

# Factors associated to the use of psychotropic drugs by community-dwelling elderly in São Paulo City

FATORES ASSOCIADOS AO USO DE PSICOTRÓPICOS POR IDOSOS RESIDENTES NO MUNICÍPIO DE SÃO PAULO

FACTORES ASOCIADOS AL USO DE PSICOTRÓPICOS ENTRE ANCIANOS RESIDENTES EN LA CIUDAD DE SÃO PAULO

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## ABSTRACT

The objectives of study were to identify the prevalence and factors associated to the use of psychotropic drugs among elderly people in São Paulo city. It is a cross-sectional study. Data were used from the SABE survey (for Health, Well-being and Ageing). The sample was constituted of 1.115 elderly people, aging 65 and over, which were interviewed by standard method. In the data analysis, it was used univariate and multiple logistic regression, stepwise forward and level of significance of 5%. The prevalence of the use of psychotropic drugs of 12,2% and the factors associated were female gender (OR=3,04 IC95%= 1,76-5,23) and polypharmacy (OR=4,91 IC95%=2,74-8,79). The use of psychotropics drugs by the elderly must have their benefits and risks very well established. Elder women, especially those who were submitted to a polipharmacy, deserve special attention to adjust dosage and duration of the treatment, with the purpose of minimizing the adverse outcomes.

## DESCRIPTORS

Psychotropic drugs  
Aged  
Drug utilization  
Epidemiology  
Geriatric nursing

## RESUMO

Os objetivos do estudo foram identificar a prevalência e os fatores associados ao uso de psicotrpicos entre os idosos do Município de São Paulo. Trata-se de um estudo transversal, de base populacional, cujos dados foram obtidos do Estudo Saúde, Bem-estar e Envelhecimento. A amostra foi constituída de 1.115 idosos de 65 anos ou mais, os quais foram entrevistados por meio de instrumento padronizado. Na análise dos dados utilizou-se regressão logística univariada e múltipla stepwise forward e nível de significância de 5%. A prevalência de uso de psicotrpicos foi 12,2% e os fatores associados foram sexo feminino (OR=3,04 IC95%=1,76-5,23) e polifarmácia (OR=4,91 IC95%=2,74-8,79). O uso de psicotrpicos por idosos deve ter sua avaliação risco-benefício muito bem estabelecida. Mulheres idosas, especialmente as submetidas à polifarmácia merecem atenção diferenciada, no ajuste posológico e tempo de tratamento, visando à minimização dos desfechos adversos a que estão sujeitas.

## DESCRIPTORIOS

Psicotrpicos  
Idoso  
Uso de medicamentos  
Epidemiologia  
Enfermagem geriátrica

## RESUMEN

Los objetivos del estudio fueron identificar la prevalencia y los factores relacionados al uso de psicotrpicos entre ancianos del São Paulo. Es un estudio trasversal, poblacional, cuyos datos fueron obtenidos del Estudio de Salud, Bien-estar y Envejecimiento. La muestra constituye de 1.115 ancianos de 65 años o más, los cuales fueron encuestados, por medio de instrumentos padronizados. El análisis de los datos fue utilizada una regresión logística univariada y múltiple, stepwise forward y nivel de significancia del 5%. La prevalencia de uso de psicotrpicos fue 12,2% y los factores asociados fueron sexo femenino (OR=3,04 IC95%=1,76-5,23) y polifarmacia (OR=4,91 IC95%=2,74-8,79). El uso de psicotrpicos por ancianos debe tener su evaluación riesgo-beneficio muy bien establecida. Mujeres ancianas, especialmente las que están sometidas a la polifarmacia merecen atención diferenciada, en el ajuste posológico y tiempo de tratamiento, con el fin de minimizar los resultados adversos que están sujetas.

## DESCRIPTORES

Psicotrpicos  
Anciano  
Utilización de medicamentos  
Epidemiología  
Enfermería geriátrica

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## INTRODUCTION

A discussion concerning the use of psychotropic drugs by elderly individuals in recent years became necessary in the context of pharmacoepidemiology. An expressive increase in the consumption of these medications has been observed among the elderly. Such a fact can be partly explained by the acknowledgment of the benefits of such medications in managing affective disorders such as anxiety and depression, which have also increased among this group<sup>(1-3)</sup>. The elderly are, however, more vulnerable to these medication's adverse events, which in many cases, are actually considered being inappropriate.

Psychotropic drugs are chemical substances that act upon one's psychological functioning by altering the mental state. Medications with anti-depressive, hallucinogenic actions and/or (anxiolytic and antipsychotic) tranquilizers are included in this definition<sup>(4)</sup>. Studies addressing the use of these medications among institutionalized elderly individuals report a prevalence ranging from 59.7% to 74.6%. A higher prevalence was reported for European countries where the prescription of antipsychotic drugs predominated<sup>(5-6)</sup>. The prevalence of these medications, mainly benzodiazepines, ranges from 9.3% to 37.6% among elderly individuals living in the community<sup>(1,7-9)</sup>. An investigation conducted within the Brazilian elderly population reports a consumption of benzodiazepines at 21.7% for more than 12 months<sup>(10)</sup>. Therefore, the use of psychotropic drugs among elderly individuals living in the community is lower if compared to that of institutionalized elderly individuals, who in general, are older and have cognitive disorders sometimes associated with other chronic diseases that lead to dependence and frequently present behavioral alterations. Such a context is associated with the more frequent prescription of psychotropic drugs, which are still inappropriately used as chemical restraint strategy.

The factors associated with the use of psychotropic drugs, regardless of the study's setting, are: female gender<sup>(1-2,7-9,11-12)</sup> advanced age<sup>(2,9)</sup> multiple morbidities including depressive symptoms<sup>(2,8,12)</sup>, polypharmacy<sup>(7,8)</sup> and a worsened perception of health<sup>(8)</sup>.

Women seek care in the health services more regularly, become more frequently concerned with their health and more readily acknowledge the need for the use of psychotropic drugs. A greater longevity in this group may be also accompanied by multiple morbidities and impairment, in addition to greater suffering with losses that occur over the course of life<sup>(2,7,9-12)</sup>.

Altered sleep patterns may occur with aging, which is often associated with insomnia. Older people generally

take longer to fall asleep and wake more frequently during the night. These symptoms lead elderly individuals to perceive their sleep as being fragmented, less satisfactory and not relaxing, and consequently, they seek medication to alleviate their sleep problems<sup>(13)</sup>. The prescription of tranquilizers is usually a strategy used to solve this problem quickly<sup>(9)</sup>.

Multiple morbidities associated with the characteristics of healthcare services contribute to a situation in which elderly individuals are cared for by different specialists, which in turn may lead to polypharmacy. The use of various medications and the presence of concomitant diseases may worsen an elderly individual's mental health, who may then be medicated with drugs designed to improve psychological and behavioral conditions<sup>(8)</sup>.

Considering that Brazilian studies investigating the prevalence and factors associated with the use of psychotropic agents are still incipient, though very necessary given the need to identify risk groups and establish preventive measures, we opted to develop this study with the following objectives: to identify the prevalence and factors associated with the use of psychotropic agents among elderly individuals living in the community.

## METHOD

This population-based cross-sectional study is part of a greater study entitled *Saúde, Bem Estar e Envelhecimento* (SABE) [Health, Well-Being and Aging], a longitudinal study with multiple cohorts initiated in 2000. It addresses the life conditions and health of elderly individuals living in the city of São Paulo, SP, Brazil. In 2000, the probabilistic sample was composed of 2,143 individuals aged 60 years old or older living in the community according to strata defined by gender and age adjusted with specific weighting to represent the elderly population living in São Paulo. This sample was composed of the sum of a probabilistic sample with a sample of individuals older than 75 years old. A permanent record of 72 census tracts, selected according to a proportional probability in relation to the number of households in the PNAD records (National Household Survey) was used. The sample was then complemented with a sample of individuals 75 years old or older who lived near the selected areas. A total of 1,115 elderly individuals were interviewed again in 2006, the year when this study was conducted, and the difference between the original and the current sample was due to death (649), refusal (177), not found (139), moved to other cities (51) and became institutionalized (12).

Data were obtained through interviews held in the participants' households by trained interviewers using a standardized instrument. The questionnaire is composed

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of 11 sections that include various aspects of the elderly individuals' lives such as: personal data, cognitive evaluation, health condition, functional state, medication, use of and access to services, family and social support networks, occupational history, living conditions, anthropometry, flexibility, and mobility. In this study, the sections included: personal data, health condition, functional state and medication used.

The study was approved by the Ethics Research Committee at the University of São Paulo, School of Public Health. The participants signed free and informed consent forms. Details of the study and questionnaires used are available at <http://www.fsp.usp.br/sabe>.

The medications were classified by the Anatomical-Therapeutical-Chemical (ATC) Classification System. The use of psychotropic drugs is considered to be the dependent variable and univariate logistic regression was used to analyze associated factors. The sections previously described are considered to be the independent variables. For the multiple model we used the inclusion criterion p-value <0.20 (20%) in Person's Chi-square test with second order correction as proposed by Rao & Scott for complex samples. The inclusion of variables in the multiple model followed the stepwise forward method. The level of significance was fixed at p<0.05 (95%).

## RESULTS

A prevalence of 12.2% of psychotropic use was observed among elderly individuals living in the city of São Paulo: 7.2% using antidepressants; 6.1% using benzodiazepines; and 1.8% using antipsychotics. We also observed that 9.1% of the participants consumed one psychotropic; 2.5% consumed two; and 0.6% consumed three psychotropic agents. Ten different antidepressant drugs were observed: imipramine, clomipramine, amitriptyline, nortriptyline, fluoxetine, citalopram, paroxetine, sertraline, escitalopram, and trazodone. Of these, the most frequently used were selective serotonin reuptake inhibitors (4.0%): fluoxetine (1.7%) and sertraline (1.1%). Ten agents were identified in the class of benzodiazepines (diazepam, chlorthalidoxepoxide, lorazepam, bromazepam, clobazam, alprazolam, clonazepam, flunitrazepam, estazolam and midazolam). Among these, the use of diazepam (1.7%) and bromazepam (1.4%), respectively agents of long and intermediary action, stands out. Eight different agents were observed in the group of antipsychotic agents: (clorpromazina, levomepromazina, periciazina, haloperidol, zuclopentixol, quetiapina, sulpirida and risperidona). The most prevalent were haloperidol (0.5%) and risperidona (0.5%).

Table 1 presents the profile of elderly individuals both using and not using psychotropic drugs according to their demographic variables and conditions related to health.

**Table 1** – Distribution of elderly individuals according to demographic variables and health conditions – São Paulo, SP, Brazil – 2006

Variables	Use of psychotropic agents		p-value
	Yes (%)	No (%)	
<b>Gender</b>			
Male	6.4	93.6	< 0.001
Female	15.9	84.1	
<b>Age</b>			
65 to 74 years old	9.8	90.2	0.006
75 old or older	15.1	84.9	
<b>Schooling (in years)</b>			
None	14.7	85.3	0.252
1 to 3	9.2	90.8	
4 to 11	12.7	87.3	
12 years or more	15.8	84.2	
<b>Family composition</b>			
Live lone	11.6	88.4	0.798
Accompanied	12.4	87.6	
<b>Self perception of health</b>			
Very good/good	9.5	90.5	0.007
Regular	12.6	87.4	
Poor/very poor	22.4	77.6	
<b>Use of medications</b>			
None	-	100.0	<0.001
1 to 4	5.8	94.2	
5 or more	27.5	72.5	
<b>Limited BADLs*</b>			
No	9.1	90.9	<0.001
Yes	20.8	79.2	
<b>Limited IADLs**</b>			
No	6.7	93.3	<0.001
Yes	18.2	81.8	
<b>Cognitive decline</b>			
No	10.6	89.4	< 0.001
Yes	27.1	72.9	
<b>Number of diseases</b>			
None	3.9	96.1	<0.001
1 to 3	11.5	88.5	
4 or more	21.0	79.0	
<b>Depression</b>			
No	7.2	92.8	<0.001
Yes	36.2	63.8	
<b>Urinary incontinence</b>			
No	9.5	90.5	<0.001
Yes	20.0	80.0	
<b>Number of hospitalizations in the last year</b>			
None	10.9	89.1	0.010
1 to 2	22.8	77.2	
3 to 5	23.7	76.3	
6 to 10	11.5	88.5	

\*BADLs: basic activities of daily living; \*\* IADLs: instrumental activities of daily living

The factors associated with the use of psychotropic agents are presented in Table 2. The independent variables in the multiple model that showed association with the use of psychotropic drugs were polypharmacy (OR = 4.91; CI 95% = 2.74-8.79) and female gender (OR = 3.04; CI 95% = 1.76-5.23). A tendency of association among those who reported depression was observed (OR=1.64; CI 95%=0.97-2.77).

**Table 2** – Multiple model related to the use of psychotropic among elderly individuals – São Paulo, SP, Brazil – 2006

Variables	Adjusted OR*	CI 95%**	p-value
<b>Number of medications</b>	1.00		
1 to 4	4.91	2.74-8.79	0.000
5 or more			
<b>Gender</b>	1.00		
Male	3.04	1.76-5.23	0.000
Female			
<b>Depression</b>	1.00		
No	1.64	0.97-2.77	0.067
Yes			
<b>Limited IADLs ***</b>	1.00		
No	1.51	0.86-2.67	0.152
Yes			
<b>Cognitive decline</b>	1.00		
No	1.53	0.90-2.59	0.112
Yes			
<b>Number of diseases</b>			0.135
None	1.00		
1 or 2	2.66	0.73-9.69	
3 or more	1.28	0.36-4.56	
<b>Age</b>			0.42
60 to 74 years old	1.00		
75 years old or older	1.23	0.74-2.05	
<b>Hospitalization</b>	1.00		
No	1.32	0.56-3.08	0.52
Yes			

\* CI: Confidence interval; \*\* OR: Odds Ratio; \*\*\* IADLs: instrumental activities of daily living Cognitive decline = MMSE <19.

## DISCUSSION

The findings of this study concerning the use of psychotropic agents among elderly individuals indicate a prevalence of 12.2%, which is below that observed in studies conducted in Europe and in the United States with elderly individuals living in the community<sup>(1,7-8)</sup>. Even though São Paulo is considered to be a metropolis with characteristics similar to those of developed countries, the increase of elderly individuals in the population is relatively recent. By the time this demographic indicator equals that of developed countries, the consumption of medications, including psychotropic agents, will probably be even higher. A comparison among Brazilian population-based studies indicates that the consumption of psychotropic agents among elderly individuals in the metropolitan region of Belo Horizonte, MG (8.1%) was below that reported by SABE<sup>(10)</sup>, while the prevalence of benzodiazepine agents reported in the Study Bambuí (21.7%) was higher than the prevalence reported here<sup>(14)</sup>. Contrasts among Brazilian cities may portray important differences among the studied populations in relation to the use of health services, epidemiological profiles and sociocultural characteristics. They may also reflect the habits of those prescribing medication and criteria used in the prescription of these medications.

Among the psychotropic agents, antidepressants were the most frequently used, regardless of their mode of action, followed by the benzodiazepines. According to previ-

ous studies, the use of antidepressants has grown and the use of benzodiazepines has decreased<sup>(7,14-15)</sup>. This change in the pattern of prescription may be a result of the acknowledgment that mono-therapy with benzodiazepines or other anxiolytics for depressive individuals is not appropriate<sup>(15)</sup> and also the possibility of using antidepressants for other clinical conditions such as chronic pain.

The researchers working on the SABE project infer that the use of psychotropic agents, especially antidepressants, was more frequent due to the presence of multiple morbidities with consequent functional impairment, which may also be associated with more depressive symptoms. A total of 36.2% of the group using psychotropic agents reported depression. In Brazil, studies conducted with elderly patients of senior centers show a prevalence of 31% for depression<sup>(3)</sup> and 39.8% of those seeking care at the Primary Health Care Service reported depressive disorders<sup>(16)</sup>. These studies corroborate the SABE's findings and indicate that depression has become prevalent among elderly individuals, regardless of the study's setting.

The most frequently used psychotropic agents were fluoxetine, amitriptyline, and diazepam, which make up a group of medications considered inappropriate<sup>(17)</sup>. According to these criteria, the above-mentioned agents possess sedative properties that may increase the occurrence of collapses and falls. Systematic reviews provide evidence of the increased risk of falls among elderly individuals who use these medications<sup>(11,17-18)</sup>. Additionally, these agents may have their serum levels augmented with a consequent increase in toxicity when combined with other medications (drug interactions) since they are cytochrome enzyme P450 substrates<sup>(19)</sup>.

Even though a subgroup analysis was not specifically performed for amitriptyline, which is from the therapeutic class of tricyclics, its use may have been indicated for urinary stress incontinence, since this condition was identified in 20% of the group using psychotropic agents. These agents inhibit norepinephrine reuptake in the urethra adrenergic nerve endings and increase the contraction of the urethral smooth muscle, alleviating uncomfortable symptoms.

Extended-release benzodiazepines, such as diazepam and chlordiazepoxide, were the most consumed drugs according to international and national studies<sup>(5-6,8-9)</sup>. Given these drugs prolonged half-life, they may cause prolonged sedation for many days, increasing the risk of falls and resulting fractures<sup>(17-18)</sup>. The consumption of these agents was high among elderly individuals in developed countries regardless of their mental health condition and despite the adoption of the Beers criteria<sup>(5,8-9)</sup>. The more frequent use of diazepam reported in Brazilian studies<sup>(2,6,10,20)</sup>, including SABE, may be related to its low cost and greater availability; it is distributed free of cost in public health care services. Additionally, it is one of the benzodiazepine agents more frequently prescribed to treat insomnia, a

condition observed among elderly individuals due to altered sleep patterns<sup>(8,13,20)</sup>.

Even though the considerations presented concerning these medications have been known for some time in the scientific community, studies still report their frequent use, regardless of the studies' contexts. The presence of cognitive impairment observed in SABE was evaluated by both the Mini Mental State Exam (MMES) and Pfeffer's Questionnaire. The latter evaluates instrumental activities and a positive score indicates potentially more severe impairment and may also indicate the need for psychotropic drugs to control behavioral disorders (e.g. agitation or confusion) as a *chemical contention* strategy. Its use, however, requires caution since it may worsen an individual's condition in the presence of cognitive decline. The use of psychotropic agents for more than two years and the consumption of high dosages increase the risk of cognitive decline in 39% and 87% of patients, respectively<sup>(21)</sup>. These aspects were not confirmed in this study given its design, however.

Among the analyzed factors, female gender and polypharmacy remained in the final model associated with the use of psychotropic in elderly individuals. Women consumed three times more psychotropic drugs than men, which is also in agreement with studies conducted in developed countries and in Brazilian cities that reported an association of these agents with the female gender<sup>(1,8-12,14)</sup>. Women are generally more concerned with health, more frequently seek medical assistance<sup>(1)</sup>, and describe physical and psychological problems more easily, all of which increase the probability of them receiving and accepting the prescription of psychotropic agents<sup>(1,12)</sup>. Women are also more affected by non-fatal health problems with a greater tendency to seek medical care and the prescription of psychotropic agents<sup>(11)</sup>. Some physicians also believe that women are more fragile, vulnerable and present a greater prevalence of affective disorders<sup>(1,11-12)</sup>.

The use of psychotropic drugs was associated with elderly individuals who consumed five or more medications, that is, polypharmacy users (OR=4.91). Population-based studies conducted in developed countries report this association<sup>(7-8)</sup>, though it has not been confirmed in prior Brazilian studies<sup>(2,10,14)</sup>. A possible explanation is that a positive association between polypharmacy and psychotropic agents is a reflection of comorbidities or uncomfortable clinical manifestations experienced by elderly individuals

addressed in this study (21% of the sample presented four or more diseases). In general, elderly individuals seek care from various specialists and usually there is no one person responsible for the case or a professional qualified to verify or interested in verifying the multiple prescriptions and potential adverse effects that may arise from drug association. An individual may simultaneously use from two to six medical prescriptions and self-medicate with another two medications<sup>(22)</sup>. It was verified in the SABE study that 20% of the individuals simultaneously received two psychotropic agents, a fact that in addition to potentially triggering drug interactions can worsen adverse drug reactions (ADRs) in the central nervous system. This risk of receiving an inappropriate therapeutic combination is directly related to the number of physicians prescribing medication for any given elderly individual, a situation more frequently observed among non-institutionalized individuals<sup>(22)</sup>. Even though this study was not designed to perform such an analysis, the dangerous association between polypharmacy and psychotropic agents can also increase demand for healthcare, overwhelm the social support network, and expose elderly individuals to a greater occurrence of adverse events such as falls, fractures and hospitalizations, situations that compromise their quality of life and increase the risk of death.

Some limitations arising from the study's design, such as the impossibility of identifying therapeutic indication, the specialty of the physician prescribing the medications, dosage adequacy, time of treatment and abandonment of treatment due to ADRs, or even the impossibility of buying medication due to the high cost of some psychotropic agents, hinder the generalization of results. Therefore, further research, especially population-based studies, should be conducted to confirm or refute this study's findings.

## CONCLUSION

This population-based study provided evidence that one in every ten elderly individuals in the city of São Paulo has consumed psychotropic agents, especially antidepressants and benzodiazepines, some of which are considered inappropriate according to Beers criteria. Women and elderly individuals who have experienced polypharmacy deserve differentiated care in relation to the type of psychotropic used, dosage adjustment, and duration of treatment, in order to minimize adverse outcomes to which these individuals are subject.

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