

Alcohol intake among adolescent students and association with social capital and socioeconomic status

Consumo de bebida alcoólica por estudantes adolescentes e sua associação com capital social e condição socioeconômica

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Abstract *The aim was to evaluate the prevalence of alcohol consumption, binge drinking and their association with social capital and socioeconomic factors among Brazilian adolescents students. A cross-sectional study was carried out with a randomly selected representative sample of 936 adolescents aged 15 to 19 years. Information on alcohol consumption, social capital and socioeconomic status was collected using the Alcohol Use Disorders Identification Test, the Integrated Questionnaire for the Measurement of Social Capital and Social Vulnerability Index, respectively. The prevalence of alcohol consumption was 50.3% and binge drinking 36% the last year. Adolescents who reported believing that people in their community could help solve a collective problem (with the water supply) and those classified as having high social vulnerability had lower likelihood of binge drinking (PR = 0.776 [95%CI:0.620 to 0.971] and PR = 0.660 [95%CI:0.542 to 0.803], respectively). The prevalence of alcohol consumption and binge drinking the last year is high among participants. Those with higher socioeconomic status as well as lower perceptions of community capital social are more likely to display binge-drinking behavior.*

Key words *Social capital, Binge drinking, Socioeconomic factors, Adolescents*

Resumo *O objetivo foi avaliar prevalência do consumo de bebida alcoólica e associação com o capital social e fatores socioeconômicos em estudantes adolescentes. Estudo transversal realizado com amostra representativa aleatória de 936 adolescentes de 15 a 19 anos. Informações sobre o consumo de álcool no último ano, capital social e condição socioeconômica foram levantadas utilizando-se o Teste de Triagem para Abordar Problemas Relacionados com Álcool (AUDIT), Questionário Integrado para Medir Capital Social e Índice de Vulnerabilidade Social, respectivamente. Prevalência de consumo de bebida alcoólica foi de 50,3% e consumo abusivo de álcool 36,0%, no último ano. Os adolescentes que relataram acreditar que as pessoas em sua comunidade possam ajudar a resolver problemas coletivos (como o abastecimento de água) e os classificados como pertencentes ao grupo de alta vulnerabilidade social apresentaram menor probabilidade de consumo abusivo de álcool (RP = [IC95%:0,620-0,971] 0,776 e PR = [IC95%:0,542-,803] 0,660). As prevalências de consumo de bebidas alcoólicas e consumo abusivo de álcool no último ano foram altas. Adolescentes com melhor condição socioeconômica e menor percepção do capital social foram mais propensos a apresentar um comportamento de consumo abusivo de bebidas alcoólicas.*

Palavras-chave *Capital social, Bebedeira, Fatores socioeconômicos, Adolescentes*

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Introduction

Adolescence is a stage of life characterized by great discoveries and emotional instability. It is considered a critical period for the development of personal and interpersonal abilities, and is a stage of life when individuals are particularly susceptible to social influences. Depending on the social context, teens may adopt behavior that is either protective or a risk to their health. Among the behaviors of risk are the use of alcohol and binge drinking¹. Binge drinking is defined as having five or more drinks on a single occasion for men, and four drinks for women². This type of behavior is common among adolescents and poses a risk of additional problems such as sexual risk behavior, dating violence, poor school performance, involvement in crime, unintentional injuries, and abuse of other substances³. Several factors determine drinking behavior among adolescents, including the need for socialization, relationships with the opposite sex, subjective expectations and norms and, above all, family and social contexts. Social relations can exert either a beneficial influence on behavior or serve as a source of tension, stress and conflict, especially in adolescence⁴.

Social capital relates to the characteristics of social organization, such as trust and relationship networks⁵. Social capital is increasingly studied for its contextual influence on health, with emphasis given to the characteristics of the social environment, based on the idea that relationships exert an important impact on health and wellbeing, such as the ability of a community to engage in collective action through the existence of cohesive relationships. Social capital can be considered a determinant of the health of a population, as health is influenced by demographic, socioeconomic and behavioral factors, as well as the ability to cope with problems⁶. Social capital has generally been characterized as social participation and trust, which are considered mutually dependent and are hypothesized to enhance one another. To some extent, however, social participation has transformed into much more ideologically narrowly defined single-issue movements, formal and informal social networks and activities entailing a much smaller "radius of trust"⁵. Volunteer organizations with different objectives and degrees of formalization represent a countervailing influence on social disintegration in modern society, and the number of such organizations in a community provides an indication of the degree of collectivity in civil society.

Volunteer work is particularly prized due to the fact that it allows individuals to reach their goals through dialog and negotiation, leading to the development of civic practices that are beneficial to the functioning of democracy, including social participation, reciprocal trust, cooperation and mutual tolerance. Beyond their specific goals, civic groups offer the opportunity for cooperation and the exchange of knowledge among members. Behavior is molded by social and community contexts and the manner in which an individual relates with his/her community plays an important role in health⁷.

It is hypothesized that social capital is linked to the health of the population by the direct psychosocial mechanisms, norms and values associated with health-related behavior, crime, the degree of social disorganization and access to health care and amenities⁸. However, few studies have examined the relationships between civic cooperation, solidarity and collective efficacy and the health status of adolescents.

The aim of the present study was to evaluate the prevalence of binge drinking and its association with socioeconomic factors and social capital among adolescents in the city of Belo Horizonte, Brazil. A cross-sectional survey and dataset was used to test the hypothesis that higher levels of community social capital (measured by individual perceptions of community solidarity and collective action) may be associated with lower binge drinking among adolescents.

Methods

Study design and participants

A cross-sectional survey was carried out with a randomly selected representative sample of 936 adolescents aged 15 to 19 years attending public and private schools in the city of Belo Horizonte (the state capital of Minas Gerais, Brazil) in 2010.

The city has approximately two million inhabitants and is geographically divided into nine administrative districts. The sample was selected using a stratified cluster sampling method. To represent the real distribution of 15 to 19-year-old students in Belo Horizonte, two-stage stratified cluster sampling proportional to the administrative districts was used. The first stage was the random selection of two schools, one public and one private, from each of the nine districts (giving a total of 18 schools). Three public schools refused to participate due to time constraints

linked to a teachers' strike earlier that year and were replaced by others through an additional random selection by lots. The second stage was the random selection of 34 of the 65 classrooms in the 18 schools. All the students belonging to randomly selected classes were invited to participate. The sample size was calculated based on a 4.0% standard error, a 95.0% confidence interval, and a 50% prevalence rate of consumed alcoholic beverages. The minimum sample size required was determined at 600 individuals, to which 20.0% was added to compensate for possible non-responses ($n = 720$). A design effect of 1.3 was applied to increase precision, as multistage, rather than simple random sampling, was employed. Thus, the sample was comprised of 936 adolescents. The test power was 80.0%.

In the case of the complex sample, estimates of prevalence and confidence intervals were calculated using the "Complex Sample" module of the Statistical Package for the Social Sciences (SPSS), which considers the study design and sample weights. The sample weights were calculated for each individual by calculating the inverse of the probability of inclusion of each individual in the study. The probability was obtained by multiplying the inclusion probabilities in the stages of random selection (schools and rooms) and the response rate.

Collection of data

The self-administered questionnaires were distributed in the classroom by a researcher and assistant and collected immediately after completion. The students were told that the questionnaires would be anonymous and the responses would be treated confidentially. To guard against biases due to variability in reading proficiencies, the principal investigator (K.O.J.) read each question aloud. Students could refuse to participate and return the incomplete questionnaires in the envelopes. Information on social capital and alcohol consumption was collected using two validated, self-administered questionnaires – the Integrated Questionnaire for the Measurement of Social Capital (SC-IQ) and Alcohol Use Disorders Identification Test (AUDIT).

A pilot study was conducted among 101 adolescents to cognitively test both self-administered questionnaires (SC-IQ and AUDIT) and determine the need for changes, as suggested by the adolescents.

Socioeconomic status

The Social Vulnerability Index (SVI) was used for the socioeconomic classification of adolescents in the sample⁹. This index measures social exclusion in each neighborhood the city of Belo Horizonte. The city hall database of SVI scores for each district was used to categorize the social vulnerability of the participants based on the address of each student. The SVI has 20 variables grouped into five "dimensions of citizenship: environmental (access to housing and basic infrastructure); cultural (access to education); economic (access to income and employment); legal (access to legal assistance); and survival security (access to health, food security and welfare)¹⁰. Scores range from 0 to 1, with higher values denoting worse community conditions or greater vulnerability to social exclusion within the community in question. The SVI was dichotomized as more vulnerable (social classes 1 and 2) versus less vulnerable (social classes 3, 4 and 5).

Mother's schooling was used as an indicator of individual socioeconomic status due to its association with alcohol consumption/binge drinking in adolescents¹¹. This variable was determined based on the responses of students to a question addressing the number of years of schooling their mothers had received. Respondents who reported that their mothers had studied for a period of 0 to 7 years were coded as 0 and those who reported 8 or more years were coded as 1. The median was used as the cut-off point.

Type of school (public versus private) was also used as an additional socioeconomic indicator. Although type of school is a crude assessment, wealthy adolescents in Brazil enroll in private schools as most Brazilian public schools have fewer educational resources. Moreover, a recent study concluded that type of school is a useful socioeconomic indicator in studies involving Brazilian children¹².

Social Capital

The SC-IQ is an instrument to measure social capital developed and validated by the World Bank¹³ and has been previously administered to Brazilian adolescents¹⁴. Each item was taken from previous surveys on social capital and the questionnaire has demonstrated both reliability and validity. The SC-IQ consists of 27 items distributed among six subscales (Groups and Networks; Trust and Solidarity; Collective Action

and Cooperation; Information and Communication; Cohesion and Social Inclusion; and Empowerment and Political Action). In the present study, the Trust/Solidarity and Collective Action/Cooperation subscales were used for the assessment of social behavior related to involvement in community. These two domains are composed of seven questions: "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in your dealings with other people?; In general, do you agree or disagree with the following statements?; Most people in this village/neighborhood are willing to help if you need it.; In this village/neighborhood, one has to be alert or someone is likely to take advantage of you. How much do you trust local government officials; How much do you trust central government officials; If a community project does not directly benefit you, but has benefits for many others in the village/neighborhood, would you contribute time or money to the project?; In the past 12 months, have you worked with others in your village/neighborhood to do something for the benefit of the community?; If there was a water supply problem in this community, how likely is it that people will cooperate to try to solve the problem?"

Assessment of alcohol intake and binge drinking

AUDIT is a simple method of screening for excessive drinking and consists of ten questions inquiring about recent alcohol use, symptoms of alcohol dependence and alcohol-related problems. This measure has been validated for use in Brazil. The instrument helps identify whether an individual exhibits hazardous (or risky) drinking, harmful drinking or alcohol dependence. For this study, the AUDIT C (the first 3 questions of the AUDIT instrument related to the frequency and amount of alcohol consumed) was also used due to the fact that this measure can be effectively employed as a "stand-alone" screening measure to detect hazardous drinking among adolescents¹⁵. The third item on the questionnaire was chosen as the dependent variable in the bivariate and multivariate analyses due to its importance in assessing the frequency of heavy drinking. The respondents were asked, "How often do you have five or more drinks on one occasion?"^{16,17}.

Statistical analysis

Data analysis was performed using the Statistical Package for Social Sciences (SPSS for Windows, version 17.0, SPSS Inc, Chicago, IL, USA). Descriptive and bivariate analyses were carried out using the chi-squared test ($p < 0.05$). Poisson logistic regression was used in the multivariate analysis. The criterion for inclusion in the model was a 2-tailed significance value of $p < 0.20$ in bivariate analysis.

Ethical considerations

This study was approved by the Human Research Ethics Committee of the Universidade Federal de Minas Gerais (the Federal University of Minas Gerais) (Brazil) in accordance with the guidelines of the Declaration of Helsinki. Authorization was obtained from the schools to undertake the research. The participants and their parents/guardians signed a statement of informed consent. The participants were assured anonymity and confidentiality in their answers.

Results

A total of 936 adolescents aged 15 to 19 years were randomly selected to represent the population of schoolchildren in the city of Belo Horizonte, Brazil. The final sample consisted of 891 adolescents (mean age: 16.3 ± 1 years; 352 males [39.5%] and 539 females [60.5%]) enrolled in public (80.5%) and private (19.5%) schools. Non-responses totaled 4.8% ($N = 45$ adolescents) and were due to the incomplete filling out of questionnaires.

The frequency of alcohol consumption (How often do you drink alcoholic beverages?) among those who reported drinking alcoholic beverages less than once a month to more than four times a week was 50.3% ($n = 448$). A total of 732 adolescents (82.2%) reported low-risk alcohol consumption, while 158 (17.7%) reported hazardous use to possible dependence.

With respect to binge drinking (How often do you have five or more drinks on one occasion?), 321 of adolescents (36%) reported a frequency ranging from less than monthly to almost every day. No statistically significant difference was found between males (38.9%) and females (34.1%) with regard to binge drinking. Among the students from private schools, 47.1% reported having five or more drinks on a single occasion, whereas the corresponding prevalence

among students in public schools was 33.3% ($p = 0.001$). There was a higher prevalence of binge drinking among adolescents whose mothers had a higher level of schooling ($p = 0.002$). Among those who reported never binge drinking ($n = 570$), 338 (59.3%) were classified as being more socially vulnerable; the difference between socioeconomic groups was significant ($p < 0.001$) (Table 1).

While 41.7% of the adolescents participating in community activities reported having consumed alcoholic beverages, the majority of these adolescents (58.3%) reported not engaging in binge drinking ($p = 0.020$). A willingness to contribute time or money to community projects was not significantly associated with binge drinking. Among adolescents who answered positively to the possibility of people cooperating to solve a collective problem that affected the entire community – specifically, a problem related to the public water supply – (66.9%) reported not engaging in binge drinking ($p = 0.007$) (Table 1).

In Poisson regression analysis, higher social vulnerability and higher perceived collective efficacy (the ability of a community to solve common problems) remained significantly associated with a lower risk of binge drinking after control for gender and age (PR = 0.660 [95% CI: 0.542 to 0.803] and PR = 0.776 [95% CI: 0.620 to 0.971], respectively) (Table 2).

Discussion

The abusive consumption of alcoholic beverages among adolescents is an important public health issue. In the present study, the prevalence of alcohol consumption (a frequency ranging from less than once a month to four or more times a week) among students in the city of Belo Horizonte was high (50.3%). This is in agreement with previous studies carried out in Brazil, which found prevalence values ranging from 24.2% to 78.0%^{12,18}.

Studies report that adolescents who drink tend to do so in public episodes of binge drinking^{5,19,20}. In the present study, the prevalence of binge drinking was 36.0%, which is higher than the figure reported in a study carried out in the city of Sao Paulo (Brazil)²¹, in which 25% of a sample of 1808 students reported at least one episode of binge drinking in the previous 30 days. In a cross-sectional survey involving 48,155 students aged between 10 and 18 years enrolled in public schools in 27 large cities in Brazil, 4286 (8.9%) had engaged in binge drinking in the pre-

vious month²². A similar prevalence to that of the present investigation was reported in a previous sample of 2691 Brazilian students aged 14 to 19 years enrolled at private schools in the city of Sao Paulo, in which 34.5% of the participants reported engaging in binge drinking in the previous 30 days¹². The characteristics of binge drinking among 17,297 high school students aged 14 to 18 years were found to be associated with socioeconomic status in a study across the five different macro-regions of Brazil, where the prevalence of binge drinking was 32% in the previous year. Being in the highest socioeconomic status stratum doubled the risk of binge drinking among students in all five Brazilian macro-regions²³. The first representative survey of binge drinking in Brazil, conducted in 143 Brazilian municipalities with subjects aged between 18 and 44 years, reported that most respondents had not engaged in binge drinking (69.7%). Binge drinking was more common among participants who were male, single and had a higher family income²⁴.

Binge drinking among youths is not an exclusively Brazilian phenomenon. In a Danish study involving individuals between 16 and 20 years of age, 74% of males and 59% of females reported having six or more drinks on a single occasion at least once a month²⁵. Both the habitual and excessive consumption of alcohol in a short period of time (binge drinking) are essential factors in the analysis of intake amounts. Binge drinking has been widely described to be associated with physical, social and mental problems¹⁹. According to a longitudinal birth cohort study involving 11,622 subjects aged 16 years (11,261 of whom were followed up at 30 years of age), adolescent binge drinking predicted an increased risk of adult alcohol dependence, excessive regular alcohol consumption, illicit drug use, psychiatric illness, homelessness, school exclusion, lack of qualifications, accidents and a lower social class²⁶. In another cohort study, alcohol dependence in young adults was preceded by a high frequency of alcohol consumption in adolescence; among the adolescents who reported binge drinking, the chance of belonging to the group of dependent individuals was 6.7-fold greater²⁷.

The present study found no statistically significant difference by gender with regard to binge drinking. Previous literature has reported conflicting findings concerning gender differences^{18,21}. The growing consumption of alcoholic beverages among females is related to recent social advances among women, such as financial independence and the fact that adolescent girls

Table 1. Distribution of sample according to prevalence of binge drinking and independent variables. Belo Horizonte, Brazil, 2010.

Independent variables	Binge drinking in the past year		P-value ^a
	Never	Less than monthly to daily	
	n (%)	n (%)	
Type of school			
Public	478 (66.7)	239 (33.3)	0.001
Private	92 (52.9)	82 (47.1)	
Age			
15-16	344 (65.0)	185 (35.0)	0.428
17-19	226 (62.4)	136 (37.6)	
Sex			
Male	215 (61.1)	137 (38.9)	0.146
Female	355 (65.9)	184 (34.1)	
Mother schooling			
0-7 years	214 (69.9)	92 (30.1)	0.002
8 or more years	245 (58.5)	173 (41.4)	
Social Vulnerability Index			
Greater vulnerability	338 (59.3)	139 (43.3)	0.000
Lesser vulnerability	232 (40.7)	182 (56.7)	
†Trust in people	32 (56.1)		0.146
People can be trusted	538 (64.5)		
You can't be too careful		25 (43.9)	
†Most people are willing to help if you need it	192 (69.1)	296 (35.5)	0.054
Agree	138 (61.9)		
Neither agree or disagree		86 (30.9)	
Disagree	240 (61.5)	85 (38.1)	
†One has to be alert or someone is likely to take advantage of you	150 (38.5)	150 (38.5)	0.905
Agree	428 (64.1)	240 (35.9)	
Neither agree or disagree	73 (61.9)	45 (38.1)	
Disagree	69 (65.7)	36 (34.3)	
†Trust in Local government officials			0.924
Trust to a great extent	19 (65.5)	10 (34.5)	
Neither great nor small extent	173 (63.4)	100 (36.6)	
Trust to a small extent	378 (64.2)	211 (35.8)	
†Central government officials			0.798
Trust to a great extent	21 (63.6)	12 (36.4)	
Neither great nor small extent	159 (63.3)	92 (36.7)	
Trust to a small extent	390 (64.4)	216 (35.6)	
†Contribute with time			0.547
Yes	374 (63.3)	217 (36.7)	
No	196 (65.3)	104 (34.7)	
†Contribute with money			0.860
Yes	192 (63.6)	110 (36.4)	
No	378 (64.2)	211 (35.8)	
†Participate in any communal activities			0.020
Yes	158 (58.3)	113 (41.7)	
No	412 (66.5)	208 (33.5)	
†People will cooperate cooperate to try to solve a water supply problem			0.007
Likely	337 (66.9)	167 (33.1)	
Neither likely or unlikely	132 (65.0)	71 (35.0)	
Unlikely	101 (54.9)	83 (45.1)	

^a Chi-square test. † Questões do SC-IQ: Trust/Solidarity and Collective Action/Cooperation subscales.

Table 2. Risk factor for binge drinking (Poisson logistic regression analysis^a); Belo Horizonte, Brazil, 2010.

Dependent variable	Independent variable	P-value Crude	PR ^a 95% CI Crude	R 95% CI ^b Adjusted ^a	P-value ^c Adjusted ^a
Binge Drinking in the past year	Age				
	15-16	0.426	0.931 (0.780-1.111)	0.837 (0.700-1.000)	0.050
	17-19		1	1	
	Sex				
	Male	0.114	1.140 (0.956-1.359)	1.124 (0.943-1.340)	0.191
	Female		1	1	
	Type of school				
	Public	<0.001	0.707 (0.586-0.854)	0.795 (0.651-0.971)	0.025
	Private		1	1	
	Social Vulnerability Index				
	Greater SVI	<0.001	0.663 (0.555-0.791)	0.689 (0.570-0.834)	<0.001
	Lesser SVI		1	1	
	People will cooperate to try to solve a water supply problem				
Likely	0.048	0.804 (0.648-0.998)	0.728 (0.598-0.887)	0.002	
Neither likely or unlikely	0.933	0.991 (0.804-1.222)	0.814 (0.635-1.042)	0.103	
Unlikely		1	1		

^a PR: Prevalence ratio. ^b CI: Confidence interval. ^c Adjusted for control variables (sex and age).

today have more freedom to frequent places that serve alcoholic beverages, which were previously restricted to men.

Farmer and Hanratty²⁰, found a significant association between socioeconomic status and alcohol consumption, with adolescents from lower income families consuming more alcoholic beverages. Moreover, participants who reported greater family interactions were less likely to be regular users. Notably, the socioeconomic patterning of binge drinking in Brazil is opposite to that reported in the UK.

The SVI identifies where the most vulnerable populations live among the 81 administrative units that make up the city of Belo Horizonte. These spatial units delineate relatively homogeneous neighborhoods, with boundaries that often coincide with natural or constructed physical barriers¹⁰. A greater prevalence rate of binge drinking was found among adolescents with lower social vulnerability; those enrolled in private schools; and those whose mothers had attained a higher level of schooling. It is possible that higher economic status translates to greater purchasing power among socially privileged adolescents.

For adolescents with higher socioeconomic status, having greater financial resources may indicate that the relative cost of substance use is lower than that for adolescents from lower so-

cioeconomic backgrounds¹⁴. According to Carlini-Cotrim and da Matta Chasin²¹, this is in contrast to the commonly held notion that private schools are more protected from certain problems, such as the consumption of psychoactive substances and violent behavior. Likewise, the findings reported in a previous study in the USA indicate that higher socioeconomic status (as measured by parental schooling and household income) in adolescence is associated with higher rates of substance use, particularly binge drinking¹¹. Lower income leads to reduced consumption of all goods, including alcohol, due to the need to allocate resources for expenditures on different products²⁸. In the present study, the association between greater engagement in binge drinking and higher socioeconomic status remained statistically significant in multivariate analysis. The different components of social capital encompass civic participation, collective efficacy and social ties. The IQ-SC measures feelings of collective efficacy and capacity that encourage members of a residential unit to exert an influence on local events. The Trust/Solidarity and Collective Action/Cooperation subscales were employed in the present study. Participation in community activities, which is one of the aspects of the structural component of social capital, assesses the likelihood that people can help each other to solve a community problem.

Despite being protectively associated with binge drinking in bivariate analysis, this factor was not associated with such drinking in the Poisson regression model. These findings may be explained by cultural practices in Brazil, where it is common to drink socially after meetings and encounters involving community participation, as well as the easy access adolescents have to alcoholic beverages, despite the laws governing the sale of such products. However, none of the data in the present study on the use of alcoholic beverages during meetings explains the non-significance of the association with “participation in community activities” in the regression model.

Social capital can be measured by patterns of cooperation/collective action, volunteer work and associational life in a community, levels of social trust, reciprocity, mutual help among neighbors/members of an association and degree of civic engagement. Trust, engagement and mutual obligation among individuals in a community are contextual factors that may offer protection from the harmful use of alcohol by adolescents. The level of trust among the members of a community is also related to informal participation in volunteer activities and can exert a positive influence on both wellbeing and longevity, including serving as a protective factor against the harmful use of alcohol. Social capital measured by cooperation and collective action through social participation has the capacity to increase or diminish alcohol intake, depending on the predominant drinking patterns and norms of the social group²⁹.

In the present study, adolescents who perceived that people in their community are able to get together to solve a problem that affected everyone (such as a change in the public water supply) were less likely to engage in binge drinking. In a study involving 140 American universities, a greater level of social capital (as measured by involvement in volunteer activities) was associated with a significantly lower risk of binge drinking and associated harms, which underscores the importance of social contexts for young people. Among the risk factors for alcohol abuse, the researchers identified the accessibility, availability and price of alcoholic beverages²⁹.

According to literature, when an individual engages in collective actions with the aim of benefiting the entire community, social capital is considered positive for the majority of members of that community^{8,30}. Few studies have assessed the association between social participation, solidarity and alcohol consumption and/or abuse, especially among adolescents. In two prior publi-

cations, high degrees of social participation combined with a low degree of trust were positively associated with excessive alcohol intake. Alcohol consumption may directly or indirectly affect health through its impact on the development of positive social networks³¹. Trade union membership, volunteering and social participation can be construed as either precursors or consequences of social capital, suggesting an urgent need to incorporate direct measures of social cohesion³⁰.

In a systematic review of programs aimed at controlling risk behaviors among adolescents, such as alcohol use, drug use and sexual activity, the authors employed the Assessment of Multiple Systematic Reviews (AMSTAR) tool to assess the methodological quality of the studies and listed the actions that proved efficient in determining intervention strategies. The most promising programs considered a variety of risk and protection factors, such as boosting resilience and the promotion of positive influences from parents, family members and the school setting in providing healthy support to the social and emotional development of adolescents. The authors stress the need to broaden approaches on cultural and social levels³².

Knowledge of the consequences of early alcohol intake and binge drinking, such as involvement with other drugs, traffic accidents, violence and academic problems, health professionals, public policy developers, teachers and parents should increase efforts to track, monitor and prevent the initiation and excessive consumption of alcohol by children and adolescents³³. The results of this study suggest that promoting solidarity and participation in activities that benefit the community may constitute tools for combating excessive alcohol consumption among adolescents. However, due to the complexity of this issue, the discussion on the topic should be broadened to include social movements and public administrators.

It is believed that through associations, people develop interactions with each other, increasing the possibility of mutual trust developing between them³⁴. According to Veenstra *et al.*³⁵, social capital and health are embedded in the local geographical context and are influenced by demographic, socioeconomic and behavioral factors and skills for coping with problems. Whereas knowledge about heavy drinking in developing countries is limited¹², the present study contributes to scientific advancement, identifying social characteristics that should be considered in strategies for the prevention of heavy drinking.

The limitations of the present study are typical of cross-sectional surveys, especially with regard to causal inference and information bias. Even though anonymity was assured and self-administered questionnaires were used, it is possible that the adolescents did not reveal their true alcohol use patterns due to distrust, self-censorship, social desirability, feelings of guilt or memory lapses. Nonetheless, the present study offers a starting point for the development of longitudinal studies that can start to describe the influence of social factors and drinking behavior among young people.

Conclusions

The findings of the present study reveal a high prevalence of alcohol consumption and binge drinking among adolescents in the city of Belo Horizonte, Brazil. Greater engagement in binge drinking was found among adolescents with a higher socioeconomic status. Moreover, a lower frequency of binge drinking was found among adolescents who reported higher stocks of social capital in their community, measured in terms of the willingness of residents to undertake collective action to solve common problems.

Collaborations

KO Jorge contributed to the conception and design of the study, data collection, analysis and interpretation and drafting of the manuscript and approved of the final version for publication. PCP Paiva contributed to drafting of the manuscript and approved of the final version for publication. EF Ferreira, MP Vale, I Kawachi interpretation of the data and offered a critical review of the intellectual content and approved of the final version for publication. PM Zarzar contributed to the conception and design of the study, interpretation of the data and drafting of the manuscript, offered a critical review of the intellectual content and approved of the final version for publication.

Acknowledgments

The authors wish to thank the Brazilian fostering agency Fundação de Amparo à Pesquisa de Minas Gerais (FAPEMIG) for its support.

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Artigo apresentado em 07/03/2016

Aprovado em 09/06/2016

Versão final apresentada em 11/06/2016