Prevalence and associated factors with alcohol use disorders among adults: a population-based study in southern Brazil

Prevalência e fatores associados a transtornos devido ao uso de álcool em adultos: estudo populacional no sul do Brasil

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Abstract

Objectives: The study aimed to describe the prevalence of alcohol use disorders in an adult population from Brazil and its association with demographic, socioeconomic, behavioral variables and health conditions. **Methods:** A population-based cross-sectional survey was conducted with adults (20 to 59 years) of a medium-sized city in Southern Brazil with a random sample of 1,720 individuals. Cluster sampling was done in two stages: census tract first and household second. Alcohol use disorders were measured using the Alcohol Use Disorders Identification Test (AUDIT) and associations were tested with selected variables by Poisson Regression. Results of multivariate analysis were expressed as prevalence ratios. **Results:** The prevalence of alcohol use disorders in the population was 18.4% (95% CI: 16.6% - 20.3%), higher among men (29.9%) than in women (9.3%). The prevalence of abstinence was 30.6%; 6.8% of respondents had already caused problems to themselves or to others after drinking; and 10.3% reported that a relative, friend or doctor had already shown concern on their drinking. After multivariate analysis, an association with alcohol use disorders remained for: being male, age 20 to 29 years, being single, declaring to be light-skinned blacks and being an ex-smoker or current smoker. **Conclusion:** The prevalence of alcohol use disorders identified is high compared with other similar studies, with differences according to being male, age 20 to 29, skin color and tobacco use. These issues must be considered in formulating public health policies aimed at reducing problems related to alcohol use.

Descriptors: Cross sectional studies. Prevalence. Alcohol-Related Disorders. Adult. Brazil.

*Binge drinking is a common pattern of excessive alcohol use . The National Institute on Alcohol Abuse and Alcoholism (USA) defines binge drinking as a pattern of drinking that brings a person's blood alcohol concentration (BAC) to 0.08 grams percent or above. This typically happens when men consume 5 or more drinks, and when women consume 4 or more drinks, in about 2 hours.

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Resumo

Objetivos: Descrever a prevalência de uso problemático de álcool na população adulta de uma cidade de médio porte do sul do Brasil e testar sua associação com variáveis demográficas, socioeconômicas, comportamentais e de condições de saúde. **Métodos:** Foi realizado um estudo transversal de base populacional com adultos (20 a 59 anos) de uma cidade de médio porte do sul do Brasil com amostra probabilística de 1.720 pessoas. Utilizou-se o processo de amostragem por conglomerados, em dois estágios, sendo o primeiro o setor censitário e o segundo o domicílio. O uso problemático de álcool foi mensurado por meio do Alcohol Use Disorder Identification Test (AUDIT) e foram testadas as associações com variáveis selecionadas através da Regressão de Poisson. Os resultados das análises multivariáveis foram expressos como razão de prevalência. **Resultados:** A prevalência de uso problemático de álcool na população foi de 18,4% ($IC_{95\%}$: 16,6% – 20,3%), sendo maior entre os homens (29,9%) do que entre as mulheres (9,3%). A prevalência de abstenção foi de 30,6%. Verificou-se que 6,8% dos entrevistados já causaram problemas a si mesmos ou a outros após terem bebido e 10,3% referiram que algum parente, amigo ou médico já se preocupou com seu modo de beber. Após a análise multivariável, permaneceram associados com o uso problemático de álcool o sexo masculino, a faixa etária de 20 a 29 anos, pessoas solteiras, que se declararam pardas, e ex-fumantes ou fumantes atuais. **Conclusão:** A prevalência de uso problemático de álcool é elevada em comparação com outros estudos semelhantes, existindo diferenças segundo características demográficas, cor de pele e comportamentais. Estas questões devem ser consideradas na formulação de políticas públicas de saúde que objetivem a redução dos problemas relacionados ao uso de álcool.

Palavras-chave: Estudos transversais. Prevalência. Transtornos relacionados ao uso de álcool. Adulto. Brasil.

Introduction

Alcohol use disorders are associated with several adverse psychological, social and biological consequences such as increase in psychosocial problems, psychiatric co-morbidities and avoidable illnesses and incapacities. It is estimated that in 2007, 3.2% of deaths and 4.0% of all years of potential life lost were related to consumption of alcoholic beverages, worldwide[1].

Alcohol use is associated with several economic, cultural, environmental, biological, psychological and social factors that act simultaneously to influence the propensity for anyone to use alcohol, and this is due to the interaction between alcohol, the subject and the environment in which it operates. These factors influence how people drink in different ways, and can be protective or risk factors[2].

Among the factors associated with alcohol use disorders, being male, single, young and declaring to be light-skinned black are more likely related to the development of alcohol use disorders[3-5]. Moreover, a Brazilian study found a higher chance of association of alcohol abuse in patients with common mental disorders[6].

The prevalence of alcohol use is quite varied in different parts of the world. Whilst a study conducted in 20 countries on the African continent identified a prevalence of abstinence above 95%[7], a population-based study carried out in Denmark found that only 5% of the population abstained, and 14% of men and 9% of women presented problems related to alcohol use[8]. North and East European countries and certain regions in America present the highest levels of alcohol consumption *per capita*, whilst the lowest levels are observed in Mediterranean countries[9].

Consequences of alcohol consumption are particularly concerning in developing countries where the burden of disease and social consequences related to alcohol use are far higher than the world average. In this context, Latin America and, in particular, Brazil, stand out for high alcohol

consumption *per capita* per year, reaching almost 8.5 liters, a number which is higher than the world average of 5.8 liters[10]. Policies to minimize alcohol consumption are timid in the country and incentives to drink through advertisements for alcoholic beverages, particularly beer, are ostensible[11-12].

In 2001, the I Household Survey on the Use of Psychotropic Drugs in Brazil was performed in the 107 largest Brazilian cities, with individuals aged 12 to 65 years. The study showed that alcohol use during lifetime was 68.7%. It was estimated that 11.2% of the population was dependent on alcohol. This index, stratified by sex, indicated dependence of 17.1% in men and 5.7% in women[13].

By 2005, the II Household Survey on the Use of Psychotropic Drugs in Brazil found an estimated 12.3% of alcohol dependence, with a non-statistically significant increase of 1.1%. As for lifetime use, this study found a prevalence of 74.6%, higher than the figure found in the previous study[14].

Another important study conducted in Brazil, in 2007, was the First National Survey on Alcohol Consumption Patterns in the Brazilian population. The results of the study enable obtaining a summary of the standard drinking habits of Brazilians: 48% were abstainers, 23% drank heavily and regularly, and 29% were occasional drinkers and did not make heavy use. Of the total population aged 18 or over, 9% had a pattern of dependence[15].

In developing countries, including Brazil, problems deriving from alcohol use are still largely investigated with a focus on alcohol dependence. There are, however, problems just as serious, if not more so, to the individual or to society related to other alcohol consumption patterns such as the potential alcohol use disorders, which include hazardous, harmful use as well as possible dependence[2,16].

Hazardous drinking is a pattern of alcohol consumption that increases the risk of harmful consequences to the user or to others. Hazardous drinking patterns are of public health significance despite the absence of any current disorder in the individual user. Harmful use refers to alcohol consumption resulting in consequences to physical and mental health[16].

Alcohol dependence is a cluster of behavioral, cognitive, and physiological phenomena that may develop after repeated alcohol use. Typically, these phenomena include a strong desire to consume alcohol, impaired control over its use, persistent drinking despite harmful consequences, a higher priority given to drinking than to other activities and obligations, increased alcohol tolerance, and a physical withdrawal reaction when alcohol use is discontinued[17]. In this sense, population-based studies aimed at identifying patterns of alcohol use enable a better understanding of the magnitude of this problem in society and call for public actions to bring about a decrease in problems caused by consumption of this substance[18]. However, few population-based studies are carried out in these countries to identify alcohol use disorders and associated factors in the population.

The aims of this study were to describe the prevalence of alcohol use disorders in the adult population in the South of Brazil and to test its association with demographic, socioeconomic and behavioral variables and health conditions.

Methods

A population-based cross sectional study was conducted in Florianópolis, a city situated in the South of Brazil which presents a high Human Development Index (0.875), the fourth highest among Brazilian cities. It is considered the state capital with the best quality of life in the country, and it had an estimated population of 408,163 inhabitants in 2009.

The current study is part of a larger study named *EpiFloripa* 2009, which investigated health conditions and exposure to risk factors in a representative sample of the adult population (20 to 59 years) of Florianópolis, equivalent to 57.5% of the total population (234,693 individuals). Data collection

occurred between September 2009 and January 2010.

Sample

The sample size was calculated to test the difference between alcohol use disorders and socioeconomic and demographic exposures. Among the simulations carried out after data were collected, using *per capita* income as exposure provided the largest sample, and was the value adopted. Parameters used were relative risk of 1.65, power of 80%, significance level of 95%, ratio between non-exposed and exposed of 2:1, and prevalence of alcohol use disorders in the non-exposed group of 14.7%. The sample size was calculated in the EpiInfo 6.04 statistical package. The initial sample of 633 individuals was multiplied by a design effect (*deff*) of 2 increased by 10% for losses and refusals and 20% for control of confounding factors. This resulted in a sample of 1,671 individuals. As the current study was part of a larger research investigating other health outcomes, the final sample was larger, 2,016 adults.

The sampling process was a two-stage cluster. The first stage comprised 420 urban census tracts which consisted of approximately 300 homes each, also used by the Brazilian Institute of Geography and Statistics (IGBE) in the national census. Tracts were stratified into deciles, according to the head of the family's income. Six sectors in each decile were then systematically selected by drawing lots, totaling 60 census tracts for the sample. All tracts were visited by the research team who then counted the residential units occupied, which were configured as the second stage tract. As the number of homes among tracts varied between 61 and 810, sectors were reorganized through fusion and division of the units, respecting the geographic location and income decile of each one. Consequently, the variation in the number of residential units among census tracts was substantially reduced. From 17,755 eligible residences, 1,134 were selected for the study, resulting in an average of 1.8 adult household members per residence.

Data Collection

Data were collected in the homes, through a questionnaire applied individually to the participant by the interviewer in a quiet place, by 35 trained interviewers. Data were recorded and stored in a small computer also known as a *Personal Digital Assistant* (PDA) and later exported to Stata 9 (Stata Corporation, College Station, Texas) and analyzed. Prior to data collection, a pre--test of the questionnaire and a pilot study were carried out on approximately 100 individuals in two census tracts that were not included in the study.

All adult residents in the households were potentially eligible. Individuals who were institutionalized or with a physical and/or mental impediment were excluded from the study and those who declined to participate were considered refusals. Individuals who were not located at homes visited at least four times, including at least one visit on weekends and one at night, were considered losses. The questionnaire could not be answered by someone other than the individuals chosen. When an individual opted not to participate in the study, it was considered a refusal. Quality control of data collection was ensured by application of a shortened version of the questionnaire (10 questions) by phone to 15% of participants interviewed. The lowest kappa score was 0.6 in the question about use of dental prosthetics.

Dependent Variable

Alcohol use disorders were measured through the *Alcohol Use Disorder Identification Test* (AUDIT)[16]. The AUDIT was validated in various countries, including Brazil, and presented good levels of sensitivity (87.8%) and specificity (81%)[19] for detection of alcohol use disorders. Its performance has been positively evaluated in primary Health Care services and in population based studies on prevalence[20].

The test contains 10 questions which assess recent use of alcohol, symptoms of

dependency and alcohol-related problems. The answers to each question are given scores from 0 to 4, higher scores indicating worse problems. The score varies from 0 to 40 and in the current study, alcohol use disorders were defined by a score above 7[16].

Exploratory Variables

The independent variables analyzed were sex, age (20-29, 30-39, 40-49 and 50-59 years), self-referred skin color (white, light--skinned blacks or dark-skinned blacks), marital status (married, single or divorced/ widowed), *per capita* income in tertiles, level of schooling (years of study: 0 to 4, 5 to 8, 9 to 11 to 12 or more), being employed at time of interview (yes or no), self-assessment of health (positive (very good + good) or negative (regular + bad + very bad)), common mental disorder (measured through the Self-Reported Questionnaire – SRQ 20, with a cutoff point of 7[21], previous diagnosis of at least one chronic disease, use of tobacco (never, ex-smoker, current smoker of up to 10 cigarettes a day, current smoker of more than 10 cigarettes a day), medical appointment in the past two weeks (yes or no), and a home visit by a Community Health Worker of the Family Health Program (FHP) in the past 12 months (yes or no).

Data analysis

Poisson regression was used for statistical analysis[22] and in accordance with the theory of hierarchical model for determination[23]. In the model proposed in the current study, the demographic variables constituted the most distal level, the socioeconomic and health conditions constituted the intermediary level and use of health services constituted the closest to the outcome.

In the data analysis, variables were included in the model according to the hierarchy established in the theoretical model. For the multivariate analysis, variables which presented $p \leq 0.20$ in the bivariate analysis were maintained; those with $p < 0.05$ remained in the final model. For the analysis, the design effect was taken into account by using the '*svy*' command in Stata.

Ethical Questions

The project was approved by the Committee of Ethics in Research on Human Beings of the Federal University of Santa Catarina under protocol number 351/08. Participation in the study was voluntary and informed consent was obtained from all participants.

RESULTS

We interviewed 1,720 individuals, a response rate of of 85.3%, with 51.7% of the participants being women, and the average age 38.1 years. The majority of interviewees declared themselves to be white (86.5%), married or living with a partner (60.6%). In terms of schooling, 42.9% had 12 or more years of study and 77.3% were employed at the time of the study. Other characteristics of the sample are shown in Table 1.

The answers to the AUDIT questions are described in Figure 1. Approximately one in three individuals abstained from alcohol and, of those who drank, 70.3% drank more than two doses. In addition, excessive sporadic drinking (*binge drinking*[24*]) was observed in 32.3%, i.e. ingestion of five doses or more at one time, at least once a month. Results showed that 6.8% of those interviewed had already caused problems to themselves or to others after drinking, and 10.3% reported that a relative, friend or doctor had shown concern regarding their drinking habits.

The prevalence of alcohol use disorders in the population was 18.4% (95%CI 16.6% – 20.3%), being three times greater in men (29.9%, 95%CI 26.7% – 33.2%) than in women (9.3%, 95%CI 7.4% – 11.1%). A higher prevalence of alcohol use disorders was also observed among younger, light-skinned black, single, better schooled, richer, employed, smokers, uncovered by the FHP and who had not seen a doctor in the previous two weeks (Table 1).

Table 1 – Sample characteristics and prevalence of alcohol use disorders according to demographic, socioeconomic and behavioral variables and use of health services. Florianópolis, 2009.
Tabela 1 *– Características da amostra e prevalência de uso problemático de álcool de acordo com variáveis demográficas, socioeconômicas, comportamentais e de uso de serviços de saúde. Florianópolis, 2009.*

Variable*	Sample n (%)	Prevalence of Alcohol Use Disorders (95%CI)
Sex		
Feminine	959 (55.8)	9.3 (7.4 – 11.1)
Masculine	761 (44.2)	29.9 (26.7 –2)
Age (years)		
50-59	350 (20.4)	12.9 (9.3 – 16.4)
40-49	438 (25.5)	15.3 (11.9 – 18.7)
30-39	392 (22.8)	15.8 (12.2 – 19.4)
20-29	540 (31.4)	26.5 (22.7 – 30.2)
Skin color		
White	1444 (86.5)	17.5 (15.6 – 19.5)
Light-skinned blacks	147 (8.8)	27.2 (19.9 – 34.5)
Dark-skinned blacks	87 (5.2)	19.5 (11.0 – 28.0)
Marital status		
Married or with partner	1043 (60.6)	13.9 (11.8 – 16.0)
Single	503 (29.2)	28.2 (24.3 – 32.2)
Divorced or widowed	174 (10.1)	17.2 (11.6 – 22.9)
Schooling (years of study)		
<= 4	158 (9.2)	14.5 (9.0 – 20.1)
5 – 8	253 (14.4)	13.0 (8.9 – 17.2)
>= 11	568 (33.1)	20.8 (17.4 – 24.1)
More than or equal to 12	737 (42.9)	19.4 (16.5 – 22.4)
Currently working		
Yes	1329 (77.3)	19.6 (17.4 – 21.7)
No	390 (22.7)	14.6 (11.1 – 18.1)
Per capita income (US$)		
Tertile 1 (0 – 333,6)	564 (33.5)	14.7 (11.8 – 17.6)
Tertile 2 (333,7 – 745,1)	562 (33.4)	20.1 (16.8 – 23.8)
Tertile 3 (745,2 – 19607,8)	559 (33.2)	19.9 (15.9 – 23.4)
Self assessment of health		
Positive	1373 (79.8)	18.7 (16.7 – 20.8)
Negative	347 (20.2)	17.3 (13.3 – 21.3)
Chronic Diseases		
No	592 (34.6)	18.2 (15.1 – 21.4)
Yes	1118 (65.4)	18.5 (16.2 – 20.8)
Common Mental Disorder		
No	1431 (84.8)	18.9 (16.9 – 21.0)
Yes	256 (15.2)	17.2 (12.5 – 21.8)
Smoking habit		
Never smoked	926 (54.1)	11.3 (9.3 – 13.4)
Ex-smoker	449 (26.2)	21.6 (17.8 – 25.4)
Smoker (up to 10 cigarettes a day)	158 (9.2)	29.7 (22.5 – 37.0)
Smoker (more than 10 cigarettes a day)	178 (10.4)	37.1 (30.0 – 44.2)
Covered by Family Health Program		
Yes	489 (28.7)	14.9 (11.8 – 18.1)
No	1215 (71.3)	19.8 (17.6 – 22.1)
Medical appointment in the last 2 weeks		
Yes	480 (28.0)	14.6 (11.4 – 17.7)
No	1237 (72.0)	20.0 (17.8 – 22.2)

"*The "skin color" variable presented the lowest number of observations (n =1,678).
"**A variável "cor da pele" apresentou o menor número de observações (n =1678).*

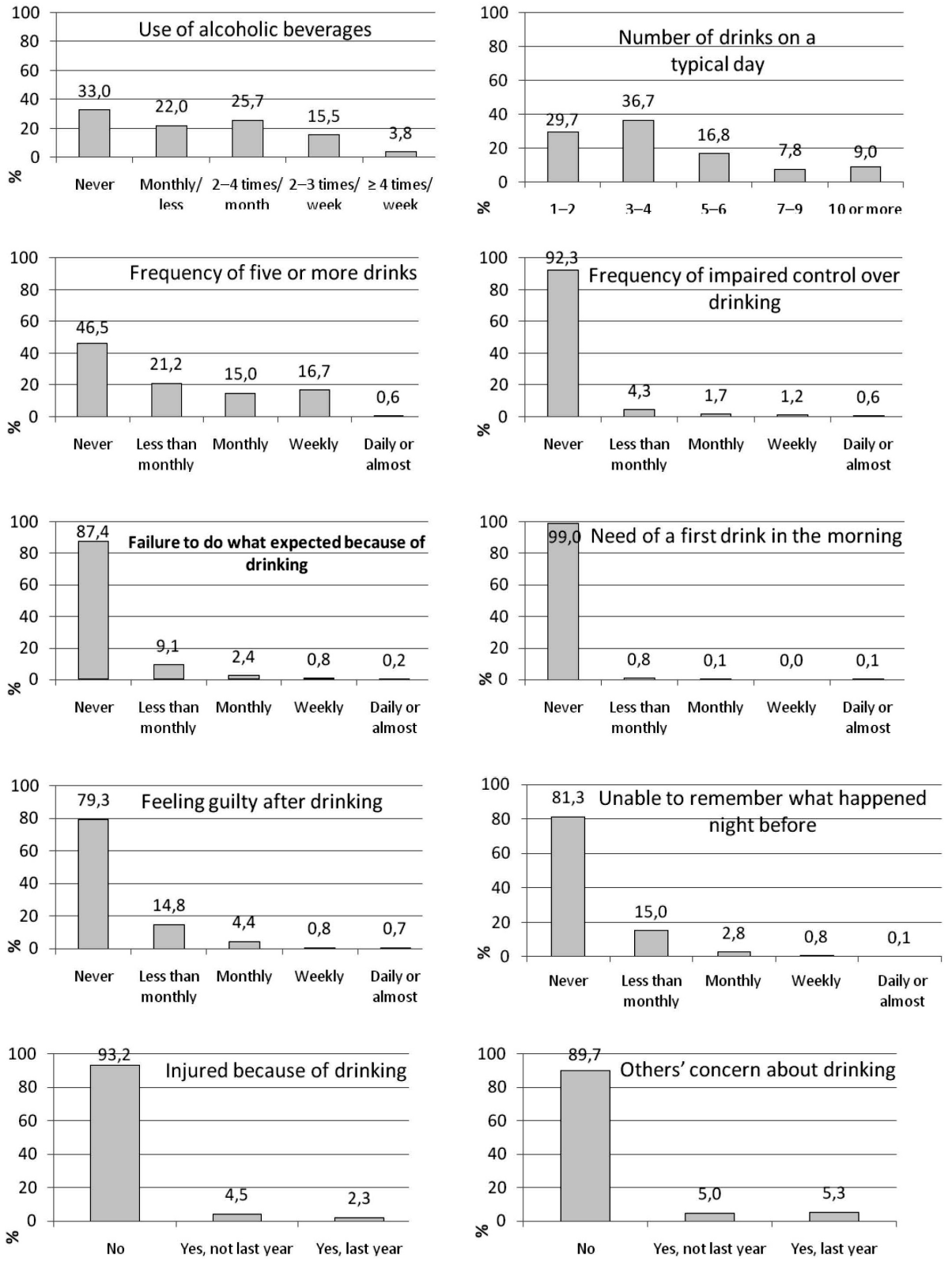

Figure 1 – Distribution of Alcohol use disorders identification test responses. Florianópolis, 2009.
Figura 1 *– Distribuição das respostas do Alcohol use disorders identification test. Florianópolis, 2009.*

Table 2 shows the unadjusted and adjusted estimates of prevalence ratios of alcohol use disorders according to the independent variables. In the bivariate analysis, the following findings stood out: the highest prevalence among men (PR = 3.23; 95% CI 2.48 – 4.21); in those between 20 and 29 years of age (PR = 2.06; 95%CI 1.49 – 2.85); single (PR = 2.03; 95%CI 1.66 – 2.49) and smokers of more than 10 cigarettes a day (PR = 3.27; 95%CI 2.51 – 4.26). In addition, skin color, income, FHP coverage and doctor appointments were all associated with alcohol use disorders.

In the multivariate analysis, men still presented a prevalence of alcohol use disorders three times higher than women. Similarly, those who were not in a stable relationship (single, divorced and widows), young (20 to 29 years of age) and smokers of all intensities presented a higher prevalence of alcohol use disorders. The remaining variables did not associate with the outcome in the adjusted analysis. Analysis was also stratified by sex. However, no differences were observed in relation to the global analysis to include it in the study's results.

Discussion

This study analyzed the prevalence of alcohol use disorders in a medium-sized city in the South of Brazil. The prevalence of alcohol use disorders was 18.4%, being higher among men, young, smokers, single and divorced or widowed individuals. Approximately 30% were abstainers and one in ten of those interviewed referred that a relative, friend or doctor had shown concern over their drinking habits.

One of the limitations in comparing alcohol use is the diversity of existing screening tests, as each test approaches different aspects such as dependence, abusive use and amount of pure ethanol ingested per day, among others[25]. The instrument used in the current study to identify prevalence of alcohol use disorders, the AUDIT, has been recommended by several researchers as the best alternative for detecting alcohol-related problems, even in household suerveys[16, 26]. In addition to alcohol use disorders, the AUDIT can also be stratified to identify hazardous, harmful use and possible alcohol dependence. In this study, only potential alcohol use disorders were measured.

A possible limitation of the study was memory as the questions referred to alcohol use in the past year. This is a period of time long enough for potential forgetting or inaccurate reports of information provided for the research. However, this was minimized by the use of a photo which displayed the kinds of drinks most consumed in the region and the equivalent (in glasses, bottles or cans) to one dose of ethanol.

A further possible limitation was information as people tend to report patterns of alcohol use which are more socially accepted[16]. In order to avoid this, the interviewers were instructed not to give opinions or be judgmental about participants' behavior thus allowing for trustworthy answers. The interviews also took place in a quiet area in the participant's home and only the participant and the interviewer were present.

The response rate of the study was 85.3%, similar in all the income deciles of the primary sampling units, which strengthens external validity of the research. The number of interviews according to sex and age range also presented a similar distribution to that estimated by the Brazilian Institute of Geography and Statistics (IGBE) for Florianópolis in 2009.

The prevalence of alcohol use disorders was three times higher among men (29.9%) in relation to women (9.3%). These results are similar to those reported in a national based study conducted by telephone in Brazil in 2009, when alcohol abuse was measured[27]. The prevalence of the outcome was 18.9%, being 28.8% in men and 10.4% in women. Another study performed in a city in the South of Brazil also using the AUDIT with the same cutoff point, however with differences in age group and the size of city, found a lower prevalence, with 7.9% in the general population, 14.5% in men and 2.5% in women[6]. The possible reasons for this

Table 2 – Association between alcohol use disorders and demographic, socioeconomic and behavioral variables and use of health services. Florianópolis, 2009.

Tabela 2 *– Associação entre uso problemático de álcool e variáveis demográficas, socioeconômicas, comportamentais e de uso de serviços de saúde. Florianópolis, 2009.*

	Variable	Unadjusted		Adjusted	
		PR* (95%CI)	P value **	PR* (95%CI)	P value **
1	**Sex**				
	Feminine	1	<0.001	1	<0.001
	Masculine	3.23 (2.48 – 4.21)		3.18 (2.41 – 4.19)	
1	**Age (years)**				
	50-59	1	<0.001	1	<0.001
	40-49	1.19 (0.85 – 1.66)		1.18 (0.85 – 1.64)	
	30-39	1.23 (0.84 – 1.79)		1.19 (0.83 – 1.72)	
	20-29	2.06 (1.49 – 2.85)		1.50 (1.07 – 2.11)	
1	**Skin color**				
	White	1	0.082	1	0.146
	Light-skinned blacks	1.55 (1.16 – 2.08)		1.42 (1.07 – 1.90)	
	Dark-skinned blacks	1.12 (0.69 – 1.81)		1.08 (0.70 – 1.68)	
1	**Marital status**				
	Married	1	<0.001	1	<0.001
	Single	2.03 (1.66 – 2.49)		1.59 (1.29 – 1.97)	
	Divorced or Widowed	1,24 (0,82 – 1,87)		1.60 (1.11 – 2.30)	
2	**Schooling (years)**				
	Less than or equal to 4	1	0.073	1	0.814
	5 – 8	0.90 (0.50 – 1.62)		0.82 (0.49 – 1.38)	
	9 – 11	1.43 (0.86 – 2.36)		1.04 (0.66 – 1.64)	
	More than or equal to 12	1.33 (0.80 – 2.22)		0.98 (0.60 – 1.59)	
2	**Working**				
	Yes	1	0.083	1	0.824
	No	0.75 (0.54 – 1.04)		1.03 (0.75 – 1.42)	
2	**Per capita income (US$)**				
	Tertile 1 (0 – 333,6)	1	0.045	1	0.124
	Tertile 2 (333,7 – 745,1)	1.37 (1.07 – 1.74)		1.2 (0.9 – 1.6)	
	Tertile 3 (745,2 – 19607,8)	1.35 (1.01 – 1.81)		1.2 (0.9 – 1.7)	
3	**Self-assessment of health**				
	Positive	1	0.589	***	
	Negative	0.92 (0.69 – 1.24)			
3	**Chronic Diseases**				
	No	1	0.904	***	
	Yes	1.01 (0.80 – 1.29)			
3	**Common Mental Disorder**				
	No	1	0.540	***	
	Yes	0.91 (0.66 – 1.24)			
3	**Smoking habits**				
	Never smoked	1	<0.001	1	<0.001
	Ex smoker	1.91 (1.47 – 2.47)		2.17 (1.70 – 2.78)	
	Up to10 cigarettes/ day	2.62 (1.86 – 3.69)		2.87 (2.01 – 4.10)	
	More than 10 cigarettes/day	3.27 (2.51 – 4.26)		3.46 (2.65 – 4.51)	
4	**Covered by the Family Health Program**				
	Yes	1	0.047	1	
	No	1.32 (1.00 – 1.76)		1.05 (0.81 – 1.35)	0.701
4	**Medical appointment in the last 2 weeks**				
	Yes	1	0.024	1	
	No	1.37 (1.04 – 1.81)		1.08 (0.83 – 1.40)	0.560

* Prevalence Ratio / * *Razão de Prevalência.* ** P value on Wald test / ** *valor de P no teste de Wald*

*** Did not enter on the adjusted model as it had a p value >0.20 on the unadjusted analysis. / *** *Não entrou no modelo ajustado, pois apresentou valor de p >0,20 na análise não ajustada.*

difference could be some characteristics of the sample. The study covered all individuals 15 years of age and over, and included younger and older people, with different patterns of alcohol consumption, and the city had half the number of inhabitants. In relation to the international context, the current study presented a higher prevalence than found in people aged 12 to 65 years in Thailand, where the prevalence of alcohol use disorders measured by the AUDIT was reported as 8.5%[28]. In a survey conducted on individuals between 17 and 70 years of age in Hong Kong, employing a questionnaire based on criteria set by the Diagnosis and Statistics Manual of Mental Disorders (DSM IV), a prevalence of 14.4% was found in men and 3.6% in women[5]. Data from national surveys on alcohol use carried out on adults from 8 countries from the former Soviet Union reported that 23% of men and 2% of women can be considered high risk users[29].

Data from a comparative study between 1991 and 2001, in the United States, indicate that during this time, binge-drinking episodes per person per year increased by 17%[24]. Highest alcohol consumption in men has been reported in the most different regions of the world[9] and can be explained by different aspects such as culture and physiology. In terms of cultural aspects, in some societies, alcohol use is considered a demonstration of masculinity, and women are prohibited from consuming alcohol as a sign of submission to men[30]. Physiological differences between men and women were also reported as lower proportional quantities of liquid and higher gastric metabolic rates in women[31].

In terms of age, alcohol use disorders were observed in younger people. This finding is consistent with the domestic and international literature on the subject as stated by the World Health Organization[10]. Studies conducted in Brazil found similar results, such as Barros in a large city in Southeast Brazil[32], as well as in another research conducted in a medium-sized city in the South of Brazil by Bortoluzzi[33]. This pattern of use was also found in research carried out in Australia, where, in addition to consuming more, young people also present higher risk behaviors related to alcohol use compared to older people[34].

Bobo[35] indicated that these results can be related to marketing strategies employed by the alcoholic beverage industry. Publicity campaigns have been developed to target this specific age group by associating alcohol use to moments of leisure which relax and favor socialization[11]. In addition, in Brazil, the product presents a relatively low price and is extremely easy to buy.

Another factor which can be related to high alcohol consumption among young adults is the transitional phase they are experiencing. This phase is characterized by many changes, such as entry into the labor market and the beginning of adult life, leaving them more vulnerable to initiate and maintain alcohol use[2]. Furthermore, alcohol is the substance most used by North American youth, a group of individuals who underestimate the negative effects of alcohol and therefore expose themselves to situations of risk which are harmful to their health[36].

Marital status also figured as a factor associated with alcohol use disorders. People who were single, divorced or widowed presented a higher prevalence than those who were married. These data are similar to a study conducted in Alberta, Canada[37] and in Russia[38]. In general, a stable relationship has been associated with better health conditions[39] and a decrease in alcohol use disorders is also observed in older relationships[40]. According to Leonard[41] transition to a stable relationship can cause a decrease in alcohol use in the same way that divorce can trigger abusive use of this substance. Among men, alcohol consumption is also observed to be lower for individuals in stable relationships, so, marital status could be a protective factor[39-40]. In consistency with the literature, this study found an association between alcohol use disorders and use of tobacco. Bobo[35] reported that 37% of North American adults who drink also smoke compared with 13% of those who do not drink. Furthermore, Dawson[42] found that

the prevalence of tobacco use in the year prior to the research was lower among people who had never used alcohol in their life (23%) and increased considerably among individuals who drank. Among the causes of this association, Room[43] suggests that multiple factors should be considered, such as physiopharmacological, psychological and socio-cultural factors.

If we consider pharmacological factors, ethanol and nicotine present effects which are partially opposite and people often use one to reinforce the effects of the other[44]. As for physiological factors, Lê[45] reported that repeated use of nicotine stimulates use of alcohol, whereas Chen[46] stated that nicotine reduces the collateral effects of alcohol use.

In terms of psychological factors, personality traits, such as impulsiveness and a search for a sensation of satiability, are related to tobacco and alcohol use in the same way that stressful events in life and chronic stress are associated with the development of dependence on both substances[47].

Socio cultural factors can be explained for different reasons. As the use of tobacco and alcohol are culturally classified in similar categories, sometimes as transgressive behaviors, there is a social influence which tends to link their use. Tobacco use is also associated with places where alcohol is consumed such as bars, restaurants and night clubs, all reinforcing its use[43].

An association between alcohol use disorders and level of schooling was not found in this study. This relationship has caused controversy in several studies[29,48], demonstrating the need for further investigations that can clarify this link. Regarding income, the data found in population-based studies have shown discrepancies[32]. The most frequent findings refer to the highest "average" intake of alcohol in people with a higher socioeconomic level but the highest prevalence of alcohol use disorders has been found in people with lower social conditions[6,38]. Therefore, new studies are required to clarify this association.

The use of health services also did not present an association with alcohol use disorders. This relation also requires further study as health services are considered a privileged space to approach the problem of alcohol use. Interventions conducted by professionals working in Primary Health Care are viable and potentially effective in a public health global approach to reduce inappropriate use of alcohol[49].

One of the possibilities to act against alcohol use disorders is the use of screening instruments in association with the Strategy for Diagnosis and Brief Intervention (SDBI)[50]. This strategy aims to recognize and assist people in the decision-making process and in their efforts to decrease or stop drinking before the onset of physical, psychological or social problems. Use of this strategy also facilitates an initial approximation and allows for an objective return for the individual, enabling the introduction of brief intervention procedures and motivation for behavior changes[51]. This effectiveness has been proved in several studies[52], emphasizing the importance of training health professionals and the adoption of the SDBI in different health care contexts, considering their proven efficacy and economic viability[50].

Knowing the prevalence and factors associated with alcohol use disorders is of extreme relevance in order to subsidize formulation and assessment of health program policies, being of interest at all government levels, to society in general and their organizations in search for better levels of health.

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Conflicts of Interest

The authors do not have any conflicts of interest related to this research.

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