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Prevalence and Patterns of Alcohol Misuse in a Community-Dwelling Elderly Sample in Brazil

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Abstract

Objective: The aim of this study was to estimate prevalence and patterns of lifetime alcohol misuse. **Method:** This was a cross-sectional study of a representative sample of 1,078 individuals aged 60 or more. Structured interview included sociodemographic, lifestyle, health data, and the five alcohol misuse screening questions of the Self-Reporting Questionnaire. **Results:** Prevalence of misuse was 6.5%. Men, aged 60 to 69, low educational level, separated/divorced, and tobacco smoking were independently associated with lifetime alcohol misuse. Odds ratios show increasing association with levels of alcohol misuse groups in males, low-educated, and tobacco users. Persons aged 60 to 69, 4 to 7 education years, and non-White ethnicity were significantly associated with the major alcohol misuse score. **Discussion:** Younger elderly were more exposed to alcohol than previous cohorts. Thus, problems with alcohol in old age will possibly increase as they grow

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older. The results of this study call attention to a field of lacking evidence in alcohol-related problems of older persons.

Keywords
alcohol, elderly, epidemiology, geriatrics, Brazil

Introduction

Alcohol use, their correlations, and consequences in elderly are a new question in the literature, with relatively few international studies (Oslin & Mavandadi, 2009). Despite the growing accumulation of evidence on the problems caused by alcohol abuse in this age group, in Brazil, very little has been done to study the prevalence and associations related to lifetime alcohol misuse in the elderly (Prais, Loyola Filho, Firmo, Lima-Costa, & Uchoa, 2008). Most studies and health policies directed their attention to younger populations (Galduróz & Carlini, 2007; Reisdorfer, Buchele, Pires, & Boing, 2012; World Health Organization [WHO], 2009) and general population (Mendoza-Sassi & Béria, 2003).

With the aging of the Brazilian population, there is an increase in the proportion of adults living until advanced ages. Accordingly, as occurs in other countries, even if the proportion remains the same, increasing numbers of older alcoholics will require health care (Berks & McCormick, 2008). Another important point of concern is an increase in the proportion of older adults who misuse drugs. This effect was identified by slower decline of the alcohol and drugs consumption in younger adult cohorts compared with previous cohorts in the United States (Moore et al., 2005). The aging of the "baby boomer" cohort showed higher rates of illicit drug and alcohol use than earlier cohorts (Koenig, George, & Scheneider, 1994; Patterson & Jeste, 1999). In the United States, it is estimated that the number of older adults in need of substance abuse treatment will increase from 1.7 million in 2000-2001 to 4.4 million in 2020 (Gfroerer, Perme, Pemberton, & Folsom, 2003).

In fact, Brazilian historical data indicate that individuals who were teenagers or young adults in the decades of 1960s, 1970s, and 1980s ingested progressively more alcohol *per capita* than individuals from the previous decades (WHO, 2004). In the same way, a cohort phenomenon similar to that consistently observed in the United States may be observed, which is adapted and designated here as a "Brazilian baby boom," given the similar demographic changes occurred in Brazil, when fertility/fecundity remained with the highest growing rates from the 1950s to 1970s combined with increasing life expectancy (Camarano & Kanso, 2009).

This cohort effect increases the relevance of studies aiming to examine addictive-related problems in older populations, as it is an understudied field. It is important to highlight that previous history of drinking, and trying to cut down on or stop drinking was associated with a higher likelihood of late-life drinking. In addition, self-reported drinking behaviors, including history of lifetime drinking and life events related to drinking, have become valid predictors of late-life drinking problems (Moos, Schutte, Brennan, & Moos, 2004).

General population surveys in Brazil have estimated the prevalence of harmful drinking in 4.3% of the elderly (Mendoza-Sassi & Béria, 2003). Prais et al. (2008), in a survey in two different cities, found a prevalence of 27% of harmful drinking in men. Other cross-sectional study in an elderly population showed 12.4% of heavy drinkers and 2.9% of elderly with alcohol dependence (Castro-Costa et al., 2008).

Alcohol misuse in elderly is associated with falls (Lima et al., 2009), higher rate of comorbidity with mental disorders and suicide attempts (Morin et al., 2013), and neurotoxicity (including cognitive impairment and dementia; Kim et al., 2012) among other dozens of health problems. Physiological changes—a decrease in hepatic metabolism, the increase of body fat, and the reduction of body nonfat mass and water—increase the effects of alcohol in elderly. Furthermore, alcohol-related injuries and deaths increased in older cohorts in many European Union countries. Alcohol contributes to 3.7% of the global burden of disease (mortality and disability-adjusted life years) in old age (Rehm & Mathers, 2009). Despite its high prevalence, costs, and related problems, relatively few studies around the world have studied factors associated with alcohol misuse in this age group (Mirand & Welte, 1996). The most well-established sociodemographic factor for harmful alcohol use is male gender. In Brazil, just one study assessed factors associated (sociodemographic characteristics, social network, health conditions, and use of health services) with binge drinking in older men (Prais et al., 2008). Comparing one big city with another small one, Prais et al. (2008) found that worse self-related health was consistently associated with binge drinking in both cities. In the big city, binge drinking was associated with higher schooling level and functional disability; in the small city, binge drinking was associated with being divorced or separated. To our knowledge, there are no studies that evaluate sociodemographic factors associated with harmful use of alcohol in both genders in Brazil. The aims of this study were to examine elderly lifetime alcohol misuse to estimate its prevalence, and to identify sociodemographic, lifestyle, and health data associated with this condition in a representative community-dwelling sample.

Method

Study Design, Setting, and Context

This is a cross-sectional study. This research was part of a multidimensional research protocol conducted in Porto Alegre city developed by Institute of Geriatrics and Gerontology of São Lucas University Hospital of Pontifical Catholic University of Rio Grande do Sul. The general study protocol was designed to access multiple aspects of health of elderly community residents without examining in depth the current characteristics of alcoholism or mental disorders as observed in other recent multidimensional studies (Gomes et al., 2013; Nogueira et al., 2013).

Porto Alegre is the capital of Rio Grande do Sul state located in the extreme south of the country. Porto Alegre is a multicultural and multiethnic city considered by the United Nations as a metropolis with good quality of life with the best Human Development Index (HDI) among national capitals.

Sampling Design and Data Collection

The sampling design was based on multistage randomized population proportionally stratified according to the Brazilian census regions for each district determined for the city of Porto Alegre, updated by the Brazilian Institute of Geography and Statistics (IBGE) according to the estimates of population change to 2005 (1,416,735 inhabitants). The sample size was calculated for 1,092 seniors targeting to reach around 0.70% of elderly population. This sampling procedure was designed with the goal of obtaining a representative group of participants 60 years old or older. Of the total, 1,078 individuals answered the multidimensional questionnaire. A high response rate was observed, as 1,074 people answered the lifetime alcohol misuse questions of the five-item Self-Reporting Questionnaire (SRQ). The first house of each region was randomly selected. Thereafter, the following houses were visited systematically, and just only one subject per household had their information collected.

Data were collected by social workers from December 2005 until September 2006 in a face-to-face household survey. These professionals were carefully trained in the face-to-face research interviews to guarantee the quality of information even in individuals with low schooling and those who were illiterate. Each selected individual was contacted directly in his or her household. No proxy information was collected. No financial compensation was paid for participants.

Variables

The structured interview included assessment of sociodemographic characteristics, lifestyle, and health conditions. A screening questionnaire on lifetime alcohol abuse and dependence (SRQ) built by WHO's initiative to detect lifetime alcohol misuse (Gonçalves, Stein, & Kapczinski, 2008) was used to assess this condition. All questions required a dichotomous response (yes/no): (a) "Has your family, a friend, your physician, or your priest ever commented or suggested that you were drinking too much?" (b) "Have ever you tried to stop drinking but been unable to do so?" (c) "Have you ever had trouble at work or school because of alcohol, such as drinking or missing work?" (d) "Have you ever been involved in fights or arrested for being drunk?" and (e) "Has it ever seemed to you that you were drinking too much?" One positive answer indicates lifetime alcohol misuse, and two or more indicates a major lifetime alcohol misuse (Blay, Fillenbaum, Andreoli, & Gastal, 2009).

Independent variables were classified into three categories: sociodemographic, lifestyle, and health. Sociodemographic measures included gender, age, education, income (personal and family—based on Brazilian minimum salary), work/occupation (including current regular professional work, other occupations in retirement, nonprofessional work, voluntary), retired (yes/no), race/ethnicity (White, and non-White—composed of Afro-Brazilians, Mulattos, and Oriental ethnicity), religion (Catholic, Evangelical, other), marital status (never married, married, widowed, and separated/divorced), and living alone (yes/no). Lifestyle included two dichotomous items (yes/no) that asked about religious practice and current regular physical activity (once a week or more). Health data were primarily composed of self-rated health (very good, good, regular, bad, or very bad), which is a valid predictor of mortality and may indicate epidemiologic correlations with specific health outcomes as recommended by WHO (Subramanian, Huijts, & Avendano, 2010). Complementarily, other variables such as vascular condition (one or more of heart disease, hypertension, diabetes, stroke, or varicose veins), respiratory condition (one or both of bronchitis and pneumonia), tobacco use, kidney disease, osteoporosis, and bone fracture (by minimal trauma) were assessed with more specific questions. Functional status was assessed by a five-item scale that asked (a) basic household independency (clean, maintain, cook), (b) ability to take medicines, (c) bathe/comb hair/dress, (d) ability to eat without support, and (e) physical functions—walk, sit, lie down, get around indoors, and go upstairs. A categorical variable was generated grouping responses in 0, 1 to 2, and 3 or more positive responses.

Statistical Analysis

Percentages and distributions with cross-tabulations were used to describe the sample. Complementary analysis of adjusted residuals was used to improve uncontrolled associations.

To verify which characteristics were independently associated with alcohol misuse, two regression models were elected. Poisson regression was used to analyze associations in nonusers and misusers (one or more items), and perform a robust estimation of prevalence ratios (PR). Polytomous multivariable logistic regression was used to estimate odds ratios (ORs) in two levels of misusers compared with no misusers as performed in a previous Brazilian study with similar research protocol set by Blay et al. (2009). For both models, we first permitted all variables meeting the criteria of $p < .20$ at uncontrolled analysis to enter the model, and then ran the models excluding variables with less interference one-by-one until the final model. This entire procedure was followed to improve the control selection criteria of variables permitting inclusion of some confounding variables with possible clinical relevance, using statistical significance as a criteria. All analyses were performed using SPSS 17.0 and significance level of $p < .05$.Ethics

The present study was approved by the Ethics Committee on Research of the Pontifical Catholic University of Rio Grande do Sul (Protocol 05/02935). All participants and the Ethics Committee's legal representatives were informed about the purpose of the study, and signed a consent form before answering the questions. The signature of informed consent by a legal representative was indicated in cases of illiteracy or inability to sign by the participant.

Results

The sample was predominantly female (71.8%), with a mean age of 71.76 ± 7.83 (ranging from 60 to 95 years); the majority was catholic (72.3%), of low education, and with low income. Very low income was reported by 36.8% (receiving less than one minimum salary). With regard to ethnicity, 83.1% were White, 10.9% were Afro-Brazilian, 5.4% were Mulatto, and 0.6% were Oriental/Asiatic.

The SRQ was completed by 1,074 of 1,078 participants. Of these, 70 participants (6.5%) answered, "yes" for at least one item. Frequencies of item responses were one, 33 (3.1%); two, 10 (0.9%); three, 12 (1.1%); four, 4 (0.4%); and five, 11 (1%). Men were more likely to report problems with alcohol than women (16.8% and 2.5%, respectively).

Uncontrolled analysis are given in detail in Tables 1 and 2; the report of alcohol-associated problems was significantly associated with male gender,

Table 1. Sociodemographic and Lifestyle Characteristics Distributed by Lifetime Alcohol Misuse.

		SRQ (Score of the Self-Reporting Questionnaire)			
Variable	Total sample *n* (%)	0 *n* (%)	1 *n* (%)	2+ *n* (%)	*p*
Gender					<.001*
Female	770 (71.7)	751 (97.5)[a]	15 (1.9)[b]	4 (0.5)[b]	
Male	304 (28.3)	253 (83.2)[b]	18 (5.9)[a]	33 (10.9)[a]	
Age					<.001*
60-69	456 (42.5)	405 (88.8)[b]	20 (4.4)[a]	31 (6.8)[a]	
≥70	618 (57.5)	599 (96.1)[a]	13 (2.1)[b]	6 (1.0)[b]	
Education					.011*
<4 years	436 (40.9)	396 (90.8)[b]	17 (3.9)	23 (5.3)[a]	
4-7 years	377 (35.4)	353 (93.6)	12 (3.2)	12 (3.2)	
≥8	253 (23.7)	247 (97.6)[a]	4 (1.6)	2 (0.8)[b]	
Personal income (Brazilian MS)					.419
<1 MS	374 (36.8)	346 (92.5)	11 (2.9)	17 (4.5)	
≥1 MS	641 (63.2)	602(93.9)	20 (3.1)	19 (3.0)	
Family income (Brazilian MS)					.149
≤2 MS	267 (31.6)	241 (90.3)	13 (4.9)	13 (4.9)	
>2 MS	579 (68.4)	544(94.0)	16 (2.8)	19 (3.3)	
Employed or still working					.029*
Yes	829 (79.3)	783 (94.5)[a]	24 (2.9)	22 (2.7)[b]	
No	216 (20.7)	194 (89.8)[b]	9 (4.2)	13 (6.0)[a]	
Retired					.810
Yes	775 (72.4)	722 (93.2)	25 (3.2)	28 (3.6)	
No	296 (27.6)	279 (94.3)	8 (2.7)	9 (3.0)	
Race/ethnicity					<.001*
White	892 (83.4)	845 (94.7)[a]	26 (2.9)	21 (2.4)[b]	
Non-White	178 (16.6)	156 (87.6)[b]	7 (3.9)	15 (8.4)[a]	
Religion					.555
Catholic	769 (75.0)	719 (93.5)	25 (3.3)	25 (3.3)	
Evangelical	141 (13.7)	136 (96.5)	2 (1.4)	3 (2.1)	
Other	116 (11.3)	106 (91.4)	5 (4.3)	5 (4.3)	
Marital status					<.001*
Never married	166 (15.5)	153 (92.2)	6 (3.6)	7 (4.2)	
Married	392 (36.6)	357(91.1)[b]	14 (3.6)	21 (5.4)[a]	
Widowed	419 (39.1)	410(97.9)[a]	4 (1.0)[b]	5 (1.2)[b]	
Separated/divorced	95 (8.9)	83 (87.4)[b]	9 (9.5)[a]	3 (3.2)	

(continued)

Table 1. (continued)

Variable	Total sample *n* (%)	SRQ (Score of the Self-Reporting Questionnaire) 0 *n* (%)	1 *n* (%)	2+ *n* (%)	*p*
Living alone					.584
Yes	247 (23.0)	234 (94.7)	7 (2.8)	6 (2.4)	
No	827 (77.0)	770 (93.1)	26 (3.1)	31 (3.7)	
Religion practice					<.001*
Yes	674 (63.2)	645 (95.7)[a]	17 (2.5)	12 (1.8)[b]	
No	393 (36.8)	353 (89.8)[b]	16 (4.1)	24 (6.1)[a]	
Regular physical activity					.963
Yes	393 (36.7)	367 (93.4)	12 (3.1)	14 (3.6)	
No	677 (63.3)	634 (93.6)	21 (3.1)	22 (3.2)	
Total	1,074 (100)	1,004 (93.5)	33 (3.1)	37 (3.4)	

Note. *p* value—based on χ^2 test. Total values may not reach 1,074 because of missing data.
MS = Minimum Salary
[a]Residuals analysis highlights observed frequencies higher than that would be expected (residual ≥ 1.96).
[b]Residuals analysis highlights observed frequencies lower than that would be expected (residual ≤ −1.96).
*$p \leq .05$.

youngest older group age, low education, unemployed (only for SRQ ≥ 2), non-White (only for SRQ ≥2), separated/divorced (only for SRQ = 1), married (only for SRQ ≥2), no religious practice, tobacco use, kidney problems (only for SRQ ≥2), and absence of osteoporosis.

The controlled analysis for dichotomous evaluation of dependent variable was the Poisson regression (Table 3) with robust estimation of PR. This analysis reveals that male gender (PR = 5.374, $p < .001$), younger elderly 60 to 69 years (PR = 2.280, $p = .003$), less than 4 years of education (PR = 3.386, $p = .005$), 4 to 7 years of education (PR = 3.317, $p = .005$), separated/divorced (PR = 2.882, $p = .009$), and tobacco use (PR = 2.220, $p = .001$) were independently associated with one or more positive answers for alcohol misuse. No associations were found with other health variables tested.

Polytomous multivariable logistic regression (Table 4) was performed to examine two levels of drinking. An increasing OR was observed with the more problematic alcohol misuse in males (OR = 3.479-23.395/$p = .001$ and $< .001$, respectively), less than 4 study years (OR = 3.167-6.058/$p = .047$ and

Table 2. Health Characteristics and Conditions Distributed by Lifetime Alcohol Misuse.

Variable	Total sample *n* (%)	SRQ (Score of the Self-Reporting Questionnaire) 0 *n* (%)	1 *n* (%)	2+ *n* (%)	*p*
General health					.807
Very good	143 (13.3)	136 (95.1)	4 (2.8)	3 (2.1)	
Good	366 (34.1)	346 (94.5)	11 (3.0)	9 (2.5)	
Regular	465 (43.3)	429 (92.3)	15 (3.2)	21 (4.5)	
Bad	44 (4.1)	42 (95.5)	1 (2.3)	1 (2.3)	
Very bad	56 (5.2)	52 (91.1)	2 (3.6)	3 (5.4%)	
Vascular conditions					.447
Yes	764 (72.6)	718 (94.0%)	23 (3.0%)	23 (3.0%)	
No	288 (27.4)	265 (92.0%)	10 (3.5%)	13 (4.5%)	
Respiratory conditions					.292
Yes	213 (20.4)	195 (91.5%)	7 (3.3%)	11 (5.2%)	
No	833 (79.6)	783 (94.0%)	25 (3.0%)	25 (3.0%)	
Tobacco use					<.001*
Yes	161 (15.0)	161 (15.0)	130 (80.7)[a]	12 (7.5)[b]	
No	913 (85.0)	913 (85.0)	874 (95.7)[b]	21 (2.3)[a]	
Kidney problems					.067
Yes	95 (9.0)	84 (88.4)[a]	4 (4.2)	7 (7.4)[b]	
No	957 (91.0)	899 (93.9)[b]	29 (3.0)	29 (3.0)[a]	
Osteoporosis					.006*
Yes	240 (24.2)	235 (97.9)[b]	2 (0.8)[a]	3 (1.3)[a]	
No	750 (75.8)	691 (92.1)[a]	29 (3.9)[b]	30 (4.0)[b]	
Bone fracture (pathological)					.194
Yes	847 (78.9)	786 (92.8)	28 (3.3)	33 (3.9)	
No	227 (21.1)	218 (96.0)	5 (2.2)	4 (1.8)	
5-item activity daily living					.943
0	765 (71.2)	716 (93.6)	24 (3.1)	25 (3.3)	
1-2	265 (24.7)	246 (92.8)	8 (3.0)	11 (4.2)	
3+	44 (4.1)	42 (95.5)	1 (2.3)	1 (2.3)	
Total	1,074 (100)	1,004 (93.5)	33 (3.1)	37 (3.4)	

Note. *p* value–based on χ^2 test. Total values may not reach 1,074 because of missing data.
[a]Residuals analysis highlights observed frequencies lower than would be expected (residual ≤ −1.96).
[b]Residuals analysis highlights observed frequencies higher than would be expected (residual ≥ −1.96).
*$p \leq .05$.

Table 3. Poisson Regression Comparing One Item or More With No Items of Alcohol Misuse.

Variable	SRQ ≥ 1/5 PR [95% CI] (*p* value)
Gender	
Male	5.37 [3.27, 8.82] (<.001)*
Age	
60-69	2.28 [1.32, 3.92] (.003)*
≥70	[a]
Education	
<4 years	3.39 [1.45, 7.92] (.005)*
4-7 years	3.32 [1.42, 7.73] (.005)*
≥8	[a]
Race/ethnicity	
White	[a]
Non-White	1.57 [0.99, 2.48] (.051)
Marital status	
Never married	2.13 [0.94, 4.85] (.071)
Married	1.90 [0.96, 3.75] (.066)
Widowed	[a]
Separated/divorced	2.88 [1.31, 6.34] (.009)*
Use tobacco	
Yes	2.22 [1.39, 3.54] (.001)*
No	[a]

Note. SRQ = Self-Reporting Questionnaire; PR = prevalence ratios; CI = confidence interval.
[a]Reference category.
*$p \leq .05$.

= .022, respectively), and tobacco smokers (OR = 2.239-4.057/p = .050 and = .001, respectively). Persons aged 60 to 69 (OR = 5.534, p = .001), with 4 to 7 study years (OR = 6.577, p = .020), and non-White ethnicity (OR = 2.691, p = .022) demonstrate significant association only with the higher level of alcohol misuse. In relation to marital status, separated/divorced shows association only with SRQ = 1/5 (OR = 7.385, p = .002). Again, no associations were found with other health variables tested.

Discussion

The descriptive sociodemographic results were not surprising. The gender ratio of women increased with age as expected. Low schooling found in this sample reflects the educational level of Brazilian elders. Low income remains

Table 4. Polytomous Logistic Regression Comparing Two Levels of Alcohol Misuse With No Misuse.

Variable	SRQ = 1/5 OR [95% CI] (*p* value)	SRQ ≥ 2/5 OR [95% CI] (*p* value)
Gender		
Male	3.48 [1.63, 7.44] (.001)*	23.39 [7.76, 70.53] (<.001)*
Female	[a]	[a]
Age		
60-69	1.55 [0.72, 3.32] (.259)	5.53 [1.97, 15.51] (.001)*
≥70	[a]	[a]
Education		
<4 years	3.17 [1.02, 9.88] (.047)*	6.06 [1.30, 28.21] (.022)*
4-7 years	2.94 ([0.91, 9.53]) [.072]	6.58 [1.35, 32.12] (.020)*
≥8	[a]	[a]
Race/ethnicity		
White	[a]	[a]
Non-White	1.28 [0.52, 3.16] (.591)	2.69 [1.16, 6.26] (.022)
Marital status		
Never married	3.38 [0.90, 12.68] (.071)	1.73 [0.44, 6.73] (.429)
Married	2.54 [0.80, 8.14] (.115)	1.63 [0.54, 4.90] (.387)
Separated/divorced	7.38 [2.11, 25.79] (.002)*	1.13 [0.22, 5.81] (.880)
Widowed	[a]	[a]
Use tobacco		
Yes	2.24 [1.00, 5.01] (.050)*	4.06 [1.79, 9.21] (.001)*
No	[a]	[a]

Note. SRQ = Self-Reporting Questionnaire; OR = Odds ratio; CI = confidence interval.
[a]Reference category.
*$p \leq .05$.

largely observed in elderly Brazilians, although the Brazilian constitution along with the advent of specific laws guarantee at least minimum wage for all seniors; the adverse economic panorama is yet to be observed because older persons still have less access to civil rights (IBGE, 2010).

One of the most important findings of this study was the lifetime alcohol misuse prevalence of 6.5%. Compared with previous Brazilian studies, our study shows results higher than 2.7% for alcohol abuse screening (Barros, Botega, Dalgalarrondo, Manín-León, & Oliveira, 2007) and 4.3% for positive screening test for alcohol disorders (Mendoza-Sassi & Béria, 2003); conversely, other researchers found higher frequencies, like 10.6% for SRQ lifetime alcohol misuse (Blay et al., 2009), and 15% for frequent or very

frequent elderly drinkers (Laranjeira, Pinsky, Sanches, Zaleski, & Caetano, 2010). Prais et al. (2008) found rates of 13.7% to 27.1% of binge drinking in men—defined as the consumption of five or more alcoholic drinks on a single occasion in the last 30 days—in two different cities.

International studies on community-dwelling elderly individuals found variable rates: 6% of current heavy drinkers and 24.4% for lifetime heavy drinking (Mirand & Welte, 1996); 6.2% for lifetime abuse and 2.2% for lifetime alcohol dependence using *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; American Psychiatric Association, 1994) criteria (Kessler et al., 2005); and 16.1% for lifetime alcohol use disorder (12.7% for abuse and 3.4% for dependence) using *DSM-IV* criteria (Hasin, Stinson, Ogburn, & Grant, 2007).

The present study found that lifetime alcohol misuse frequency of 16.8% observed in men is considerably higher than that of 2.5% among women, a difference consistently observed in the literature that study alcohol-related problems in general adult populations (Barros et al., 2007; Laranjeira et al., 2010), and in community-dwelling elderly samples (Balsa, Homer, Fleming, & French, 2008; Blay et al., 2009; Mirand & Welte, 1996).

Controlled analysis reveals that male gender was the strongest factor related with lifetime alcohol misuse, and the highest increase comparing misuse level (OR = 3.479-23.395). These results are in agreement with those of previous studies of elderly using the SRQ (Blay et al., 2009), alcohol intake measurements (Kirchner et al., 2007), and diagnostic criteria (Balsa et al., 2008). An increased association with the higher level of alcohol misuse was also observed in low-educated elderly (less than 4 years of education, OR = 3.167-6.058). Nevertheless, we found no association with income level, even at uncontrolled analysis; this result is different from those of previous Brazilian studies that found association with poorer social classes and lower income (Blay et al., 2009; Mendoza-Sassi & Béria, 2003); on the other hand, a large national study with adult individuals from United States found inverse association with education level and substance use disorders (Kessler et al., 2005).

The direct relationship with alcohol misuse and tobacco is consistent with that observed in the literature, including elderly samples (Blay et al., 2009; Blazer & Wu, 2009). Individuals aged 60 to 69 (SRQ > 0 PR = 2.280, p = .003/SRQ ≥ 2/5 OR = 5.534, p = .001), with 4 to 7 years of education (SRQ > 0 PR = 3.317, p = .005/SRQ≥2/5 OR = 6.577, p = .020) demonstrate significant association with some alcohol misuse, but comparing results by misuse levels, the associations remain significant only for the more problematic alcohol misuse subgroup. Higher rates of alcohol-related problems seen among younger adults compared with those of older adults coincides with

findings of previous reports (Blay et al., 2009; Blazer & Wu, 2009; Kirchner et al., 2007; Mirand & Welte, 1996). With regard to ethnicity, our results show association with more problematic lifetime alcohol misuse and non-White, and for some misuse the PR was 1.571, but with a p value of .051. The relationship with alcohol and ethnicity is controversial; some data suggest association between binge drinking and African American women (Blazer & Wu, 2009) and lifetime alcohol misuse and African Brazilians (Blay et al., 2009). In relation to marital status, separated/divorced show association only with some SRQ positive score, and with SRQ = 1/5. Blazer and Wu (2009), in a community survey (6,717 participants aged 50 to 64 years and 4,236 aged ≥ 65 years), found that being separated, divorced, or widowed was associated with "at-risk" and binge drinking in men, but not women, when compared with the "no alcohol use" group. When compared with "low-risk" drinking group, the same marital status was associated only with binge drinking in men.

We found no associations between alcohol and functional status, vascular conditions, respiratory problems, kidney problems, bone fracture, or a self-rated health. Nevertheless, some previous studies present results of a "positive health effect in elderly women who consume one to two drinks per day" (Balsa et al., 2008). We agree with Blay et al. (2009) who discussed carefully the reduction of OR for vascular condition with increasing score of the SRQ, as a safe level of alcohol intake for aged individuals has still not been established and individual addictive risk cannot be assessed at population level. Thus, any mathematical protective effect of alcohol ingestion should be carefully discussed balancing all possible negative outcomes well documented in the literature. In addition, WHO's Expert Committee on problems related to alcohol consumption (WHO, 2007) considers that the alcohol "protective effect" in the elderly is likely to have been overestimated. In this way, a survival effect may be the best explanation because evidence demonstrates that lifetime alcohol misuse is associated with earlier onset of cardiovascular disease in middle-aged men (Caspers, Yucuis, McKirgan, Spinks, & Arndt, 2009).

Our study has some limitations. First, the cross-sectional design fails to determine causative direction of associations. In addition, all data are originated by a screening about lifetime alcohol misuse, which is inherently subject to recall bias that may contribute to an underestimation. However, no test proved to be a "gold standard screening" for alcohol-related problems, especially in elders (Berks & McCormick, 2008). In general population, SRQ performed well in specificity, but not so well in sensitivity when compared with current diagnostic of alcohol abuse or dependence. Nevertheless, unsatisfactory sensitivity values for alcohol screening instruments in community

samples are not an uncommon finding in other studies as observed by Gonçalves et al. (2008), so this matter is yet to be better understood.

Literature has a few studies conducted with community-dwelling elderly random samples that limit discussion of some findings. This is more problematic when comparison of results is carried out with multiple methodologies and different measures to assess alcohol-related problems (Berks & McCormick, 2008; Johnson, 2000).

We believe that this study stands out for having a representative sample and analysis methodology fairly robust. This study shows important associations that confirm or diverge from the relatively few studies that investigated alcohol misuse in the elderly. It is noteworthy that the results in this article include individuals from different socioeconomic and educational levels that include a relatively large subgroup of elders who are illiterate or functionally illiterate.

In conclusion, this study is based on a representative sample of community residents aged 60 years and older in a state capital from South Brazil. With a robust study design and analysis, we found that male gender, younger elderly (60-69 years), lower education, non-White ethnicity, separated/divorced marital status, and currently smoking were factors independently associated with lifetime alcohol misuse. More specific studies on characteristics of alcohol misusers, addiction behaviors, and search for sensible alternatives to early detection of alcohol-related problems are required in this age group. Considering cited difficulties in screening and diagnostic, we can emphasize some points of concern that can be focused on to improve detection and management of addiction among older individuals: (a) as it was an important screening question, lifetime addiction-related problems were not regularly questioned at elderly evaluation; (b) important subtypes of problematic drinking as binge drinking were not adequately screened; (c) (co-) occurrence of psychotropic misuse were not regularly examined by screening methods, especially with regard to the "silent addictive-behavior of sleeping and diet pills using"; and (d) detection is rarely linked with systematic brief intervention models. With regard to this last point, the "Alcohol, Smoking, and Substance Involvement Screening Test" could be a promising tool for detection and early intervention (WHO, 2008) to treat substance disorders among older individuals, unless its validity (Humeniuk et al., 2008) was proved only for nonelderly. It is essential to elucidate better this "hidden" problem, especially considering that it occurs in some countries, including Brazil, an aging cohort effect that was more exposed to alcohol than younger aged groups. Finally, older individuals can demonstrate better adherence and outcomes in alcoholism treatment (Oslin, Pettinati, & Volpicelli, 2002; Satre, Mertens, Arean, & Weisner, 2004).

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