

Drug use by the elderly in Southern Brazil

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Keywords

Use of medications. Elderly. Over-the-counter drugs. Polypharmacy. Socioeconomic characteristics.

Abstract

Objective

To describe self-reported drug use by the elderly, evaluating the occurrence of polypharmacy and the influence of sociodemographic and health conditions on the use of medications.

Methods

A cross-sectional study comprising a sample of 215 elderly was carried out in Porto Alegre, Southern Brazil, in 2001 and 2002. Data on the use of medications were collected using questionnaires filled out during home visits. Drugs were classified according to the Anatomical-Therapeutic-Chemical Classification System.

Results

Of all respondents, 141 (66%) were women, 117 (54%) aged between 60 and 70 years old, 157 (73%) were white, 115 (53%) lived with a partner, and 145 (67%) had some schooling. The prevalence of the use of medications by the elderly was 91% (n=195). In the week previous to the interview, 697 drugs were used, an average of 3.2 drugs per person (SD= 2.5). A total of 187 (87%) subjects had attended at least one medical visit in the last year and 71 (33%) confirmed the use of over-the-counter drugs. Polypharmacy was evidenced in 57 (27%) cases.

Conclusions

There is a pattern of increased drug use by the elderly aged 60 years or more who lives in the study community and slight differences were determined by their health conditions and socioeconomic factors.

INTRODUCTION

In recent decades, lower fertility and mortality rates have gradually increased longevity, generating the phenomenon of population aging which in turn entails new social demands.¹¹

As chronological age increases, the elderly become exposed to numerous risks and vulnerabilities, among which the most remarkable are multiple disease conditions,⁹ poor socioeconomic condition,¹¹ hospitalizations in the last 12 months,⁸ use of multiple medicines,^{4,10} and adverse drug effects.^{6,14}

It is estimated 23% of the Brazilian population use 60% of the national drug production, and most users are aged over 60.¹² High drug use among the community elderly has been described in other studies in Brazil⁵ and worldwide.^{2,10,13,14}

American community elderly have been found to take, on average, 2.7 to 4.2 prescription and over-the-counter (OTC) drugs.⁹ Though no consensus has been reached in regard to a cut-off value characterizing polypharmacy, it has generally been defined as either multiple drug use at the same time, assessed by simple counting of drugs used or drug administra-

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tion above a certain level clinically recommended according to specific criteria.^{9,10} Quantitatively speaking, some authors have described polypharmacy as the simultaneous use of five or more drugs.^{4,10} Flaherty et al (2000) divided the levels of polypharmacy as follows: five to six; seven to nine and over 10 drugs.⁸

Understanding drug use behavior is key to evaluating the impact of new therapies and planning and implementing better healthcare programs.⁴ Knowing the actual situation of the elderly in Brazil is therefore necessary in order to assess their concerns and needs for achieving a healthier life and a more rational drug use. The main purpose of the present study was to explore drug use among community elderly as well as to assess polypharmacy and the influence of sociodemographic factors on their health condition and drug use.

METHODS

A cross-sectional study was carried out in the city of Porto Alegre, Southern Brazil, between 2001 and 2002. The study population comprised both men and women aged 60 years and over, who were not bedridden or hospitalized, able to communicate and take their medications by themselves and lived within the coverage area of a hospital-associated Community Health Program (CHP). All those who agreed to participate in the study signed an informed consent.

The CHP covers 12 health units providing care to approximately 125,000 people, i.e., 10% of the city's population. In three of the CHP-covered areas—Barão de Bagé, Coinma and Margarita—, most of the population attending the program are elderly.

The study sample size estimate was based on Wilcox data (1994) who estimated 80% prevalence of drug use among community elderly.¹³ A 95% confidence interval, 5% predicted relative error and prevalence between 75% and 85% were set.

The Epi Info 6.04d software was used for calculating the sample size. From a population of 1,800 individuals over 60 years of age, a sample size of 215 subjects was obtained. A total of 432 names were drawn from the list of patients enrolled in the program. Of these, 51 (10%) were deceased but their deaths were not reported to the program; 86 (17%) had moved to another area; 50 (10%) could not be found in the recorded address or their records have been misplaced; 25 (5%) did not meet the study criteria; four

(0.8%) did not want to answer the questionnaire; and one (0.2%) was excluded due to missing information. To attain the calculated sample size, 1,006 attempts of either successful or unsuccessful contact were made, ranging from one to 11 home visits, resulting in on average two attempts per subject drawn.

The patient's enrollment list of each CHP in the area covered in the study was used for identifying each subject drawn.

First the interviewer would ask the subject to bring over the drugs they were using at that time. The prevalence of drug use in this population was assessed through an open question followed by a closed one. The last time of use was also asked and recorded for each drug in an attempt to avoid potential analysis inaccuracies.

After collection, data was gathered in a database and coded and drugs were classified according to the Anatomical-Therapeutic-Chemical (ATC) Classification System. In the ATC classification system, drugs are grouped according to the organ or system on which they act and their chemical, therapeutic and pharmacological properties. Information was collected through open and closed questions and included prescription and OTC drugs regardless of the time they were used. However, to assess polypharmacy, only those cases where five or more drugs were used at the same time in the last seven days were taken into account. Data entry and analysis was performed using Epi Info version 6.04d and SPSS version 8.0. The logistic regression model included polypharmacy as outcome and the variables age, gender, skin color, income, schooling, marital status, hospitalization in the last year, medical care in the last year and coverage area of the health unit.

The study was approved by the Research Ethics Review Board of the Conceição Hospital Center, in Porto Alegre, Southern Brazil.

RESULTS

Of all respondents, 141 (66%) were women; 117 (54%) aged between 60 and 70 years; 157 (73%) were white; 115 (53%) had a partner and 145 (67%) had completed elementary school. Their monthly family income ranged from R\$ 80.00 and R\$ 5,000.00, about US\$ 35.54 and US\$ 2,221.14, respectively.*

As for the patients, 163 of the elderly (76%) reported seeking health care but 32 (15%) said they

*Converted at the rate of \$1.00 = R\$ 2.25 as of October 17, 2005.

Table 1 - Classes and subgroups of the most frequently used drugs by the elderly in the week previous to the interview. Porto Alegre, 2001-2002.

Classes and subgroups	N	%
Cardiovascular agents	224	32
Diuretics	74	11
Renin-angiotensin agents	50	7
β-blockers	39	6
Heart therapy (cardiac glycosides, antiarrhythmics, cardiotonics, vasodilators)	24	3
Hypolipemics	17	2
Calcium channel blockers	16	2
Others	4	1
Central nervous system agents	150	22
Analgesics	85	12
Psychoanaleptics	26	4
Psycholeptics	22	3
Others	17	3
Gastrointestinal and metabolism agents	124	18
Antidiabetics	32	5
Antacids, anti-ulcers and anti-flatulence agents	20	3
Vitamins	16	2
Mineral supplements	15	2
Antispasmodics, anticholinergics and prokinetics	15	2
Laxatives	15	2
Others	11	2

sought care only sometimes and 20 (9%) did not seek any care at all. Of all, 187 (87%) had attended at least one medical visit in the last year. In regard to health-care services, 107 (50%) reported using them occasionally (zero to four visits per year); 89 (42%) used them regularly (four to 12 visits per year), mostly when they had a reason for that (an event justifying the medical visit); and 18 (8%) reported using the services very often (over 12 visits per year).

Of all study respondents, 71 (33%) had used drugs without asking medical advice and the main reason for that was generic pain (53%). Also, 34 (16%) mentioned checking old medical prescriptions for looking for previously prescribed drugs.

There were reported 28 cases (13%) in which other people also used the same medicines taken by the respondent. This practice of drug sharing did not follow a pattern, i.e., it occurred due to physical proximity (neighbors) as well as at different degrees of kinship (ascending, descending or lateral).

The prevalence of drug use in this population was assessed through two questions: an open and a closed one. The open question provided 86% prevalence, i.e., 185 subjects over 60 years of age reported the use of medications, making a total of 728 drugs used. Of the elderly taking any drug, 106 (57%) took some kind of tea at the same time. There was 56% prevalence (n=120) of tea consumption although 14 (12%) of the respondents did not consider tea a medicine.

On the other hand, the closed question provided 39% prevalence, i.e., 85 respondents reported the use of medications. Of them, 10 (12%) had answered "no" to the open question, resulting in a 33% in-

crease of "yes" answers to drug use. From that, an additional 104 drugs were included in the initial list, making a total of 832 drugs used reported by 195 subjects (91%). The drugs in this list were categorized according to the last date they were used: 365 (44%) had been used at the same day of the interview; 332 (40%) had been used in the last week, excluding the day of the interview; and 122 (15%) had been used previously to the last week. In 13 (2%) cases, the respondents did not recall when they had last used the drugs.

The analysis included only 697 (84%) drugs used in the last week (including the day of the interview). The average number of drugs used per person was 3.2 (SD=2.5) and polypharmacy was ascertained in 57 (27%) cases. Table 1 shows the therapeutic drug classes most used for the cardiovascular system (224; 32%), nervous system (150; 22%) and gastrointestinal tract and metabolism (124; 18%).

The amount of drugs used by the 215 elderly respondents can be associated to sociodemographic characteristics, as showed in Table 2. For instance, the number of drugs used tended to increase with age.

Women and the elderly who had no partner reported a higher mean drug use. The same could be seen in the multivariable analysis using logistic regression (Table 3), adjusted for the variables of interest and CHP-covered areas.

DISCUSSION

The high mean drug use found in the study seems to be similar to the findings of other studies.^{2,4,8-10} Easy access to drugs and low non-pharmacological

Table 2 - Distribution of the main sociodemographic characteristics of the elderly and number of drugs used by them in the week previous to the interview. Porto Alegre, 2001-2002

Variables	Elderly		Number of drugs	Mean	Standard deviation
	N	%			
Area					
Barão de Bagé	103	(48)	341	3.3	2.5
Coinma	87	(40)	271	3.1	2.5
Margarita	25	(12)	85	3.4	2.3
					p=0.36
Age groups					
60-70	117	(54)	338	2.9	2.4
70-80	79	(37)	279	3.5	2.3
80-90	16	(7)	72	4.5	3.2
Over 90	3	(2)	8	2.7	2.9
					p=0.28
Gender					
Male	74	(34)	161	2.2	2.0
Female	141	(66)	536	3.8	2.5
					p=0.00
Skin color*					
White	157	(73)	488	3.1	2.4
Non-white	57	(27)	209	3.7	2.7
					p=0.34
Marital status					
No partner	100	(46)	390	3.9	2.4
Partner	115	(54)	307	2.7	2.3
					p=0.00
Schooling					
Illiterate	21	(10)	75	3.6	2.7
Elementary school	78	(37)	259	3.3	2.6
Middle school	67	(31)	211	3.1	2.3
High school	35	(16)	121	3.5	2.5
University	14	(6)	31	2.2	2.0
					p=0.35

*One missing piece of information

management of medical conditions are contributors for this practice among the elderly.

In regard to the therapeutic drug classes used by the elderly, the study findings were similar to those described in the literature.^{2,4,10} As cardiovascular diseases are the leading cause of disease burden and mortality among individuals aged 65 years or more, cardiovascular drugs have been widely prescribed by doctors.¹

High use of analgesics and gastrointestinal drugs (Table 1) was also found, suggesting that the elderly have a strong urge to relieve or eliminate any acute pain. Health providers should bear that in mind to advise their patients on the event of any drug interaction or redundancy.

It can also be implied that, though these drugs were sporadically used for a short while, they were more often recalled because users had striking recollections of them being associated with unpleasant events of acute illness and, thus, more easily recollected. On the other hand, cardiovascular drugs are used on a daily basis for long term and thus can also be easily retrieved by the elderly from their recent memory. Cardiovascular drug use can often be underestimated in long-term memory as they have already been integrated to one's daily routine.

The high number of medical visits in the last year

reflects the relative disease burden of the study population. Although community elderly have equal access to health services, there are still inequalities in access to drugs, which varies according to the frequency of medical visits, socioeconomic conditions, and drug sharing by relatives, friends and neighbors, among others.

As users' enrollment in the healthcare services studied is carried out through active search, all residents in the coverage area were registered, which have avoided the effect of care-seeking in the sample makeup. The fact that the study population comprised mostly women can reflect their greater longevity compared to men. Attempts have been made to explain this gender difference between aged men and women. It has been suggested that men have higher mortality rates due to violence, car accidents and chronic dis-

Table 3 - Results of the logistic regression analysis and the respective odds ratios and 95% confidence intervals. Porto Alegre, 2001-2002.

Variables*	OR	95% CI
Gender	0.40	0.16-0.98
Age	1.85	0.86-4.0
Skin color	0.47	0.22-1.02
Schooling	0.53	0.24-1.17
Income	0.80	0.39-1.64
Marital status	2.33	1.09-5.00
Hospitalization in the last year	0.85	0.41-1.78
Medical visit in the last year	12.18	1.53-96.89

*Adjusted to the described variables and areas of residence

eases¹¹ while women show higher morbidity due to non-fatal chronic diseases³ and, in particular, due to lower exposure to risk factors, especially work-related factors. Besides, both men and women take different attitudes toward health and disease; women pay more attention to signs and symptoms and seek help more often than men.³ Consequently, the variable gender can affect the use of medications and women are more likely to be users.^{3,4,10}

The increased prevalence of the use of medications seen with the closed question may indicate this population's lack of knowledge on the concept of medication. They did not see as medications drugs for losing weight, allergies, pain, diarrhea, kidney, bladder and stomach conditions, colds or any other sort of vitamins.

Polypharmacy increased with age, which could be explained by many factors such as increased morbidity. This finding is consistent with other studies carried out in Brazil, England and Wales,^{4,5} but it was not significant in the study multivariate analysis. Also, the study did not show an effect of skin color in the use of medications, as other studies⁷ described to be higher among white elderly.

Regardless of the socioeconomic condition, in Brazil, home and community care still have an important role and are prioritized over institutional care.^{8,11} In this sense, the role of the partner in the elderly life should be stressed as those who lived alone used on average more medications.

As the study was conducted in the southern region

of Rio Grande do Sul, one of its limitations was that the season (spring-summer), which might have had an effect on the amount and type of drugs used. It might be that, during fall/winter season, there would be a higher use of respiratory and anti-infection drugs.

The association between polypharmacy and increased cardiovascular and diabetes drug use among community elderly can indicate that exposure to multiple drugs is generally related to long-term treatment of chronic diseases (cardiovascular diseases, hypertension, and diabetes) and that this practice is practically followed for years.

In regard to the sociodemographic characteristics studied, being a woman, living alone and attending at least one medical visit in the last year are factors that should be taking into account as they are strongly associated to higher use of medications by the elderly. Some of the challenges pharmaceutical providers have to face are promoting rational drug use and educating users on the risks of self-medication, interrupting drug treatment and changing the prescribed treatment as well as the need for medical prescriptions; and routinely reassessing drug use by the elderly as for dosages, costs, and treatment compliance.

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