





Medicines' private costs among elderly and the impairment of family income in a medium-sized municipality in the state of São Paulo

Gasto privado com medicamentos entre idosos e o comprometimento da renda familiar em município de médio porte no estado de São Paulo

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ABSTRACT: *Introduction:* The acquisition of medicines accounts for a significant proportion of private health expenditures. The objective of this study was to analyse the private spending with the purchase of medicines and the commitment of the family income, by the elderly. *Methods:* Population survey conducted in Praia Grande, São Paulo, Brazil. The monthly expenditure and the per capita family income commitment with the purchase of medicines were calculated from the information obtained in the interviews. The variables were described in absolute and relative frequencies and the hypothesis test was Pearson's χ^2 , Student's t and Anova, with a significance level of 5%. *Results:* The prevalence of drug use was 61.2%. The average monthly expenditure per capita was R\$ 34.59, with significantly higher income impairment for individuals with higher levels of education, without chronic diseases and health plan beneficiaries. *Conclusion:* The prevalence of drug use was low. The cost generated by the purchase of medicines is one of the ways in which inequality can manifest in society. The expansion of free drug provision would be necessary to expand access and avoid spending, especially those who have private health plans but cannot afford drug treatment.

Keywords: Health services for the aged. Drug costs. Primary health care.

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Conflict of interests: nothing to declare – **Financial support:** Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), process number 473460.

RESUMO: *Introdução:* A aquisição de medicamentos responde por proporção importante dos gastos privados em saúde. O objetivo deste trabalho foi analisar o gasto privado com a compra de medicamentos e o comprometimento da renda familiar por idosos. *Métodos:* Inquérito populacional realizado em Praia Grande, São Paulo, 2013. O gasto mensal e o comprometimento da renda familiar *per capita* com a compra de medicamentos foram calculados com base nas informações obtidas nas entrevistas. As variáveis foram descritas em frequências absolutas e relativas, e os testes de hipótese utilizados foram o χ^2 de Pearson, o *t* de Student e a análise de variância (Anova), com nível de significância de 5%. *Resultados:* A prevalência de utilização de medicamentos foi de 61,2%, e o gasto médio mensal *per capita*, de R\$ 34,59, sendo significativamente maior o comprometimento da renda para os indivíduos com maior escolaridade, sem doenças crônicas e beneficiários de planos de saúde. *Conclusão:* A prevalência de utilização de medicamentos foi baixa. O custo gerado pela aquisição de medicamentos é uma das formas pelas quais pode se manifestar a desigualdade na sociedade. A ampliação da provisão gratuita de medicamentos seria necessária para expandir o acesso e evitar gastos, sobretudo àqueles que possuem planos de saúde privados, mas que não conseguem arcar com as despesas de tratamento medicamentoso.

Palavras-chave: Serviços de saúde para idosos. Custos de medicamentos. Atenção primária à saúde.

INTRODUCTION

Population aging and an increase in the prevalence of chronic non-communicable diseases are challenges faced by health systems, including the Brazilian one. This change in the demographic and epidemiological profile, together with the growing incorporation of new technologies increases health costs. Thus, public policies need to be prepared to meet this new reality and ensure access to health care for the elderly, with the least possible economic impact¹⁻³.

According to the 2008–2009 Family Budget Survey (POF), medication use accounts for an significant proportion of health spending, especially for the poorest population. There are still access issues to these medicines in the public sector, often triggering the need to purchase medicines in private pharmacies, generating out-of-pocket expenses that interfere with family income⁴.

A large portion of the elderly Brazilian population do not have the financial resources to cover these costs. In these cases, the public service is the only form of access to drug treatment, which is guaranteed in the policies of the Unified Health System (SUS). Ensuring rational access to medicines and reducing private spending are priorities of the National Medicines Policy⁵ and specific programs such as Pharmaceutical Assistance for Arterial Hypertension and Diabetes Mellitus⁶.

The population's access to medicines through SUS has increased in Brazil, particularly in the state of São Paulo⁷, however universal coverage and equity in access still face challenges⁸. The present study aimed to analyze private spending of elderly regarding the direct purchase of medicines in a city in the state of São Paulo.

METHODOLOGY

A Population survey performed with individuals aged 60 years or older, non-institutionalized, of both sexes, living in the urban census sectors of Praia Grande, São Paulo, a municipality with approximately 260,000 inhabitants, which was classified, in 2008, by Viana et al.⁹ as having low complexity in the health care network and less favorable social indicators. On the other hand, it was the first in the Baixada Santista metropolitan region to implement the Family Health Strategy (FHS), reaching 70% coverage in 2009, above the average for the state of São Paulo¹⁰.

In Praia Grande, as in most Brazilian municipalities, the purchase of medicines can take place in public health units or through direct purchase in private pharmacies. The Popular Pharmacy Program, created by the federal government to expand access to medicines, had little coverage in the municipality during the interview period¹.

This work consists of a thematic section of a research project entitled Public Private Mix in the Use of Primary Care Services, which began from the hypothesis of the existence of an important link between the public and the private sector regarding the use of health services in Brazil.

A probabilistic sampling by clusters was performed in two stages, considering the census sectors as the primary unit. In the first stage, 40 census tracts were drawn with probability proportional to the size of residents, based on the 2010 population census. In each sector, by listing all existing households, 40 households were selected by systematic drawing, with a total of 1,600. For a sampling error of 10 percentage points, a design effect of 2 and a 95% confidence interval level, the minimum sample size was calculated at 200 elderly.

The face-to-face home interviews took place from October 2012 to April 2013, using structured questionnaires, applied by previously trained interviewers who always worked in pairs. All elderly people living at home were interviewed regarding their demographic characteristics, health conditions and use of health services. The Brazilian Economic Classification Criterion (CCEB)¹² was used to assess the socioeconomic conditions of the families.

The questions regarding the use of medications were applied to everyone who used medications in the 15 day period prior to the interview. The elderly were questioned about: responsible person for the indication or prescription, names of medicines, dosage, continuous use or not, place of purchase and amount paid in Reais, when purchased at a private pharmacy. The interview participants were asked for the package, prescription or package insert for the pharmaceutical products used to minimize the rates of non-responses due to general forgetfulness.

The individual monthly amount spent was calculated by adding all the amounts spent by the elderly on the purchase of medicines in private pharmacies (out-of-pocket) for one month of treatment and informed during the interview. When the amount spent was not informed by the elderly, this value was estimated by means of the simple average between the maximum consumer prices allowed by the legislation for each pharmaceutical laboratory,

including the Tax on Circulation of Goods and Services (ICMS) with the rate of 18 %, applied in the state of São Paulo¹³. The simple average avoided possible distortions caused by discrepant prices, practiced by some pharmaceutical laboratories.

For the purpose of calculating the amount spent, when the dosage of any medication was not informed, the standard dosage was considered in its main indication, using the National Therapeutic Form as a reference¹⁴.

The average amount spent in private pharmacies was calculated by calculating the mean between the monthly average per capita values. Income impairment with the purchase of medicines was obtained by dividing the average amount spent by the family income per capita and the quotient multiplied by 100, in order to express the total as a percentage. The ratio between the variables was calculated based on the quotient between the average of values spent.

All categorical variables were described in absolute and relative frequencies and numerical variables using means and standard deviations. The following hypothesis tests used were: Pearson's χ^2 for categorical variables and Student's t test, for two independent groups; and analysis of variance (Anova), for more than two independent groups in order to compare the means. The Shapiro-Wilk normality test was used for the distribution of numerical variables. The level of significance adopted in all analyzes was 5%. The analyzes were performed by the survey module of the Stata 10.0 statistical package for complex samples.

The drugs used were classified according to the anatomical group as level 1 according to the Anatomical Therapeutic Chemical Classification System (ATC)¹⁵, as:

- A: gastrointestinal tract and metabolism;
- B: blood and hematopoietic organs;
- C: cardiovascular system;
- N: nervous system.

The other groups were combined and given other names.

The study was approved by the Research Ethics Committee of the Catholic University of Santos (opinion 01341012400005536, of June 18, 2012).

RESULTS

289 elderly people participated in the study, a sample greater than the calculated minimum ($n = 200$), with a mean age of 69.4 and a median of 68 years. The prevalence of medication use in the 15 days prior to the interview was 61.2% ($n = 177$). The number of medications used varied between one and 11, with an average of 2.9 medications per person. According to the interviewees, 69.5% of the drugs were prescribed by SUS health professionals, and 75.7% of the elderly obtained at least one of the medicines provided by SUS.

Table 1 shows that the majority were women, with socioeconomic classification C, low education, with SUS being the first alternative in health care, without private health insurance,

Table 1. Sociodemographic profile and health conditions of the elderly and interviewed, Praia Grande, 2013.

Variables	Total			Used medications		
	n	%	95%CI	n	%	95%CI
Sex						
Female	172	59.5	53.4 - 65.3	111	62.7	55.9 - 69.0
Male	117	40.5	34.7 - 46.6	66	37.3	31.0 - 44.1
Socioeconomic class						
A and B	55	19.0	13.6 - 26.0	35	19.8	13.8 - 27.5
C	199	68.9	61.0 - 75.7	121	68.4	60.4 - 75.4
D and E	35	12.1	8.0 - 18.0	21	11.9	6.9 - 19.5
Education						
≤ 8 years	232	80.3	71.5 - 86.9	145	81.9	71.6 - 89.1
> 8 years	57	19.7	13.1 - 28.5	32	18.1	10.9 - 28.4
First reference for healthcare						
SUS	208	72.0	64.1 - 78.7	132	74.6	63.4 - 83.2
Private	77	26.6	20.5 - 33.8	42	23.7	15.9 - 33.9
None	4	1.4	0.03 - 5.2	3	1.7	0.4 - 6.9
Attended a health service in the last year						
Yes	199	68.9	53.4 - 81.0	136	76.8	63.2 - 86.5
No	90	31.1	19.0 - 46.6	41	23.2	13.5 - 36.8
Health plan						
No	211	73.0	61.9 - 81.8	126	71.2	58.7 - 81.1
Yes	78	27.0	18.2 - 38.1	51	28.8	18.9 - 41.3
Chronic health problem						
Yes	174	60.2	52.8 - 67.2	148	83.6	77.3 - 88.4
No	115	39.8	32.8 - 47.2	29	16.4	11.6 - 22.7
Arterial hypertension						
No	152	52.6	45.2 - 59.8	59	33.3	25.4 - 42.3
Yes	137	47.4	40.1 - 54.8	118	66.7	57.6 - 74.6
Diabetes mellitus						
No	222	76.8	71.8 - 81.2	116	65.5	59.1 - 71.4
Yes	67	23.2	18.8 - 28.2	61	34.5	28.6 - 40.9
Self-perceived health						
Good	140	48.6	40.1 - 57.2	80	45.5	36.8 - 54.4
Fair/poor	102	35.4	27.6 - 44.1	81	46	37.0 - 55.3
Excellent/very good	46	16.0	11.1 - 22.4	15	8.5	4.6 - 15.3

CI: confidence interval; SUS: Unified Health System.

with chronic pathology and who attended a health service in the last year. Regarding the perception of health, it was evenly distributed between good and fair/bad.

The average per capita expenditure on medicines was R\$34.59. Spending and income impairment were higher for elderly with more than eight years of study, without chronic diseases, beneficiaries of health insurance plans, affiliated with the private sector (Table 2).

Table 2. Average expenditure on the purchase of medicines and impaired income, according to sociodemographic characteristics and health conditions, Praia Grande, 2013.

Variable	Average amount spent (R\$)	Reason	P*	Impaired Income** (%)	95%CI	p***
Sex						
Male	43.05 (± 74.42)	10	0.03	4.6	1.6 - 4.6	0.08
Female	25.36 (± 55.84)	0.6		3.1	1.8 - 7.3	
Age range						
60 - 69	30.79 (± 59.91)	1.0	0.86	3.8	2.1 - 5.5	0.95
70 - 79	33.20 (± 73.60)	1.1		3.4	0.4 - 6.5	
80 or more	33.85 (± 57.02)	1.1		3.5	0.5 - 6.4	
Socioeconomic class						
A and B	33.02 (± 60.75)	1.0	0.98	2.3	0.9 - 3.5	0.95
C	32.61 (± 67.88)	1.0		4.1	2.2 - 5.9	
D and E	25.28 (± 38.78)	0.8		3.5	1.0 - 6.0	
Education (years of study)						
≤ 8 years	26.38 (± 53.56)	1.0	0.02	3	1.8 - 4.1	≤ 0.01
> 8 years	54.91 (± 92.72)	2.1		6.5	1.1 - 11.8	
Chronic disease						
Yes	29.05 (± 63.50)	1.0	≤ 0.01	3.3	1.7 - 4.9	≤ 0.01
No	45.09 (± 63.84)	1.5	1	5.2	2.8 - 7.7	
Reference						
SUS	18.01 (± 42.05)	1,0		1.9	0.9 - 2.8	≤ 0.01
Private	79.86 (± 95.86)	4.4	≤ 0.01	9.8	4.9 - 14.6	
None	10.15 (± 17.59)	0,6	1	0.79	0.8 - 2.3	
Supplementary health						
Yes	63.60 (± 88.74)	1,0	≤ 0.01	8.4	4.4 - 12.4	≤ 0.01
No	19.01 (± 44.50)	0.3	1	1.7	0.9 - 2.6	

*Student *t Test* when two categories, and analysis of variance (ANOVA) with more than two categories;

**p porcentagem average household income *per capita* committed to the direct purchase of medicines (*out-of-pocket*);

***t this Pearson χ^2 ; CI: confidence interval; SUS: Unified Health System.

The drugs were grouped in anatomical systems, at the first level of the ATC classification, and the percentages of use, acquisition at SUS and expenditure on direct purchase at private pharmacies at each level studied were presented (Table 3). Medicines that treat cardiovascular system diseases exhibited the highest frequency of use, followed by those for the gastrointestinal tract and metabolism, blood and hematopoietic organs and nervous system. The purchase of medicines for these four anatomical systems occurred predominantly through SUS. All medications that did not fit into any of these systems were classified as other.

The drugs classified as cardiovascular system were the most used (46.0%), in particular the pharmacological angiotensin-converting enzyme inhibitor subgroups (35.7%) and low-ceiling thiazide diuretics (21.9%). Private spending per capita for this class was R\$34.16.

Medicines for the gastrointestinal tract and metabolism were also widely used by the elderly, 80% of whom were oral hypoglycemic agents. In this group, the average expenditure per capita was R\$30.19. Medicines for blood and hematopoietic organs and the nervous system were also widely used, with average per capita spending of R\$12.31 and R\$26.23, respectively.

DISCUSSION

The sociodemographic profile observed among the elderly interviewed is consistent with official data of the municipality¹⁶, with a predominance of low-educated and low-income population with SUS as the first reference for health care.

The number of elderly people found was higher than expected in the sample calculation. This fact can be explained in two non-exclusive ways: accelerated migration of retirees to Baixada Santista and greater willingness of the elderly to participate in the interviews.

Table 3. Medicines used by respondents, percentage of acquisition in the Unified Health System (SUS) and private spending, according to the Anatomical Therapeutic Chemical Classification System (ATC), level 1, Praia Grande, SP, 2013.

Anatomical Group	Medicines n (%)	SUS n (%)	Average expenditure** (R\$)
C - Cardiovascular system	227 (46.0)	177 (78.0)	34.16
A - Alimentary tract and metabolism	92 (18.7)	70 (76.1)	30.19
B - Blood and hematopoietic organs	33 (6.7)	27 (81.8)	12.31
N - Nervous system	28 (5.7)	18 (64.3)	26.23
Others	113 (22.9)	55 (48.7)	39.93
Total	493 (100)	347 (70.4)	34.59

*Percentage of drugs purchased from SUS, without direct disbursement; ** average monthly expenditure *per capita* on the purchase of drugs with direct disbursement.

The percentage of elderly people who reported having attended a health service in the last 12 months was lower than the findings of the National Household Sample Survey (PNAD 1998 and 2003)¹⁷ and the National Health Survey 2013¹⁸, which is an important indicator used to assess health services access of a specific population. Regarding Praia Grande, with wide FHS coverage, this result is contrary to expectations¹⁹.

Another indicator commonly used to assess health access is usually the use of medicines, which, in our study, was lower than the results obtained by other studies²⁰⁻²⁵. Different variables can interfere with medication adherence, including the economic cost of treatment^{26,27}. As the income impairment was the main focus, the discussion happened in this context. In addition, it was not asked during the interviews whether the elderly had stopped using any prescription medication and what were the reasons that led them to do so, this being a limitation of the work and to delve into the issue of underutilization.

With a prevalence of chronic diseases in the municipality similar to the national one for the same age group²⁸ and self-perceived regular or poor health of 35.4%, the economic cost may have contributed to the low use of medicines, as observed in other studies²⁹⁻³². In addition, 41.2% of elderly people living in Praia Grande have an income of up to one minimum wage and 10% live in poverty³³.

The average per capita expenditure on medicines was R\$34.59, referring to 5.6% of the minimum wage in force at the time (R\$622), a percentage lower than that verified in a population-based study in Brazil³⁰. The low prevalence of medication use associated with the reduced average *per capita* expenditure on medicines in the municipality suggests the underuse of medicines.

The average per capita expenditure on the purchase of medication is higher among elderly men and those with higher education corroborating with the information from the PNAD³⁰ and the National Health Survey³⁴. Those with less education, on the other hand, received their medication from SUS. Ensuring access to medicines in the public sector is essential, especially for the low-income population, as in some cases these expenses can negatively affect the family budget. A population-based study carried out in a period similar to this study showed that catastrophic spending on the purchase of medicines was present in 3.2% of Brazilian households³⁵. The design of a universal health care system depends on organizational and financial arrangements in order to minimize out-of-pocket expenses.

The result found of greater income impairment with the purchase of medicines for the beneficiaries of health plans and who have the private sector as a reference is similar to that verified in a study carried out in the municipality of Sorocaba, in the state of São Paulo³⁶. Due to the socioeconomic profile found in Praia Grande (predominantly class C), it would be important to establish measures to guarantee access to medicines, including the elderly in the private sector.

Respondents with chronic diseases had less income impairment with the purchase of medicines. Public policies guarantee access to drug therapy for the treatment of chronic

diseases, especially hypertension and diabetes mellitus and reduce private spending³⁷⁻³⁹. A cross-sectional study carried out in two regions of the country found that the FHS had a greater impact on access to medicines for these two pathologies³⁹, a result similar to that found here.

The profile of medication use was similar to that described in the literature for the same age group²⁰⁻²², with greater medication consumption for treatment and control of the main chronic pathologies that affect the elderly, such as arterial hypertension and diabetes.

CONCLUSION

The prevalence of medication use was low. The cost generated by the purchase of medicines is one of the ways in which societal equality manifests. The expansion of the free supply of medicines would be necessary to expand access and avoid spending, especially for those who have private health plans, but who are unable to afford drug treatment. Further studies on the possible underutilization of drugs would be important to make a more accurate diagnosis of municipal pharmaceutical assistance.

ACKNOWLEDGEMENTS

We would like to thank Paulo Angelo Lorandi for his contribution in revising the manuscript.

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Received on: 08/28/2018

Revised on: 04/18/2019

Accepted on: 05/30/2019

Author's contributions: Restrepo SF, Vieira MRS, Bousquat A: conception and design of the study, analysis and interpretation of data, writing and relevant critical review of the content of the manuscript. Barros CRS: analysis and interpretation of results, writing and relevant critical review of the content of the manuscript.

