

# Alcohol Consumption among Students – A Cross-Sectional Study at Three Largest Universities in Serbia

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## SUMMARY

**Introduction** The prevalence of unhealthy alcohol use among university students is increasing in many countries.

**Objective** The aim of the study was to investigate alcohol consumption and alcohol-related knowledge, attitudes and risky behaviors among Serbian university students.

**Methods** The cross-sectional study was carried out at the three state universities from January to June in the academic year 2009/2010 and included 2,285 students of both genders. The students filled out a questionnaire consisting of 70 questions with respect to demographic and socioeconomic characteristics, their lifestyle habits, styles and attitudes, health assessment, as well as exposure to different risk factors.

**Results** It was found that 77.7% of students drank alcohol occasionally, 4.6% of them consumed it on a daily basis. Friedman's test ( $p < 0.001$ ) showed that students prefer drinking beer to all other alcoholic beverages. Students in Belgrade and students of Technical faculties are undisputed champions when it comes to how often they drink six or more drinks on a single occasion. Older students in Serbia drink more and get drunk more frequently.

**Conclusion** A high percentage of Serbian students consume alcohol, and even though they have their first drink at an early age, they generally drink less than students in many other countries.

**Keywords:** students; alcohol consumption; public health

## INTRODUCTION

The university experience is unique as it provides students with the first opportunity to be a part of a larger group of peers without parental supervision. It also represents the last period of freedom (perceived by students) before taking on the responsibilities of adulthood. This makes them more vulnerable to try novel, previously prohibited and sometimes illicit experiences [1]. Abrupt transition from high school to a university setting, which in turn generally implies separation from immediate family, transition from adolescence into early adulthood, increased pressure due to the study regime and strenuous exams, the first real independence that brings greater exposure to psychoactive substances and alcohol, with economic dependence on parents or the state – these are all the factors that further increase the pressure and affect the student population, and provoke numerous health disorders. Socio-economic environment that dominates the country, the existing differences in wealth and socioeconomic groups, striking poverty, unemployment, frustration regarding current or former sociopolitical trends, insecurity and uncertain professional achievements stand in favor of it [2, 3].

The prevalence of unhealthy alcohol use among young adults (aged 18–24 years) is increasing in many countries. A high prevalence

of hazardous drinking by university students has also been reported [4, 5].

University students are often unaware that their drinking is risky and exceeds normative levels. Young people at universities have a particularly high prevalence of unhealthy alcohol use due to the peer-group influence, desire to remain awake at night, pressure to succeed in academic work, self-reported poor mental health, and easy accessibility of drugs [3, 6]. They have been found to drink more heavily [7, 8] and to exhibit more clinically significant alcohol-related problems [9] than their non-student peers. Across the world it has been reported that university students' levels of alcohol consumption are higher than those of their non-university peers [7, 8].

In contrast to their North American peers, the drinking patterns of students from Europe in general have been less extensively investigated. Unlike in the US, where the minimum purchase age is 21 years, European students can legally purchase alcohol from the age of 18, thereby creating a different context for alcohol consumption.

As levels of alcohol intake increase, so does the prevalence of a variety of risky behaviors, including unsafe sexual activity, behavior leading to injury and damage to property, violence and illegal behavior. Increased frequency of injury and assault inevitably leads to increased

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strain on care and emergency services, and links between alcohol consumption and hospital admissions are well established. Heavy alcohol intake has also been linked to depression and liver damage.

Factors within the university environment contribute to these high levels of consumption leading to a range of negative consequences. These include: social, physical and psychological harms to the student, e.g. academic impairment, blackouts, injury, suicide, unintended sexual activity and sexual coercion; harm to other people including interpersonal and sexual violence; and costs to institutions, such as property damage and student attrition.

Students have been reported to drink at higher levels than non-student peers [10, 11, 12] making this an issue of public health concern given the negative social and health consequences of heavy intake [13] and the link with other unhealthy behaviors [14] (e.g. cigarette smoking and recreational drug use).

As alcohol and illicit drug use are constantly increasing among university students, there is a need for a large survey across different universities and faculties in Serbia.

## OBJECTIVE

The aim of the study was to investigate consumption of alcohol and alcohol-related knowledge, attitudes and risky behaviors of Serbian university students.

## METHODS

### Material

The cross-sectional study was carried out at the three state universities from January to June in the academic year 2009/2010 and included 2,285 students of both genders. The students filled out a questionnaire consisting of 70 questions with respect to demographic and socioeconomic characteristics, their lifestyle habits, styles and attitudes, health assessment, their mental health characteristics, as well as exposure to different risk factors. The questionnaire employed was compiled and developed from different published sources, including validated instruments used in various populations, as well as questions developed specifically for this survey [15].

The survey was performed by students and teaching assistants of the University of Niš (south of Serbia), Belgrade (capital) and Novi Sad (north) at lectures, in dormitories, reading rooms and student clubs. The filling out of the questionnaire was intended to last a maximum of 15 minutes, including the time needed for interviewer instructions.

### Statistical analyses

The data were entered into Excel spreadsheets (Microsoft Office 2003) by several teams consisting of two people,

whereby cross-checking was done for every given survey. The total number of received questionnaires was 2,532, 247 of which were rejected due to incomplete responses.

Of the 70 questions asked in the questionnaire, some of which contained sub-questions, a total of 116 variables were made. For the purposes of this study, only those variables that were related to the objectives of this study were used.

Distribution of respondents was done according to: gender, university, groups of faculties (Biomedical, Social and Technical sciences) and type of students' accommodation.

The investigated factors were compared between these groups.

The assessment of their own health, alcohol use, and the existence of emotional problems were taken as the research outputs.

Statistical analysis was performed using SPSS 17.0 (SPSS Inc., Chicago IL, USA) in Windows XP environment.

The research results were shown in tables. Statistical analysis included the use of descriptive statistics (percent prevalence, mean, median) and analytical parametric (Student's t-test, ANOVA) and nonparametric tests (Pearson's  $\chi^2$  test,  $\chi^2$  homogeneity test, Fischer's exact probability test, Cochran's Q-test, Friedman's test, Mann-Whitney U-test, Kruskal-Wallis H-test) and binary logistic regression tests.

For all tests, significance level was set at  $p < 0.05$ .

## RESULTS

The total number of students tested in this study was 2,285 – 707 students from the University in Niš (30.9%), 1,004 students from the University in Belgrade (43.9%) and 574 students from the University in Novi Sad (25.1%) (Table 1).

Out of that number, 1,121 (49.1%) subjects were males and 1,164 were females (50.9%).

The mean age for all tested students was 22.51 (SD 2.10), while the mean value of years of study for all students tested was 3.15 (SD 1.67). For male students, this value amounted to 22.64 (SD 2.21) for age and 3.20 (SD 1.65) for the year of study, while for female students examined these values amounted to 22.39 (SD 1.98) for age and 3.10 (SD 1.69) for the year of study.

T-test of independence showed no statistical significance for the study year between male and female students. Statistically significant difference was found with respect to age. Specifically, male students were older than female students ( $t=2.854$ ,  $df=2283$ ,  $p < 0.01$ ).

All faculties were divided into three groups: 1. Biomedical sciences (such as medicine, dentistry, pharmacy, biophysics, veterinary science, physical education and the like); 2. Social (law, economics, political science, organizational science, art); and 3. Technical (civil engineering, mechanics, electronics, transportation, agricultural and others).

Of the total number of all students (2,285), 769 students were from the group of biomedical science faculties (33.7%), 714 from the faculties of social sciences (31.2%) and 802 students from the group of technical faculties (35.1%) (Table 1).

**Table 1.** Distribution of students by gender, groups of faculties and universities

Universities		Groups of faculties							
		Biomedical		Social		Technical		Total	
		N	%	N	%	N	%	N	%
Niš	Males	127	18.0	89	12.6	89	12.6	305	43.1
	Females	230	32.5	108	15.3	64	9.1	402	56.9
	Total	357	50.5	197	27.9	153	21.6	707	100.0
Belgrade	Males	109	10.9	163	16.2	262	26.1	534	53.2
	Females	160	15.9	188	18.7	122	12.2	470	46.8
	Total	269	26.8	351	35.0	384	38.2	1,004	100.0
Novi Sad	Males	55	9.6	69	11.8	159	27.7	282	49.1
	Females	88	15.3	98	17.1	106	18.5	292	50.9
	Total	143	24.9	166	28.9	265	46.2	574	100.0
Total	Males	291	12.7	320	14.0	510	22.3	1,121	49.1
	Females	478	20.9	394	17.2	292	12.8	1,164	50.9
	Total	769	33.7	714	31.2	802	35.1	2,285	100.0

The one-way ANOVA test showed no significant statistical differences in age and year of study among students from different groups of faculties.

In this paper we investigated a variety of variables including: gender of students, faculty, residence, and the university at which they study. The study also examined their distribution and percentage, as well as the existence of any statistically significant differences between these groups.

The use of alcohol was first examined in relation to the gender of students.

Students were asked to choose 1 of 5 offered statements related to their habits (never drank, tried only 1–2 times, past drinking, drink occasionally and drink every day) and how often they drink alcoholic beverages separately especially for each of the three types of drinks (beer, wine and spirits – never, a few times a year, 2–3 times a month, once a week, 2–3 times a week and every day).

It was found that 77.7% of students drink alcohol occasionally, 4.6% of them consumed it daily. Of these, 78.7% of males and 76.8% of females drank alcohol occasionally, while constant drinking was reported by 7.3% of males and 2.0% of females.

30.1% of males (337) and 61.4% of females (715) said they never drank 6 or more drinks on 1 occasion (46.0% of total); once a month or less often than that 50.6% of males (571) and 35.1% of females (408) (42.7% of total); once a week, or almost every day 19.4% of males (217) and 3.5% of females (41) (11.3% of total). ( $p < 0.001$ ,  $df = 4$ ,  $\chi^2 = 300.180$ ).

The mean value when they first had an alcoholic drink in total for all students was 13.04, and median was 15.00. The mean for the males was 12.10 and median 14.0, and mean for the females was 13.94 and median 16.0.

Friedman's test ( $p < 0.001$ ,  $\chi^2 = 317.163$ ,  $df = 2$ ) showed that there were significant differences between the types of alcoholic beverages that students prefer to consume. It was shown that students prefer to drink beer to all other alcoholic beverages.

To the question "How many drinks they consumed during the last week", the following mean values were obtained: 2.19 for beer, 1.14 for wine and 1.60 for spirits. Of

that, for males, the mean value was 3.73 for beer, 1.56 for wine and spirits 2.54, while for the females the mean value was 0.71 for beer, wine 0.74 and for spirits 0.70.

Mann-Whitney U-test showed no difference in the consumption of wine between genders. Men drank more beer and spirits, as they generally drank more frequently ( $p < 0.001$  for all three).

Kruskal-Wallis H-test showed that the least satisfied with their lives were students in Belgrade, and the most satisfied were students in Novi Sad (Table 2).

Students of the University in Belgrade in comparison with other students drink the highest number of drinks on one occasion (6 drinks or more), while students of the University in Niš the least number of drinks. Students in Niš drink beer the least, but they drink liquor the most; with students in Novi Sad it is vice versa – they drink liquor the least and beer the most. For wine, statistically significant difference was not found (Table 3).

Kruskal-Wallis H-test showed that the students of social sciences were the least satisfied with their lives and their health turned out to be the worst when self-assessments of the students from different groups of faculties were compared. Concerning the self-assessments of health given by the students of biomedical sciences, their health was evaluated as the best and they were the most satisfied with their lives. Engineering students see themselves as the thinnest and biomedical sciences students see themselves as the most obese (Table 2).

Students of technical faculties are undisputed champions when it comes to how often they drink 6 or more drinks during a single occasion and individual consumption of all the 3 types of drinks (beer, wine and spirits) (Table 3).

According to the type of students' accommodation, students were divided into four groups: 398 students lived with their parents (17.4%), 1,381 students lived in students' dorms (60.4%), 393 of them lived in rented flats (17.2%) or had some other kind of accommodation (113 of them – 4.9%). Within these groups the fact whether the students had their own room was taken into consideration (1,579 students had their own room – 69.1%).

**Table 2.** Associations between selected self-ratings and individual variables by gender, university, faculty groups and place of residence of the students (mean with SD)

Variables		Satisfaction with their life	Rating of their health	Assessment of their weight	How often they were under stress
Gender	Male	8.19 (1.15)	2.64 (0.5)***	1.94 (0.48)**	1.94 (0.64)***
	Female	8.27 (0.99)	2.52 (0.54)***	2.01 (0.46)**	2.07 (0.55)***
University	Niš	8.21 (1.11)***	2.57 (0.54)	1.98 (0.47)	2.04 (0.61)
	Belgrade	8.13 (1.04)***	2.58 (0.52)	1.96 (0.50)	2.0 (0.60)
	Novi Sad	8.42 (1.08)***	2.59 (0.53)	1.99 (0.43)	1.97 (0.60)
Groups of faculties	Biomedical	8.31 (1.06)***	2.63 (0.51)**	2.00 (0.46)**	2.01 (0.58)
	Social	8.09 (1.12)***	2.53 (0.54)**	2.00 (0.45)**	2.02 (0.61)
	Technical	8.27 (1.04)***	2.57 (0.54)**	1.93 (0.50)**	1.99 (0.62)
Type of accommodation	Parents	8.23 (1.09)	2.57 (0.54)	1.97 (0.48)	1.99 (0.62)
	Dorm	8.24 (1.07)	2.59 (0.53)	1.97 (0.47)	2.00 (0.60)
	Rented	8.19 (1.05)	2.53 (0.53)	1.99 (0.46)	2.05 (0.56)
	Other	8.21 (1.14)	2.66 (0.48)	2.03 (0.45)	2.01 (0.74)

\*\* p<0.01; \*\*\* p<0.001 in Mann-Whitney U-tests and Kruskal-Wallis H-tests

**Satisfaction with their life:** from 1 = "poor" to 10 = "excellent".

**Rating of their health:** Poor; Average; Good.

**Assessment of their weight:** Skinny; Neither thick nor thin; Thick.

**How often they were under stress:** No; Yes, but no more than the others; Yes, more than others; Yes, their life is almost unbearable.

**Table 3.** Associations between drinking habits and individual variables by gender, university, groups of faculties and type of accommodation of the students (mean with SD)

Variables		How often they drink 6 or more on one occasion	How often they drink beer	How often they drink wine	How often they drink spirits
Gender	Male	2.35 (1.14)***	3.18 (1.43)***	2.35 (1.20)	2.37 (1.31)***
	Female	1.58 (0.84)***	2.14 (1.12)***	2.35 (0.99)	1.92 (1.01)***
University	Niš	1.85 (1.05)**	2.54 (1.45)*	2.36 (1.13)	2.23 (1.21)**
	Belgrade	2.00 (1.04)**	2.66 (1.36)*	2.37 (1.06)	2.14 (1.14)**
	Novi Sad	2.00 (1.13)**	2.76 (1.47)*	2.31 (1.15)	2.03 (1.23)**
Groups of faculties	Biomedical	1.78 (0.99)***	2.41 (1.33)***	2.39 (1.12)*	2.04 (1.09)**
	Social	1.92 (1.07)***	2.62 (1.40)***	2.26 (1.10)*	2.12 (1.23)**
	Technical	2.15 (1.11)***	2.90 (1.48)***	2.39 (1.08)*	2.26 (1.23)**
Type of accommodation	Parents	1.73 (0.93)***	2.50 (1.38)**	2.23 (1.03)*	2.21 (1.16)***
	Dorm	1.97 (1.05)***	2.68 (1.36)**	2.33 (1.08)*	2.06 (1.15)***
	Rented	1.94 (1.14)***	2.57 (1.52)**	2.45 (1.15)*	2.22 (1.29)***
	Else	2.58 (1.24)***	3.11 (1.71)**	2.64 (1.32)*	2.60 (1.30)***

\* p<0.05; \*\* p<0.01; \*\*\* p<0.001 in Mann-Whitney U-tests and Kruskal-Wallis H-tests

**How often they drink 6 or more drinks on one occasion:** Never; Less than once a month; Once a month; Once a week; (Almost) Every day.

**How often they drink beer/wine/spirits:** Never; Several times a year; 2–3 times a month; Weekly; 2–3 times a week; Every day.

**Table 4.** Correlations between characteristics and behaviors with selected variables

Variable	Correlations (Kendall tau-b)		
	Satisfaction with their life	The statement refers to them	How often do they drink 6 or more drinks on one occasion
When they first had a drink	0.013	0.052**	-0.141***
Year of study	-0.011	0.054**	0.047**
Age	-0.071***	0.061**	0.040*
The average score	0.072***	-0.056**	-0.101***
Weekly pocket money	0.123***	0.122***	0.127***
Rating of their health	0.203***	-0.031	-0.028
Assessment of their weight	0.016	-0.001	0.020
How often they were under stress	-0.228***	-0.005	0.000
Smoking status	-0.072***	0.142***	0.197***
How many beers they drank the previous week	-0.029	0.310***	0.466***
How many glasses of wines they drank the previous week	0.030	0.250***	0.180***
How many spirits they drank the previous week	0.014	0.297***	0.317***

\* Correlation is significant at the 0.05 level; \*\* p<0.01; \*\*\* p<0.001

**Satisfaction with life:** from 1 = "poor" to 10 = "excellent".

**The statement refers to them:** They never drank; Tried only 1–2 times; They drank earlier, not any more; Drink occasionally; Daily drink.

**How often they drink 6 or more drinks on one occasion:** Never; Less than once a month; Once a month; Once a week; (Almost) Every day.

Students of biomedical sciences in a much higher percentage lived with parents or in an apartment; students of the faculties of technical sciences in a high percentage lived in dormitories ( $p<0.001$ ).

There was no statistically significant difference among genders with respect to the type of students' accommodation ( $p=ns$ ).

Kruskal-Wallis H-test revealed that students living with their parents drank alcoholic beverages the least, while students who did not live with their parents, i.e. living either in a student dormitory or in a rented apartment away from parents (with friends, relatives, etc.) drank much more (Table 3).

Among the variables examined in relation to the parameters related to the frequency of drinking alcoholic beverages (how regularly they drink alcohol) and drinking rate (how often they drink 6 or more drinks on a single occasion), statistically significant correlations were found (Table 4).

It was confirmed that older students drank more and got drunk more often.

Also, students will drink more frequently if they began to drink earlier. However, these students will get drunk less frequently (6 or more drinks on a single occasion) than those who had their first drink later.

Better students drank less and got drunk less often, just as they were more satisfied with their lives. Students who had more money, besides being more satisfied with their lives, drank more and got drunk more often. Students who smoked also drank more and got drunk more often (Table 4).

Mann-Whitney U-test showed that those students who had their own room were more satisfied with their lives ( $p<0.01$  and  $df=1$  for  $\chi^2=8.813$ ) and drank less wine

( $p<0.05$  and  $df=1$  for  $\chi^2=6.008$ ) and spirits ( $p<0.05$  and  $df=1$  for  $\chi^2=4.588$ ) than those students who did not have their own room.

Median test showed that younger students, both in terms of age ( $p<0.01$ ) and year of study ( $p<0.05$ ), saw themselves as healthier people, that students who did not smoke also saw themselves as healthier ( $p<0.001$ ), as was the case with students who did not drink beer ( $p<0.05$ ).

Most students took medications prescribed by a doctor (49.1%), while 24.2% of students did not take drugs at all. Cochran's Q-test showed a statistically significant difference between the groups of drugs that students used to take on their own initiative, with painkillers mostly used, followed by immune boosters (Cochran's  $Q=2,935E3 (>1)$ ,  $df=6$ ,  $p<0.001$ ).

Of the total number of students tested, 376 of them were daily smokers (16.5%) and 215 students reported to smoke occasionally (9.4%). The total number of girls who were daily smokers was 215 (18.5%) and there were 161 men (14.4%).

Binary logistic regression was used to test the prognostic value of certain parameters on the expressed need of students for assistance from a practitioner (psychologist or psychiatrist) and on their emotional problems.

We examined the influence of these parameters – how often students take drugs, whether they smoke, how many cigarettes they smoke per day, whether they have a desire to quit smoking, whether they are concerned about the consequences of smoking on their health, how they evaluate a statement concerning their use of alcohol, how often they drink 6 or more drinks on 1 occasion – on the need for expert assistance, and on emotional problems (Table 5).

**Table 5.** Risk behavior and mental health

Independent variables		Need for psychologist (yes, no)			Emotional problems (yes, no)			
		df	p	OR	df	p	OR	
Medications taken	On the advice of doctors	1	0.770	0.949	1	0.812	1.031	
	By themselves	1	0.068	1.417	1	0.001	1.628	
	Don't take them	2	0.034		2	0.001		
How many cigarettes a day					1	0.043	1.015	
Concern over the consequences	No answer	1	0.018	0.630	1	0.000	0.581	
	No, not at all	1	0.080	0.680	1	0.900	0.978	
	Yes, a little	1	0.004	0.604	1	0.016	0.713	
	Yes, very much	3	0.019		3	0.001		
The statement refers to them	They never drank				1	0.543	1.224	
	Tried only				1	0.134	1.564	
	Drank earlier				1	0.406	1.341	
	Drink occasionally				1	0.003	2.090	
	Drink daily				4	0.002		
How often they drink 6 or more drinks on one occasion	Never	1	0.004	0.201				
	<1 per month	1	0.012	0.247				
	Once a month	1	0.002	0.180				
	Once a week	1	0.004	0.181				
	Almost every day	4	0.023					
Constant		1	0.773	1.178	1	0.810	0.935	
Correctly classified			82.5%			64.5%		

df – degree of freedom; OR – odds ratio

The adequacy of the model used for forward step-wise method (likelihood ratio) was established using Hosmer-Lemeshow test of goodness-of-fit ( $p=0.292$ , for  $\chi^2=9.626$  and  $df=8$ ), whereby the strength of determination with respect to the need for a psychologist is Cox & Snell  $R^2=0.018$ , and Hosmer-Lemeshow test ( $p=0.635$ , for  $\chi^2=6.110$  and  $df=8$ ), whereby the strength of determination for emotional problems is Cox & Snell  $R^2=0.037$ .

Students who did not take any drugs, who were very concerned about the consequences of the harmful effects of tobacco and who often drank 6 or more drinks on one occasion are better candidates than all the other students regarding this group of parameters when seeking professional help is concerned.

Students who usually took medications on their own initiative, who smoked a number of cigarettes and were very concerned about the consequences of the harmful effects of tobacco, as well as those who drank alcohol occasionally, are the risk groups when it comes to the expression of emotional problems (Table 5).

## DISCUSSION

According to Hallett et al. [16] more than one third of university students drank to harmful levels. Their study also found that tertiary students drank more heavily than their non-student peers yet are often unaware their drinking is risky. They also found that the youngest students are the heaviest drinkers in the population and are the “main target” of the alcohol industry. However, we found that the older students were the ones who drank more and got drunk more often. Also, in Serbian universities it was found that only 4.6% of students drank on a daily basis, and 77.7% of them drank alcohol occasionally. Of these, 78.7% of male students and 76.8% of female students drank occasionally, while constant drinking was found in 7.3% of males and 2.0% of females.

Many university students tend to overestimate how much their peers drink. It is probable that this sort of cognitive bias is making those students drink more heavily. Students risk long-term damage to their liver and brain and face more immediate dangers of accidents, falls, unwanted sex and sexual assault [16].

Both Australian and a few international studies suggest that tertiary education students, particularly males, have relatively high levels of risky alcohol consumption [17, 18]. In those studies, while students were less likely to drink regularly, they were more likely to drink heavily when they did consume alcohol. In the study of Roche and Watt [19] it was found that 94% of students drank alcohol and 54% drank 5 or more drinks on a typical drinking occasion. Another study revealed that 88% of students drank alcohol, with 45% drinking weekly and over 40% drinking 5 or more drinks in a single session [20]. Several studies also have reported alarming rates of alcohol abuse in student populations [21, 22].

According to Nelson et al. [23] the recommended safe levels for daily alcohol consumption are 4 units for men

and 3 units for women. Our measure of 6 or more drinks on one occasion that defines heavy drinking is consistent with this data.

In our work, the mean value when students first had an alcoholic drink for all students in total was 13.04. In the other study, the mean age of first alcohol consumption was 16.1 years, which is reasonably consistent with other Australian data [24].

The previous research showed that young people are most likely to drink bottled spirits, liqueurs and pre-mixes in cans and bottles and that consumption of these drinks has increased in the recent years [25]. There is some evidence that alcohol consumption is higher in Australian adolescents and young adults than in other countries, notably the US, pointing to the importance of gathering Australian data [26, 27]. In the current study in Serbia it was shown that students rather drank beer than any other alcoholic beverage. As in some other studies, the most popular type of alcoholic beverage consumed by students was spirits [28].

Alcohol and substance use is also becoming increasingly widespread in many African countries, unlike the situation in Asian cultures where young people are less likely to drink heavily [6, 18].

Australian studies report that between 70% and 96% of university students regularly consume alcohol [29] with 50% drinking to intoxication at least weekly [18, 19].

The level of alcohol consumption reported in the study by Kyprilidis et al. [30] is less than that reported in New Zealand, both for men and women. Although gender convergence in drinking has been reported elsewhere [31, 32, 33] and a similar trend appears to be occurring in Australia [34], this study shows a large discrepancy between males and females. However, there are no previous prevalence studies from which to assess attenuation trends.

The results of the study of Reavley et al. [28] suggest that tertiary education students, particularly males, have relatively high levels of risky alcohol consumption. Those who started drinking regularly at an early age are more likely to drink at risky levels, providing further support for approaches that delay the age of alcohol consumption among adolescents. With approximately 50% of young people aged between 18 and 24 in vocational or higher education, interventions in these institutions have the potential to play a substantial role in reducing risky drinking among this age group [28].

The situation is quite different in our case. Students who started to drink or have tried alcohol earlier are less likely to get drunk.

Within the United Kingdom, a review of studies measuring undergraduate drinking concluded that 52% of males and 43% of females reported drinking above the recommended limits of 21 units per week for men and 14 units per week for women [35].

The strength of this study was a relatively large sample size. The analysis covered a wide range of factors, employing several variables for each of the areas under investigation. Hence, this study has contributed to the literature focusing on a young adult population. The study's limita-

tions are that findings are based on self-reported data with no validation undertaken. Furthermore, cross-sectional approaches allow conclusions about associations, not causations.

## CONCLUSION

A high percentage of Serbian students consume alcohol, and even though they have their first drink at an early age, they generally drink less than students in many other countries. In addition, they prefer drinking beer, unlike other students. Older students in Serbia drink more and get drunk more frequently, whereas these trends in the world are associated with younger students.

While the heaviest drinkers are at greatest risk for harm, they are relatively few and generate proportionately small

amounts of all drinking-harms. Lower level drinkers in universities are numerous and they account for the majority of harms – this is a prevention paradox [36].

There is an explicit need for better education about alcohol concerning general health in Serbian universities as in nearly all countries. That is why development of appealing comprehensive alcohol abuse prevention programs and the scaling up of existing interventions that have been shown to be effective [37] are a priority for universities due to the serious physical, psychosocial and emotional consequences and long-term risks related to alcohol consumption.

As a public health issue of university students, further research along with this work should be of value in prevention planning in Serbia for improving their health and well-being.

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## Конзумација алкохола међу студентима: студија пресека на три највећа универзитета у Србији

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### КРАТАК САДРЖАЈ

**Увод** Преваљенција нездраве употребе алкохола међу студентима је у порасту у многим земљама.

**Циљ рада** Циљ рада је био да се испитају учесталост пијења алкохола и знање, ставови и ризична понашања у вези с употребом алкохола код студената у Србији.

**Методе рада** Истраживање је урађено као студија пресека од јануара до јуна школске 2009/2010. године, а њиме је обухваћено 2.285 студената оба пола три државна универзитета у Србији. Студенти су попуњавали упитник који се састојао од 70 питања која су се односила на демографске и социоекономске одлике, затим животне навике и стилове студената, понашања и ставове у вези с употребом алкохолних пића, процене сопственог здравља, као и на изложеност различитим факторима ризика.

**Резултати** Истраживањем је утврђено да 77,7% студената пије алкохолна пића повремено, а да их 4,6% пије свакодневно. Фридманов тест ( $p < 0,001$ ) је показао да студенти у Србији најрадије пију пиво. Студенти Универзитета у Београду и студенти техничких факултета свих универзитета су неоспорни „прваци“ када је у питању испијање шест или више пића у некој прилици. Старији студенти пију више и чешће се напијају.

**Закључак** Велики проценат студената у Србији пије алкохол. Међутим, иако су се први пут сусрели с алкохолним пићима знатно раније у односу на студенте многих других земаља, они ипак генерално пију мање него студенти из тих земаља.

**Кључне речи:** студенти; пијење алкохола; народно здравље

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