Socio-economic differences in factors associated with alcohol use among adolescents in Slovenia: a cross-sectional study

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Abstract

Objectives. This paper aims to investigate the association of parental, friends, and personal factors with the risk of alcohol use in a sample of Slovenian adolescents, and whether these associations differ by socio-economic status of the school area (SES).
Methods. The survey involved 2946 students of 44 Slovenian primary schools in the school year 2010/2011. The association between sociodemographic characteristics, parental alcohol use and permissiveness to drink, parental monitoring, perception of friends' alcohol use, beliefs towards alcohol, self-esteem and refusal skills, and the probability of recent alcohol use was evaluated through multiple multilevel logistic regression analysis.
Results. Parental alcohol use, parental permissiveness to drink alcohol, low parental monitoring, perception of friends' alcohol use, positive beliefs towards alcohol use, and low refusal skills were significantly associated with the risk of alcohol use. Parental drinking and permissive attitudes were stronger correlates of alcohol use among adolescents of middle and low SES schools, while friends' alcohol use and personal factors among adolescents of high SES schools.
Conclusions. Alcohol prevention programs should be tailored to school socio-economic environment taking into account friends and personal determinants among high SES, and parental factors among low SES school students.

Introduction

Alcohol use is widespread among Slovenian adolescents (Furlan et al. 2010; Jericˇek Klansˇcˇek et al. 2019). According to the European School Survey Project on Alcohol and other Drugs (ESPAD), alcohol use among adolescents in Slovenia exceeds the European average (Kraus et al. 2016). This is not surprising since alcoholrelated behaviours during adolescence are strongly influenced by social patterns of drinking (Bjarnason et al. 2003), and alcohol use is recognized as a socially acceptable behaviour in the country (Cˇ ebasˇek-Travnik 2007). Indeed, although alcohol consumption may lead to many negative behavioural outcomes, adolescents are against bans towards its use (Holubcikova et al. 2017; Palladino et al. 2018).
In 2003, Slovenia adopted national policies to limit alcohol use: the sale of alcoholic beverages in stores is banned between 9.00 pm and 7.00 am, and the sale of alcoholic beverages to people under 18 years of age is prohibited (Rosˇkar et al. 2016). Media advertising of beverages with alcohol content over 15% vol. is banned, whilst advertising of beverages containing less than 15% vol. of alcohol is allowed between 9.30 pm and 7.00 am (Rosˇkar et al. 2016). The price of alcohol appears to be low in comparison with the average income (Cebasek-Travnik 2007). However, despite the imposed legal restrictions, adolescents perceive alcohol as easily available in public places (Boben-Bardutzky et al. 2009, 2010).
Besides social acceptance, other factors are associated with alcohol use among adolescents. It is well recognized that parents play an important role in children's initiation of alcohol use (Ryan et al. 2010). Parental tolerant attitudes towards alcohol use, as well as parental drinking itself increase the

likelihood of alcohol use among children (Li et al. 2002; Spijkerman et al. 2008; Stafstro¨m 2014; Van Der Vorst et al. 2009). Other family factors also influence adolescent alcohol use, such as a poor quality of parent–child relationship, a low parental monitoring and family conflicts (Kristjansson et al. 2009; Mathijssen et al. 2014; Thompson et al. 2015).

Especially in late adolescence, friends' drinking becomes one of the strongest predictors of drinking initiation and progression (Anderson and Brown 2010; Beckmeyer and Weybright 2016; Leung et al. 2014; Li et al. 2002).

Finally, several studies highlighted an interaction of socio-economic status (SES) with patterns of adolescents' alcohol use (Kendler et al. 2014; Legleye et al. 2013; Richter et al. 2013; Shackleton et al. 2019). However, the findings were inconsistent and deserve further investigation (Hanson and Chen 2007; Kwok and Yuan 2016).

In Slovenia, the first encounter with alcohol usually occurs in domestic environment, and the practice of drinking in family environment is quite common (Boben-Bardutzky et al. 2009; Furlan et al. 2010). Previous studies found that adolescents generally perceive permissive attitudes of parents towards their drinking (Boben-Bardutzky et al. 2009, 2010). Family composition, parental drinking, home production of alcohol by parents, friends' drinking, as well as male gender, older age and SES appeared to be linked to adolescent alcohol use patterns in previous studies conducted in Slovenia (Kolsˇek 1994; Kovsˇe and Hocˇevar 2011).

This paper aims to investigate the association of parental, friends, and personal factors with the risk of alcohol use among Slovenian adolescents, and to study whether these associations differ by socioeconomic status of the school area.

Methods

Data collection

The survey involved 2946 students of 44 Slovenian primary schools (7th and 8th grades) during October/November 2010. The sample included students across the country regions ensuring national representativeness. All Slovenian primary schools were invited to take part in the study. Out of 46 schools that accepted to participate in the study, one school resigned before the baseline survey, whereas a second school did not get parental consent for participation of their children. Finally, 44 schools participated in the survey.

A self-reported anonymous questionnaire was used to collect information about sociodemographic characteristics, school performance, substance use behaviours, knowledge, attitudes, beliefs and risk perceptions towards tobacco, alcohol and drugs, friends' and peers' substance use, intrapersonal and interpersonal skills, parental tobacco and alcohol use, and perceived parental permissiveness. The questionnaire was a modified version of that used in the EU-Dap study (www.eudap.net). It was adapted to the Slovenian context, mainly with regard to lexical aspects. Local experts revised the language and the appropriateness of the constructs. The included 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) and other international sources (European School Survey Project on Alcohol and other Drugs ESPAD, Health Behaviour in School-aged Children HBSC, Project ALERT, RATING Swedish cohort and Bracken family scale) providing validated instruments for evaluating prevention, treatment, and harm reduction interventions. To preserve confidentiality, the questionnaires were labelled with a 9-digit individual code selfgenerated by the student. The baseline questionnaires were administered in classes between October and November 2010. At the beginning of the school year, information on the study was provided to parents and formal consent to participate was obtained. Prior to questionnaire administration, students were informed about the objectives of the study and provided consent to participate.

Measures

Information on alcohol use was investigated by asking students ‘‘How many times (if any) have you drunk alcoholic beverages during the last 30 days?’’, with responses ranged on a scale from 0 to 30 and more. Responses were collapsed generating the dichotomous variable of Yes/No.
Sociodemographic characteristics included gender (male/female), age (based on birth date), and socio-economic status of the school area. Schools self-declared their SES according to three levels: high (n = 7), middle (n = 27) and low (n = 10) SES schools. Official national statistics were used to check this classification according to the average household income of the municipality area of the school. All self-declared data were coherent with national official data. Exposure to parental alcohol use was measured by asking students the question ‘‘Does any of your parents drink alcoholic beverages?’’. A single item assessed the perceived parents’ permissiveness towards 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’’. An indicator of parental monitoring was derived from the items: ‘‘My parents set clear rules’’ and ‘‘My parents know where I am in the evenings’’. The possible answers on the number of friends who used alcohol were: ‘‘None’’, ‘‘Less than half of them’’, ‘‘About half of them’’, ‘‘More than half of them’’, ‘‘All of them’’, and ‘‘Don’t know’’. Positive beliefs toward alcohol use were assessed through the question ‘‘How likely is that each of the following would 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’’. An indicator of self-esteem was derived from the items: ‘‘At times I think I am not good at all’’, ‘‘Most boys and girls of my age are smarter than I am’’, ‘‘I feel embarrassed when I have to say something in class’’, ‘‘I worry a lot about silly things’’, ‘‘I often feel nervous over nothing at all’’, ‘‘I feel I don’t have much to be proud of’’, ‘‘I certainly feel useless at times’’, ‘‘I wish I could have more respect for myself’’, and ‘‘I am inclined to feel that I am a failure’’. Refusal skills were assessed through a question investigating students’ ability to cope with alcohol offers. The questions on parental monitoring, beliefs, self-esteem, and refusal skills allowed responses graded on a 4-point Likert scale (strongly agree/agree/disagree/strongly disagree and very likely/likely/unlikely/very unlikely). Answers were scored from 1 to 4 and summed up, means were calculated, and categories of high, middle, and low level of each indicator were created using tertiles.

Statistical analyses

The outcome under study was alcohol use in the 30 days preceding the survey (yes/no). The analytical sample included 2865 adolescents providing information on it.
The association between sociodemographic characteristics, parental alcohol use and permissiveness to drink, parental monitoring, friends’ alcohol use, positive beliefs towards alcohol, self-esteem and refusal skills, and the probability of alcohol use in the 30 days preceding the survey was evaluated through bivariate logistic regression. All variables significantly associated with the risk of alcohol use in the bivariate analysis were included in the final multivariate logistic regression model simultaneously. Multilevel mixed-effect modelling was used to control for the hierarchical nature of the data, fitting school as I level, class as II level and pupil as III level. Gender and age were set as confounders. Co-linearity between variables was checked. Categorical variables were re-coded in order to reduce the number of items included in the model. The association between the factors and recent alcohol use was evaluated in the overall sample, and stratifying by socioeconomic status of the school area. Listwise deletion was used to handle missing data. Missing data were less than 4% for all studied variables. Due to the latter, the final model was run on 2636 students (89.5% of the initial sample). Adjusted Odds Ratios (AORs) were estimated as measures of association between the studied factors and the outcome. Statistical analysis was carried out using STATA software release 12.0 (Stata Corporation 2011, College Station, TX, USA).

Results

The mean age of the students participating in the survey was 13.0 (± 0.6) years. About half of the sample were boys and the other half girls (50.6% vs 49.4%). The prevalence of alcohol use in the 30 days preceding the survey was 26.4%. Use of alcohol was more frequent among boys than girls (29.7% vs. 23.0%), and among adolescents of low and middle SES schools compared to adolescents of high SES schools (28.4% and 29.0%, respectively, vs. 17.3%) (data not shown). Statistically significant bivariate associations were found for all factors studied as correlates of recent alcohol use (Table 1).

Adolescents of low- and middle-SES schools reported higher proportions of parents with permissive attitudes towards alcohol use (7.5% vs 10.6% vs 6.7%, respectively) and of friends' using alcohol (37.7% vs 38.5% vs 29.3%) compared to their peers of high-SES schools. A greater proportion of adolescents with low self-esteem (28.7% vs 29.2% vs 23.0%) was found in low- and middle-SES compared to high-SES schools. A higher proportion of middle-SES school adolescents (16.3%) reported low refusal skills compared to those attending low- and high-SES schools (11.5% vs 11.2%, respectively) (Table 2).

Low and middle SES of the school area were marginally associated with the probability of recent alcohol use ($p = 0.069$ and $p = 0.072$, respectively). Parental alcohol use and parental permissiveness to drink were significantly correlated with the probability of recent alcohol use. The probability of alcohol use was four times greater among students whose parents allowed drinking, and twice greater among students whose parents would not allow drinking at home than among those whose parents did not allow to drink alcohol at all. Low parental monitoring was associated with 53% greater likelihood of alcohol use. The pupils who had friends who used alcohol had almost three times greater odds of drinking themselves. This association was higher when more than half of friends drank. Positive beliefs on the consequences of alcohol use were significantly correlated with the risk of alcohol use. The indicator of self-esteem was not significantly related to alcohol use in the overall sample, whilst students who had low refusal skills were 2.54 times as likely to use alcohol compared to those who had high refusal skills (Table 3).

Some differences in factors correlated with alcohol use emerged when stratifying by SES of the school area. Parental alcohol use was associated with higher odds of alcohol use only among students of middle and low SES. Parental permissiveness was correlated with alcohol use independently by SES, with stronger association among students of low and middle SES schools than among those of high SES schools if parents would allow drinking. However, parental restriction of not drinking at home was associated with alcohol use among high and middle SES group, while it was only marginally significant for the low SES group. Parental monitoring was associated with the odds of recent alcohol use only among students of middle SES group. Friends' alcohol use was a significant correlate for students of high and middle SES schools, but did not reach statistical significance for those attending low SES schools. Similarly, individual factors such as positive beliefs on the effects of alcohol and low refusal skills were associated with the risk of alcohol use among students of high and middle SES schools, but did not reach statistical significance among those attending low SES schools. Finally, low self-esteem was significantly associated with the risk of alcohol use just among high SES students.

Discussion

The purpose of this study was to identify social and personal factors associated with the risk of alcohol use among adolescents in Slovenia. To our knowledge, this is the first study that examined whether socio-economic status of the school area modifies the association between risk factors and alcohol use in Slovenia.

As expected, parental drinking was associated with a higher probability of alcohol use in their offspring. This finding is consistent with what previously observed in the international literature (Li et al. 2002; Spijkerman et al. 2008), and with the 900s Slovenian study by Kolsˇek (1994). The habit

of parental alcohol use may lead to the adoption of similar behaviours in the children because of imitation and modelling (Bandura 1971; Li et al. 2002). Moreover, the perception of harmfulness of alcohol use may be attenuated, again increasing the probability of initiation (Hawkins et al. 1997). The habit of alcohol drinking itself may increase parents' permissiveness towards use, another strong correlate of children behaviour, as observed in our study and elsewhere (Mrug and McCay 2013; Stafstrom 2014; Van Der Vorst et al. 2009). This can be particularly true in Slovenia, since Slovenian adolescents perceive their parents to be permissive towards alcohol use (Boben-Bardutzky et al. 2009, 2010). Finally, permissive parental attitudes towards drinking may facilitate home alcohol availability, which in turn may increase the probability of adolescents' alcohol use (Stafstro¨m 2014; Strandberg et al. 2014).

In line with other international studies, in our sample parental monitoring was associated with alcohol use (Thompson et al. 2015). This was consistent also with a recent study conducted in Bosnia and Herzegovina (Cerkez et al. 2015). Moreover, in a multicentric study conducted in six European countries, low parental monitoring was a stronger correlate of alcohol use in Slovenia than elsewhere (Kokkevi et al. 2007).

The probability of alcohol use was higher for the students whose friends drank, similarly to what previously observed in the Slovenian and Croatian studies (Kolsek 1994; Sakoman et al. 2002), and acknowledged internationally (Anderson and Brown 2010; Beckmeyer and Weybright 2016; Kokkevi et al. 2007; Leung et al. 2014; Li et al. 2002). Since alcohol drinking is a social-based activity affected by group norms, the use in friends' and peers' exaggerate the adolescents' perception of alcohol use as a normative behaviour, increasing the odds of experimentation (Beckmeyer and Weybright 2016; Jackson et al. 2014). Also in the Slovenian context, consumption of alcohol is associated with socialization with friends (Pivacˇ and Skela-Savicˇ 2016).

Personal factors, such as beliefs on the consequences of use, self-esteem, and refusal skills may be important for adolescents to react to social influences. The association between positive beliefs towards alcohol and the risk of alcohol use was a rather expected finding, as already observed in previous studies (Anderson and Brown 2010). Several studies pointed out that adolescents in Slovenia tend to neglect the negative consequences of alcohol use (Boben-Bardutzky et al. 2010; Zˇ eleznik et al. 2015). Beck et al. (2014) argued that adolescents' denying of the risks of alcohol drinking reflect high rates of alcohol consumption in the country. Low refusal skills were also associated with the likelihood of recent alcohol use. Similar findings were previously observed in the international literature (Beckmeyer and Weybright 2016; Stephens et al. 2009). In our study, low self-esteem was significantly associated with alcohol use only in bivariate model. However, previous studies observed that students who suffer from negative self-esteem and negative self-image tend to use alcohol more frequently (Griffin et al. 2000; Pivacˇ and Skela-Savicˇ 2016). A negative self-esteem may push adolescents towards alcohol in an effort to identify with the peer group and to increase one own image.

In our study, the association between the indicator of SES of the school area and the student alcohol use was only marginally significant when adjusted for the other factors in the multivariate model. A significant result was observed in a Slovenian study, which, however, measured the association between parental employment status and adolescent weekly drinking (Kovsˇe and Hocˇevar 2011). The evaluation of the modifying effect of SES on correlates of adolescent alcohol use showed interesting results. Parental alcohol use was the strongest correlate of alcohol use among low SES students. This was already observed in previous European studies using education or income as the indicators of SES (Spijkerman et al. 2008; Vermeulen-Smit et al. 2012), suggesting a stronger role of parental modelling of alcohol use in low SES families (Spijkerman et al. 2008). Parental permissiveness to drink alcohol exerts a generalized risky effect across SES groups, with greater effect among low SES students. Due to lower educational background, parents of low SES may be less aware of the harmful effects of alcohol use and underestimate the risk related to permissive behaviours. Parents of high SES impose stricter rules towards alcohol use of their children, as observed in our study and elsewhere (Mrug and McCay 2013; Spijkerman et al. 2008). Furthermore,

we found a greater proportion of adolescents with low self-esteem and having friends' using alcohol in the low and middle SES groups. However, friends' alcohol use and personal factors such as positive beliefs on the effects of alcohol, low selfesteem, and low refusal skills were stronger correlates of alcohol use among high SES adolescents. Luthar and Latendresse (2005) reported that peer acceptance has a great impact on substance use among affluent adolescents suggesting the importance of social conformity in this population subgroup. Moreover, they found a linkage between substance use and depression among affluent youth, particularly in adolescents who perceive academic failure as a personal failure. In upper class environments, parents may put great pressure on academic achievement and education pathways of their children. Sensation of personal failure can reduce self-esteem. In order to cope with sensation of failure and lack of compliance with parental expectations, adolescents can try to regain selfesteem by achieving acceptance and popularity in the peer social environment. In such environment, the impact of friends on adolescents' alcohol use may operate through their lower self-esteem and weaker refusal skills. This would be worthwhile to examine in future studies.

Our findings should be considered in the light of several limitations. The findings are limited by the cross-sectional nature of the study, which does not allow causal inference.

However, some of the investigated factors such as SES of the school area, parental and friends' habits and some personal factors should naturally precede the outcome, therefore limiting the risk of reverse causation. Moreover, risk factors were investigated applying a multiple mixedeffect multilevel logistic regression model, taking into account possible confounders. So, although we cannot exclude residual uncontrolled confounding, the risk of erroneously attributing causal pathway should be minimized.

Missing values reduced the sample for the adjusted analyses. However, 2636 subjects were included in the multivariate model, which is still a big sample. All the information were self-reported, and this could weaken the reliability of information provided. However, anonymous questionnaire administration should have attenuated this risk. Parents were not directly interviewed, so the information on their behaviours is perceived and referred by students, and student's perceptions of parental disapproval may not accurately reflect parental behaviour. The indicator of school SES may be less reliable because it is possible that not everybody attending the same school belongs to the same socio-economic group. However, since our sample is young, it is likely that pupils attend the school in their own neighbourhood and generally the families of a neighbourhood are quite homogeneous as regards their average income, and this should partly attenuate the bias.

Some of the associations could not be significant because of limited sample size, especially for the low SES group, which was underpowered. Finally, the stratified analysis tested whether the effect was significant within each subgroup, but not the difference between subgroups.

This study has also some strength. It involves data of 44 schools at national level. The assessment was conducted according to a standardized protocol and a standardized questionnaire, minimizing possible biases related to data collection. Data collection was conducted anonymously, and this should have assured the sincerity of the answers. Multilevel regression models were employed to adopt an approach respectful of the ''non-independence'' of the individual reports according to higher order clustering (school, class, and pupil).

In conclusion, the present study highlights that differences exist in the influence of parental, friends' and personal factors on the risk of alcohol use by socio-economic status. Among low SES adolescents, drinking behaviour appears to be highly affected by parental drinking and their permissive attitudes towards alcohol, while adolescents of high SES are rather influenced by friends' alcohol use and personal factors. Alcohol prevention programs should be tailored to school socio-economic environment taking into account the higher importance of friends and personal determinants among adolescents of high SES schools, and of parental attitudes and behaviours among adolescents of low SES schools. Specific efforts should be made to involve parents of low SES environments in prevention activities to reduce the uptake of risk behaviours among their children.

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Author contributions

Federica Vigna-Taglianti and Matej Kosir designed and coordinated the Unplugged Slovenia study. Matej Kosir and Sanela Talic´ organized the field work, trained teachers, collected and entered data. Emina Mehanovic´, Federica Vigna-Taglianti and Helena Jericek Klanscek drafted the paper. Emina Mehanovic´ carried out the statistical analyses. All authors provided critical revision, contributed to and approved the final manuscript.

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Data availability

The dataset used for the analyses includes 2946 records of anonymous questionnaires filled by primary school students in Slovenia in October/November 2010; 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 towards drugs; self-esteem, decision-making skills, refusal skills; perception of peers' and friends' substance use; parental cigarettes and alcohol use, parental permissiveness towards tobacco and alcohol. Data are available under request. Federica Vigna-Taglianti is responsible for the data.

Compliance with ethical standards

Conflict of interest. The authors declare that they have no conflict of interest.

Ethical approval. Study materials and procedures were submitted for approval to the Institutional Review Board of each school, and approval was obtained before participation. All procedures were in accordance with the ethical standards of the institutional and of the national research committee and with the 1964 Declaration of Helsinki and its later amendments.

Informed consent. At the beginning of the school year, information on the study was provided to parents and formal consent to participate was asked. Students were informed about the objectives of the study and consent to participate was asked. All participants in the study provided informed consent. The data were gathered through an anonymous questionnaire the students deposited in a box only the researchers had access to once filled.

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Table 1 Characteristics of students who used vs did not use alcohol in the 30 days preceding the survey. Slovenia, 2010

Characteristics	Overall (n = 2865)		Yes alcohol use (n = 755)		No alcohol use (n = 2110)		P
	N	%	N	%	N	%	
Gender							
Girls	1398	49.4	321	43.0	1077	51.7	
Boys	1432	50.6	425	57.0	1007	48.3	< 0.001
Age							
Mean ± SD	13.0 ± 0.6		13.2 ± 0.6		12.9 ± 0.6		< 0.001
SES of the school area							
High	626	21.8	108	14.3	518	24.6	
Middle	1873	65.4	543	71.9	1330	63.0	0.020
Low	366	12.8	104	13.8	262	12.4	0.051
Parental alcohol use							
No	920	32.2	146	19.4	774	36.8	
Yes	1701	59.6	567	75.3	1134	54.0	< 0.001
Don't know/missing	233	8.2	40	5.3	193	9.2	0.930
Parental permissiveness to use alcohol							
Wouldn't allow	1611	56.2	235	31.1	1376	65.2	
Wouldn't allow at home	430	15.0	168	22.3	262	12.4	< 0.001
Would allow	269	9.4	171	22.6	98	4.6	< 0.001
Don't know/missing	555	19.4	181	24.0	374	17.7	< 0.001
Parental monitoring							
High/middle	2524	89.3	629	84.1	1895	91.2	
Low	303	10.7	119	15.9	184	8.8	< 0.001
Friends' alcohol use							
None	1182	41.3	146	19.3	1036	49.1	
Less than half/about half	815	28.4	331	43.8	484	22.9	< 0.001
More than half/all of them	216	7.5	134	17.8	82	3.9	< 0.001
Don't know/missing	652	22.8	144	19.1	508	24.1	< 0.001
Positive beliefs towards alcohol							
Low	998	36.0	176	24.0	822	40.4	
Middle/high	1772	64.0	557	76.0	1215	59.6	< 0.001
Self-esteem							
High/middle	2014	72.5	503	68.0	1511	74.1	
Low	766	27.5	237	32.0	529	25.9	0.002
Refusal skills on alcohol							
High	2401	85.8	511	68.8	1890	91.9	
Low	398	14.2	232	31.2	166	8.1	< 0.001

SD Standard deviation, *SES* socio-economic status

Table 2 Social and personal characteristics of students by socio-economic status of the school area. Slovenia, 2010

Characteristics	High SES schools (n = 644)		Middle SES schools (n = 1931)		Low SES schools (n = 371)		P
	N	%	N	%	N	%	
Parental alcohol use							
No	222	34.6	605	31.5	117	31.5	0.459
Yes	370	57.6	1144	59.5	227	61.2	
Don't know/missing	50	7.8	173	9.0	27	7.3	
Parental permissiveness to use alcohol							
Wouldn't allow	395	61.3	1036	53.7	210	56.6	0.007
Wouldn't allow at home	91	14.1	294	15.2	63	17.0	
Would allow	43	6.7	205	10.6	28	7.5	
Don't know/missing	115	17.9	396	20.5	70	18.9	
Parental monitoring							
High/middle	576	90.1	1687	89.0	322	87.7	0.490
Low	63	9.9	208	11.0	45	12.3	
Friends' alcohol use							
None	291	45.2	751	38.9	154	41.5	0.001
Less than half/about half	158	24.5	576	29.8	111	29.9	
More than half/all of them	31	4.8	168	8.7	29	7.8	
Don't know/missing	164	25.5	436	22.6	77	20.8	
Positive beliefs towards alcohol							
Low	239	37.8	642	34.7	141	39.7	0.112
Middle/high	393	62.2	1208	65.3	214	60.3	
Self-esteem							
High/middle	485	77.0	1319	70.8	256	71.3	0.011
Low	145	23.0	543	29.2	103	28.7	
Refusal skills on alcohol							
High	561	88.8	1570	83.7	322	88.5	0.002
Low	71	11.2	305	16.3	42	11.5	

SES socio-economic status

The number of schools included in each SES strata: high (n = 7), middle (n = 27) and low (n = 10)

Table 3 Factors associated with last 30 days alcohol use, by socio-economic status of the school area[a]. Slovenia, 2010

Characteristics	Overall (n = 2636)		High SES schools (n = 590)		Middle SES schools (n = 1708)		Low SES schools (n = 338)	
	AOR (95%)	*P*	AOR (95%)	*P*	AOR (95%)	*P*	AOR (95%)	*P*
Gender								
Girls	1		1		1		1	
Boys	1.28 (1.03–1.59)	0.024	0.91 (0.54–1.53)	0.724	1.28 (0.98–1.67)	0.067	1.93 (1.06–3.50)	0.031
Age	1.51 (1.22–1.88)	< 0.001	1.12 (0.67–1.85)	0.670	1.67 (1.28–2.17)	< 0.001	1.35 (0.68–2.67)	0.388
SES of the school area								
High	1							
Middle	1.67 (0.95–2.91)	0.072	–		–		–	
Low	1.88 (0.95–3.72)	0.069						
Parental alcohol use								
No	1		1		1		1	
Yes	1.59 (1.23–2.05)	< 0.001	1.20 (0.67–2.15)	0.543	1.62 (1.18–2.22)	0.003	2.06 (1.04–4.07)	0.038
Don't know/missing	0.68 (0.42–1.09)	0.110	0.38 (0.11–1.38)	0.141	0.93 (0.54–1.62)	0.807	0.09 (0.01–1.03)	0.052
Parental permissiveness to use alcohol								
Wouldn't allow	1		1		1		1	
Wouldn't allow at home	2.27 (1.70–3.02)	< 0.001	2.18 (1.11–4.29)	0.024	2.33 (1.64–3.31)	< 0.001	2.16 (0.98–4.78)	0.056
Would allow	4.45 (3.12–6.35)	< 0.001	3.65 (1.54–8.70)	0.003	4.66 (3.02–7.17)	< 0.001	7.51 (2.47–22.85)	< 0.001
Don't know/missing	2.10 (1.59–2.78)	< 0.001	1.37 (0.68–2.75)	0.373	2.32 (1.64–3.27)	< 0.001	2.33 (1.08–5.00)	0.030
Parental monitoring								
High/middle	1		1		1		1	
Low	1.53 (1.11–2.10)	0.009	0.87 (0.37–2.00)	0.737	1.96 (1.33–2.89)	0.001	1.15 (0.45–2.91)	0.768
Friends' alcohol use								
None	1		1		1		1	
Less than half/about half	2.84 (2.17–3.73)	< 0.001	3.61 (1.88–6.96)	< 0.001	3.11 (2.22–4.34)	< 0.001	1.65 (0.81–3.36)	0.170
More than half/all of them	4.46 (2.95–6.73)	< 0.001	3.78 (1.22–11.7)	0.021	5.04 (3.04–8.35)	< 0.001	2.67 (0.90–7.93)	0.076
Don't know/missing	1.59 (1.18–2.15)	0.002	3.47 (1.77–6.79)	< 0.001	1.40 (0.96–2.04)	0.078	0.94 (0.40–2.21)	0.883
Positive beliefs towards alcohol								
Low	1		1		1		1	
Middle/high	1.67 (1.32–2.12)	< 0.001	2.65 (1.43–4.90)	0.002	1.54 (1.15–2.06)	0.003	1.55 (0.85–2.85)	0.155
Self-esteem								
High/middle	1		1		1		1	
Low	1.15 (0.91–1.46)	0.237	2.08 (1.18–3.64)	0.011	1.06 (0.80–1.41)	0.688	0.83 (0.42–1.62)	0.580
Refusal skills on alcohol								
High	1		1		1		1	
Low	2.54 (1.90–3.39)	< 0.001	2.18 (1.07–4.43)	0.032	3.00 (2.11–4.27)	< 0.001	1.35 (0.51–3.57)	0.546

AOR Adjusted Odds Ratios, *SES* socio-economic status

[a]Multilevel mixed-effect logistic regression model with 3 levels (school, class, and pupil)