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Use and sources of psychotropic drugs by Brazilian adults and seniors

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Abstract *The aim of the present study was to estimate the prevalence of psychotropic drug utilization among adults and seniors and determine associated factors, therapeutic classes and sources of acquisition. Data from the Brazilian National Survey on Access, Use and Promotion of the Rational Use of Medicines (2013-2014) were analyzed. The prevalence of use of at least one psychotropic drug in the overall sample (adults and seniors) was 8.7%. In the adjusted analyses, positive associations were found between the use of psychotropic drugs and the female sex, poorer self-rated health and chronic diseases ($p < 0.05$). The most frequently used therapeutic classes were antidepressants (55.3%) by the adults and anxiolytics (59.3%) by the seniors. Approximately 23.0% of psychotropic drugs were obtained exclusively from pharmacies of the public healthcare system and 77.0% were acquired from other sources. The findings reveal a low proportion of attaining psychotropic drugs through the Brazilian public healthcare system as well as the need for public policies that encourage the rational use of prescriptions and treatments to promote a better quality of life and ensure the population's right to health.*

Key words *Drug utilization, Psychotropic drugs, Pharmacoepidemiology, Health Surveys*

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Introduction

The demographic and epidemiological transition in Brazil poses challenges with regard to implementing the constitutional principles of the public healthcare system due to the tripling of the disease burden, the persistence of infectious and parasitic diseases as well as the growth of external causes and chronic diseases[1]. The accelerated aging of the population and increase in the prevalence of chronic non-communicable diseases (NCDs) have led to the demand for the prolonged use of medications[2].

Mental and behavioral disorders (MBDs) are among the NCDs that most lead to disability and deteriorate quality of life[3]. Evidence from the Global Burden of Disease study indicates that MBDs are a serious public health problem, are highly prevalent and account for 18.7% of all years lived with disability[4].

The results of this study demonstrate that MBDs account for 9.5% of disability-adjusted life years in Brazil. The mental disorders that most contribute to lost years of healthy life include depression (3.3%) and anxiety (2.7%). Analyses from the same study in both 1990 and 2015 reveal that MBDs were the main cause of disability in Brazil, accounting for 24.9% of the total number of years lived with disability for all causes[3].

The massive use of psychotropic drugs is seen in many countries. Indeed, these drugs are among the most widely prescribed medications, with considerable popularization and undeniable benefits in the treatment of MBDs[5]. However, the need for psychotropic drugs as therapeutic agents is questionable, especially when the indication is based on nonspecific psychiatric conditions[6].

The extensive use of psychotropic drugs reflects a tendency toward the recurrence of a complex, controversial, multifaceted phenomenon, such as that described by Birmam[7] when the author portrays social medicalization. In this thinking, psychotropic drugs play a central role in transforming human conflict and psychological suffering into problems that are resolved through a medicinal intervention.

The lack of data in the national literature on access to and the utilization of psychotropic drugs among adults and seniors in Brazil constitutes a gap in knowledge on the use of these drugs and the profile of users for a better understanding of the use pattern. Therefore, the aim of the present study was to estimate the prevalence of the utilization of psychotropic drugs among adults and seniors in Brazil as well as determine factors associated with such use, estimate the prevalence of utilization according to therapeutic class and determine sources of the acquisition of medications stratified by geographic region, economic classification and the presence/absence of a private health insurance plan.

Methods

A population-based cross-sectional study was conducted using data on adults (20 to 59 years of age; n = 23,329) and seniors (≥ 60 years of age; n = 9,019) from the Brazilian National Survey on Access, Use and Promotion of the Rational Use of Medicines (RUM survey) conducted between September 2013 and February 2014.

This survey involved complex sampling stratified by sex and age group and was conducted in three stages. The data were collected using a structured questionnaire on an electronic device (tablet) during face-to-face interviews with residents of urban areas representative of the five large geographic regions of the country. Details on the sampling and data collection procedures are described by Mengue et al.[8].

The data analyzed in the present investigation were obtained from the administration of a questionnaire to all adult individuals (≥ 20 years of age) addressing information on the use of medications for the treatment of chronic diseases and/or acute events related to the interviewees.

The dependent variable was the use of at least one psychotropic medication (year or no), regardless of the reason for its use (treatment of chronic disease or acute events in the 15 days prior to the interview). Information on the use of medications was obtained using a set of questions beginning with a reference to the interviewee. For example, "Has any doctor ever told you that you have depression?" (yes/no). This was followed by "Do you have a prescription to use any medication for depression?" (yes/no) and "Are you taking any of these medications?" (yes/no); if affirmative: "Which?"

The following independent variables were selected for the analysis of factors associated with the use of psychotropic drugs:

1. *Demographic and socioeconomic*: region of residence (North, Northeast, Southeast, South or Central-West), sex (male or female), skin color/race (white or non-white), marital status (with or without a spouse/partner), schooling (0 to 8 years, 9 to 11 years or 12+ more years), economic classification according to the Brazilian Econom-

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ic Classification Criteria developed by the Brazilian Association of Research Companies (http://www.abep.org/) (Class A/B, C, D or E) and having a private health insurance plan (yes or no). Regarding the economic classification, as Class A corresponds to a very small portion of the population (0.5%) and as individuals and families in Classes A and B have similar consumer profiles and purchasing power, the decision was made to unite these classes into a single category.

2. *Behaviors and health conditions*: self-rated health (very good/good, fair or poor/very poor), number of chronic diseases (none, one, two or more), smoking (yes or no) and binge drinking (four or more drinks for women and five or more drinks for men on a single occasion in the previous 30 days [one drink was defined as a dose of distilled alcohol, a can of beer or a glass of wine]). The following chronic diseases were investigated: arterial hypertension, diabetes mellitus, respiratory disease, high cholesterol, stroke, heart disease, joint disease and other chronic diseases (yes or no).

Psychotropic drugs were classified into four therapeutic classes based on the European Study of the Epidemiology of Mental Disorders: antidepressants, axiolytics, anti-psychotics and mood stabilizers.

Regarding the source of drug acquisition for the treatment of clinical conditions, the interviewees were asked about where they acquired their medications. For those who reported using psychotropic drugs, a dichotomous variable was created: all psychotropics acquired exclusively through pharmacies of the Brazilian public healthcare system (SUS-exclusive) or not (exclusively through the People's Pharmacy; exclusively through a private pharmacy; combination of public healthcare pharmacy and People's Pharmacy; combination of public healthcare pharmacy and private pharmacy; combination of People's Pharmacy and private pharmacy; combination of public healthcare pharmacy, People's Pharmacy and private pharmacy).

The prevalence rates of psychotropic drug utilization among adults and seniors were estimated according to the selected variables. The association between variables and the use of at least one psychotropic drug was determined using Pearson's chi-square test with the second-order correction proposed by Rao & Scott for complex samples, considering a 5% significance level.

Variables independently associated with use were identified using Poisson multiple regression analysis. Variables with a p-value < 0.20 in the bivariate analysis were incorporated into the multivariate analysis. Regarding the self-reported diseases, only the number of chronic diseases was considered in the multivariate model. Using the stepwise backward method, only variables with a p-value < 0.05 after the adjustments for the other variables remained in the final model. Prevalence ratios (PR) of psychotropic drug utilization among the adults and seniors were also estimated with respective 95% intervals (CI).

The sources of psychotropic drug acquisition (exclusively from the public healthcare system or not) were determined and stratified by region of residence, economic classification and presence/absence of a private health insurance plan. All analyses were performed with the aid of the Stata 14.0 program considering weights stemming from the complex sampling design.

The Brazilian National Survey on Access, Use and Promotion of the Rational Use of Medicines received approval from the National Research Ethics Committee, as well as the Human Research Ethics Committee of the Federal University of Rio Grande do Sul. All participants signed a statement of informed consent.

Results

Mean age of the adults and seniors was 39.6 years (sd = 11.2) and 70.2 years (sd = 8.0), respectively. The prevalence of psychotropic drug utilization in the overall sample of adults and seniors (≥ 20 years) was 8.7% (95%CI: 8.1 to 9.4), with a statistically significant difference (p < 0.001) among adults with age 20-59 years (7.0%; 95%CI: 6.4 to 7.7) and seniors with age ≥ 60 years (16.1%; 95%CI: 14.7 to 17.5).

Table 1 displays the distribution of the population and prevalence of the use of at least one psychotropic drug according to socio-demographic characteristics. A total of 76.4% of the sample with age ≥ 20 years had no private health insurance plan at the time of the study. In both age groups, differences in prevalence were found according to the region of residence, sex, skin color and marital status (p < 0.05). Among the seniors, the prevalence of use was greater among those who reported having a private health insurance plan (p < 0.001). For all variables, higher prevalence rates were found among the seniors.

Table 2 displays the prevalence of the use of at least one psychotropic drug according to behaviors and health conditions among the adults and seniors. In the adult population, all

Table 1. Distribution of sample and prevalence of use of at least one psychotropic drug according to socio-demographic characteristics of adults and seniors. National Survey on Access, Use and Promotion of the Rational Use of Medicines (PNAUM), Brazil, 2014.

Variables	n	(%)	Total		Adults		Seniors	
			%	95%CI	%	95%CI	%	95%CI
Region of residence			p*< 0.001		p<0.001		p<0.001	
North	8,421	6.7	2.1	1.6-2.7	1.9	1.4-2.5	3.2	2.5-4.2
Northeast	6,909	23.4	7.5	6.7-8.5	6.5	5.7-7.3	12.3	10.8-14.1
Southeast	6,075	47.4	9.6	8.5-10.9	7.6	6.5-8.8	17.3	15.1-19.8
South	6,097	14.7	11.4	10.2-12.6	8.8	7.7-10.0	22.3	19.8-25.0
Central-West	4,846	7.8	7.6	6.6-8.8	6.5	5.4-7.7	13.7	11.8-15.8
Sex			p<0.001		p<0.001		p<0.001	
Male	11.702	46.3	5.1	4.5-5.7	3.9	3.4-4.6	10.4	9.1-11.9
Female	20.646	53.7	11.9	10.9-12.9	9.8	8.8-10.8	20.2	18.4-22.2
Skin color/race			p<0.001		p<0.001		p<0.001	
White	13.890	48.0	10.7	9.8-11.6	8.4	7.5-9.4	19.0	17.4-20.7
Non-white	16.725	52.0	7.7	6.9-8.5	6.4	5.7-7.3	13.7	11.8-15.8
Marital status			p<0.001		p=0.033		p<0.001	
With partner	19.647	60.7	8.2	7.5-9.0	6.9	6.1-7.7	14.5	13.0-16.1
Without partner	11.586	39.3	10.4	9.5-11.5	8.1	7.2-9.1	18.9	16.8-21.2
Schooling			p=0.083		p=0.200		p=0.302	
0 to 8 years	18.536	58.3	9.2	8.4-10.0	7.4	6.6-8.3	16.7	15.2-18.3
9 to 11 years	9.997	30.6	8.0	7.1-9.0	6.4	5.5-7.3	14.9	12.6-17.6
12 or more years	3.602	11.1	8.2	6.9-10.0	6.7	5.4-8.2	15.1	12.4-18.4
Economic class			p=0.1129		p=0.075		p=0.895	
A/B	6.774	24.2	8.6	7.5-10.0	7.1	5.9-8.6	16.0	13.4-18.9
C	18.209	55.1	8.3	7.5-9.1	6.4	5.7-7.2	16.3	14.7-18.0
D	5.940	16.2	9.8	8.5-11.3	8.3	6.9-10.0	15.2	12.7-18.0
E	1.366	4.5	10.2	8.1-12.	8.8	6.4-12.0	16.1	11.9-21.4
Insurance plan			p<0.001		p=0.054		p<0.001	
Yes	6.156	23.6	10.8	9.4-12.3	8.2	6.8-9.7	20.2	17.6-23.1
No	26.156	76.4	8.1	7.4-8.8	6.7	6.0-7.4	14.5	13.2-16.0

n: number of individuals in unweighted sample. Differences in total number of individuals due to possibility of "does not know/ did not answer" responses for some variables: skin color (1,733; 5.36%), marital status (1,115; 3.45%), schooling (223; 0.69%), economic class (59; 0.18%) and insurance plan (36; 0.11%) *p-value of chi-square test (Rao-Scott).

variables were associated with use ($p < 0.01$). In the senior population, only smoking was not associated with use ($p = 0.92$).

Table 3 displays the results of the multivariate analysis of factors associated with the use of psychotropic drugs. In both age groups, prevalence rates were higher among the Northeastern, Southeastern, Southern and Central-Western regions in comparison to the northern region. In both age groups, prevalence rates were higher among women, individuals who self-rated their health as fair or poor/very poor, those who reported at least one chronic disease and smokers. Particularly among the adults, the prevalence of use was higher among individuals in economic class E (PR = 1.41; 95%CI: 1.01 to 1.98) and lower among non-white individuals (PR = 0.78; 95%CI: 0.67 to 0.91). Among the seniors, the prevalence of use was lower among those who did not have a private health insurance plan at the time of the study (PR = 0.81; 95%CI: 0.70 to 0.93).

Among the individuals who reported using psychotropic drugs, the analysis according to therapeutic class revealed that 55.3% of the adults and 49.6% of the seniors reported taking antidepressants. High use of anxiolytics was also found, especially among the seniors (59.3%) (Figure 1).

Table 4 displays the data on sources of acquisition of psychotropic drugs according to region of the country, economic class and presence/ab-

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Table 2. Prevalence of use of at least one psychotropic drug according to behaviors and health conditions of adults and seniors. National Survey on Access, Use and Promotion of the Rational Use of Medicines (PNAUM), Brazil, 2014.

Variables	Total		Adults		Seniors	
	%	95% CI	%	95% CI	%	95% CI
Smoking	**p*=0.0152**		**p<0.001**		**p=0.921**	
No	7.8	7.2-8.5	6.1	5.5-6.8	15.2	13.8-16.8
Yes	9.5	8.2-11.0	8.6	7.1-10.2	15.0	12.2-18.4
Binge drinking	**p<0.001**		**p<0.001**		**p<0.001**	
No	9.6	8.9-10.3	7.8	7.2-8.5	16.5	15.1-17.9
Yes	2.3	1.6-3.3	2.1	1.3-11.2	6.4	3.5-11.2
Self-rated health	**p<0.001**		**p<0.001**		**p<0.001**	
Very good/good	5.0	4.5-5.5	4.0	3.5-4.5	10.8	9.5-12.3
Fair	16.8	15.2-18.3	15.1	13.4-17.0	20.4	18.2-22.7
Poor/very poor	35.5	31.6-39.6	34.9	30.1-40.0	36.6	30.9-42.7
Number of NCDs	**p<0.001**		**p<0.001**		**p<0.01**	
None	3.3	2.8-3.8	3.0	2.5-3.4	7.4	6.0-9.2
One	13.8	12.6-15.1	14.4	12.9-16.1	12.2	10.7-14.0
Two or more	22.0	31.6-39.6	21.0	18.4-24.0	22.9	20.6-25.4
Self-reported diseases						
Arterial hypertension	**p<0.001**		**p<0.001**		**p<0.001**	
No	6.1	5.6-6.7	5.5	5.0-6.1	11.9	10.3-13.5
Yes	16.8	15.4-18.4	15.0	13.2-16.9	19.0	17.3-20.9
Diabetes *mellitus*	**p<0.001**		**p<0.001**		**p=0.015**	
No	8.0	7.4-8.6	6.6	6.0-7.2	15.5	14.2-16.9
Yes	18.0	15.9-20.4	17.4	14.4-20.9	18.6	15.9-21.5
Respiratory disease	**p<0.001**		**p<0.001**		**p=0.001**	
No	8.3	7.7-9.0	6.7	6.1-7.3	15.7	14.4-17.2
Yes	19.6	16.1-23.6	18.2	14.0-23.3	22.9	18.2-28.3
High cholesterol	**p<0.001**		**p<0.001**		**p<0.001**	
No	7.4	6.8-8.1	6.2	5.7-6.9	13.6	12.4-14.9
Yes	20.2	17.8-22.8	17.1	14.2-20.4	24.3	21.1-27.9
Stroke	**p<0.001**		**p<0.001**		**p<0.001**	
No	8.4	7.8-9.1	6.9	6.3-7.5	15.5	14.1-16.9
Yes	26.4	21.7-31.8	27.4	19.6-36.9	25.8	20.9-31.5
Heart disease	**p<0.001**		**p<0.001**		**p<0.001**	
No	7.9	7.3-8.6	6.6	6.0-7.3	14.6	13.3-16.0
Yes	23.2	20.4-26.3	21.7	17.8-26.1	24.5	20.9-28.4
Chronic joint disease	**p<0.001**		**p<0.001**		**p<0.001**	
No	7.6	7.0-8.3	6.4	5.8-2.7	13.7	12.3-15.1
Yes	25.6	23.0-28.4	22.7	18.6-27.5	28.3	24.9-31.9

*p-value of chi-square test (Rao-Scott).

sence of a private health insurance plan. In the overall sample (adults and seniors), acquisition exclusively from the public healthcare system ranged from 20.1% in the Central-Western region to 36.2% in the Northern region, with no significant differences among the regions of the country. Greater acquisition exclusively from the public healthcare system was also found among individuals who reported not having a private health insurance plan. Regarding economic class, the proportion of acquisition exclusively from the public healthcare system was nearly twofold higher in classes C, D and E compared to classes A/B.

Considering only the adults, differences in acquisition were found with regard to economic class and presence/absence of a private health insurance plan. Considering only the seniors, differences were found with regard to region of residence (11.0% in the Northeastern region and

Table 3. Poisson multiple regression model for use of at least one psychotropic drug among adults and seniors. National Survey on Access, Use and Promotion of the Rational Use of Medicines (PNAUM), Brazil, 2014.

Variables/categories	Adults		Seniors	
	PR	95%CI	PR	95%CI
Region of residence				
North	1		1	
Northeast	2.63	1.94-3.57	3.17	2.35-4.28
Southeast	3.80	2.76-5.22	4.82	3.56-6.54
South	3.99	2.93-5.43	6.03	4.50-8.08
Central-West	2.95	2.14-4.06	3.51	2.60-4.75
Sex				
Male	1		1	
Female	1.92	1.61-2.31	1.69	1.47-1.94
Skin color/race				
White	1			
Non-white	0.78	0.67-0.91		
Economic class				
A/B	1			
C	0.91	0.7-1.12		
D	1.05	0.81-1.37		
E	1.41	1.01-1.98		
Insurance plan				
Yes			1	
No			0.81	0.70-0.93
Self-rated health				
Very good/good	1		1	
Fair	2.35	2.02-2.73	1.64	1.42-1.90
Poor/very poor	4.44	3.52-5.59	2.84	2.32-3.44
Number of NCDs				
None	1		1	
One	3.08	2.54-3.73	1.35	1.06-1.72
Two or more	3.47	2.73-4.40	1.92	1.51-2.45
Smoking				
No	1			
Yes	1.24	1.04-1.49		
Binge drinking				
No	1			
Yes	0.42	0.28-0.66		

PR: prevalence ratio adjusted using Poisson multiple regression (21,640 adults and 8,996 seniors included in final model).

23.9% in the southeastern region). Moreover, the acquisition of psychotropic drugs was significantly higher among seniors without insurance plan (Table 4).

Discussion

The results of the present study demonstrate greater use of psychotropic drugs among women, individuals with a negative perception of their own health and those with a greater number of chronic diseases in both age groups (adults and senior). Moreover, the prevalence of use was lower in the Northern and Northeastern regions of Brazil.

The prevalence in the overall sample (adults and seniors residing in urban areas) was 8.7%. The lack of previous national studies on psychotropic drug utilization in these groups impedes

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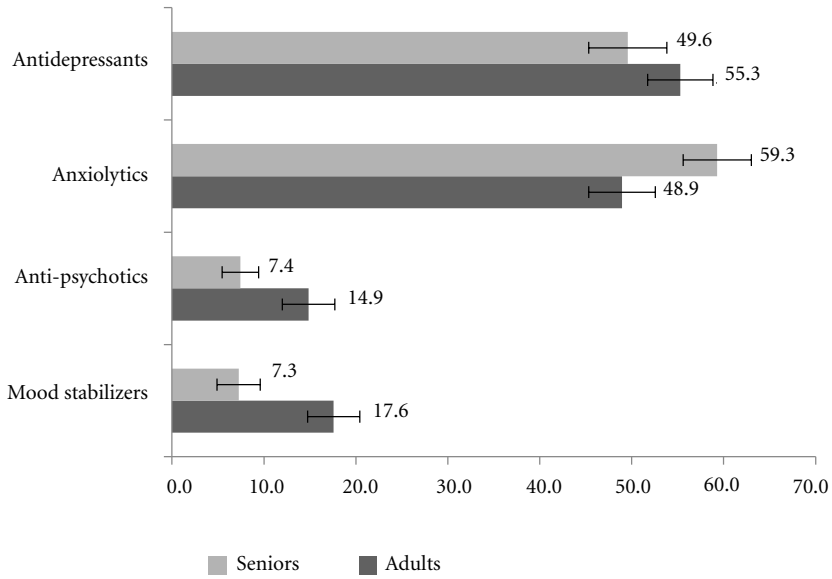

Figure 1. Psychotropic drugs stratified by therapeutic class according to European Study of the Epidemiology of Mental Disorders (ESEMeD). National Survey on Access, Use and Promotion of the Rational Use of Medicines (PNAUM), Brazil, 2014.

the comparison of the results as well as knowledge on the patterns of use of these medications in the population.

Studies conducted in other countries, such as Canada (7.2%)[9] and the United States (11.1%)[10], report similar prevalence values of psychotropic drug utilization to that found in the present investigation. However, these figures are higher than those reported for countries in western Europe (France, Germany, Italy and the United Kingdom)[11] and Chile[12] as well as lower than the prevalence reported for the population of Spain (16%)[13]. Such information portrays a general panorama of psychotropic drug utilization in other countries, but comparisons of these numbers require caution. Differences in the use of medication in different studies may be related to the methods employed, such as the study population, recall period, distinction of age groups, types of medications investigated, etc. Moreover, divergences among healthcare systems in different parts of the world related to access to health services, the offer and prescription of medications and the context of the period in which the study was conducted exert an influence on the magnitude of the frequency of psychotropic drug utilization.

The use of psychotropics was significantly higher among the women, which is similar to findings described in previous studies[13,14]. Women traditionally seek help more and use health services more often than men[15]. The history of the organization of medication services and the establishment of health programs in Brazil were mainly focused on maternal-child health and the reproductive health of women, strengthening the social medicalization of the female body[16]. Moreover, women have a greater burden of depression and anxiety as well as a greater frequency of eating disorders and borderline personality disorder[17].

The difference between sexes in the process of medicalization is strengthened by the social role imposed on women in society, such as that of caregiver of the nuclear family and manager of the household, which can lead to fatigue and the accumulation of responsibilities. This context favors the emergence of vulnerabilities and suffering, making women the target of diagnoses with an indication for treatments involving

Table 4. Sources of acquisition of psychotropic drugs according to region of residence, economic classification and presence/absence of health insurance. National Survey on Access, Use and Promotion of the Rational Use of Medicines (PNAUM), Brazil, 2014.

Variable	Total				Adults				Seniors			
	Public system		Others		Public system		Others		Public system		Others	
	%	95%CI	%	95%CI	%	95%CI	%	95%CI	%	95%CI	%	95%CI
Region of residence		p=0.079				p=0.1611				p=0.0045		
North	36.2	24.9-49.3	63.8	50.7-75.1	40.7	27.5-55.4	59.3	44.6-72.5	19.8	12.2-30.4	80.2	69.6-87.8
Northeast	21.4	16.9-26.6	78.6	73.4-83.1	25.4	19.6-32.3	74.6	67.7-80.4	]11	7.7-15.5	89	84.5-92.3
Southeast	28.4	23.1-34.4	71.6	65.6-76.9	31.2	24.5-38.5	68.8	61.5-75.2	23.9	18.3-30.5	76.1	69.5-81.7
South	26.9	22.2-32.1	73.1	67.9-77.8	31.5	25.6-38.1	68.5	61.9-74.4	18.8	14.4-24.2	81.2	75.8-85.5
Central-West	20.1	15.6-25.5	79.9	74.5-84.4	20.7	15.1-27.8	79.3	72.2-84.9	18.5	12.3-27.0	81.5	73.0-87.7
Economic class		p<0.001				p<0.001				p=0.2418		
A/B	14.4	10.7-19.1	85.6	80.3-90.6	13.7	9.4-19.7	86.3	80.3-90.6	15.9	10.3-23.8	84.1	76.2-89.7
C	29.1	25.3-33.1	70.9	66.9-74.7	33.3	28.5-38.4	66.7	61.5-71.5	21.8	17.7-26.6	78.2	73.4-82.3
D	30.5	24.5-37.3	69.5	62.7-75.5	37	28.9-45.8	63	54.2-71.0	18.2	12.4-26.0	81.8	74.0-87.6
E	35.1	22.8-49.7	64.9	50.3-77.2	37.8	22.1-56.5	62.2	43.5-77.9	29.5	15.4-49.1	70.5	50.9-84.6
Insurance		p<0.001				p<0.001				p<0.001		
Yes	10.1	7.3-13.8	89.9	86.1-92.7	9.3	6.0-14.1	90.7	85.8-94.0	11.2	7.5-16.5	88.8	83.4-92.5
No	32.8	29.3-36.6	67.2	63.4-70.7	36.5	32.2-41.0	63.5	59.0-67.8	25.2	21.2-29.7	74.8	70.3-78.8
Total	23	21.1-25.1	77	74.9-78.9	21.5	19.6-23.6	78.5	76.3-80.4	20.4	16.7-24.4	79.6	75.6-83.1

pharmacological products. One should also bear in mind that the use of psychotropic drugs, such as antidepressants and anxiolytics, is often prescribed by the most diverse medical specialties for the treatment of osteoarticular problems, other chronic pain, insomnia, hypertension and weight loss[18], when contributes to the high consumption of these medications among women.

The increase utilization of psychotropic medications with the increase in age (greater use among seniors) independently of sex has been reported in other national and international studies[9,12,14,19–21]. The prevalence of psychotropic drug utilization was higher among individuals aged 60 years or older (16.1%) and higher in comparison to the findings of a population-based cross-sectional study conducted in the city of Campinas (10.8%)[14]. The present findings indicate that the greater use among seniors is associated with the female sex, poor self-rated health and a greater number of chronic diseases. One should also consider that fact that the reduction in the use of alcohol and other psychoactive substances with the advance in age may be associated with the increase in the consumption of psychotropic drugs[20].

In the present study, non-white adults used psychotropic drugs less than white adults. This difference was not found among the seniors. Population-based studies conducted in the city of Pelotas (southern Brazil) with the urban population aged 15 years or older[22] and the city of Campinas (southeastern Brazil) with a population aged 20 years or older[14] report similar results. The difference in the psychotropic drug utilization according to race/skin color has been attributed to social inequalities regarding access to health services and treatment[23,24]. Moreover, the social construction process of the stigma of mental illness may hinder the seeking of treatment on the part of non-white individuals, who are already exposed to situations of discrimination and racism throughout the lifecycle[25].

Differences were found among the regions of Brazil in the use of psychotropic drugs, with a lower prevalence in the northern region compared to the other regions of the country. In the southern region, the prevalence was approximately fourfold higher than that found in the northern region. This difference is evidence of a profound inequality in access to health services, diagnoses and treatments in the Brazilian population, as the prescription of psychotropic drugs in based on a preliminary diagnosis[26] and obtainment of these drugs is governed by specific regulations[27]. A study involving data from National Household Surveys in 1998 and 2008 confirms the different degrees of difficulty regarding access to health services depending on the region of residence[28]. Individuals who live in the northern and northeastern regions of the country have less access to healthcare services. Particularly in the north, the geography of the region imposes numerous challenges to the implementation of health services and actions as well as the placement of health professionals in remote areas, which depend on a complex river system for transportation[29].

Moreover, one should bear in mind that factors such as the social recognition of MBDs and the organization of a healthcare system with actions and services capable of diagnosing diseases and offering therapeutic options (such as an adequate medication provision and distribution system) can exert an impact on access to psychotropic drugs for the treatment of health problems.

The findings of the present investigation are in agreement with data described in previous studies reporting a negative self-perception of health as a predictor of the use of psychotropic drugs[13,14]. One of the explanations for this is the close relationship between chronic multi-morbidities, a negative self-perception of health and an increase in the consumption of medications, including psychotropics. One should also bear in mind that MBDs generate disabilities that may exert an influence on self-perceived health. The combination of these factors increases the risk of disability, adverse reactions and impairment in terms of labor and leisure activities, leading to reductions in quality of life and psychological wellbeing, which can lead to medicalization with more psychotropics[30].

The prevalence of psychotropic drug utilization was higher among smokers only in the adult population. The greater consumption of tobacco among younger individuals and the close relationship between tobacco and MBDs[13], particularly anxiety disorders and the abuse of other psychoactive substances[31], which are more prevalent comorbidities among adults, may explain the association between psychotropic drugs and smoking in these individuals. Moreover, the pleasure and wellbeing promoted by nicotine can serve as a mechanism to help cope with the difficulties of the illness process, especially in terms of the symptoms and social stigmas related to MBDs, and may also be an attempt to compensate for the side effects of psychotropic drugs used in treatment[32].

Binge drinking was inversely associated with the use of psychotropic drugs among the adults. This finding may be related to compliance regarding the contraindication of the potentially dangerous combination of alcohol and psychotropic medications[13].

Among the drug classes analyzed in the present study, antidepressants were the most used among the adults, whereas anxiolytics were the most prevalent class among the seniors. The use of anti-psychotic drugs and mood stabilizers was more frequent in the population less than 60 years of age. This confirms the greater prevalence of psychotic disorders and bipolar disorder among younger individuals as well as the lower survival rate among individuals affected by these MBDs[33].

The greater use of antidepressants among adults compared to seniors has also been reported in the literature[9,34]. Studies report the risk of suicide among young adults who take antidepressants, which has stimulated US and European regulatory agencies to issue warnings to prescribers and patients regarding the risks related to the use of these drugs[35]. This underscores the need to increase attention in terms of the rational use of these medications by Brazilian adults.

The results from studies conducted in the city of São Paulo[21] describe a higher prevalence of antidepressant use among seniors, which is in disagreement with the present findings. However, data from population surveys conducted in other studies describe an increase in the use of anxiolytics with the advance in age[9,34], which is in agreement with the present findings.

According to the criteria established by the Brazilian Consensus on Potentially Inadequate Medications for the Elderly[36], benzodiazepines should be avoided in this population, independently of their clinical conditions, due to the increased risk of cognitive alterations, falls, fractures and automobile accidents. The high prevalence of benzodiazepines is associated with the desire to alleviate social problems and control the stress of longevity[37], representing a new form of subjectivation, in which the psychopathological discourse takes on decidedly biological and pharmacological features to overcome the malaise of social dramas and old age[7].

Inequities were found regarding the source of the acquisition of psychotropic drugs. A minority of patients obtained their entire treatment free of charge, which is an important difference in comparison to findings described in other studies involving other classes of medications for chronic diseases[38,39]. Among other factors, the broadening of access to medications for NCDs requires an adequate financing policy with strategies for increasing the supply. In Brazil, treatment for NCDs is made available through the public healthcare system, with copayment at the People's Pharmacy of Brazil as a complementary strategy. This program initially ensured the distribution of medications through the implantation of a network of state-run pharmacies[40]. The expansion of the People's Pharmacy modality in partnership with retail pharmacies in 2011 broadened access to the program throughout the country, including exemption from payment for a set of medications through a strategy denominated "Health Has No Price"[40]. However, the selection of medications in this modality is narrow and does not include psychotropic drugs. It is reasonable to suppose that absence of strategies such as "Health Has No Price" for the acquisition of psychotropics can exert an impact on free access to these medications.

The prevalence of the acquisition of medications through the Brazilian public healthcare system is influenced by social and demographic variables. The regions of residence only exerted an influence on the type of source of acquisition for the seniors, with residents of the northeastern region those that least obtained their entire treatment exclusively through the public healthcare system. According to Matta et al.[40], this region of the country has one of the highest percentages of individuals who exclusively use the public healthcare system for their care needs (they have no private insurance plan) and well as the highest percentage of acquiring medications from private pharmacies, indicating deficiencies in the availability of medications through the public system. In the present study, differences in the acquisition of free treatment were found for seniors who did not have a private insurance plan.

Among the adults, economic class and the presence/absence of a private health insurance plan exerted an influence on acquiring the entire medicinal treatment through the public healthcare system. Poorer individuals and those who exclusively used the public system obtained their medications more from public pharmacies. However, this percentage did not reach half of the population. The acquisition of medications through the private sector or the co-payment system by patients with prescriptions issued by the public healthcare system places greater pressure on the family budget, which penalizes those with a lower income more. This situation is mainly related to the difficulty in finding all medications indicated for treatment at public pharmacies[40].

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Mental disorders are among the chronic diseases that cause greater disability. Medicinal treatment is the preferred therapeutic option for comorbidities, such as schizophrenia, bipolar disorder and severe depression, and the control of panic attacks[26]. The discontinuity of treatment or non-obtainment due to problems affording the medication can cause a greater burden of temporary or permanent disability, leading to the loss of productivity and stress in the family setting[41].

The public financing of medications in Brazil is the responsibility of the federal, state and municipal governments and the National List of Essential Medications guides the selection and the offer at healthcare services as well as the prescription and dispensing of medications financed by the Brazilian public healthcare system[42]. Antidepressants, mood stabilizers, anxiolytics and anti-psychotic drugs are among the medications that can be offered through the service network from primary care to the specialized levels of health care.

The greater frequency of the free acquisition of treatment found for those with less income and those who depend exclusively on the public healthcare system reflects that magnitude of the importance of broadening equity strategies in pharmaceutical policies in order to reduce inequalities in the free access to medications.

The present study has limitations that should be considered. The cross-sectional design does not enable the establishment of cause-and-effect relationships, such as the relationship between self-rated health and the use of psychotropic drugs. Moreover, the fact that the information was self-reported increases the risk of recall bias, especially regarding reports of the indication of medications at appointments with health professionals as well as the correct identification of the form of acquiring medications.

Final considerations

The present study offers unprecedented data on the national prevalence of psychotropic drug utilization and its distribution in the adult and senior population in Brazil as well as the patient profile and sources of the acquisition of these medications. Among the individuals who reported taking psychotropics, a large portion acquired these medications with their own resources. For those who acquired these medications through the Brazilian public health care system, higher proportions were found among poorer individuals and those who did not have a private health insurance plan, suggesting that equity strategies for overcoming inequalities in access to medications may have had some reach with regard to psychotropic drugs.

However, the low proportion of the acquisition of psychotropics through the public healthcare system underscores the need for further studies on the availability of these medications at health services as well as concordance between medications prescribed at public healthcare services and those offered on the National List of Essential Medications. The data from this study can contribute to the planning and management of pharmaceutical policies as well as the structuring of care and treatment in the psychosocial care network in the country in order to improve the quality of life of the users of these medications and ensure their right to health.

Collaborations

PS Rodrigues, PMSB Francisco and KS Costa participated in the conception, execution of analyzes, writing and approval of the final version of the manuscript. AT Fontanella and RB Borges collaborated in the review of data analysis and final approval of the manuscript.

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