status and access to health services. In the final model, the variables with $p < 0.05$ or the ones that contributed with the global adjustment of the model remained. The model was adjusted by age and sex, regardless of statistical significance. The estimates of the models were interpreted by the odds ratio (OR), with the respective 95% confidence intervals (95%CI).

The statistical analyses were carried out using the software Stata 13.0 (Stata Corporation, CollegeStation, TX, the United States), using the command "survey".

ETHICAL CONSIDERATIONS

The PNS project was approved by the National Commission of Research Ethics (Conep), of the National Health Council (CNS), in June, 2013. Since this study was carried out based on secondary data of public databases, there was no need for appreciation from the local Ethics Committee.

RESULTS

The sample was composed mostly by women (63.5%), people who declared to be white (51.5%), and had a higher proportion of individuals with schooling higher than 8 years (55.3%). The presence of at least one chronic condition was reported by 54.7% of the individuals (Table 1). Regarding the macro-region of residence, almost half of the study population belonged to the Southeast region, followed by Northeast, South, Center-West and North (data not shown in the table). Based on the bivariate analysis, it was observed that the access to medication was significantly associated with all of the independent variables, except for age and number of chronic conditions (Table 1). Most adults had total access to the prescribed medicines, both in Brazil and in the large regions of the country, but a lower proportion of total access was found in the North region in comparison to the others (Figure 1).

Figure 2 presents the sources of acquisition of the prescribed medicines. In Brazil, the prevalence rates of total access by health insurance, PFP and public health system were 4.9; 11.9; and 15.3%, respectively. There was a statistically significant difference in relation to the access by health insurance plan ($p = 0.0149$) and PFP ($p < 0.0001$) in the Brazilian regions. There was no association between the acquisition of the medicine in the public service and the regions ($p > 0.05$).

Even though we did not collect information about the private drugstores, data analysis showed that most individuals paid some amount for the drug, with no differences between the regions ($p > 0.05$). In Brazil, 63.9% of the individuals had monetary expenditure with the acquisition of the medications. In the North Region, 65.4% had monetary expenditure with the acquisition; in the Northeast, 66.5%; in the Southeast, 62.7%; in the South, 62.9%;

Table 1. Percentage distribution of access to medicines and bivariate analysis between the access to prescribed medications and demographic, socioeconomic, lifestyle variables, health status and access to health services. Brazil, 2013.

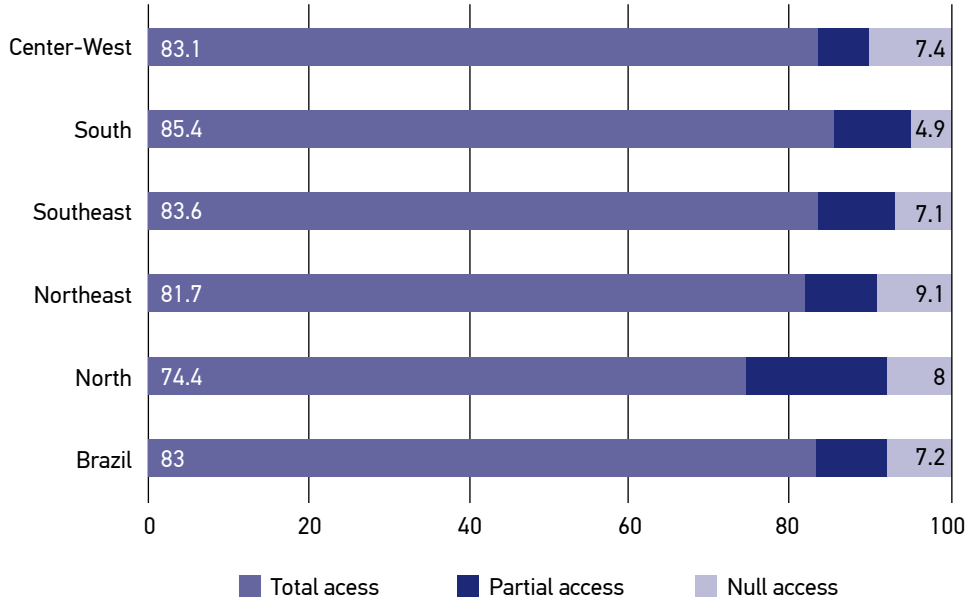
	(%)	Total	Partial	Null	p-value
Sex					
Male	36.5	85.3	7.7	7.0	0.03
Female	63.5	81.7	11.0	7.3	
Age (years)					
18 to 39	33.8	83.5	8.2	8.3	0.29
40 to 59	37.4	82.7	10.5	6.9	
60 or older	28.8	82.9	10.8	6.4	
Skin color					
White	51.5	84.4	10.0	5.6	< 0.01
Non-white	48.5	81.4	9.6	8.9	
Schooling (years)					
0 to 3	25.1	79.0	13.7	7.3	< 0.01
4 to 7	19.6	82.1	10.8	7.1	
8 to 11	37.5	83.5	8.6	7.9	
12 or more	17.8	88.5	5.7	5.8	
Physical activity					
No	80.6	81.7	10.7	7.6	< 0.01
Yes	19.4	88.3	6.1	5.6	
Number of chronic diseases					
0	45.3	83.4	8.5	8.1	0.06
1 or more	54.7	82.6	10.9	6.5	
Household enrolled in ESF					
No	32.7	85.3	8.0	6.6	< 0.01
Yes	57.6	80.7	11.4	7.8	
Does not know	9.6	88.5	6.0	5.4	
Filliation to a health plan insurance					
No	64.7	80.0	12.5	7.6	< 0.01
Yes	35.3	88.5	4.9	6.5	
Place of service					
Public	62.5	79.6	13.2	7.2	< 0.01
Private	37.5	88.6	4.2	7.2	

ESF: Family Health Strategy.

and in the Center-West, 66.1%. In the country and in all regions, the main reasons to not access all of the medications were the unavailability of the drugs in the health service and the absence of money for the purchase, as presented in Table 2. Based on the multinomial logistic regression models (Table 3), it was shown that, in Brazil, the chances of partial access, in comparison to total access, were higher for women (OR = 1.45; 95%CI 1.06 – 1.99) and for individuals assisted in the public sector (OR = 2.51; 95%CI 1.58 – 3.97). The adults living in the Northeast, Southeast, South and Center-West regions presented lower chances of partial access in relation to the North region. As to null access, in relation to total access, there was significant association only for skin color. Individuals who declared non-white skin color presented 43% more chances of not obtaining medicines when compared to those who declared to be white, and who had total access.

DISCUSSION

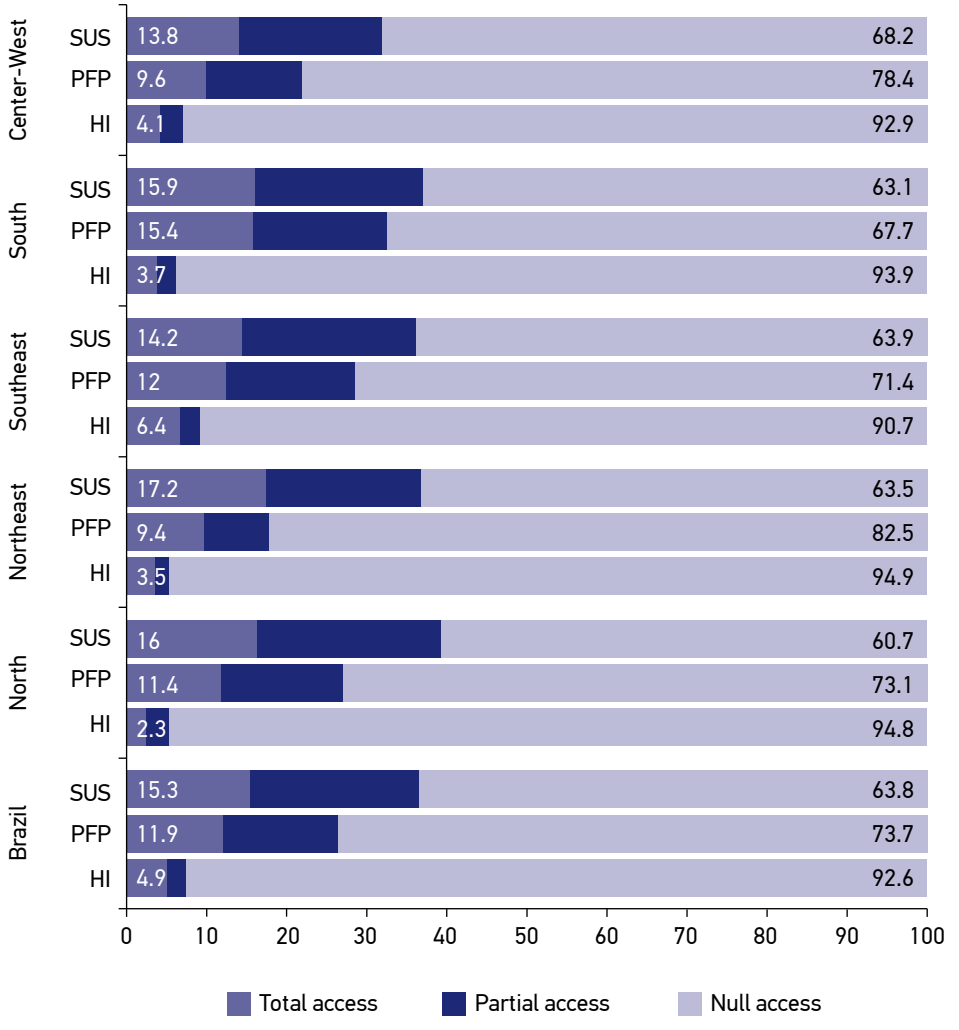
This study identified high prevalence of access to all of the prescribed medications for the Brazilian adult population. Besides, it was observed that most individuals obtained them after investing money, and the main reasons for not accessing all of the medicines were the unavailability of the drug in the public health service, or the absence of money to purchase them. Generally, access has been associated with socioeconomic conditions and use of services.



*Significant statistical difference of access to medicines between the Brazilian regions.

Figure 1. Percentage distribution of access to medicines. Brazil and large regions, 2013.

The high prevalence of access to prescribed medications corroborates the findings in different studies in Brazil[3,4,6]. However, the verified prevalence was lower to that observed by other authors, who assessed specific groups (elderly and women) based on the data from the last health supplement in the National Household Sample Survey (PNAD), in 2008 (86%)[3] and the National Study of Women and Children Demography and Health, from 2006 (87.4%)[4]. However, it is important to point out that the attributed diferences may be



SUS: Unified Health System; PFP: Popular Drugstore Program; HI: Health Insurance. The categories are not mutually excluding; *significant statistical difference between the Brazilian regions and the access via Popular Drugstore Program; **statistically significant difference between the Brazilian regions and the access via health insurance.

Figure 2. Percentage distribution of the access to prescribed medications according to source of acquisition. Brazil and large regions, 2013.

related to the fact that these studies only investigated the access to continuous-use medications, which present higher access to the population[6]. Therefore, the comparison between the studies must be careful, due to the differences between the populations and the types of medicine assessed.

The difference of access observed between the large regions is in accordance with that observed by other authors[6,13]. Oliveira et al. (2016)[6], in a study conducted with Brazilian adults, found higher prevalence of access in the South region (95.8%) in comparison to the Northeast region (92.0%). Paniz et al. (2008)[13] assessed the access to medications for the adult population in the South and in the Northeast of Brazil and showed access of 83.7 and 78.8%, respectively. The highest proportions of access to medications found for the more developed Brazilian regions, with higher population density, show the importance of

Table 2. Distribution of the reasons for not accessing the prescribed. Brazil and regions, 2013.

Reason for not accessing the medication	Brazil (%)	North* (%)	Northeast (%)	Southeast (%)	South (%)	Center-West (%)
Did not obtain it in the public health service, because the drugstore was closed.	5.3	11.1	5.9	3.7	7.9	0.4
The medicines were not available in the health service.	57.6	61.8	54.4	58.8	58.6	53.7
Could not get the medicine(s) in the Popular Drugstore Program.	4.5	2.4	0.8	6.1	5.1	7.8
There was no drugstore close by or had difficulties with transportation.	1.7	1.9	2.0	1.5	2.4	0.0
Could not find all medicines in the drugstore.	4.7	2.4	6.4	4.7	3.6	4.4
had no Money to buy them.	11.9	13.9	17.3	8.9	9.5	17.2
Did not think they were necessary.	7.3	3.0	6.0	9.4	5.3	6.9
Gave up looking, because felt like got better..	0.6	0.0	0.2	0.4	0.0	5.0
Another reason	6.4	3.4	6.9	6.6	7.6	4.7

*No significant difference was observed between the reasons for the reasons for not obtaining the medicines ($p > 0.05$).

Table 3. Models of multinomial logistic regression for the evaluation of factors associated with the access to prescribed drugs. Brazil, 2013‡.

	Brazil OR (95%CI)**
Partial access	
Sex (male)†	
Female	1.45 (1.06 – 1.99)*
Age (18 to 39 years)†	
40 to 59	1.10 (0.74 – 1.63)
60 or more	1.09 (0.70 – 1.70)
Color (white) †	
Non-white	0.77 (0.57 – 1.03)
Macro-region (North)†	
Northeast	0.44 (0.28 – 0.70)*
Southeast	0.50 (0.32 – 0.79)*
South	0.45 (0.28 – 0.74)*
Center-West	0.51 (0.32 – 0.81)*
Place of last appointment (private)†	
Public	2.51 (1.58 – 3.97)*
Null access	
Sex (male) †	
Female	1.05 (0.76 – 1.45)
Age (18 to 39 years)†	
40 to 59	0.87 (0.62 – 1.22)
60 or more	0.84 (0.49 – 1.45)
Color (white) †	
Non-white	1.43 (1.03 – 1.99)*
Place of last appointment (private)†	
Public	0.82 (0.57 – 1.19)

‡Category of reference of the model: total access; OR: odds ratio; 95%CI: 95% confidence interval; †category of reference; *p value < 0.05; **model adjusted by schooling, physical activity, number of diseases, record in the Family Health Strategy and health insurance plan.

observing and assessing the specificities of each region, especially in processes of regional planning of health actions.

Even though the prevalence of total access to prescribed medications for adults in Brazil has been high, most (63.9%) individuals paid some amount for the drug. Besides, only 15.3% had full access to medications prescribed by the Unified Health System (SUS). Many studies have shown the low acquisition of medications by SUS[3,9,10,16] and high proportion of access by purchase[4], including continuous-use medications[3], also those for chronic conditions, such as hypertension and diabetes[6], which are part of the essential medications provided by SUS. According to the health satellite-account, Brazilian families have financed 90% of the final intake of medications[21], corroborating the need for the direct expenditure to access the drugs.

Regarding the reasons for not acquiring all of the medications, the main factor reported by the participants was the absence of medicines in the health service (57.9%), followed by the absence of money for purchase (11.9%). According to the literature, the monetary expenditure to guarantee the access to medications leads the income to be compromised, and penalizes mostly the poorer population[22], once this expenditure constitutes most of the expenses with health among individuals with lower purchase power[23]. Therefore, the findings in this study are in accordance with the evidence available, showing the importance of the purchase capacity as a limiting factor for obtaining the drugs[10,14,24,25].

It is important to point out that part of the non-access to medicines can be attributed to the non-adherence to treatment, considering that 7.3% of the individuals reported not considering the medication to be necessary. Low schooling and financial condition and reduced level of knowledge about the disease represent some of the factors associated with the non-adherence to the drug treatment[26].

The adjusted analysis for the evaluation of the factors associated with the access to medication reinforces the existing inequalities in access, verified in other studies[4,10,13,16,24], given the observation of significant differences in the prevalence rates in relation to sociodemographic conditions.

Regarding the demographic variables, there are diverging results referring to the association between access and the gender of the individual. Lack of significant association[16] and higher chances of partial access among women[24], similarly to the finding observed in Brazil in this study, were found in the literature. Besides, non-white individuals presented more chances of not accessing the medicines, as demonstrated in other studies[12]. These results not only reflect the worse socioeconomic conditions of this group[27], but also shows the lower access to health[28]. In this sense, Boing et al. (2013)[10] highlighted the importance of SUS to promote health, once it increases the access to medication for underprivileged groups.

Despite the relevance of SUS for increasing the access to medication, the results of the adjusted analysis show that individuals whose last location of appointment was the public service presented higher chances of partial access in comparison to those assisted by the private service. The place of care can also be considered as an expression of people's

socioeconomic conditions, once the profile of the user of SUS is mostly composed of low-income population strata[3,10,16]. Therefore, we restate that the free distribution can reduce the inequalities in access to medicines prescribed in the public service, once the drugs compose most of the expenses with health, which is difficult for Brazilian families with lower income[29].

Among the strong aspects of this study, it is worth to mention the use of a representative sample of the Brazilian population, which also allowed the analysis of the profile of access in the different regions of the country. Regarding the limitations, it is important to consider the potential memory bias as to the source of acquisition of the prescribed medicines, because the individuals who needed a large quantity of medicines obtained them through different origins, and may have had difficulties to precisely remember the source of each one. However, since the memory period was short (15 days), it is expected that the effects of this problem can be minimized. This period has been used by other authors[5,10,12]. The access, defined as the obtainment of prescribed medications, is used to investigate the prescription of the last visit to the doctor for a certain period (15 to 30 days), which is useful to measure the access to drugs to treat acute diseases, and to assess the use of medications to treat chronic diseases used for long periods (12 months)[30]. Another factor concerns the investigation of access to any drug, regardless of the therapeutic class. It is possible that some medicines that were not obtained via SUS or PFP are not on the list of medicines provided by the service, underestimating the prevalence of access in these locations.

CONCLUSION

This study showed that the access to drugs in the country, despite high, is uneven, regardless of the monetary expenditure and associated with socioeconomic factors. Even though the medicines represent a much common therapy intervention, the difficulty to access some of them can compromise the efficacy of the drug therapy. The inequity in the access to drugs reinforces the need to strengthen SUS to provide medicines for free, in order to reduce the inequalities.

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