Heavy alcohol consumption and associated factors: a population-based study

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Keywords
Alcoholism. Prevalence. Cross-sectional studies. Risk factors. Socioeconomic factors. Social problems.

Abstract

Objective
To determine the prevalence of heavy alcohol consumption and factors associated with it in a Brazilian adult population.

Methods
Cross-sectional population-based study including 2,177 adults (aged 20 to 69), living in the urban area of the municipality of Pelotas, Rio Grande do Sul State, Brazil. The sample was selected in multiple stages. Heavy alcohol consumption was defined as above 30g/day. The adjusted analysis was conducted by logistic regression.

Results
The prevalence of heavy alcohol consumption was 14.3% (29.2% among men and 3.7% among women). The following groups presented higher prevalences of heavy alcohol consumption after adjusted analysis: men, elderly people, blacks or mulattoes, heavy smokers, and people who present some kind of chronic disease. Men with minor psychiatric disorders showed higher prevalences of heavy alcohol consumption than other men. Among women, association between age and heavy alcohol consumption was inversely related. Furthermore, the study indicates that among hypertensive subjects, those with heavy alcohol consumption presented worse disease management.

Conclusions
Heavy alcohol consumption is high and results in countless negative consequences for the individual's health and quality of life. Our results highlight the high prevalence of heavy alcohol consumption and indicate subsections of the whole population more susceptible to alcoholism.

INTRODUCTION

Moderate consumrtion of alcoholic beverages, according to the literature, is a protective factor for mortality due to all causes, particularly due to its effect in reducing the frequency of cardiovascular diseases.[4,9] However, heavy alcohol consumption results in innumerous negative consequences for the individual's health and quality of life, increasing the rate of morbidities that result in death or functional limitations such as cirrhosis, some types of cancer, cerebral vascular accidents, violence, mental diseases, among others.[10,14,16] The World Health Organization (WHO) indicates that mortality and functional limitations resulting from heavy alcohol consumption are even greater than those caused by cigarette smoking.[16]

Alcoholism is, of itself, also considered an illness and a multicentric Brazilian study[1] indicates prevalences ranging from 7.6% to 9.2%. Another study

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undertaken in Brazil[5] found a prevalence of alcoholism of 12.4% among hospital patients. A study undertaken in South Korea[7] indicates a prevalence of heavy alcohol consumption of 16% among men and 2% among women, whereas a study undertaken in New Zealand[6] indicated a prevalence of 9.9% among elderly subjects.

Heavy alcohol consumption also entails in higher costs for the Health Care System, both directly and indirectly, because the morbidities which ensue from consumption are expensive and difficult to manage. Furthermore, alcoholism also provokes family disturbances with greater frequency.

The objective of this study was to determine the prevalence and the factors associated with heavy alcohol consumption in an adult population in southern Brazil. Detecting the population groups more exposed to heavy alcohol consumption makes it possible to plan more efficacious health policies designed to decrease this morbidity and other diseases unleashed by alcoholism.

METHODS

A cross-sectional, population-based study was undertaken during the period between the 3rd of December, 1999 and the 3rd of April, 2000, involving several aspects related to the health of the adult population, aged 20 to 69, living in the urban area of Pelotas, Rio Grande do Sul State, Brazil.

The sample was selected in multiple stages. The primary sample units were the 281 census tracts of the urban area of the municipality, 40 of which were selected according to a systematic random sampling technique. Within the selected tracts, systematic sampling of households was undertaken. All inhabitants of selected households within the age range of interest to this study were interviewed.

Calculation of the sample size estimated a 15% prevalence of heavy alcohol consumption, with a 95% confidence level, 80% testing power, exposures between 5 and 50%, 2.0 relative risk, as well as a 10% excess in the sample size to account for eventual losses and refusals and 15% for adjusted analysis. The estimated sample size resulting from the above mentioned calculations was composed of 1,595 individuals. Since this study was conducted in conjunction with others, the sample was increased in order to be able to account for other less common outcomes.

Alcohol consumption was measured by means of a questionnaire that evaluated the types, quantities and frequency of individual consumption of alcoholic beverages. The cut-off point for defining hazardous drinking was 30g/day or more of ethanol.[9,11]

The independent variables collected were: sex, age, skin color, (white or black/mulatto according to the interviewer's observation), formal education (measured in years of schooling in which the student passed on to the next grade) social level (as it is classified by the *Associação Nacional de Empresas de Pesquisa* – ANEP[2] [National Association of Research Enterprises], conjugal status (single, living with a companion, widowed/separated), minor psychiatric disorders (Self Reported Questionnaire - SRQ-20, with a cut-off point of 6 for men and 7 for women),[8] hypertension (the mean of two measurements equal to or greater than 160/95 or the consumption of anti-hypertensive medication), body mass index (normal: <25 kg/m^2; overweight: 25 a 29,9 kg/m^2; obesity: 30 kg/m^2 or more),[12] physical activity (insufficiently active: less than 1000kcal/week spent in leisure activities[13]), smoking (never smoked cigarettes; ex-cigarette smoker; light to moderate smoker – <20 cigarettes per day; heavy smoker – 20 cigarettes or more per day) and chronic disease (presence of at least one of the following diseases: self-referred diabetes, arterial hypertension, minor psychiatric disorders, chronic bronchitis or obesity).

The consequences of heavy consumption of alcohol on health care were indicated by analyzing adherence to treatment for systemic arterial hypertension (measured by the adequate control of blood pressure), rates of hospitalization and frequency with which the individual recurred to the health services (measured by the number of visits made to the services in the last year).

The interviewers were medical students from the *Universidade Federal de Pelotas* [The Federal University of Pelotas] and were submitted to a training program, including exercises on standardizing the procedures for measuring weight and height as well as participation in a pilot study, and were unaware of the objectives and hypothesis of the study.

Individuals who refused to answer the questionnaire or who weren't home at the time of the interview were visited two more times and at different periods of the day. Quality control was carried out by applying a simplified version of the questionnaire to 10% of the subjects included in the sample.

Data was codified and registered twice in a database using the Epi Info 6 Program and automatic verification of consistency as well as amplitude was undertaken. Stata 7.0 and SPSS 8.0 programs were used

for analyses, which consisted of a description of the sample, crude analysis (of the entire sample and stratified by sex) and adjusted analysis. Adjusted analysis was undergone through non-conditional logistic regression, based on a conceptual model consisting of three hierarchical levels;[15] in which the first level was composed of demographic variables (sex, age and skin color), the second level contained the socioeconomic variables (social status – ANEP, formal education and civil status) and the third level consisted of variables related to morbidity and lifestyle (smoking, physical activity, minor psychiatric problems, BMI, systemic arterial hypertension and the presence of chronic diseases). The variables were maintained within the model when they attained a 20% level of significance and, if it reached 5%, the association was considered significant.

This project was approved by the Ethics and Research Committee of the *Faculdade de Medicina* of the *Universidade Federal de Pelotas* [School of Medicine of the Federal University of Pelotas] and was considered to be of minimum risk. Consequentially, only verbal consent was requested of people submitted to interviews.

RESULTS

One thousand nine hundred and sixty eight individuals of the 2,177 considered eligible for the study

Table 1 – Description of the sample according to demographic, socio-economic, behavioral and health variables and crude analysis of the association between heavy alcohol consumption and predictors.

Variables***	N(%)	P (%)	OR ($CI_{95\%}$)	p Value
Sex				<0.001*
Masculine	846 (43.0)	27.2	9.53 (6.76 to 13.43)	
Feminine	1,122 (57.0)	3.8	1.00	
Age – in years				0.08**
20 to 29	464 (23.7)	11.9	1.00	
30 to 39	457 (23.2)	14.7	1.28 (0.87 to 1.88)	
40 to 49	443 (22.5)	13.2	1.13 (0.76 to 1.67)	
50 to 59	374 (19.0)	12.6	1.07 (0.71 to 1.62)	
60 to 69	229 (11.6)	19.6	1.81 (1.18 to 2.80)	
Skin color				<0.001*
White	1,634 (83.0)	12.6	1.00	
Black / Mulatto	334 (17.0)	20.2	1.76 (1.30 to 2.39)	
Social status – ANEP				0.001**
A	110 (5.6)	13.8	1.00	
B	500 (25.6)	10.3	0.72 (0.39 to 1.33)	
C	726 (37.2)	13.5	0.98 (0.54 to 1.75)	
D	529 (27.1)	14.6	1.07 (0.59 to 1.95)	
E	89 (4.6)	29.2	2.59 (1.27 to 5.27)	
Formal education – years of schooling				<0.001**
0	88 (4.5)	20.0	2.1 (1.8 to 4.14)	
1-4	424 (21.5)	17.8	1.84 (1.19 to 2.82)	
5-8	631 (32.1)	15.3	1.54 (1.02 to 2.32)	
9-11	491 (24.9)	9.7	0.91 (0.57 to 1.44)	
12 or more	334 (7.0)	10.5	1.00	
Civil status				0.09*
Married / in stable union	1,205 (61.2)	14.8	1.09 (0.08 to 1.48)	
Separated / widowed	287 (14.6)	9.8	0.68 (0.42 to 1.09)	
Single	476 (24.2)	13.8	1.00	
Minor psychiatric disorders				0.5*
Yes	561 (28.5)	14.8	1.11 (0.84 to 1.47)	
No	1,406 (71.5)	13.5	1.00	
Body mass index***				0.5**
Normal (<25 kg/m^2)	907 (46.8)	13.8	1.00	
Overweight (25 to 29.99 kg/m^2)	653 (33.7)	15.0	1.10 (0.83 to 1.47)	
Obesity (30 kg/m^2 or more)	376 (19.4)	11.8	0.83 (0.58 to 1.20)	
Physical activity				0.02*
Insufficiently active	1,581 (80.6)	12.9	1.00	
Sufficiently active	380 (19.4)	17.7	1.45 (1.07 to 1.97)	
Hypertension				0.2*
Yes	462 (23.5)	13.3	1.21 (0.90 to 1.62)	
No	1,501 (76.5)	15.7	1.00	
Chronic disease				<0.001*
Yes	459 (23.4)	19.5	1.75 (1.32 to 2.31)	
No	1,503 (76.6)	12.2	1.00	
Cigarette smoking				<0.001**
Non smoker	945 (48.0)	6.2	1.00	
Ex-smoker	423 (21.5)	18.8	3.51 (2.44 to 5.03)	
Light / moderate smoker	319 (16.2)	16.7	3.03 (2.03 to 4.50)	
Heavy smoker	281 (14.3)	28.8	6.13 (4.23 to 8.88)	

P: prevalence of heavy alcohol consumption (+30 g/day)
ANEP: Associação Nacional de Empresas de Pesquisa (National Association of Research Enterprises)
*Test for heterogeneity of proportions
**Test for linear trend
***Maximum of 32 missing values (BMI variable)

were interviewed, bringing the rate of losses and refusals to a total of 9.6%.

Twenty one percent of the study sample stated they never drank an alcoholic beverage; moderate consumption (up to 30 g/day of ethanol) was reported by 65.1% of the sample and the prevalence of heavy alcohol was 14.3% (95% CI 9.7%, 17.8%) being that these represented 3.7% of the women and 29.2% of the men.

The sample obtained was composed of 1,122 (57%) women, the mean age was 41.6 years, being that almost half of the individuals were less than 40 years old. The majority of the individuals (83%) were defined as being white. As to socioeconomic status, the A and E classes of the ANEP each contained approximately 5% of the individuals in the sample and the great majority of the individuals (37%) were concentrated in group C. A similar distribution was found with respect to years of schooling. The majority of the sample was composed of individuals who were married or lived in stable relationships (61%). Data related to co-morbidity and lifestyles are better described in Table 1.

The results of crude analysis for the occurrence of the outcome and of the several factors studied are also presented in Table 1. Significant statistical association was detected between heavy alcohol consumption and male sex, non-white skin color, physical activity and the presence of chronic disease, being that the greatest risks for alcohol abuse were

Table 2 – Crude analysis of heavy consumption of alcohol and demographic, socio-economic, behavioral and health variables among men.

Variable***	N(%)	P (%)	OR ($CI_{95\%}$)	p Value
Age – in years				<0.001*
20 to 29	230 (27.2)	17.4	1.00	
30 to 39	187 (22.1)	30.5	2.08 (1.31 to 3.30)	
40 to 49	181 (21.4)	27.0	1.83 (1.14 to 2.93)	
50 to 59	149 (17.6)	27.0	1.76 (1.07 to 2.89)	
60 to 69	98 (11.6)	43.8	2.69 (2.18 to 6.26)	
Skin color				<0.005*
White	702 (83.0)	25.2	1.00	
Black / mulatto	144 (17.0)	37.1	1.75 (1.20 to 2.56)	
Social level – ANEP				<0.001*
A	50 (5.9)	26.0	1.00	
B	219 (26.0)	20.6	0.74 (0.36 to 1.51)	
C	323 (38.4)	25.2	0.96 (0.49 to 1.90)	
D	210 (24.9)	32.1	1.34 (0.67 to 2.69)	
E	40 (4.8)	52.5	3.15 (1.30 to 7.63)	
Formal education – years of schooling				<0.001**
0	28 (3.3)	57.1	5.52 (2.35 to 12.98)	
1-4	182 (21.5)	36.5	2.38 (1.42 to 3.97)	
5-8	291 (34.4)	28.7	1.67 (103 to 2.71)	
9-11	201 (23.8)	18.0	0.91 (0.53 to 1.57)	
12 or more	144 (17.0)	19.4	1.00	
Civil status				0.06*
Married / in conjugal union	562 (66.4)	28.8	1.46 (1.02 to 2.10)	
Separated / widow(er)	52 (6.1)	35.3	1.97 (1.03 to 3.80)	
Single	232 (27.4)	21.6	1.00	
Minor psychiatric disorders				0.01*
Yes	178 (21.0)	35.2	1.62 (1.14 to 2.32)	
No	668 (79.0)	25.1	1.00	
Body mass index				0.2**
Normal (<25 kg/m^2)	405 (48.3)	24.7	1.00	
Overweight (25 to 29.99 kg/m^2)	313 (37.3)	29.7	1.29 (0.92 to 1.79)	
Obesity (30 kg/m^2 or more)	121 (14.4)	28.9	1.24 (0.79 to 1.95)	
Physical activity				0.1*
Insufficiently active	583 (69.0)	28.6	1.00	
Sufficiently active	262 (31.0)	23.8	0.78 (0.55 to 1.09)	
Hypertension				0.02*
Yes	181 (21.4)	34.3	1.54 (1.08 to 2.19)	
No	664 (78.6)	25.3	1.00	
Chronic disease				<0.001*
Yes	205 (24.3)	37.3 24.0	1.88 (1.34 to 2.63)	
No	640 (75.7)		1.00	
Cigarette smoking				<0,001**
Never smoked	331 (39.1)	15.5 31.4	1.00	
Ex-smoker	227 (26.8)	33.6 40.3	2.50 (1.66 to 3.76)	
Light / moderate smoker	129 (15.2)		2.76 (1.72 to 4.42)	
Heavy smoker	159 (18.8)		3.67 (2.37 to 5.67)	

P: prevalence of heavy alcohol consumption (+30 g/dia)
OR: odds ratio
CI: confidence interval
*Test for heterogeneity of proportions
**Test for linear trend
***Maximum of 32 missing values (BMI variable)

found among the male sex (OR=9.53) and non-white skin color (OR=1.76). The variables formal education or schooling, socio-economic level and smoking presented a linear tendency to increase in prevalence according to the decrease in schooling and socioeconomic level and according to the increase in cigarette consumption. Tables 2 and 3 present the crude analysis stratified by sex, in which important differences may be noticed. As to the age groups, there was a tendency to increase according to the increase in age, however, this is a low intensity association. Among the women, sex stratification resulted in an inverse tendency. The younger age group among the women presented an increased association with abusive alcohol consumption. Among the men, the tendency remained the same as was observed when the sample was analyzed as a whole; however the magnitude of the effect was more readily demonstrated.

No association was found between heavy alcohol consumption and minor psychiatric disorders or hypertension when the entire sample was analyzed, however, when subjects of the male sex were analyzed separately, the presence of psychiatric disorders was directly associated with the outcome.

Some of the variables (socio-economic level and schooling) which presented statistical significance in the sample when analyzed as a whole, when stratified according to sex, particularly the female sex, lost their significance. The reverse holds true for civil

Table 3 – Crude analysis of the heavy alcohol consumption and demographic, socio-economic, behavioral and health variables among women.

Variable***	N(%)	P (%)	OR ($CI_{95\%}$)	p value
Age – in years				0.02**
20 to 29	234 (20.9)	6.4	1.00	
30 to 39	270 (24.1)	3.7	0.56 (0.25 to 1.28)	
40 to 49	262 (23.4)	3.1	0.46 (0.19 to 1.11)	
50 to 59	225 (20.1)	3.1	0.47 (0.19 to 1.17)	
60 to 69	131 (11.7)	1.6	0.23 (0.05 to 1.03)	
Skin color				0.01*
White	932 (83.1)	3.0	1.00	
Black / mulatto	190 (16.9)	7.4	2.56 (1.32 to 4.96)	
Social level – ANEP				0.1**
A	60 (5.4)	3.4	1.00	
B	281 (25.3)	2.2	0.63 (0.12 to 3.18)	
C	403 (36.2)	4.0	1.19 (0.27 to 5.31)	
D	319 (28.7)	3.2	0.93 (0.20 to 4.35)	
E	49 (4.4)	10.2	3.24 (0.60 to 17.49)	
Formal education – years of schooling				0.9**
0	60 (5.3)	3.4	0.91 (0.18 to 4.49)	
1-4	242 (21.6)	3.7	1.00 (0.37 to 2.74)	
5-8	340 (30.3)	3.8	1.03 (0.40 to 2.64)	
9-11	290 (25.8)	3.8	1.03 (0.39 to 2.71)	
12 or more	190 (16.9)	3.7	1.00	
Civil status				0.04*
Married / in conjugal union	643 (57.3)	2.7	0,41 (0.20 a 0.83)	
Separated / widow(er)	235 (20.9)	4.3	0,67 (0.29 a 1.52)	
Single	244 (21.7)	6.3	1.00	
Minor psychiatric disorders				0.07*
Yes	383 (34.2)	5.3	1.80 (0.97 to 3.34)	
No	738 (65.8)	3.0	1.00	
Body mass index				0.1**
Normal (<25 kg/m^2)	502 (45.8)	5.0	1.00	
Overweight (25 to 29.99 kg/m^2)	340 (31.0)	1.5	0.29 (0.11 to 0.76)	
Obesity (30 kg/m^2 or more)	255 (23.2)	3.6	0.70 (0.32 to 1.52)	
Physical activity				0.8*
Insufficiently active	998 (89.4)	3.6	1.00	
Sufficiently active	118 (10.6)	4.2	1.17 (0.45 to 3.04)	
Hypertension				1.0*
Yes	281 (25.1)	3.6	0.93 (0.45 to 1.92)	
No	837 (74.9)	3.9	1.00	
Chronic disease				0.2*
Yes	254 (22.7)	5.2	1.55 (0.79 to 3.03)	
No	863 (77.3)	3.4	1.00	
Cigarette smoking				
Never smoked	614 (54.7)	1.2	1.00	
Ex-smoker	196 (17.5)	4.1	3.64 (1.32 to 10.30)	
Light / moderate smoker	190 (16.9)	5.3	4.76 (1.79 to 12.69)	
Heavy smoker	122 (10.9)	13.9	13.88 (15.62 to 34.28)	<0.001**

P: prevalence of heavy alcohol consumption (+30 g/day)
OR: odds ratio
CI: Confidence Interval
*Test for heterogeneity of proportions
**Test for linear trend
***Maximum of 32 missing values (BMI variable)

status, wherein single women presented a higher risk of being heavy alcohol consumers.

Multivariate analysis yielded significant associations for the following variables: male sex, old age, skin color, low socio-economic level, the presence of a chronic disease and cigarette smoking (see Table 4). The above variables, with the exception of cigarette smoking and the presence of a chronic disease, had increased effects in this analysis when compared to the crude analysis.

An analysis of the relation between heavy alcohol consumption and the control of systemic arterial hypertension was undertaken and an important association between heavy alcohol consumption and poor control of hypertension was found both within the global analysis (OR=1.73, value p<0.001) and analysis stratified by sex. A lower number of medical consultations were also associated to the outcome. Hospitalization was also studied as a variable, but no significant associations were found.

DISCUSSION

A study with a cross-sectional design, despite its advantages in terms of rapid results and low costs, presents some limitations as to inferences with respect to causal effects, due to the fact that both exposures and outcomes are collected simultaneously. Particularly with respect to this study, the relations between heavy alcohol consumption and physical activity, body mass index, minor psychiatric disorders and cigarette smoking may have been affected by this bias.

Furthermore, the subject's account of alcohol consumption may have been affected by memory bias. However, if this bias occurred, it was probably conservative, that is, the frequency of heavy alcohol consumption may be higher than declared.

Alcohol consumption was evaluated, as in other analyses,[6,7,9] by means of an account of the weekly consumption of alcoholic beverages according to frequency, quantity and types of beverages. However, it is known that quantification of alcoholism is a controversial issue, and that the strategy utilized may sub estimate the prevalence of alcohol abuse.[14]

Considering the methodological strategies undertaken in this investigation it is noteworthy that there was a low percentage of losses and refusals (less than 10%) and that there is a great similarity between the study sample and census data for the municipality (*Instituto Brasileiro de Geografia e Estatistica, Censo Demográfico, 2000* [Brazilian Institute of Geography and Statistics, Demographic Census, 2000]).

The prevalence of heavy alcohol consumption (14.3%) was greater than indicated in other studies that utilized the same definition of the outcome, in which prevalences ranged from 7 to 10%.[1,6] On the other hand, studies[7,14] which utilized the DSM III or DSM IV criteria found higher prevalences (15 to 30%).

The greater frequency of heavy alcohol consumption among men is consistent with the litera-

Table 4 – Adjusted analysis of alcohol consumption and demographic, socio-economic, behavioral and health variables.

Level	Variable		OR ($CI_{95\%}$)	P value
1	Sex			<0.001*
		Masculine	10.09 (7.13 to 14.28)	
		Feminine	1.00	
1	Age – in years			0.01**
		20 to 29	1.00	
		30 to 39	1.60 (1.06 to 2.40)	
		40 to 49	1.39 (0.92 to 2.12)	
		50 to 59	1.35 (0.87 to 2.10)	
		60 to 69	2.33 (1.46 to 3.72)	
1	Skin color			0.001*
		White	1.00	
		Black / Mulatto	1.94 (1.39 a 2.71)	
2	Social status – ANEP			0.001**
		A	1.00	
		B	0.73 (0.38 to 1.42)	
		C	1.04 (0.55 to 1.94)	
		D	1.22 (0.64 to 2.32)	
		E	2.81 (1.27 to 6.22)	
3	Chronic disease			0.007*
		Yes	1.60 (1.14 to 2.24)	
		No	1.00	
3	Cigarette smoking			
		Never smoked	1.00	<0.001*
		Ex-smoker	2.34 (1.55 to 3.54)	
		Light to moderate smoker	2.54 (1.63 to 3.95)	
		Heavy smoker	4.62 (3.04 to 7.00)	

*Test for heterogeneity of proportions
**Test for linear trend

ture.[6] A Chinese study[6] indicated 16% prevalence of alcoholism among men and 2% among women, while, in the present study, prevalences were, respectively, 27.2% and 3.8%. Another study among Brazilian hospital patients[5] detected a 22% prevalence among men, whereas the prevalence among women was only 3%.

As to age, differences were also observed between the sexes. Heavy alcohol consumption was directly associated to aging among men, whereas the opposite tendency was observed among women. It is interesting to note the contrast between this and another Brazilian study[9] in which a similar association between alcohol consumption and age was found among both men and women.

Blacks and mulattoes presented higher rates of heavy alcohol consumption, even after analysis was adjusted, indicating the existence of ethnic and/or cultural differences which cannot be explained by age and sex variables. Since skin color is one of the determinants of socio-economic *status*, its effect cannot be controlled by formal schooling or socio-economic level (mediating factors). Nonetheless, this result is consistent with that encountered in other studies undertaken in Brazil,[3,7] which established controls for socio-economic indicators as well.

Alcoholism and socio-economic indicators were inversely associated, as occurs in the majority of the literature reviewed.[3,7] However, the only significant difference was noted among the poorest individuals (class E). Although few years of schooling was associated with heavy alcohol consumption in the crude analysis, in the adjusted analysis this association was not significant.

Cigarette smokers presented greater prevalence of heavy alcohol consumption, particularly heavy smokers. Although there is no causal relation between these variables, this association is recurrent in the literature[3]. This result seems to indicate that alcoholics tend to be more careless about their health.

Finally, despite the limitations of the cross-sectional study, it was noted that people who presented some form of chronic disease consumed more alcohol excessively than other people. This is a cause of concern for it was found that these patients had worse control of systemic arterial hypertension. This finding may be a consequence of the deleterious effect of heavy alcohol consumption, as well as the lower degree of personal health care presented by these individuals, since it was also found that the number of visits to the health center was lower among this population.

Studies similar to this one should be undertaken periodically in order to monitor the tendencies of heavy alcohol consumption. However, ideally, they should be designed in such a way as to make stratified analyses according to sex viable, given that the findings suggest that there are different profiles of heavy alcohol consumption between men and women.

The results indicate that black men, individuals within lower social and economic levels, heavy cigarette smokers and people who present chronic diseases are the groups which present higher frequencies of heavy alcohol consumption of alcohol and who are therefore more susceptible to morbidity and mortality related to alcoholism. Health activities, geared towards these groups, but preferably focused on the entire population, should be planned in order to diminish heavy alcohol consumption and, consequently, its harmful effects on health.

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