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Correlates of alcohol experimentation and drunkenness episodes among secondary-school students in Nigeria

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Abstract

Background: Alcohol is the most used substance among adolescents in Nigeria. While risk factors for alcohol use among adolescents are well documented in Europe and the US, they have received less attention in the literature on African countries. This study aimed to investigate the factors associated with alcohol experimentation and drunkenness episodes in a national sample of Nigerian adolescents. **Methods:** A total sample of 4,078 secondary-school students participated in the survey during the school year 2015–2016. The survey involved 32 secondary schools of six geopolitical zones (South-South, South-West, South-East, North-Center, North-West, and NorthEast) and two metropolitan cities (Abuja and Lagos) of Nigeria. Sociodemographic characteristics, parental alcohol use and permissiveness, friends' alcohol use, risk perceptions and beliefs were investigated as correlates of alcohol experimentation and drunkenness episodes through multilevel, mixed-effect logistic regression models. **Results:** The prevalence of alcohol experimentation was 34.0%, while the prevalence of drunkenness episodes was 13.4%. Results showed that male gender, family structure different from both parents' families, parental and friends' alcohol use, parental permissiveness to drink, low risk perceptions on drinking alcohol, and positive beliefs on consequences of alcohol use were associated with an increased probability of alcohol experimentation and drunkenness episodes. Family affluence and one-parent family structure were related to an increased probability of alcohol experimentation but not of drunkenness episodes. **Conclusions:** The majority of risk factors analyzed in this study generalize across drinking-behavior outcomes. Since the young population is dominant in Nigeria, alcohol use could become a big public health problem in the near future. High investment in adolescents' well-being by addressing the factors that contribute to drinking behavior might help to reduce the burden of the problem. Evidence-based prevention curriculum addressing knowledge, risk perceptions, beliefs on consequences of alcohol use, and parental behaviors should be implemented as widely and early as possible.

Introduction

Alcohol is the most used substance among adolescents in Nigeria.^{1,2} Recent studies conducted among secondary-school adolescents found a worrisome prevalence of alcohol use, ranging from 21% to even 59%.^{1,3–9} Moreover, according to a World Health Organisation report on alcohol use and health, Nigeria ranks second in Africa for heavy episodic drinking among senior secondary-school students.¹⁰

Alcohol has always been used in Nigerian society. However, the patterns of alcohol use changed in the last 20 years, when Western alcohol-production industries moved their factories into developing countries where alcohol policies are rather absent.¹¹ Since then, alcohol became more easily available for all age groups and youth became the target population of brewery producers sponsoring social events, advertising alcohol, and posting alcohol outlets near schools.^{12–15} Although in Nigeria the legal minimum age for the sale of alcoholic beverages is 18 years, underage youth can freely buy alcohol in public places.¹³ Due to the absence of a national alcohol policy and poor implementation of existing laws, alcohol companies relied on self-regulation, i.e., strategies of alcohol marketing were championed by alcohol producers.¹³

While risk factors for alcohol use among adolescents are well documented in Europe and the US, they received less attention in African countries. Regarding Nigeria, the few studies conducted on secondary-school students found that male gender, age, socioeconomic status, family structure different from two-parent household, parental alcohol use, and friends' alcohol use were factors associated with adolescents' alcohol use.^{3,9,16–19} Risk perceptions and beliefs were studied only among university students: Adelekan et al. (1993) found low perceived harmfulness to be associated with alcohol use among undergraduates, whereas more recently Ekpenyong et al. (2014) observed that youth were more inclined toward positive than negative beliefs and those perceiving positive beliefs were more likely to use alcohol.^{20,21} Adolescents reported experimenting something new, spending good time with friends, feeling better, relieving stress, socializing, and increasing self-esteem as the most common reasons for using alcohol.^{4,5} Moreover, alcohol is generally perceived as easily available by adolescents in Nigeria and this may be another reason for its use.^{7,22} Finally, the few studies investigating knowledge on effects showed that the majority of adolescents in Nigeria are not aware of the negative effects of alcohol use on health.^{23,24}

Most previous Nigerian studies involved just one geopolitical zone, generally the South, and investigated risk factors for alcohol use. No studies were conducted at the national level and there is a lack of studies that investigated risk factors for excessive alcohol use or drunkenness episodes.

In 2015, the United Nations Office on Drugs and Crime (UNODC), with the collaboration of the Federal Ministry of Education (FMOE), the National Drug Law Enforcement Agency (NDLEA), and the National Agency for Food and Drug Administration (NAFDAC), implemented in Nigeria a large-scale project funded by the European Union (EU) titled "Response to Drugs and Related Organized Crime in Nigeria," which included a component to promote healthy lifestyles in schools, families, and communities. Within the project, the prevention program Unplugged was implemented and tested through a randomized controlled trial. A survey investigating substance use behaviors, knowledge, attitudes, beliefs, and risk perceptions was conducted at baseline among secondary-school students participating in the project.

The objective of the present study is to identify the factors associated with alcohol experimentation and drunkenness episodes in the national sample of Nigerian adolescents who participated in the above-mentioned project, underlining differences in the correlates of one or the other outcome.

Material and Methods

Data collection

The project involved 4,078 students of 32 secondary schools of the six geopolitical zones (South-South, South-West, South-East, North-Center, North-West, and North-East), and two metropolitan cities (Abuja and Lagos) of Nigeria. Schools were randomly extracted from a list of 60 federal public schools provided by the Federal Ministry of Education (FMOE) and available to participate in the randomized controlled trial for the evaluation of the Unplugged prevention program. Details on the trial and the sample size calculations are provided elsewhere. Since the geopolitical zones differ from each other in many characteristics, e.g., size of population, language, culture and religion, economic resources, and historical backgrounds, the random extraction and random allocation took place by zone. Based on the population size of the zones, six schools were extracted in the North-West zone, four in the NorthEast, four in the North-Central, two in the Abuja Federal Capital Territory, eight in the South-West (of which two are in Lagos State), four in the South-East, and four in the South-South.

A self-completed, anonymous questionnaire was used to collect information about sociodemographic characteristics; substance use behaviors; knowledge, attitudes, beliefs, and risk perceptions toward tobacco, alcohol, and drugs; intrapersonal and interpersonal skills; perception of friends' substance use; parental substance use and permissiveness; parental monitoring; and school characteristics. The questionnaire was a shortened version of that used in the EUDap study (available at www.eudap.net). It was adapted to the Nigerian context, especially with regard to lexical aspects. Local experts revised the language and the appropriateness of the constructs.

Most questions were derived from the Evaluation Instruments Bank of the Exchange on Drug Demand Reduction Action (EDDRA), the online platform of European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) that provides validated instruments for evaluating prevention, treatment, and harm-reduction interventions (www.emcdda.europa.eu/eib). To preserve confidentiality, the questionnaires were labeled with a nine-digit individual code self-generated by the student. The questionnaires were administered to students in classrooms by local responsible staff between December 2015 and January 2016. Information on the study was provided to the students before the survey and oral consent to participate was obtained. The overall participation rate of students was 4,078 out of 4,320 (94.4%) expected.

Measures

Alcohol experimentation and drunkenness episodes were investigated through the questions "How many days (if any) have you drunk any alcoholic beverages in your lifetime?" and "How many times (if any) have you been drunk from drinking any alcoholic beverages in your lifetime?" Response categories were ranged on a scale from 0–30 or more. The dependent variable included those who used alcoholic beverages and have been drunk at least once during their life. The responses were collapsed in a dichotomous variable of ever alcohol experimentation/never alcohol experimentation and ever drunkenness/never drunkenness.

Individual sociodemographic information included gender, age (based on date of birth), and family composition categorized in three levels (living with both parents, one parent, and other). As a proxy of socioeconomic status, family car possession was assessed using the question "Does your family have a car or a bus?" with possible answers no; yes, one; and yes, two or more. Parental alcohol use was investigated through the question "Do any of your parents drink alcoholic beverages?" and categorized into yes, no, don't know, and don't have these persons. A single item examined perceived parental permissiveness toward alcohol use, with possible responses would allow (allows me) to drink alcohol, would not (does not) allow drinking at home, would not (does not) allow drinking at all, and don't know.

The possible answers on the perceived number of friends who drink or get drunk were none, less than half, about half, more than half, all of them, and don't know.

Two indicators of risk perceptions on alcohol were investigated separately through the items risk perceptions on having one or two drinks nearly each week and risk perceptions on drinking alcohol every day, allowing the answers no risk, slight risk, great risk, and don't know. Positive beliefs toward alcohol were assessed using the question "How likely would each of the following happen to you if you drink alcohol in the next month?" with the following answers: have more friends, feel more relaxed, have more fun, be more popular, forget my troubles, and be more confident and outgoing. The students reported responses on a 4-point Likert scale (very likely/likely/unlikely/very unlikely). Answers were scored 1–4 and summed, means were calculated, and categories of high, middle, and low level of each indicator were created by using tertiles.

Statistical analysis

The present analysis used a cross-sectional design. The dependent variables under study were ever alcohol experimentation and ever drunkenness (yes/no) as recorded at baseline. The analytical sample included 4,029 adolescents answering the question of ever alcohol experimentation and 4,016 answering to the question of ever drunkenness.

The associations of sociodemographic characteristics, parental alcohol use and permissiveness, friends' alcohol use, risk perceptions, and positive beliefs with the risk of alcohol experimentation and drunkenness were evaluated in multilevel bivariate logistic regression analysis. All significant variables from the bivariate analysis were included in the multiple logistic regression models simultaneously. Colinearity between variables was checked. In order to control for the hierarchical nature of the data, multilevel mixedeffect modeling was applied in multiple logistic regression models. Since the zones differ from each other in many characteristics that may have an impact on substance use,²⁵ we fitted geopolitical zone as first level. Furthermore, since the random extraction occurred at the school level, we fitted school as second level. Separate models were fitted for ever alcohol experimentation and ever drunkenness. Categorical variables were re-coded in order to reduce the number of items included in the model, i.e., the number of categories was reduced or merged. Pairwise deletion was applied to handle missing values. The final models for alcohol experimentation and drunkenness were run on 3,689 and 3,690 students (90.5% of initial sample).

Statistical analyses were carried out using STATA software release 12.0 (Stata Corporation, 2011, College Station, TX, US).

Results

The prevalence of alcohol experimentation was 34.0% and the prevalence of drunkenness was 13.4%. Boys reported higher involvement in both alcohol use (38.0% vs. 25.8%, $p < 0.001$) and drunkenness episodes (14.7% vs. 10.6%, $p < 0.001$) than girls. The mean age of the studied sample was 14.7 years ($SD \pm 1.24$), with no difference between students who had already experimented with alcohol or had drunkenness episodes vs. those who never did. Students who had already used alcohol or had been drunk reported a higher proportion of parents who drank alcohol (36.0% vs. 12.8%, $p < 0.001$ and 38.1% vs. 18.1%, $p < 0.001$), perceived parental permissive norms toward alcohol use (14.7% vs. 3.7%, $p < 0.001$ and 17.7% vs. 5.8%, $p < 0.001$), had friends who drank (29.8% vs. 8.9%, $p < 0.001$), and friends who got drunk (22.5% vs. 7.5%, $p < 0.001$). They showed lower risk perceptions as regards drinking occasionally (26.6% vs. 15.9%, $p < 0.001$ and 27.1% vs. 18.4%, $p < 0.001$) and drinking every day (5.5% vs 3.3%, $p < 0.001$ and 7.3% vs. 3.5%, $p < 0.001$), as well as higher positive beliefs on consequences of alcohol use (66.6% vs 57.7%, $p < 0.001$ and 70.3% vs. 59.4%, $p < 0.001$) than those who reported they never experimented with alcohol or got drunk (see Tables 1 and 2).

Correlates of alcohol experimentation

In the multiple regression model, male gender was significantly associated with the increased risk of alcohol experimentation, whilst age lost significance. The association between the indicator of socioeconomic affluence (family car possession) and the risk of adolescent's alcohol experimentation

was statistically significant, and the probability of ever alcohol use slightly increased with the amount of cars possessed by the family. Also, living in a one-parent household and living with other family components vs. living with both parents were associated with ever alcohol use.

Both parental alcohol use and perceived permissiveness to drink were strongly associated with ever alcohol use: the probability of adolescent alcohol use was three times higher among those whose parents drank alcohol, and almost five times higher among those whose parents allowed drinking. The risk of alcohol experimentation increased also when parents would not allow drinking at home and they did not set a rule for outside.

The students who had friends who drank had a threefold greater chance of alcohol experimentation themselves.

The perception that having one or two drinks each week and drinking alcohol every day caused slight risk was associated with a higher probability of ever alcohol use compared to the perception that it caused great risk, and the association was even stronger when the perception was that these behaviors were not risky at all. Positive beliefs on the consequences of alcohol use increased the likelihood of involvement in alcohol use (see Table 3).

Correlates of drunkenness

In the multiple regression model, male gender was significantly associated with an increased risk of having experienced drunkenness episodes. Age, the indicator of socioeconomic affluence, and living with only one parent lost significance, whilst living with other family components was significantly associated with the risk of drunkenness vs. living with both parents.

The adolescents whose parents drink alcohol and were permissive toward their drinking had an increased risk of having experienced drunkenness (2.64 times and 2.08 times, respectively). The restriction of perceived parental ban to drink alcohol in the home setting did not change the increase of the risk of students to get drunk.

Having friends who got drunk was associated with an increase of three times the probability of students experiencing drunkenness.

The perception that having one or two drinks each week caused a slight risk increased the probability of drunkenness by 39%, whilst the perception that it was not risky at all was only slightly associated. The perception of a slight risk in drinking alcohol every day was associated with a 58% increase of the probability of ever drunkenness, whilst the perception of no risk at all related to such behavior increased the risk twice. Positive beliefs on the consequences of alcohol use increased the probability of experiencing drunkenness (see Table 4).

Discussion

The novelty of our study lies in the assessment of factors associated with alcohol experimentation and ever drunkenness within a national sample of Nigerian secondary-school students who participated across all six geopolitical zones of the country. In our study, the prevalence of ever alcohol use among adolescents was 34.0% and the prevalence of ever drunkenness was 13.4%, with large differences between males and females. This was consistent with the studies by Anyanwu et al. (2016), Bassi et al. (2017), and Famuyiwa et al. (2011), and with the 14.6% prevalence of heavy episodic drinking reported by the World Health Organisation's Global Status Report on Alcohol and Health in 2014 for Nigerian adolescents.^{1,6,8,10}

Most of the studied factors were associated with both alcohol use outcomes, i.e., alcohol experimentation and ever drunkenness.

In line with previous studies, male gender was associated with both alcohol experimentation and drunkenness.^{3,17,19,26,27} Higher parental permissiveness toward the use of alcohol among males

and greater restrictions for girls can explain this result. Indeed, a significantly higher proportion of boys perceived parental permissiveness toward alcohol in our sample. However, our survey involved students attending school, and the proportion of females was quite low, probably reflecting females' lower access to school in some zones of Nigeria. So, the population of females participating in our study is representative of the overall female student population, but it could be not fully representative of the overall population of female adolescents in Nigeria. Thus, we can't exclude that other factors related to education of females could contribute to the lower alcohol use we observed among females.

Having several cars was associated with a greater risk of alcohol experimentation. This is in line with the increased prevalence of alcohol use among high-income adults²⁸ and with previous Nigerian studies, which observed an increase of adolescent alcohol use with the increase of father's and mother's education levels.^{3,9} This can be explained by the greater availability of alcohol in high-income households due to new, Western-like cultural norms, more liberal parental attitudes toward drinking in high-SES families, and the greater purchasing power of high-income adolescents. In the last number of years, indeed, the patterns of alcohol use greatly changed in Nigerian society, and alcohol became a symbol of social prestige.¹³ On the contrary, the association between number of cars in the family and the risk of drunkenness episodes was not statistically significant. This could be due to the higher tendency of low-SES adolescents to engage in heavy-risk behaviors.^{29–31} However, the lack of significance could also be due to a low statistical power to detect such an association.

Compared to living with both parents, living in one-parent families increased the risk of alcohol experimentation, whilst living with other family components was related to the risk of both ever alcohol use and drunkenness. Parental supervision protects against risky drinking, as is well known from Western literature and also observed in African countries.³² Previous studies conducted in Nigeria found that living in polygamous families, large families, single-parent families, and with nonparent caregiver were associated with alcohol use among secondary-school adolescents.^{18,19} Adolescents living in such families may engage in risk behaviors because they lack adequate parental supervision and control.

The association of parental alcohol use with the probability of adolescent alcohol use, already well known in Western literature, was observed also in other studies conducted in Nigeria.^{17,18} Parents play an important role in modeling drinking behaviors of adolescents.^{16,33,34} Moreover, alcoholic beverages are easily available in households where parents drink and parents who drink may have more permissive attitudes, so that children may perceive alcohol as less harmful and become involved in earlier in drinking.³⁵

Friends' drinking increased the risk of adolescents' alcohol use and friends' drunkenness was the strongest factor associated with drunkenness episodes. The influence of peers is well known in the international literature, and it was observed in studies on secondary-school students in Nigeria and on university students in Ethiopia.^{16,36,37} Due to the socialization role of alcohol, friends' and peers' drinking normalizes drinking risk behaviors during adolescence.

Beliefs and risk perceptions are important predictors of adolescents' alcohol use.^{38–41} In our study, the proportion of pupils perceiving no risk at all or slight risk in drinking alcohol every day was quite high (15%), suggesting the need for specific prevention interventions. Consistent with other African studies, low risk perceptions were associated with both alcohol-use outcomes.^{20,42}

Students with high positive beliefs on consequences of alcohol use were more likely to drink. It is easier for adolescents to consider short-term positive consequences of alcohol use on their individual and social lives (having fun, relief from stress) more than long-term negative consequences (alcohol dependence, liver disease). It was already

observed by Ekpenyong and Aakpege (2014) that youth in Nigeria are more inclined toward positive than negative beliefs.²¹ Alcohol advertisement, alcohol outlet density, and less-restricted alcohol

control policies may contribute to the perception of positive consequences of use, so normalizing drinking behaviors and increasing earlier intake.^{15,43–46}

The results of this study should be considered in light of several limitations. The cross-sectional nature of the study prevents conclusions about causal pathways. However, although reverse bias is possible, most of the variables included in the model should precede the outcome, e.g., sociodemographic characteristics, family composition, and parental and friends' alcohol use. Reverse bias can't be excluded for risk perceptions, beliefs, and parental permissiveness. Missing values reduced the sample for the adjusted analyses. However, 3,689 and 3,690 subjects included in the multiple models for alcohol experimentation and drunkenness are still big samples. All the information was self-reported by the pupils and this could weaken the reliability of information provided; however, the anonymous administration of the questionnaire should have attenuated this risk. Finally, the sample was drafted for a randomized controlled trial and not specifically for survey purposes, and this could limit its representativeness and the generalizability of the results.

This study has some strengths. It is the first study that examined factors associated with alcohol use on a large sample of secondary-school students from all six geopolitical zones of Nigeria. The surveys were conducted according to a standardized protocol and a standardized questionnaire, minimizing possible misclassification related to data collection. Multilevel bivariate and multivariate regression models were employed to examine associations between the studied factors and the outcome, adopting an approach respectful of "nonindependence" of the individual reports according to higher-order clustering (school and zone).

In conclusion, the majority of risk factors analyzed in this study generalize across drinking behavior outcomes, i.e., alcohol experimentation and drunkenness. The prevalence of alcohol experimentation and drunkenness episodes was high. Since the young population is dominant in Nigeria, alcohol use could become a big public health problem in the near future. High investment in adolescents' well-being by addressing the factors that contribute to drinking behavior might help to reduce the burden of the problem. Evidencebased prevention curriculum addressing knowledge, risk perceptions, beliefs on consequences of alcohol use, and parental behaviors should be implemented as widely and early as possible.

The Unplugged Nigeria Coordination Group includes: Federica Vigna-Taglianti, Marta Alesina (Department of Clinical and Biological Sciences, University of Torino, Italy); Gian Luca Cuomo, Ljiljana Damjanović, Valeria Di Marco, Laura Donati, Emina Mehanović, Serena Vadrucchi (Technical Support Team, Piedmont Center for Drug Addiction Epidemiology, Torino, Italy); Harsheth Kaur Virk, Akanidomo Ibanga, Glen Prichard (United Nations Office on Drugs and Crime, Project Office, Lagos, Nigeria); Juliet Pwajok (University of Jos); Peer van der Kreeft (University College, Ghent, Belgium); Ann Ogbonna, Rhoda Madu, Francis Elisha, Ruth Owotumi, Peter Ojunugba (Federal Ministry of Education, Abuja, Nigeria); Alhaji Baba Hussaini, Stella Ngozi Ngwoke (National Drug Law Enforcement Agency); and Paul Kamai (National Agency for Food and Drug Administration and Control).

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Ethical statement

The study was conducted following the principles of the Declaration of Helsinki. Study materials and procedures were approved by the Federal Ministry of Education. Students were informed about the objectives of the study and provided consent to participate before filling the questionnaire. The

questionnaire was anonymous; once filled, the students deposited it in a box only the researchers had access to.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Author contributions

Federica Vigna-Taglianti conceived the Unplugged Nigeria trial and the present study. Peer van der Kreeft and Federica Vigna-Taglianti trained data managers, trainers, and teachers. Harsheth Kaur Virk, Ann Ogbonna, Glen Prichard, and Akanidomo Ibanga coordinated the field work. Akanidomo Ibanga and Juliet Pwajok collected data. Emina Mehanovic and Federica Vigna-Taglianti drafted the article. Emina Mehanovic carried out the statistical analysis. All authors provided critical revision, and contributed to and approved the final manuscript.

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Data availability statement

The data set used for the analyses includes 4,078 records of anonymous questionnaires filled in by secondary school students in Nigeria in December 2015; the data include information on sociodemographic characteristics (gender, age, family car and computers, family composition); school performance; substance use (tobacco, alcohol and drug use lifetime and in the last 30 days); knowledge, beliefs, risk perceptions, and attitudes toward drugs; self-esteem, decision-making skills, and refusal skills; perception of peers' and friends' substance use; parental substance use; and parental permissiveness toward tobacco and alcohol. Data are available upon request. Federica Vigna-Taglianti is responsible for the data.

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Table 1. Sociodemographic, parental, and personal factors among students who ever vs. never experimented with alcohol.

Characteristics	Ever alcohol experimentation (N = 1,368)		Never alcohol experimentation (N = 2,661)		Overall (N = 4,029)	
	n	%	n	%	n	%
Gender						
Girls	334	24.7	963	36.7	1,297	32.7
Boys	1,016	75.3	1,658	63.3	2,674	67.3
Age						
Mean ± SD†	14.8 ± 1.23		14.7 ± 1.25		14.7 ± 1.24	
Family possession of car						
None	237	17.6	567	21.5	804	20.2
One	597	44.4	1,142	43.3	1,739	43.6
Two or more	510	38.0	931	35.3	1,441	36.2
Family composition						
Both parents	697	50.9	1,593	59.9	2,290	56.8
One parent	131	9.6	172	6.5	303	7.5
Other	540	39.5	896	33.7	1,436	35.6
Parents drink alcohol						
No	695	50.8	2,086	78.4	2,781	69.0
Yes	493	36.0	340	12.8	833	20.7
Don't know/Don't have/No answer	180	13.2	235	8.8	415	10.3
Perceived parental permissiveness to drink alcohol						
Would not allow at all	1,039	76.8	2,481	94.1	3,520	88.2
Would not allow at home	123	9.1	77	2.9	200	5.0
Would allow	76	5.6	21	0.8	97	2.4
Don't know	115	8.5	58	2.2	173	4.3
Friends drink alcohol						
No	652	47.7	1,998	75.1	2,650	65.8
Yes	407	29.8	236	8.9	643	16.0
Don't know	309	22.6	427	16.0	736	18.3
Risk perception on having one or two drinks each week						
Great risk	180	13.2	569	21.4	749	18.6
Slight risk	651	47.6	1,298	48.8	1,949	48.4
No risk	364	26.6	424	15.9	788	19.6
Don't know	173	12.6	370	13.9	543	13.5
Risk perception on drinking alcohol every day						
Great risk	957	70.0	2,165	81.4	3,122	77.5
Slight risk	219	16.0	221	8.3	440	10.9
No risk	75	5.5	89	3.3	164	4.1
Don't know	117	8.5	186	7.0	303	7.5
Positive beliefs toward alcohol						
Low	429	33.4	1,063	42.3	1,492	39.3
Middle/High	857	66.6	1,450	57.7	2,307	60.7

†SD: Standard Deviation.

Table 2. Sociodemographic, parental, and personal factors among students who ever vs. never had a drunkenness episodes.

Characteristics	Ever drunkenness (N = 538)		Never drunkenness (N = 3,478)		Overall (N = 4,016)	
	n	%	n	%	n	%
Gender						
Girls	137	25.8	1,156	33.7	1,293	32.6
Boys	393	74.2	2,274	66.3	2,667	67.4
Age						
Mean ± SD†	14.8 ± 1.28		14.7 ± 1.23		14.7 ± 1.24	
Family possession of car						
None	90	17.1	715	20.7	805	20.2
One	236	44.7	1,499	43.5	1,735	43.6
Two or more	202	38.3	1,235	35.8	1,437	36.1
Family composition						
Both parents	269	50.0	2,025	58.2	2,294	57.1
One parent	52	9.7	245	7.0	297	7.4
Other	217	40.3	1,208	34.7	1,425	35.5
Parents drink alcohol						
No	258	48.0	2,516	72.3	2,774	69.1
Yes	205	38.1	631	18.1	836	20.8
Don't know/Don't have/No answer	75	13.9	331	9.5	406	10.1
Perceived parental permissiveness to drink alcohol						
Would not allow at all	395	74.4	3,122	90.4	3,517	88.3
Would not allow at home	57	10.7	141	4.1	198	5.0
Would allow	37	7.0	60	1.7	97	2.4
Don't know	42	7.9	130	3.8	172	4.3
Friends get drunk						
No	296	55.0	2,624	75.5	2,920	72.7
Yes	121	22.5	260	7.5	381	9.5
Don't know	121	22.5	594	17.1	715	17.8
Risk perception on having one or two drinks each week						
Great risk	71	13.2	679	19.5	750	18.7
Slight risk	260	48.3	1,689	48.6	1,949	48.5
No risk	146	27.1	639	18.4	785	19.5
Don't know	61	11.3	471	13.5	532	13.3
Risk perception on drinking alcohol every day						
Great risk	357	66.4	2,765	79.5	3,122	77.7
Slight risk	101	18.8	338	9.7	439	10.9
No risk	39	7.3	120	3.5	159	4.0
Don't know	41	7.6	255	7.3	296	7.4
Positive beliefs toward alcohol						
Low	149	29.7	1,338	40.6	1,487	39.2
Middle/High	353	70.3	1,954	59.4	2,307	60.8

†SD: Standard Deviation.

Table 3. Factors associated with ever alcohol experimentation.

Characteristics	Crude OR (95% CI) N = 4,029	p	Adj OR (95% CI) N = 3,689	p
Gender				
Girls	1		1	
Boys	1.76 (1.50–2.05)	<0.001	1.50 (1.25–1.79)	<0.001
Age	1.08 (1.01–1.16)	0.020	0.98 (0.91–1.06)	0.571
Family possession of car				
None	1		1	
One	1.28 (1.06–1.54)	0.009	1.26 (1.02–1.56)	0.036
Two or more	1.35 (1.11–1.64)	0.003	1.30 (1.04–1.63)	0.021
Family composition				
Both parents	1		1	
One parent	1.76 (1.36–2.26)	<0.001	1.37 (1.01–1.86)	0.045
Other	1.38 (1.19–1.59)	<0.001	1.27 (1.08–1.50)	0.005
Parents drink alcohol				
No	1		1	
Yes	4.19 (3.54–4.95)	<0.001	3.00 (2.48–3.64)	<0.001
Don't know/Don't have/No answer	2.33 (1.87–2.91)	<0.001	1.83 (1.41–2.38)	<0.001
Parental permissiveness to drink alcohol				
Would not allow at all	1		1	
Would not allow at home	3.96 (2.92–5.34)	<0.001	2.46 (1.74–3.48)	<0.001
Would allow	9.13 (5.53–15.1)	<0.001	4.69 (2.62–8.40)	<0.001
Don't know	5.07 (3.63–7.09)	<0.001	3.00 (2.02–4.45)	<0.001
Friends drink alcohol				
No	1		1	
Yes	5.26 (4.36–6.35)	<0.001	3.45 (2.79–4.27)	<0.001
Don't know	2.21 (1.85–2.63)	<0.001	1.74 (1.42–2.13)	<0.001
Risk perception on having one or two drinks each week				
Great risk	1		1	
Slight risk	1.49 (1.22–1.82)	<0.001	1.43 (1.14–1.80)	0.002
No risk	2.54 (2.03–3.18)	<0.001	1.88 (1.44–2.47)	<0.001
Don't know	1.47 (1.14–1.88)	0.003	1.05 (0.76–1.46)	0.756
Risk perception on drinking alcohol every day				
Great risk	1		1	
Slight risk	2.23 (1.81–2.74)	<0.001	1.53 (1.19–1.97)	0.001
No risk	2.34 (1.67–3.28)	<0.001	1.84 (1.22–2.78)	0.004
Don't know	1.64 (1.26–2.12)	<0.001	1.27 (0.88–1.84)	0.207
Positive beliefs toward alcohol				
Low	1		1	
Middle/High	1.58 (1.36–1.82)	<0.001	1.24 (1.05–1.46)	0.010

Table 4. Factors associated with ever drunkenness.

Characteristics	Crude OR (95% CI) N = 4,016	p	Adj OR (95% CI) N = 3,690	p
Gender				
Girls	1		1	
Boys	1.58 (1.26–1.97)	<0.001	1.31 (1.01–1.69)	0.039
Age	1.13 (1.03–1.25)	0.008	1.02 (0.92–1.14)	0.685
Family possession of car				
None	1		1	
One	1.31 (1.00–1.71)	0.052	1.20 (0.89–1.62)	0.237
Two or more	1.38 (1.04–1.82)	0.026	1.26 (0.92–1.72)	0.147
Family composition				
Both parents	1		1	
One parent	1.59 (1.13–2.25)	0.008	1.03 (0.67–1.57)	0.899
Other	1.40 (1.14–1.71)	0.001	1.26 (1.00–1.58)	0.050
Parents drink alcohol				
No	1		1	
Yes	3.35 (2.68–4.17)	<0.001	2.64 (2.06–3.38)	<0.001
Don't know/Don't have/No answer	2.32 (1.71–3.13)	<0.001	1.96 (1.39–2.77)	<0.001
Parental permissiveness to drink alcohol				
Would not allow at all	1		1	
Would not allow at home	3.24 (2.29–4.57)	<0.001	2.12 (1.42–3.16)	<0.001
Would allow	5.14 (3.29–8.04)	<0.001	2.08 (1.21–3.59)	0.008
Don't know	2.64 (1.80–3.89)	<0.001	1.91 (1.23–2.95)	0.004
Friends get drunk				
No	1		1	
Yes	5.02 (3.84–6.55)	<0.001	3.22 (2.38–4.38)	<0.001
Don't know	1.84 (1.44–2.34)	<0.001	1.38 (1.05–1.82)	0.019
Risk perception on having one or two drinks each week				
Great risk	1		1	
Slight risk	1.39 (1.04–1.86)	0.026	1.39 (1.00–1.94)	0.047
No risk	1.98 (1.44–2.72)	<0.001	1.43 (0.99–2.09)	0.060
Don't know	1.18 (0.81–1.71)	0.390	1.00 (0.63–1.60)	0.985
Risk perception on drinking alcohol every day				
Great risk	1		1	
Slight risk	2.27 (1.75–2.95)	<0.001	1.58 (1.16–2.17)	0.004
No risk	3.03 (2.01–4.58)	<0.001	2.19 (1.32–3.62)	0.002
Don't know	1.41 (0.97–2.04)	0.071	0.97 (0.57–1.64)	0.911
Positive beliefs toward alcohol				
Low	1		1	
Middle/High	1.79 (1.45–2.23)	<0.001	1.45 (1.15–1.84)	0.002