BJPS

Brazilian Journal of Pharmaceutical Sciences

http://dx.doi.org/10.1590/s2175-979020200001181016

Article

Barriers to access to medicines for non-communicable diseases for patients using the Brazilian Unified Health System (SUS)

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This paper investigates difficulties related to access to medicines in SUS and factors associated with the inability to obtain medicines in SUS by non-communicable chronic disease (NCCD) patients who used this source for health care. We analyzed data from the National Survey on Access, Use and Promotion of Rational Use of Medicines. First analysis included individuals aged 20 years and over, diagnosed with at least one NCCD, with indication of medicine treatment and follow up of this disease (s) with a physician from SUS, and who reported having obtained some of the medicines in use from the SUS. The difficulties of obtaining medicines from SUS were investigated based on dimensions of access to medicines. Among 5·155 individuals investigated, 65·4% were women, 40 years old or older and 54·3% residents of the Southeast region of Brazil. Aspects related to availability and waiting time to obtain medicines were the most significant reported barriers to access to medicines. Regional differences were found in basically all dimensions of access and the low availability of medicines in SUS pharmacies was the main reason cited for their search in private pharmacies.

Keywords: Health Services. Accessibility. Noncommunicable Diseases. Primary Health Care.

INTRODUCTION

Noncommunicable diseases (NCDs) account for seven of the nineteen groups of causes on the national list of primary care sensitive conditions (Rehem; Egry, 2011). The morbidity and mortality caused by NCDs is higher in poorest populations. This reinforces the importance of the control of these diseases as a priority for public health policies, and the assurance of access to medicines recognized as a fundamental strategy for policies to people with NCDs in many countries like Brazil (Schmidt *et al*., 2011; Tavares *et al*., 2013).

In Brazil, there are two publicly financed access to medicines mechanisms: the provision in SUS dispensing facilities and the copayment in Brazilian Popular Pharmacy Program (PFPB) (Luiza *et al*., 2018). Medicines can also be obtained by out-of-pocket payment in private pharmacies in Brazil.

SUS dispensing facilities at primary health care (PHC) are tasked with providing free access to essential medicines. A SUS doctor's prescription is always required to any medicine. However, different failures compromise this access. For example, problems regarding availability of medicines, as well as with different pharmaceutical activities such as demand forecasting, acquisition and storage have been reported

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in studies (Mendes *et al*., 2014; Vieira, 2008) On the other hand, Brazil has experienced an increased in access to medicine treatment for NCDs, especially hypertension and diabetes, despite some gaps among regions of the country (Tavares *et al*., 2013).

In the PFPB, hypertension, diabetes and asthma medicines have been distributed free-of-charge since 2012, which has contributed to access from this source. This is an additional mechanism of governmental funding (Silva; Caetano, 2015) that accounts for higher financing but reaching fewer people (Luiza *et al.*, 2018). However, is has attracted the attention of other countries, interested in implement similar programs (Luiza *et al*., 2018).

Given the context of different formal sources of medicines for chronic diseases, important to understand the elements that hinder access to public dispensaries, most of them located inside primary health care facilities, in order to assist with the planning of actions to improve PHC. To that end, it is useful to rely on the theoretical logical model adapted by Luiza and Bermudez (2004) to evaluate access to medicines. This model assumes that access to medicines results from the interaction between four dimensions: *physical availability* - the relationship between the type and quantity of medicines required and the type and quantity of products provided; *affordability* – the relationship between medicine prices and the ability to pay for them; *geographical accessibility* – the relationship between the location of medicine providers and users; *acceptability* – fit between the characteristics of the products and services and users' expectations and needs (Oliveira *et al*., 2016).

This paper aims to investigate barriers related to access to medicines for NCDs, except cancer, in SUS and factors associated with the inability to obtain this medicines in SUS by patients who used this source for health care.

METHODS

We used data from the household survey of the National Survey on Access, Use and Promotion of Rational Use of Medicines (PNAUM). The PNAUM is a population-based study, with a cross-sectional design and sampling plan by clusters representative of the Brazilian population and macro-regions. Data was collected from September 2013 to February 2014 with face-to-face household interviews and application of questionnaires. Further details on the PNAUM method are available elsewhere (Mengue *et al*., 2016). PNAUM was funded by the Ministry of Health through the Secretariat of Science and Technology and Strategic Inputs.

To investigate access to medicines barriers, the first analysis included individuals aged 20 years and over, diagnosed with at least one NCD, with indication of medicine treatment and treatment of this (these) disease (s) with a SUS doctor and who reported having obtained some of the medicines in use from the SUS. The difficulties of obtaining from this source were investigated based on three dimensions of access to medicines according to the model adopted: geographic accessibility, availability and acceptability. Affordability was not analyzed as an obstacle to access to medicines because there was no charge at the time of dispensing in SUS.

In the geographical accessibility dimension, the questions referred to the difficulty of getting to the SUS pharmacy and the perceived distance between the individual's home and the place of dispensing medicines in SUS. Regarding the question "Reaching this location is very difficult/a bit difficult/not difficult", categories "very difficult" and "a bit difficult" were grouped under "it is difficult". With respect to the question "Is this place far/more or less far/not far?" The "more or less far" category was included in the "far" category.

Regarding availability of medicines in SUS pharmacy services, the question asked was whether individuals get all medicines they need. For the analysis, the "no" and "sometimes" answers were incorporated into the "does not get" category. Another question was "Were any of these medicines sometimes unavailable?" and the analyzed answer option was "yes".

Acceptability was investigated in the PNAUM household questionnaire by a set of questions about the routine dispensing of medicines at SUS pharmacies and the quality of service: "Can medicines be picked up any day of the week? Yes/No"; "Do you need to attend a group or meeting to pick up the medicines? Yes/No"; "How long do you usually wait to be served? Does not wait/waits a little/waits a lot of time"; "Are opening hours very good/good/fair/bad/very bad?" and "Is medicines pick-up service: very good/good/fair/bad/very bad?" We considered the negative response on medicine dispensing on any day of the week and an affirmative response on participation in some group or meeting to pick-up medicines for the analysis. In addition, the "waits a little" and "waits a long time" categories were

aggregated into "waits to receive medicines" and the "fair/bad/very bad" responses for the opening hours and quality of service at the pharmacy were analyzed.

The independent variables analyzed corresponded to the demographic, socioeconomic and health variables that showed a significant difference in the analyses performed by Oliveira *et al.* (2016): gender, age group (years), region, number of chronic NCDs, number of medicines required and health self-assessment.

The second part of analyses included a sample of individuals aged 20 years and over, diagnosed with at least one NCDs, with indication for medicine treatment, in treatment of this (these) disease (s) with a SUS physician and who reported having obtained some of the medicines in use at a private pharmacy. The goal was to verify why they were unable to obtain any of the medicines from the SUS, although they tried, or why they did not try and obtain them from SUS. These analyses were investigated through the following questions: "Did you try to obtain any of these medicines in the SUS?", "Why were you unable to obtain some of these medicines in the SUS?" and "Why did you not try to obtain some of these medicines from the SUS?"

The software STATA 12.0 was used with the application of the *svy* command, which considers the aspects of a complex sampling. The association between the independent variables and variables related to the dimensions of access to medicines was analyzed by Pearson's chi-square test, with a significance level of 5%.

The National Commission for Ethics in Research (Protocol 18947013.6.0000.0008) and the Research Ethics Committee of the Federal University of Rio Grande do Sul (Protocol 19997) approved the PNAUM.

RESULTS

The population of the PNAUM study included 41,433 adult and elderly individuals. Of these, 6,889 met the criteria of being 20 years of age and older, with at least one chronic illness, indication of use of medicines and under treatment with a SUS physician. Of these, 5,155 reported obtaining some of the medicines in use from SUS and were the main sample of this study.

Most individuals were women aged 40 years and older and reside in Southeast Brazil. More than half (56·0%) reported having two or more chronic diseases, 15·7% of the individuals used five or more medicines and 9·6% rated their health as poor or very poor (Table I).

TABLE I – Distribution of adult and elderly (20 years or more) users of the Unified Health System (SUS) with a reported chronic noncommunicable disease (NCD), indication of medicine treatment and obtaining some of the medicines in use in the SUS, according to demographic, socioeconomic and health variables. PNAUM, 2014 (N=5,155)

Variables	Sample*	
	%	CI95%
Gender		
Male	34·6	(32·7-36·4)
Female	65·4	(63·6-67·3)
Age group (years)		
20-39 years	13·2	(11·24-15·54)
40-59 years	44·5	(42·3-46·8)
60 years and over	42·2	(40·0-44·5)
Region		
North	3·8	(2·7-5·4)
Northeast	18·6	(14·6-23·5)
Southeast	54·3	(47·5-60·9)
South	16·4	(12·8-20·7)
Midwest	6·8	(5·1-9·1)
Number of NCDs		
1	44·0	(41·2-46·7)
2	27·8	(25·9-29·7)
3	15·5	(14·0-17·0)
4 and over	12·8	(11·4-14·4)

(continuing)

TABLE I – Distribution of adult and elderly (20 years or more) users of the Unified Health System (SUS) with a reported chronic noncommunicable disease (NCD), indication of medicine treatment and obtaining some of the medicines in use in the SUS, according to demographic, socioeconomic and health variables. PNAUM, 2014 (N=5,155)

Variables	Sample*	
	%	CI95%
Number of medicines for chronic diseases		
1	26·2	(24·5-28·1)
2	27·9	(26·1-29·8)
3-4	30·2	(28·5-31·9)
5 and over	15·7	(14·2-17·4)
Self-assessment of health		
Very good/good	46·7	(43·9-49·5)
Fair	43·7	(41·1-46·2)
Poor/very poor	9·6	(8·5-11·0)

*Percentages adjusted by sample weights and post-stratification according to age and gender.

Most people did not consider it difficult or far to reach the SUS pharmacy. The geographic region of residence did not show a significant difference in the difficulty of getting to the SUS pharmacy, but rather in terms of perceived distance, and the highest proportions of 'far' responses were in the North (38·7%) and Midwest (29·0%) (Table II).

Difficulty of getting to the place showed a significant difference for the number of NCDs and medicines for chronic diseases. It was more significant for individuals suffering from four or more NCDs and those who used three or more medicines for chronic diseases.

Self-assessed health was significantly related to the difficulty of getting to the place and perceived distance, and the worse people perceived their health, the more they tended to consider that the SUS pharmacy was difficult to reach and distant (Table II).

Regarding difficulties with availability, 38·2% of individuals did not get all the medicines they needed from the SUS pharmacy and 45·6% of medicines were sometimes missing (Table III).

More women (48·1%) than men (40·8%) reported lack of medicines at SUS pharmacies, and this difference was significant (Table III).

Region, number of NCDs and medicines for chronic diseases and health self-assessment were strongly associated with measures of medicine availability at SUS pharmacy services. Midwest, Northeast and North regions were the Brazilian regions with the highest proportions of individuals responding that 'they were unable to *get all* the medicines they needed' and that 'medicines was sometimes unavailable'. In the Southeast region, these variables showed respective values of 33·6% and 38·9%, indicating that the region seems to have fewer problems with the availability of medicines. There was a direct relation between the measures of availability with the number of NCDs and with the number of medicines for chronic diseases. The worse was the self-assessed health the greater was the proportion of individuals who reported problems with availability of medicines at SUS pharmacy services (Table III).

Among the variables that evidence difficulties related to acceptability, most individuals said they waited to get medicines (62·2%) and the minority said they needed to participate in groups to obtain medicines (6·7%) (Table IV).

With exception of 'waiting to obtain medicines', other measures of acceptability indicated gaps between regions, with regional differences between health system characteristics related to the opening hours of pharmacy services. The North region showed the highest proportions of difficulties with acceptability, since people said that opening hours and attendance at the pharmacy were fair, poor or very poor – at 27·5% and 24·9%, respectively – and 29·1% said that dispensation is not performed on any weekday. Individual factors, such as the number of NCDs and the number of chronic use medicines were not statistically associated with hindrances vis-à-vis acceptability at SUS pharmacy services. The age group was inversely associated with the fair/bad/very bad perception of opening hours and attendance at the pharmacy. Health self-assessment is directly associated with the evaluation of the opening hours and the quality

of service at the pharmacy, since the worse the self-assessed health, the greater the proportion of individuals who consider opening hours and service at the pharmacy as fair/bad/very bad (Table IV).

TABLE II – Difficulties of geographical accessibility to SUS pharmacy services among adult and elderly (20 years and over) users of the Unified Health System (SUS) with a reported chronic noncommunicable disease (NCD), indication of medicine treatment and that obtain some of the medicines in use in the SUS, according to demographic, socioeconomic and health variables. PNAUM, 2014 (N=5,155)

Variables	It is difficult to get to the SUS pharmacy		The SUS pharmacy is far	
	%*	CI95%	%*	CI95%
Overall	11·0	(9·4-12·9)	24·9	(22·0-28·2)
Gender	*p=0·407*		*p=0·151*	
Male	10·1	(7·6-13·3)	23·1	(19·2-27·6)
Female	11·4	(9·6-13·5)	25·9	(22·9-29·2)
Age group (years)	*p=0·123*		*p=0·069*	
20-39 years	15·1	(9·9-22·4)	30·2	(24·4-36·7)
40-59 years	9·6	(7·4-12·3)	22·9	(19·3-27·0)
60 years and over	11·2	(9·2-13·5)	25·5	(21·8-29·5)
Region	*p=0·142*		*p=0·051*	
North	15·4	(11·7-20·1)	38·7	(32·1-45·8)
Northeast	12·1	(9·7-14·9)	23·9	(19·4-29·0)
Southeast	10·1	(7·5-13·4)	25·0	(20·2-30·6)
South	10·0	(7·7-12·8)	21·0	(17·0-25·5)
Midwest	15·0	(11·4-19·4)	29·0	(23·6-35·1)
Number of NCDs	*p=0·008*		*p=0·843*	
1	10·1	(8·0-12·9)	24·8	(20·7-29·4)
2	10·1	(8·0-12·8)	24·3	(20·8-28·1)

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TABLE II – Difficulties of geographical accessibility to SUS pharmacy services among adult and elderly (20 years and over) users of the Unified Health System (SUS) with a reported chronic noncommunicable disease (NCD), indication of medicine treatment and that obtain some of the medicines in use in the SUS, according to demographic, socioeconomic and health variables. PNAUM, 2014 (N=5,155)

Variables	It is difficult to get to the SUS pharmacy		The SUS pharmacy is far	
	%*	CI95%	%*	CI95%
3	10·2	(7·7-13·3)	24·9	(20·4-30·0)
4 and over	16·7	(12·8-21·6)	26·9	(22·1-32·3)
Number of medicines for chronic diseases	*p=0·005*		*p=0·058*	
1	9·0	(6·7-12·0)	23·0	(18·8-27·6)
2	9·5	(7·2-12·6)	25·1	(21·1-29·6)
3-4	10·8	(8·2-14·1)	24·0	(20·0-28·6)
5 and over	16·5	(12·9-20·9)	30·6	(26·0-35·7)
Self-assessment of health	*p=0·000*		*p=0·004*	
Very good/good	8·5	(6·6-10·8)	22·4	(18·3-27·1)
Fair	11·7	(9·4-14·5)	25·6	(22·7-28·7)
Poor/Very Poor	19·7	(15·7-24·5)	34·1	(28·3-40·4)

Note: Pearson's chi-square test *Percentages adjusted by sample weights and post-stratification according to age and gender.

TABLE III – Difficulties of availability of medicines in SUS pharmacy services among adult and elderly (20 years and over) users of the Unified Health System (SUS) with a reported chronic non-communicable disease (NCD), indication of medicine treatment and that obtain some of the medicines in use in the SUS, according to demographic, socioeconomic and health variables. PNAUM, 2014 (N=5,155)

Variables	Did not get all the medicines needed		Medicines were sometimes missing	
	%	CI95%	% *	CI95%
Overall	38·2	(35·6-40·9)	45·6	(42·3-48·9)
Gender	*p= 0·054*		*p= 0·003*	

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TABLE III – Difficulties of availability of medicines in SUS pharmacy services among adult and elderly (20 years and over) users of the Unified Health System (SUS) with a reported chronic non-communicable disease (NCD), indication of medicine treatment and that obtain some of the medicines in use in the SUS, according to demographic, socioeconomic and health variables. PNAUM, 2014 (N=5,155)

Variables	Did not get all the medicines needed		Medicines were sometimes missing	
	%	CI95%	% *	CI95%
Male	35·5	(31·5-39·7)	40·8	(36·3-45·6)
Female	39·6	(36·9-42·4)	48·1	(44·6-51·5)
Age group (years)	*p= 0·653*		*p= 0·449*	
20-39 years	40·6	(34·2-47·3)	46·5	(39·4-53·8)
40-59 years	38·2	(34·6-41·8)	46·9	(42·9-50·9)
60 years and over	37·5	(34·3-40·8)	43·9	(40·0-47·9)
Region	*p= 0·000*		*p= 0·000*	
North	44·4	(39·5-49·3)	48·6	(41·6-55·8)
Northeast	44·8	(41·1-48·6)	59·2	(54·5-63·7)
Southeast	33·6	(29·7-37·7)	38·9	(34·0-43·9)
South	38·9	(34·5-43·5)	46·5	(42·1-50·9)
Midwest	51·4	(45·7-57·0)	58·5	(52·9-63·8)
Number of NCDs	*p= 0·000*		*p= 0·000*	
1	28·1	(25·1-31·4)	35·0	(30·7-39·4)
2	41·7	(37·6-45·9)	50·7	(46·3-55·1)
3	46·1	(40·6-51·7)	53·7	(48·4-58·9)
4 and over	55·6	(50·5-60·6)	60·7	(55·4-65·9)

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TABLE III – Difficulties of availability of medicines in SUS pharmacy services among adult and elderly (20 years and over) users of the Unified Health System (SUS) with a reported chronic non-communicable disease (NCD), indication of medicine treatment and that obtain some of the medicines in use in the SUS, according to demographic, socioeconomic and health variables. PNAUM, 2014 (N=5,155)

Variables	Did not get all the medicines needed		Medicines were sometimes missing	
	%	CI95%	% *	CI95%
Number of medicines for chronic diseases	*p= 0·000*		*p= 0·000*	
1	26·7	(22·7-31·2)	33·8	(29·0-38·8)
2	35·4	(31·7-39·3)	42·3	(37·8-46·9)
3-4	42·2	(38·2-46·3)	50·5	(46·2-54·8)
5 and over	53·5	(48·2-58·7)	59·6	(54·2-64·8)
Self-assessment of health	*p= 0·000*		*p= 0·000*	
Very good/good	30·5	(27·6-33·6)	37·0	(33·2-41·0)
Fair	44·0	(40·7-47·3)	51·9	(48·3-55·5)
Poor/very poor	49·2	(43·6-54·8)	58·1	(52·3-63·8)

Note: Pearson's chi-square test.
*Percentages adjusted by sample weights and post-stratification according to age and gender Pearson's chi-square test

TABLE IV – Difficulties related to the acceptability of SUS pharmacy services by adult and elderly (20 years and over) users of the Unified Health System (SUS) with a reported chronic noncommunicable disease (NCD), indication of medicine treatment and that obtain some of the medicines in use in the SUS, according to demographic, socioeconomic and health variables PNAUM, 2014 (N=5,155)

Variables	Dispensing is not on any day of the week		You need to join a group to receive		There is waiting to get medicines		Opening hours are fair/bad/very bad		Pharmacy attendance is fair/poor/very poor	
	%*	(CI95%)	%*	(CI95%)	%*	(CI95%)	%*	(CI95%)	%*	(CI95%)
Overall	13·3	(11·4-15·6)	6·7	(5·4-8·2)	62·2	(58·4-65·9)	12·6	(11·0-14·6)	12·7	(11·2-14·4)
Gender		*p= 0·990*		*p= 0·520*		*p= 0·312*		*p= 0·713*		*p= 0·806*

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TABLE IV – Difficulties related to the acceptability of SUS pharmacy services by adult and elderly (20 years and over) users of the Unified Health System (SUS) with a reported chronic noncommunicable disease (NCD), indication of medicine treatment and that obtain some of the medicines in use in the SUS, according to demographic, socioeconomic and health variables PNAUM, 2014 (N=5,155)

Variables	Dispensing is not on any day of the week		You need to join a group to receive		There is waiting to get medicines		Opening hours are fair/bad/very bad		Pharmacy attendance is fair/poor/very poor	
	%*	(CI95%)	%*	(CI95%)	%*	(CI95%)	%*	(CI95%)	%*	(CI95%)
Male	13·4	(10·5-16·9)	6·3	(4·7-8·4)	60·8	(55·4-65·9)	12·3	(9·8-15·3)	12·4	(10·1-15·2)
Female	13·3	(11·2-15·7)	6·9	(5·5-8·6)	63·0	(59·2-66·6)	12·8	(10·9-15·1)	12·8	(11·1-14·7)
Age group (years)		*p= 0·197*		*p= 0·090*		*p= 0·157*		*p= 0·030*		*p= 0·022*
20-39 years	10·1	(6·2-15·9)	4·6	(2·8-7·4)	67·2	(58·6-74·8)	17·8	(12·5-24·8)	17·3	(13·2-22·4)
40-59 years	13·2	(10·8-16·0)	7·5	(5·9-9·7)	62·9	(58·3-67·2)	12·8	(10·5-15·5)	12·8	(10·5-15·4)
60 years and over	14·5	(12·2-17·2)	6·4	(4·9-8·3)	60·0	(55·7-64·1)	10·8	(9·0-13·0)	11·1	(9·4-13·1)
Region		*p= 0·000*		*p= 0·000*		*p= 0·124*		*p= 0·000*		*p= 0·000*
North	29·1	(19·9-40·5)	7·7	(4·9-11·7)	68·6	(62·6-74·0)	27·5	(22·0-33·8)	24·9	(20·8-29·4)
Northeast	14·2	(11·1-18·0)	4·1	(2·5-6·8)	57·7	(50·3-64·7)	15·3	(12·3-19·0)	20·2	(16·6-24·4)
Southeast	10·5	(7·8-14·0)	5·4	(3·6-8·1)	64·9	(58·5-70·7)	11·8	(9·2-14·9)	10·5	(8·5-12·9)
South	15·3	(11·3-20·4)	11·9	(9·1-15·2)	59·8	(54·2-65·1)	8·3	(6·4-10·8)	7·5	(5·5-10·3)
Midwest	20·4	(15·6-26·3)	10·8	(7·9-14·5)	55·9	(50·1-61·6)	14·6	(10·5-19·9)	15·4	(11·6-20·1)
Number of NCDs		*p= 0·340*		*p= 0·727*		*p= 0·295*		*p= 0·694*		*p= 0·568*
1	12·9	(10·1-16·2)	6·3	(4·9-8·0)	64·1	(59·1-68·8)	11·7	(9·6-14·4)	11·8	(10·0-13·9)
2	12·1	(9·7-15·0)	6·6	(4·7-9·1)	61·7	(57·1-66·1)	13·3	(10·8-16·2)	12·9	(10·4-16·0)
3	15·7	(12·4-19·6)	7·4	(5·1-10·5)	58·7	(52·8-64·4)	13·0	(9·8-17·1)	14·2	(11·2-17·9)
4 and over	14·8	(11·2-19·3)	7·4	(5·5-10·0)	61·3	(55·7-66·7)	13·9	(10·2-18·6)	13·2	(10·2-16·9)

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TABLE IV – Difficulties related to the acceptability of SUS pharmacy services by adult and elderly (20 years and over) users of the Unified Health System (SUS) with a reported chronic noncommunicable disease (NCD), indication of medicine treatment and that obtain some of the medicines in use in the SUS, according to demographic, socioeconomic and health variables PNAUM, 2014 (N=5,155)

Variables	Dispensing is not on any day of the week		You need to join a group to receive		There is waiting to get medicines		Opening hours are fair/bad/very bad		Pharmacy attendance is fair/poor/very poor	
	%*	(CI95%)	%*	(CI95%)	%*	(CI95%)	%*	(CI95%)	%*	(CI95%)
Number of medicines for chronic diseases		*p= 0·884*		*p= 0·961*		*p= 0·537*		*p= 0·461*		*p= 0·316*
1	14·1	(10·5-18·8)	6·7	(4·7-9·3)	63·6	(58·2-68·6)	13·7	(11·0-17·0)	14·2	(11·6-17·3)
2	12·7	(10·1-15·8)	6·5	(4·8-8·7)	63·0	(57·7-68·0)	11·2	(8·9-13·9)	12·3	(10·0-15·0)
3-4	13·5	(11·0-16·5)	7·0	(5·1-9·5)	61·6	(57·2-65·8)	11·8	(9·2-15·0)	10·9	(8·6-13·8)
5 and over	13·6	(10·5-17·5)	7·2	(4·9-10·3)	59·1	(52·8-65·2)	14·2	(10·0-19·7)	13·1	(10·1-16·9)
Self-assessment of health		*p= 0·647*		*p= 0·221*		*p= 0·161*		*p= 0·006*		*p= 0·015*
Very good/good	12·8	(10·1-16·0)	7·6	(5·7-10·0)	61·1	(55·9-66·0)	9·96	(7·8-12·6)	10·7	(8·7-13·1)
Fair	13·6	(11·4-16·1)	6·0	(4·7-7·8)	64·2	(60·4-68·0)	14·6	(12·3-17·3)	14·0	(11·8-16·4)
Poor/very poor	14·9	(10·9-20·1)	5·3	(3·3-8·6)	58·5	(52·2-64·5)	16·4	(11·7-22·7)	16·3	(12·6-20·8)

Note: Pearson's chi-square test. *Percentages adjusted by sample weights and post-stratification according to age and gender Pearson's chi-square

A total of 3,988 individuals aged 20 years and over, with at least one chronic illness, with an indication of medicines use, treated with a physician from the SUS said they were getting some of the medicines in use at a private pharmacy. Of these, most of them (68·3%; 95% CI; 65·6-70·8) said they tried to obtain from the SUS some of the medicines they use. Most people who answered that they did not get medicines from the SUS, despite having tried, said it was because medicines were not available (78·6%; 95% CI; 76·0-81·0) (Figure 1).

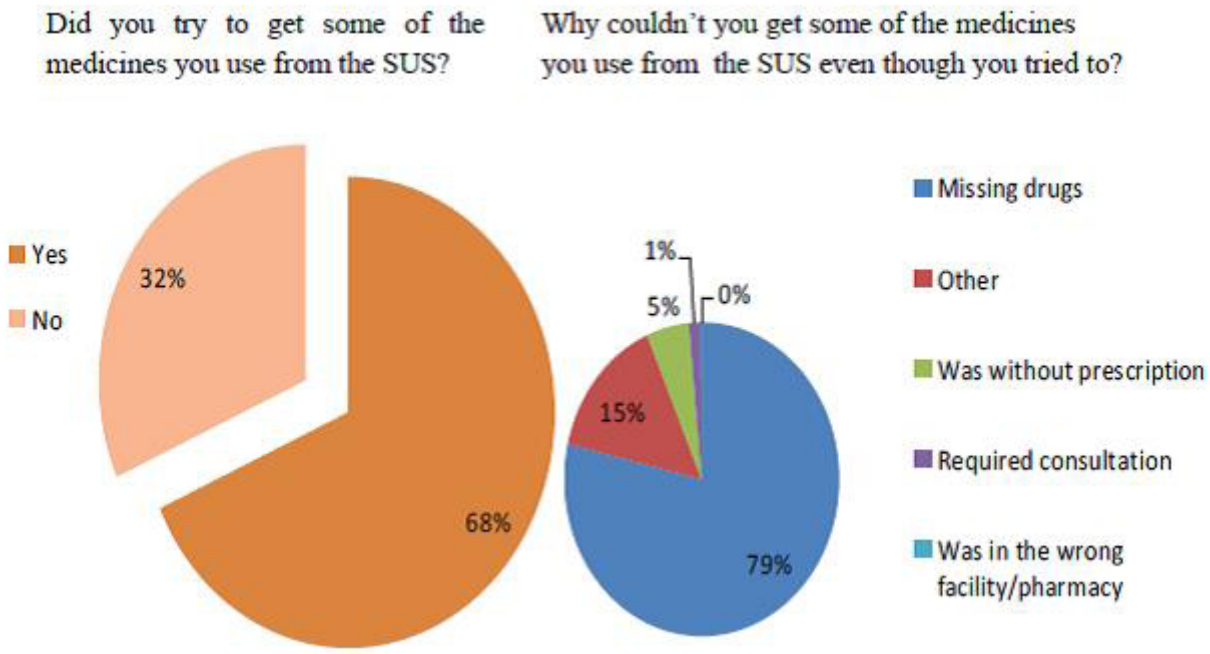

FIGURE 1 – Individuals aged 20 years and over, with at least one chronic illness, with indication of medicines use, who are treated by a physician from the SUS and who said they obtained some of the medicines in use in a private pharmacy. PNAUM, 2014 N=3,988.

DISCUSSION

Geographical accessibility to the SUS pharmacy showed regional differences related to the perception of distance, especially in the North region, which is characterized by being territorially the largest of the five regions of the country, with low socioeconomic development, poor primary care network service and low population density.

Bousquat *et al*. (2017) showed that in the distribution of the types of primary health care facilities (PHCF) in Brazil in 2012, the North evidenced one of the lowest absolute numbers of UBS, and the highest proportions of UBS were in rudimentary conditions and did not meet the quality standards in relation to their structure.

The difficulty of reaching the SUS pharmacy grew significantly with the increased number of chronic diseases. Individuals suffering simultaneously from more diseases may show more limitations, which magnifies their perceived difficulty of getting to the SUS pharmacy. In addition, services that address more complex cases may be more concentrated, for example, medicines' dispensing may be centered in a service that is harder to reach for individuals.

In this study, all respondents had a medical diagnosis of NCD and it was observed that the worse the self-assessment of health, the greater the proportion of individuals who considered the SUS pharmacy hard to reach and remote. Polymedicated individuals with comorbidities reported greater difficulty in getting to the SUS pharmacy supposedly due to limitations of their health status, which hampers their efforts to circumvent these hurdles.

There was a significant difference between gender and 'medicines unavailable at the SUS pharmacy' It may be that women have a more accurate perception because they use health services more (Gonçalves, Cunha Faria, 2016; Malta *et al*., 2017)

A substantial proportion of individuals reported lack of medicines at SUS pharmacies. This unfavorable situation converges with findings from other studies. It was previously found low mean availability of key medicines in all population strata and in all types of PHCF analyzed; the proportion of facilities with total availability of key medicines in all pharmacological groups was also low (Mendes *et al*., 2014; Nascimento *et al*. (2017) found inadequate availability of medicines for chronic diseases in the primary services of SUS.

On the other hand, regional differences were highly significant with regard to availability of medicines, indicating that, among the five Brazilian regions, some gaps in pharmaceutical care activities affect the availability of medicines in SUS pharmacies.

Pharmaceutical services organizational and management capacity issues are associated with the availability of medicines, in so far as the appropriate PHCF infrastructure and the presence of qualified professionals converge for the good performance of care activities.

Bousquat *et al*. (2017) elaborated a classification of PHCF in Brazil based on the results of the Brazilian Infrastructure Census of the PHCF, where the type of team, list of professionals, working shifts, available services, facilities and supplies were the dimensions used. Two-thirds of "reference" PHCF, were concentrated in regions of greater socioeconomic development, the South and Southeast concentrate while a third of the UBS in the North are "rudimentary" or "not approved". This classification corroborates the results found, since the Southeast showed the lowest proportion of individuals reporting lack of medicines at SUS pharmacies, and the North had one of the highest proportions of individuals responding that they were unable to g*et all* the medicines they needed and that medicines were sometimes unavailable.

The Midwest has the highest proportion of people saying they were unable to g*et all* the medicines they needed, a problem that can be attributed to the local pharmaceutical care organization. However, Bousquat *et al*. (2017) found that the Midwest is the region of the country with better-structured UBS, with proportions above the national average. On the other hand, it is the region of the country with the lowest absolute number of UBS.

Individuals with a higher number of morbidities, who use many medicines for chronic diseases and with a worse health status had more difficulties with the availability of medicines at SUS pharmacies because they did not get all the medicines they needed or because medicines were sometimes unavailable. Therefore, in general, more severe and polymedicated patients are more likely not to obtain complete treatment at SUS pharmacies. Managerial disorganization of pharmaceutical care activities and irregular financial transfers for the procurement of medicines may also be the causes for some medicine stock shortage in SUS pharmacies (Mendes *et al*., 2014; Vieira, 2010)

Throughout Brazil, waiting for medicines at SUS pharmacy was the most reported difficulty in the area of acceptability. Possible causes may be the insufficient number of professionals capable of dispensing; poor pharmacy infrastructure; high demand for medicines that exceeds care capacity; and problems in organizing the workflow. Corroborating this result, Leite *et al*. (2017) showed that, according to those responsible for dispensation, waiting time was never less than 15 minutes in more than half of the medicine dispensing units in the primary care network.

Leite *et al.* (2017) observed great gaps in the dispensing organization models among the municipalities, with differences in the physical structure and professionals involved. Thus, regional gaps found in almost all categories related to difficulties with accessibility can be related to the existence of different medicine dispensation models among Brazilian regions. Only "waiting for medicines" has not shown regional differences, showing that it is a systemic problem and needs to be addressed.

Acceptability is the level of fit between the characteristics of products and services and the expectations and needs of users, that is, it measures 'users' perception vis-à-vis the SUS (Oliveira *et al*., 2016). It is known that Brazil has many regional differences in socioeconomic, geographic and cultural aspects, which are attributes of the community in which the individuals live, and directly influence access to health services. In this study, region showed significant differences with almost all of the analyzed variables relation to acceptability. Furthermore, the age group and self-assessed health were the individual factors that evidenced significant differences regarding individual perception of opening hours and pharmacy service. These features of service are disliked by a greater proportion of people when they feel their health is more debilitated. In relation to age group, the proportion of elderly people that negatively evaluates the opening hours and the quality of service is lower than the proportion of young people, perhaps due to the greater time availability and patience.

The lack of medicines in SUS pharmacies was the main reason cited for their purchase in private pharmacies. The inelastic demand is an important feature that influences the behavior of people requiring medicine treatment. The essential nature of this product leads consumers to acquire them, even with scarce financial resources. In some cases, users compromise a

large part of the family budget, dispose of assets and become indebted to ensure continuity of treatment (Luiza *et al*., 2016).

It should be noted that at the time of data collection of the PNAUM household survey, the Popular Pharmacy program, which had a covenant with pharmacies, was already in place – "*Aqui Tem Farmácia Popular*" ("Popular Pharmacy Is Here", ATFP) – including the "*Saúde Não Tem Preço*" ("Health Is Priceless") initiative, which provides diabetes, hypertension and asthma medicines without co-payment. One of the effects of the Popular Pharmacy Program (PFPB) was to provide a safeguard from failures in the public provision of medicines in the country, although this is restricted to a specific list (Silva, Caetano, 2015). Yamauti *et al*. (2015) analyzed the PFPB medicine list in relation to Brazil's pharmaceutical care policy and found that 80·7% of the PFPB medicine list was also found in the National Essential Medicines List (RENAME) 2010.

Possible limitations of this study that can be considered are the quality of self-reported information and in relation to the source study (PNAUM), the correct identification of the place of obtaining medicines. Because the ATFP component of PFPB is provided in through private pharmacies this can lead to confusion in answers about public and private provision of services whenever questions relate to private pharmacies. In addition, memory bias may underestimate figures, due to the absence of a specific time period in the question about the lack of medicines at the SUS pharmacy.

CONCLUSION

Aspects related to the availability and waiting time to obtain medicines were the main barriers of access to medicines most reported by SUS users. Significant regional differences were found in basically all dimensions of access, and lack of medicines in SUS pharmacies was the main reason cited for their purchase in private pharmacies, signaling these issues as important challenges for the organization of the supply of medicines in the SUS. This study emphasizes the need for policies and practices focused on primary care that meet the population's needs for access to medicines at this level of care in the different regions of Brazil, in order to reduce the burden on the budget allocated to the purchase of primary care medicines from private pharmacies.

ACKNOWLEDGMENTS

The Ministry of Health for funding and technical support for implementing the Pesquisa Nacional sobre Acesso, Utilização e Promoção do Uso Racional de Medicamentos (PNAUM – National Survey on Access, Use and Promotion of Rational Use of Medicines) and, in particular, the team that worked to collect the data, here represented by Prof. Dr. Alexandra Crispim Boing, and the statistical support team for the project, Amanda Ramalho Silva, Andréia Turmina Fontanella and Luciano S. P. Guimarães. We also acknowledge Michelle Childs for revising the English writing.

AUTHOR'S CONTRIBUTIONS

SRM participated in the conception, analysis, data interpretation and writing ADB, ICME and VLL participated in the conception, data interpretation and writing. All researches listed in PNAUM group participated in the coordination of the source study in all its steps.

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Received for publication on 08th December 2018
Accepted for publication on 01st April 2019