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con medicamentos en el Sur de Brasil  
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# Socioeconomic inequalities in expenditures and income committed to the purchase of medicines in Southern Brazil

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## ABSTRACT

**OBJECTIVE:** To describe socioeconomic inequalities regarding the use, expenditures and the income committed to the purchase of medicines.

**METHODS:** A cross-sectional population-based study was carried out with 1,720 adults living in the urban area of Florianópolis, Southern Brazil, in 2009. Cluster sampling was adopted and census tracts were the primary sampling units. Use of medicines and the expenditures incurred in their purchase in the past 30 days were investigated through interviews. Use, expenditures and the income committed concerning medicines were analyzed according to *per capita* family income, self-reported skin color, age and sex, adjusting for the complex sample.

**RESULTS:** The prevalence of medicine use was 76.5% (95%CI: 73.8; 79.3), higher among women and in older individuals. The mean expenditure on medicine was R\$ 46.70, with higher values among women, whites, older individuals and among richer people. While 3.1% of the richest committed more than 15% of their income to purchasing medicine, that figure reached 9.6% in the poorest group. The proportion of people that had to buy medicines after an unsuccessful attempt to obtain them in the public health system was higher among the poor (11.0%), women (10.2%) and the elderly (11.1%). A large part of the adults bought medicines contained in the National List of Essential Medicines (19.9%) or in the Municipal List of Essential Medicines (28.6%), with significant differences according to gender, age and income.

**CONCLUSIONS:** There is socioeconomic, age and gender inequality in the income committed to the purchase of medicines, with worse conditions for the poor, older individuals and women.

**DESCRIPTORS:** Income. Health Expenditures. Pharmaceutical Preparations. Health Inequalities. Cross-Sectional Studies.

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## INTRODUCTION

The Brazilian health system has been legally universal, equitable and integral since the end of the 1980s. The *Sistema Único de Saúde* (SUS – National Health System), which was created in Brazil in 1990, has incorporated actions to consolidate its principles and guidelines, such as the guarantee of integral therapeutic assistance, including pharmaceutical assistance.

Brazil is one of the few countries in which free access to essential medicines is a right of the citizens, materialized by means of policies and strategies, like *Relação*

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*Nacional de Medicamentos Essenciais* (RENAME – National List of Essential Medicines) and *Relação Municipal de Medicamentos Essenciais* (REMUME – Municipal List of Essential Medicines).<sup>4</sup> Generic drugs were introduced in Brazil in 1999 to reduce the price of medicines and facilitate the access of the entire population to these inputs. In 2004, the federal government launched *Programa Farmácia Popular* (Popular Drugstore Program), which aims to reduce the impact of medicines' prices on the family budget based on the co-payment system, in which the public power pays approximately 90% of the medicine's value and the citizen pays directly the rest.<sup>a</sup>

Despite the advancements in the sector's public policies, they do not reach a large part of the population, mainly concerning the rational use of medicines, both in the private market and in the public sector.<sup>7</sup> The global investment in health (public and private expenditures) was equivalent to 7.6% of the Brazilian gross domestic product in 2003,<sup>19</sup> showing a lower participation of the public sector in this proportion (45.3%), a value that is close to the one observed in countries with non-universal health systems.<sup>19</sup> The low public investment in health causes higher private expenditures in this sector, including drug expenditures.

Drug expenditure represents the largest part of the private expenditures on health among the poor. The medicines' weight in the total health expenditures is inversely proportional to income, according to a literature review in 54 low-income countries.<sup>16</sup> Similarly, medicines have had the largest share of responsibility for health expenditures in Brazil, reaching approximately 47% of the total expenditures.<sup>3</sup> Income committed to drug expenditure, especially when it is not planned, can lead families to even greater health risks, like the reduction in the purchase of food products, and make them become more susceptible to health problems, or, by the economic order, make families become poorer or even indigent.<sup>b</sup>

Brazilian population-based studies have shown that the mean expenditure on medicines in absolute figures is higher among older men<sup>12</sup> and increases as income increases.<sup>3</sup> The SUS assumes the largest part of the global drug expenditures, mainly among the poor, while the rich present more private expenditures.<sup>5</sup> In spite of this, data from *Pesquisa Nacional por Amostra de Domicílios 1998* (National Household Sample Survey) presented more income committed to the purchase of medicines among the poor, transposing differences between groups and configuring it as inequity.<sup>15</sup>

The aim of the present study was to describe socio-economic inequalities concerning the use, expenditures and income committed to the purchase of medicines.

## METHODS

Cross-sectional population-based study with 2,016 adults aged 20-59 years from the urban area of Florianópolis (Southern Brazil), carried out between August 2009 and January 2010. The study was called EpiFloripa. Florianópolis is the capital city of the State of Santa Catarina. It is a medium-sized municipality, with population estimated at 408,163 inhabitants in 2009.<sup>c</sup> In the most recent national census (year 2000), Florianópolis presented *per capita* income of R\$ 701.42 (equivalent to US\$ 354.25), Gini index of 0.57 and municipal Human Development Index (MHDI) of 0.875, the highest one among the Brazilian capital cities.<sup>d</sup>

The study's target population corresponded to 249,530 people, equivalent to 61.1% of the total population of the municipality.<sup>c</sup>

The parameters to the final sample were: prevalence of drug expenditures of 50%, sample error of four percentage points, and a 95% confidence interval. A design effect of 2 was used, 10% were added for possible losses or refusals and 20% to control for confounding factors. This sample was enough to estimate the outcome of any magnitude considering the same sample error.

Two-stage sampling was performed. The first stage was formed by the census tracts defined by *Instituto Brasileiro de Geografia e Estatística* (IBGE – Brazilian Institute of Geography and Statistics) for statistical purposes. The units of the second stage were the households included in the selected census tracts. The study's unit of analysis was the adult individual. All the adult inhabitants of the selected households were eligible for the interview, except for institutionalized individuals or those unable to answer the study's questionnaire (bedridden or with some physical or mental disability).

The mean income of the heads of households was observed in the 420 urban census tracts according to the 2000 Census and the values ranged from R\$ 192.80 to R\$ 13,209.50. The sectors were organized in an increasing income order and stratified in deciles. Sixty census tracts were drawn, with systematic selection of six sectors in each income decile. With a minimum of 61 households and a maximum of 810, the coefficient of variation of occupied households across sectors was 55%. In order to reduce it, some census tracts were merged and others were divided; thus, 63 census tracts

<sup>a</sup> Agência Nacional de Vigilância Sanitária - ANVISA. Vigilância sanitária: guia didático. Brasília (DF): Ministério da Saúde; 2002.

<sup>b</sup> Instituto Brasileiro de Geografia e Estatística. Pesquisa de Orçamentos Familiares 2002-2003. Rio de Janeiro: IBGE; 2004.

<sup>c</sup> Instituto Brasileiro de Geografia e Estatística - IBGE. População brasileira [cited 2009 Feb 10]. Available from: <http://www.ibge.gov.br>

<sup>d</sup> Programa das Nações Unidas para o Desenvolvimento - PNUD. Atlas do desenvolvimento humano no Brasil. Brasília (DF); 2003.

were obtained with a coefficient of variation of 32%. Eighteen households were systematically drawn in each of these geographical units.

Data collection was performed by 35 female interviewers. They had completed High School and were fully available to conduct the fieldwork. The Personal Digital Assistant (PDA) was used to register and store data. Losses were considered adult inhabitants of drawn households that were not found after at least four visits, one on a weekend and another in the night period.

The quality control of the answers was performed on a weekly basis through revision and checking of 15% of the interviews, selected by means of a draw in each sector. Key information contained in the questionnaire was verified by telephone by the field supervisors. Analyzing the agreements, the kappa value varied from 0.6 to 1.0.

The outcomes were the use of medicines, expenditures and the income committed to the purchase of them during 30 days before the interview. The socioeconomic classification was performed according to the interviewees' *per capita* family income (stratified in quintiles). Information on self-reported skin color was also utilized (white, mixed-color, black, indigenous

and yellow; the last two were excluded from this analysis due to the small number of people), as well as gender and age in complete years (20 to 29; 30 to 39; 40 to 49 and 50 to 59).

The question that guided the study was: "*In the last 30 days did you take any medicine?*". The names, dosages and pharmaceutical presentation of the medicines were asked, as well as the form of acquisition (SUS; commercial drugstore; the person already had it at home or was given by someone). The number of medicines used, the purchase of medicines because it was not possible to obtain them from the SUS, and their presence on RENAME and REMUME were analyzed.

To calculate the drug expenditures, information referring to the last 30 days and self-reported values described in *reais* (Brazilian currency) were used. The value of the income committed to the purchase of medicines was obtained by the division of the reported expenditure by the *per capita* family income. Then, the quotient was multiplied by 100 and the value was expressed in the form of percentage. For this calculation, 24 people who had no income were excluded. The variable income commitment was categorized according to cutoff points equal to  $\geq 5\%$ ,  $\geq 10\%$  and  $\geq 15\%$ .

**Table 1.** Sample according to sociodemographic variables, prevalence of medicine use and crude and adjusted prevalence ratios. Florianópolis, Southern Brazil, 2009.

Variable <sup>a</sup>	Sample		Prevalence of medicine use % (95%CI)	Crude Prevalence Ratio (95%CI)	Adjusted Prevalence Ratio <sup>b</sup> (95%CI)
	n	%			
Gender					
Male	761	44.5	65.9 (61.9;69.9)	1	1
Female	959	55.5	85.0 (82.2;87.9)	1.29 (1.21;1.37)	1.29 (1.21;1.37)
Age (years)					
20 to 29	540	32.7	73.9 (69.9;77.8)	1	1
30 to 39	392	22.9	72.8 (68.2;77.4)	0.98 (0.92;1.05)	0.98 (0.91;1.04)
40 to 49	438	25.0	79.5 (75.4;83.5)	1.08 (1.01;1.15)	1.05 (0.98;1.12)
50 to 59	350	19.4	81.6 (77.7;85.5)	1.10 (1.03;1.18)	1.07 (1.00;1.15)
Race/Skin color <sup>a</sup>					
White	1.444	85.8	76.5 (73.4;79.6)	1	1
Mixed	147	9.1	77.3 (69.6;85.1)	1.01 (0.91;1.13)	1.04 (0.93;1.17)
Black	87	5.1	74.6 (63.3;85.8)	0.97 (0.85;1.11)	1.00 (0.89;1.12)
Per capita family income in quintiles (R\$) <sup>c</sup>					
Quintile 1	337	20.0	76.0 (71.0;81.0)	0.98 (0.87;1.08)	0.96 (0.87;1.07)
Quintile 2	353	19.8	74.2 (70.6;77.9)	0.96 (0.88;1.04)	0.96 (0.88;1.04)
Quintile 3	321	18.7	75.8 (70.8;80.8)	0.98 (0.89;1.07)	0.98 (0.89;1.07)
Quintile 4	351	21.9	79.4 (74.4;84.3)	1.02 (0.95;1.10)	1.02 (0.94;1.10)
Quintile 5	323	19.6	77.5 (71.8;83.2)	1	1
TOTAL	1.720		76.5 (73.8;79.3)		

<sup>a</sup> The variable with the lowest n was skin color (n=1678)

<sup>b</sup> Adjusted by socioeconomic and demographic variables

<sup>c</sup> US\$1 is equivalent to R\$1.75

The statistical analyses were performed using the Stata *svy* commands to correct the design effect of complex samples and incorporate the sample weights. It is available in the program Stata version 9.0. The analyses of use, expenditures and income commitment were carried out according to income quintile, skin color, age and gender. Crude and adjusted prevalence ratios were calculated by means of Poisson regression, considering the demographic and socioeconomic variables for the outcomes: proportion of use of medicines, acquisition of at least one medicine through the SUS, purchase of medicines not obtained through the SUS, expenditures on medicines from RENAME and expenditures on medicines from REMUME. The socioeconomic and demographic variables were adjusted among themselves in the adjusted model. To test the difference between means, the Mann Whitney and Kruskal-Wallis tests were employed.

The calculation of the sample was performed in EpiInfo 6.04.

The study was approved by the Research Ethics Committee of Universidade Federal de Santa Catarina (Process no. 351/2008).

## RESULTS

The response rate was 85.3% ( $n = 1,720$ ). The mean age of the interviewees was 38 years (standard-deviation – SD = 11.6) and 55.5% were women. The prevalence of medicines use during 30 days before the interview was 76.5%, 29% higher among women (PR: 1.29; 95% CI: 1.21;1.39) and 7% higher in older adults when compared to younger adults (PR: 1.07; 95%CI: 1.00;1.15) in the adjusted analysis. No statistically significant differences were observed in the use of medicines among the income and skin color strata (Table 1). Approximately one third of the adults who used medicines in the past 30 days used only one, approximately half used two,  $\frac{1}{4}$  reported the use of three and a little less than 10% used four or more medicines.

The mean expenditure was R\$ 46.70 (median = R\$ 10.00), varying from zero to R\$ 920.00. The spent values were 60% higher among the women and increased according to the individuals' income, approximately five times higher among the richer ones (Q5) when compared to the poorer ones (Q1). Higher expenditures were observed among older people (approximately three times higher in the older individuals when compared to the younger ones). White individuals (70% more) and mixed-color individuals (50% more)

**Table 2.** Mean expenditure and proportion of income spent with medicines in the 30 days before the interview, according to income quintiles, age, gender and skin color. Florianópolis, Southern Brazil, 2009.

Variable	Mean expenditure (R\$)	Ratio between groups	p	Mean proportion of the income spent with medicines (%)	Ratio between groups	p
Gender			<0.001*			<0.001*
Male	35.3	1.0		3.0	1.0	
Female	55.6	1.6		5.8	1.9	
Age (years)			<0.001**			<0.001**
20 to 29	26.8	1.0		3.5	1.0	
30 to 39	48.7	1.8		5.1	1.4	
40 to 49	48.9	1.8		4.3	1.2	
50 to 59	72.5	2.7		5.8	1.6	
Skin color			0.002**			0.175**
White	48.4	1.7		4.2	1.0	
Mixed-color	41.4	1.5		6.9	1.6	
Black	28.2	1.0		6.2	1.5	
Per capita family income in quintiles			<0.001 <sup>b</sup>			0.002 <sup>b</sup>
Quintile 1	18.9	1.0		7.3	2.7	
Quintile 2	24.2	1.3		4.4	1.6	
Quintile 3	37.8	2.0		4.3	1.6	
Quintile 4	63.3	3.3		4.2	1.6	
Quintile 5	90.1	4.8		2.7	1.0	
Total	46.7			4.6		

\*Mann Whitney Test; \*\*Kruskal-Wallis Test

**Table 3.** Proportion of people who obtained medicines through the *Sistema Único de Saúde* (National Health System), who purchased at least one medicine not obtained through the SUS, who presented expenditures on medicines from *Relação Nacional de Medicamentos Essenciais* (National List of Essential Medicines) and from *Relação Municipal de Medicamentos Essenciais* (Municipal List of Essential Medicines), according to socioeconomic and demographic variables. Florianópolis, Southern Brazil, 2009.

Variable	Acquisition of at least one medicine through the SUS (%)	Purchase of medicines not obtained through the SUS (%)	Expenditures on medicines from RENAME (%)	Expenditures on medicines from REMUME (%)
Gender				
Male	14.2	5.3	15.4	22.8
Female	24.3	10.4	23.6	33.3
Age (years)				
20 to 29	16.4	5.3	16.2	26.3
30 to 39	19.1	8.5	19.2	25.4
40 to 49	20.0	9.0	20.5	29.1
50 to 59	26.2	11.3	26.3	35.7
Race/Skin color				
White	18.2	7.9	20.8	29.4
Mixed	24.6	7.1	17.0	24.9
Black	35.3	9.1	12.9	23.2
Per capita family income in quintiles (in R\$) <sup>a</sup>				
Quintile 1	37.1	10.6	15.4	24.4
Quintile 2	27.1	9.4	19.6	25.3
Quintile 3	16.1	9.2	18.7	28.9
Quintile 4	14.0	7.3	22.3	31.1
Quintile 5	5.5	4.6	24.0	33.8
Total	19.8	8.1	19.9	28.6

<sup>a</sup> US\$1 is equivalent to R\$1.75

SUS: Sistema Único de Saúde (National Health System)

RENAME: *Relação Nacional de Medicamentos Essenciais* (National List of Essential Medicines)

REMUME: *Relação Municipal de Medicamentos Essenciais* (Municipal List of Essential Medicines)

presented higher expenditures on medicines than black individuals (Table 2).

The income committed to the purchase of medicines was almost three times higher among the poorer individuals (Q1) when compared to the richer ones (Q5). While in the first income quintile people committed, on average, 7.3% of their income to the purchase of medicines, in the richest quintile the proportion was of 2.7% (Table 2). More income was committed among the women (90% more) and among the older individuals (60% more among individuals aged 50 – 59 years compared to those aged 20 – 29 years) (Table 2).

Figure 1 presents the prevalence of people who spent any value with the purchase of medicines and the proportion of people who committed values equal to or higher than 5%, 10% and 15% of their income to the purchase of medicines, according to the quintiles of *per capita* family income. Approximately 70% of the richer ones (Q5) committed some of their income to expenditures on medicines, a proportion that is significantly

higher than in the other groups (Figure 1A). However, the proportion of people who committed 5% or more of their income to expenditures on medicines was much higher among the poorer individuals (Q1) (Figure 1B). This difference was more significant when higher income commitments were considered. While 6.5% of the richer individuals (Q5) committed 10.0% or more of their income to the purchase of medicines, among the poorer ones, 14.6% presented this situation (Figure 1C). When the focus was on commitment equal to or higher than 15%, 9.6% of the poorer individuals (Q1) were in this condition, compared to 3.1% of the richer individuals (Q5) (Figure 1D).

Table 3 presents differences related to the purchase of medicines in the SUS according to gender, age, skin color and *per capita* family income. Approximately one out of every five people obtained at least one medicine in the SUS, a significantly higher value among the poorer individuals (PR: 6.20 95%CI 3.50;10.97), women (PR: 1.56 95%CI 1.18;2.06), older individuals (PR: 1.76 95%CI 1.29;2.42) and the blacks (PR: 1.44

**Table 4.** Crude and adjusted prevalence ratios of people who obtained medicines through the *Sistema Único de Saúde* (National Health System), who purchased at least one medicine not obtained through the SUS, who presented expenditures on medicines from *Relação Nacional de Medicamentos Essenciais* (National List of Essential Medicines) and from *Relação Municipal de Medicamentos Essenciais* (Municipal List of Essential Medicines), according to socioeconomic and demographic variables. Florianópolis, Southern Brazil, 2009.

Variables	Acquisition of at least one medicine through the SUS	Purchase of medicines not obtained through the SUS	Expenditures on medicines from RENAME	Expenditures on medicines from REMUME
Gender				
Crude PR <sup>a</sup> (95%CI)	1.71 (1.30;2.24)	1.95 (1.34;2.83)	1.54 (1.21;1.95)	1.46 (1.25;1.72)
Adjusted PR <sup>a</sup> (95%CI)	1.56 (1.18;2.06)	1.92 (1.33;2.77)	1.57 (1.22;2.03)	1.46 (1.25;1.71)
Age (years)				
Crude PR <sup>b</sup> (95%CI)	1.59 (1.18;2.15)	2.15 (1.26;3.66)	1.62 (1.20;2.18)	1.36 (1.11;1.66)
Adjusted PR <sup>b</sup> (95%CI)	1.76 (1.29;2.42)	2.52 (1.46;4.33)	1.55 (1.16;2.06)	1.25 (1.02;1.53)
Race/Skin color				
Crude PR <sup>c</sup> (95%CI)	1.94 (1.36;2.76)	1.14 (0.52;2.51)	0.62 (0.34;1.13)	0.79 (0.54;1.16)
Adjusted PR <sup>c</sup> (95%CI)	1.44 (1.08;1.93)	1.10 (0.47;2.58)	0.74 (0.40;1.34)	0.84 (0.56;1.26)
Per capita family income in quintiles				
Crude PR (95%CI)	6.72 <sup>d</sup> (3.77;11.96)	2.32 <sup>d</sup> (1.18;4.55)	1.56 <sup>e</sup> (1.10;2.20)	1.38 <sup>e</sup> (1.08;1.77)
Adjusted PR(95%CI)	6.20 <sup>d</sup> (3.50;10.97)	2.08 <sup>d</sup> (1.00;4.33)	1.44 <sup>e</sup> (1.01;2.06)	1.37 <sup>e</sup> (1.07;1.75)

<sup>a</sup> Ratio between W/M;

<sup>b</sup> Ratio between 50-59/20-29

<sup>c</sup> Ratio between Black/White;

<sup>d</sup> Ratio between Q1/Q5

<sup>e</sup> Ratio between Q5/Q1

SUS: *Sistema Único de Saúde* (National Health System)

RENAME: *Relação Nacional de Medicamentos Essenciais* (National List of Essential Medicines)

REMUME: *Relação Municipal de Medicamentos Essenciais* (Municipal List of Essential Medicines)

95%CI 1.08;1.93) (Table 4). A higher proportion of women, older people and poorer individuals needed to purchase medicines after trying unsuccessfully to obtain them through the SUS. No difference was observed regarding skin color. A large proportion of people purchased medicines that compose the lists RENAME and REMUME (19.9% and 28.6%, respectively), mainly women, older individuals and richer individuals in the crude and adjusted analyses (Table 4).

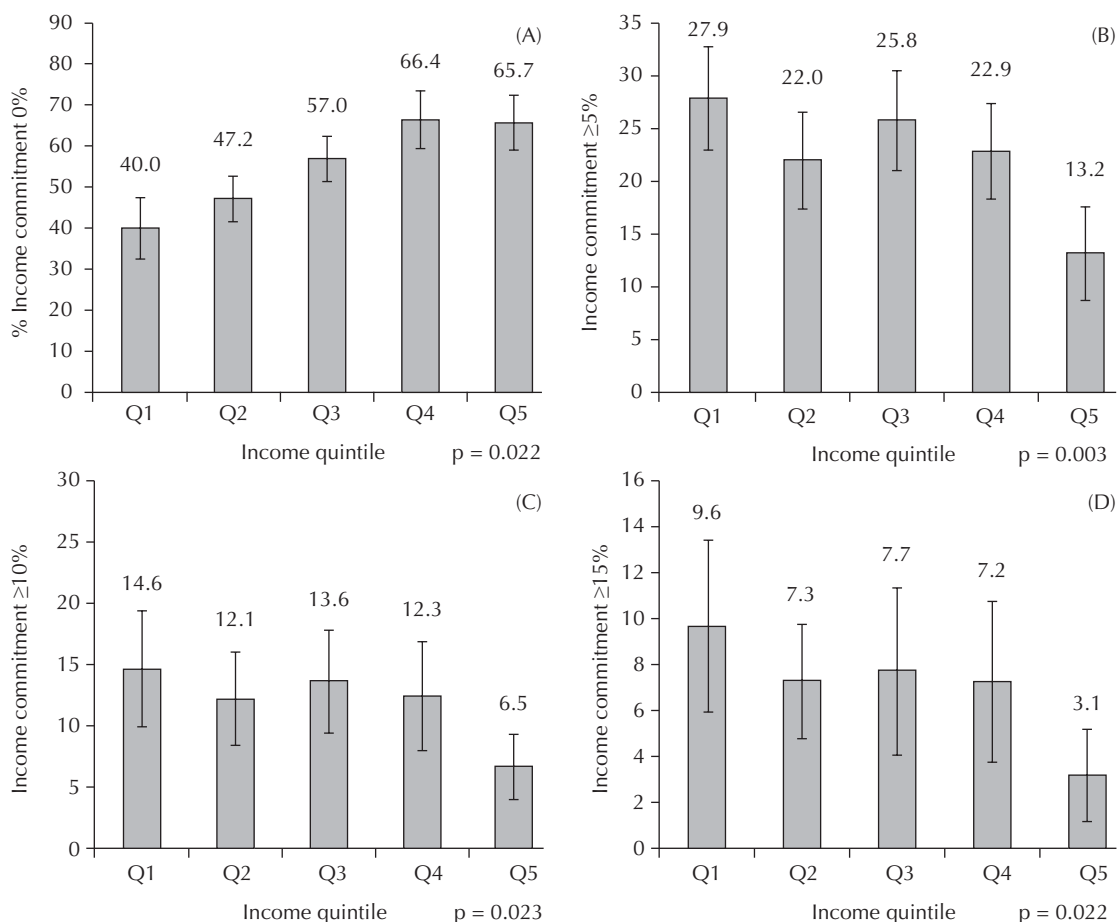
## DISCUSSION

Women and older individuals use more, spend more and commit more income to drug expenditures compared to men and to younger people. Individuals who self-reported their skin color as black presented less expenditures on medicines than white individuals. An important socioeconomic inequality was observed in drug expenditures and in the income committed to the purchase of medicines, i.e., the poorer the individual, the higher the income committed, but the richer the individual, the higher the expenditures on medicines.

The prevalence of medicines use was higher than the ones observed in other national studies with adults, whose prevalences vary from 49.7%<sup>2</sup> to 69.9%,<sup>17</sup> and

the same occurs in international studies (from 36.8%<sup>13</sup> to 67.4%).<sup>11</sup> The differences in prevalences may derive from differences in the analyzed age groups and in the recall period. If, on the one hand, a longer recall time can increase the exposure to the use of medicines, on the other hand it can increase the memory bias, mainly in the population that does not use medicines in a continuous way.<sup>6</sup> Furthermore, differences in the pharmaceutical policies adopted in different countries may influence the behavior of medicines use and may partly explain the distinct prevalences when we compare the national and international panoramas.

Higher utilization of medicines among women and older individuals corroborate the findings of the literature,<sup>7,9,11</sup> which also point to higher concern about health and higher utilization of the health services in the female sex.<sup>10</sup> It is expected that individuals are affected by a higher number of chronic diseases as age advances and, consequently, use more the health services. The combination of these factors directly influences the increase in the use of medicines.<sup>8</sup> Additionally, the medicalization of health adopted by a large part of professionals and institutions, besides health actions and programs that are specific to women, like adolescents, pregnant women and puerperal women, contribute to explain this scenario.<sup>14</sup>



**Figure 1.** Per capita family income committed to drug expenditures according to the population's per capita income quintiles: (A) Income commitment  $\geq 0\%$ ; (B) Income commitment  $\geq 5\%$ ; (C) Income commitment  $\geq 10\%$  and (D) Income commitment  $\geq 15\%$ . Florianópolis, SC, 2009.

The expenditures mean was higher among women and older individuals, accompanying the greater use of these inputs in these groups, and white individuals spent more than black individuals, similarly as found in the United States,<sup>20</sup> but the association lost significance after adjustment.

Drug expenditures were higher among the richer individuals, which suggests higher availability of financial resources and also the possibility that the SUS has a more comprehensive coverage among the poorer individuals, potentially minimizing the absolute expenditures of this group.<sup>e</sup> The lower expenditures among the poorer individuals may be explained by the expansion of health programs in the SUS, like *Farmácia Básica* (Basic Drugstore), *Estratégia da Saúde da Família* (Family Health Strategy) and *Farmácia Popular* (Popular Drugstore), as well as the changes in prices of goods and services and the income of poor families, which

may reduce or even eliminate the health expenditures to allocate them to other goods and services.<sup>c</sup> Besides, the higher absolute expenditures on the acquisition of these products among the greatest consumers, i.e., women and older individuals, is coherent, confirming the findings of the national literature.<sup>1</sup>

The inequality in the income committed to the purchase of medicines was worse to the poorer individuals. When the committed income was analyzed in at least 10% and 15% of the total *per capita* income, the difference in the committed income was 2.2 times and 3.1 times higher in the poorer individuals when compared to the richer ones. This was also observed in the literature when the general health expenditures were considered, with higher income commitment among women, the poorer individuals and the older ones.<sup>18</sup>

The higher commitment of health expenditures can become catastrophic if the health expenditure

<sup>e</sup> Diniz BPC, Servo LMS, Eirado M, Piola SF. Gasto das famílias com saúde no Brasil: evolução e debate sobre gasto catastrófico. In: Silveira FG, Servo LMS, Menezes T, Piola SF, organizadores. O gasto e consumo das famílias brasileiras contemporâneas. Brasília (DF): IPEA; 2007. p.143-166.



represents at least 40% of the family income after the payment of their subsistence expenditures.<sup>20</sup> In a study conducted among 59 countries investigated in relation to catastrophic health expenditures, Brazil presented the second highest prevalence of families in this situation (10.3%), behind Vietnam (10.5%).<sup>21</sup> Of the health expenditures, those directed at the purchase of medicines are among the most significant.<sup>3</sup>

The results of the present study and the representation of medicines in the catastrophic expenditures show the importance of the State's protection against these expenses due to the implications deriving from this process, like, for example, the non-utilization or the underutilization of medicines, interfering in the possibility of adequate treatment, cure, aggravation or health complications. The State's role refers to the attempt to reduce the financial obstacle, minimized by the availability or the reduction in medicines' prices. Also, there is the role of the prescriber, who should consider the user's capacity to pay and the availability of medicines in the public sector at the moment of the prescription.<sup>13</sup> In addition, macroeconomic and social measures are fundamental, so as to impact the market of consumption and access to goods and services, like better income distribution, the access to public health services and general life conditions.

The studied sample presents external validity for the adult population residing in the urban area of Florianópolis. The uniform distribution of the losses in the family income deciles contributed to this condition of sample inference. The distribution by sex and age group was similar to the one found in the IBGE estimates for the adult population of the municipality for the year of 2009.

The potential memory bias involved in the self-reported data, like the use of medicines and the expenditures on the purchase of the products in the 30 days before the interview can be considered a limitation of the study. To minimize it, the interviewees were asked to provide prescriptions, packages and/or the description leaflet of medicines utilized in the past 30 days.

Considering the high impact of the private drug expenditure on people's budget and the potential of minimization of this phenomenon through the SUS, the better utilization and organization of RENAME and REMUME might represent important mechanisms to reduce private expenditures regarding the public policies, as approximately 50% of the people do not use the medicines they need because they do not have access to them through the SUS.<sup>f</sup> Pharmaceutical policies that promote the rational use of the medicines should be implemented, improving health assistance and reducing drug expenditures.

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<sup>f</sup> Ministério da Saúde. Acesso aos medicamentos, compras governamentais e inclusão social. Brasília (DF); 2003.

## REFERENCES

1. Alves D. Gastos com saúde: uma análise por domicílios para a cidade de São Paulo. *Pesq Plan Econ.* 2001;31(3):479-94.
2. Arrais PSD, Brito LL, Barreto ML, Coelho HLL. Prevalência e fatores determinantes do consumo de medicamentos no município de Fortaleza, Ceará, Brasil. *Cad Saude Publica.* 2005;21(6):1737-46. DOI:10.1590/S0102-311X2005000600021
3. Barros AJ, Bertoldi AD. Out-of-pocket health expenditure in a population covered by the Family Health Program in Brazil. *Int J Epidemiol.* 2008;37(4):758-65. DOI:10.1093/ije/dyn063
4. Bermudez J, Oliveira M, Luiza V. Assistência farmacêutica. In: Giovanella S, Escorel S, Lobato LVC, Noronha JC, Carvalho I, organizadores. Políticas e sistema de saúde no Brasil. Rio de Janeiro: Editora Fiocruz; 2008. p.761-793.
5. Bertoldi AD, Barros AJ, Camargo AL, Hallal PC, Vандoros S, Wagner A, et al. Household expenditures for medicines and the role of free medicines in the Brazil public health system. *Am J Public Health.* 2011;101(5):916-21. DOI:10.2105/AJPH.2009.175844
6. Bertoldi AD, Barros AJD, Wagner A, Ross-Degnan D, Hallal PC. A descriptive review of the methodologies used in household surveys on medicine utilization. *BMC Health Serv Res.* 2008;8:222. DOI:10.1186/1472-6963-8-222
7. Carvalho MF, Pascom ARP, Souza Jr PRB, Damacena GN, Szwacwald CL. Utilization of medicines by the Brazilian population, 2003. *Cad Saude Publica.* 2005;21(Suppl 1):S100-8. DOI:10.1590/S0102-311X2005000700011
8. Coelho Filho JM, Marcopito LF, Castelo A. Perfil de utilização de medicamentos por idosos em área urbana do Nordeste do Brasil. *Rev Saude Publica.* 2004;38(4):557-64. DOI:10.1590/S0034-89102004000400012
9. Eggen AE. Patterns of drug use in a general population: prevalence and predicting factors: the Tromsø Study. *Int J Epidemiol.* 1994;23(6):1262-72. DOI:10.1093/ije/23.6.1262
10. Fleith VD, Figueiredo MA, Figueiredo KFLRO, Moura EC. Perfil de utilização de medicamentos em usuários da rede básica de saúde de Lorena, SP. *Cienc Saude Coletiva.* 2008;13(Supl):755-62. DOI:10.1590/S1413-81232008000700026
11. Hovstadius B, Astrand B, Petersson G. Dispensed drugs and multiple medications in the Swedish population: an individual-based register study. *BMC Clin Pharmacol.* 2009;9:11. DOI:10.1186/1472-6904-9-11 2009
12. Lima-Costa MF, Barreto SM, Giatti L. Condições de saúde, capacidade funcional, uso de serviços de saúde e gastos com medicamentos da população idosa brasileira: um estudo descritivo baseado na Pesquisa Nacional por Amostra de Domicílios. *Cad Saude Publica.* 2003;19(3):735-43. DOI:10.1590/S0102-311X2003000300006
13. Luz TCB, Loyola Filho AI, Lima-Costa MF. Estudo de base populacional da subutilização de medicamentos por motivos financeiros entre idosos na Região Metropolitana de Belo Horizonte, Minas Gerais, Brasil. *Cad Saude Publica.* 2009;25(7):1578-86. DOI:10.1590/S0102-311X2009000700016
14. Secoli SR. Polifarmácia: interações e reações adversas no uso de medicamentos por idosos. *Rev Bras Enferm.* 2010;63(1):136-40. DOI:10.1590/S0034-71672010000100023
15. Silveira FG, Osório RG, Piola SF. Os gastos das famílias com saúde. *Cienc Saude Coletiva.* 2002;7(4):719-31. DOI:10.1590/S1413-81232002000400009
16. Vialle-Valentin CE, Ross-Degnan D, Ntaganira J, Wagner AK. Medicines coverage and community-based health insurance in low-income countries. *Health Res Policy Syst.* 2008;6:11. DOI:10.1186/1478-4505-6-11
17. Vilarino JF, Soares IC, Silveira CM, Rödel APP, Bortoli R, Lemos RR. Perfil da automedicação em município do Sul do Brasil. *Rev Saude Publica.* 1998;32(1):43-9. DOI:10.1590/S0034-89101998000100006
18. Vilhjálmsson R, Sigurðardóttir GV. Out-of-pocket health care costs among population groups in Iceland. *Laeknabladid.* 2003;89(1):25-31.
19. World Health Organization. The world health report 2006: working together for health. Geneva; 2006.
20. Xu KT, Borders TF. Racial and ethnic disparities in the financial burden of prescription drugs among older Americans. *J Health Hum Serv Adm.* 2007;30(1):28-49.
21. Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J, Murray CJL. Household catastrophic health expenditure: a multicountry analysis. *Lancet.* 2003;362(9378):111-7. DOI:10.1016/S0140-6736(03)13861-5