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ORIGINAL ARTICLE

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Alcohol use prevalence and sociodemographic correlates of alcohol use in a university student sample in Turkey

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Abstract *Background* This study is a survey to determine prevalence and sociodemographic correlates of drinking problems among students from five university centres in Turkey. *Method* Using an anonymous self-administered questionnaire and the CAGE Questionnaire for alcohol use problems, 1,720 students were surveyed. *Results* Of the whole student sample 63.3% reported that they had ever tried drinking alcohol, and 48.5% had used alcohol in the past year. Sixty five percent of the students had been drinking once a month or more frequently. The overall prevalence of alcohol use problems according to CAGE2+ was 9.7% (19.9% among the students who used alcohol in the past year). In multivariate analysis, male students tended to have problems with alcohol about three times more than females. Living in the dormitory seemed to be protective in terms of frequent drinking, and as educational level of the parents increased, the odds of drinking at least once a month increased. Students whose mothers were illiterate or primary school graduate tended to give more positive answers to the Cut-down, Annoyed and Guilty items. The odds of giving a positive answer to the Cut-down item among those living alone was greater than the other residence groups. Predictors of positive answer to the Eye-opener item were male gender, living alone at home, and residence of the family being in a foreign country. Paternal educational level being in the illiterate/primary school category was significantly related with more positive answers to the Guilty item. *Conclusions* Drinking problems among university students in Turkey are more prevalent when compared with prevalence rates shown in other surveys in Turkey. Alternative ways of socialization should be provided for the university youth in order to prevent alcohol use problems in the future.

Key words alcohol use – prevalence – university students – sociodemographic factors – CAGE

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Introduction

An individual's alcohol use and his problems with alcohol begin and develop in a cultural context. Besides individual biological and psychological factors, cultural factors constitute a major role in determining prevalence of alcohol use problems. Social values can encourage young people's alcohol use, or actively discourage and encourage involvement in activities in line with adult mainstream values, hopes and expectations. The geographical location of Turkey allows different cultural influences both from the Muslim countries where alcohol use is religiously and/or lawfully forbidden, and from the European countries where alcohol use is highly prevalent. The Turkish Government and its institutions are based on laic laws. Although majority of the Turkish population is formed by Muslims, the great majority does not live up to the principles of the religion of Islam, and alcohol use is a socially acceptable phenomenon in Turkey. In deed, the Turkish population is a multicultural and multiethnic society, so that culture and many cultural interactions determine religious activities, but the reverse is not true. Religion is just a

cultural element in the whole picture for a significant part of the population.

According to the World Health Organization Global Status Report on Alcohol [29], the rate of the use of alcohol in the year 2000 was 19.6% in general Turkey population, prevalence of alcohol dependence was 1.3%. Regarding the other Muslim countries, the prevalence of alcohol use within the past year lies between 0.5% in Egypt and 35.6% in Lebanon, and the prevalence of alcohol dependence ranges from 0.2% in Egypt to 7.3% in Iran. Still, these figures are far below those in European countries where the proportion of alcohol users among adult populations and prevalence of alcohol dependence were reported to be 62.0–97.5 and 2.2–12.2%, respectively. Turkey is more open to the effects of the Western culture than that of the East because of the government's political choices, touristic visits from Europe, and the effect of mass media and Internet connections.

Distribution of the rates of alcohol consumption is usually heterogeneous in a given population where risk groups can be defined. University students may be one of the risk groups in terms of hazardous alcohol consumption because of some particular characteristics of the university life. First of all, the university campus can be considered as a distinct cultural environment where new peer relations and peer groups are formed. The university campus where social contact and drinking are frequent often has increased modeling for drinking, peer pressure to partake in drinking, and easy availability of alcohol that may lend itself to greater rates of problematic drinking. Alcohol use can become a norm in this sociocultural context where students may feel obliged to drink in conformity with the group's norms for social approval [13]. Moreover, university students are free from demands of work and marriage, giving them the freedom to seek leisure without the adult responsibilities [24].

Life-time prevalence of alcohol use was reported as 74% in Israeli university students [14] and 61% in Hong Kong [1] university students, and changed from 49.2 to 70.8% with an eight-year interval in two universities of Lebanon [15]. In an international study prevalence of alcohol use was investigated among university students in 21 countries, and it was found that prevalence of any more than drinking on dinking occasions was 95% in Ireland, in a range changing from 42% in France to 86% in other European countries, 65% in the United States, 43% in Thailand, and 50% in Venezuela [9]. Thus, there is a considerable variation among different countries, even among the European countries.

In Turkey, students enter the university by passing a central exam after high school, and it is usually the first time that youths leave their protective parent home environment. With respect to alcohol use the university environment is relatively permissive when compared with students' previous home and school environment. Many of the students either rent a house with their friends or they stay in student dormitories during their university years. Again considering alcohol use, this age group (18–24 years) corresponds to the time of first use of alcohol in Turkey. Clinical studies done in clinical alcohol dependent patients showed that the mean age of first use of alcohol changed between 14 and 20 in Turkey [7, 8, 20]. Peer influence is of paramount importance during adolescence [24] and drinking is generally perceived and imitated as an adult behaviour at this psychosocial developmental stage. Thus, the youth may need to prove himself/herself as an independent "adult". During this period of time, adolescents generally begin the protracted psychological process of forging an identity and making role transitions one of which is entering the workforce [13]. All of these mentioned psychosocial developmental issues may be critical factors in regulation of alcohol consumption behaviour of university students.

The main aim of this study was to determine the extent of alcohol use problems in the university students in Turkey. This study is based on the observation that alcohol use, especially drinking beer, which was previously an occasional event for the youth entered the daily behavioural repertoire of university students in Turkey. There are several studies in Turkey which surveyed university students to determine the rate of use of alcohol and alcohol use problems. Alcohol use prevalence among first and forth-year university students was between 58 and 82.4% in Istanbul in 1983 [25]. Yüksel et al. [30] reported that 10% of university students from four university centres in Ankara used alcohol in the past month, and 2% used alcohol daily. Life-time prevalence of alcohol use was found as 72.3% and the prevalence of clinically significant alcohol use problems was found as 6.6% in a medical school [2]. Akvardar et al. [4] found that the prevalence of alcohol use problems was 22.4% in junior medical students and 8.9% in senior medical students. The results of the mentioned studies cannot be generalized to the whole country, as they were done in single university centres representing a restricted sociocultural environment. This study was done on five university centers which were located in different social environments with the aim of having more generalizable findings and determining the relationship between alcohol use and various sociodemographic factors. Having findings from different social environments would enable the institution of appropriate and specific prevention and intervention programmes for the alcohol use problems of the university students.

Method

This study is a survey carried out among randomly selected 2,000 students in five universities. Students were drawn from the faculties of political sciences. The reason for preferring these schools was

first the ease to reach the sample by the authors. Secondly, a homogeneous sample with regard to the faculty would allow comparability and interpretation of the findings in itself. However, it is still a necessity to include other faculties with further studies.

Questionnaires were distributed to the participants voluntarily by lecturers while they were in attendance of a required course. The lecturers were instructed about introduction of the questionnaire forms. Students were assured that their responses would be confidential and they were informed that they were not obliged to complete the questionnaire. The respondents were instructed to place the completed questionnaire forms in an envelope before returning.

A total of 1,720 participants, or 86% of the sample took part in the study. The mean age of the sample was 21.5 ± 1.8. Distribution of the sample by gender and school is shown in the Table 1.

The questionnaire was prepared by the authors as a self-rating form. It consisted of questions including sociodemographic status, academic status, parents' education, economic status, and place of birth. Assessment of the pattern of alcohol use was done by asking questions on ever use of alcohol, use of alcohol in the past year, in the past month and past week. Students who drank alcohol in the previous year were asked about frequency of drinking and whether they evaluated their consumption of alcohol as problematic.

The CAGE (Cut-down, Annoyed, Guilty, Eye-opener) Questionnaire was applied by the interviewer to identify the problems of alcohol use. This instrument was also used in previous surveys done in Turkey [3, 4, 6, 26], so it was preferred in the present study with the aim of comparing the results. The CAGE Questionnaire is a scale including four items. Questions covered were: "Have you ever felt you should cut down on your drinking?", "Have people annoyed you by criticizing your drinking?", "Have you ever felt bad or guilty about your drinking?", and "Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover (eye-opener)?" Each question was scored with one point. The CAGE Questionnaire was originally developed by Ewing [11]. Probable presence of an alcohol use disorder is indicated by a score of 1+, whereas a score of 2+ was taken as the cut-off point for detecting presence of clinically significant alcohol use problems [23]. Validation of the Turkish version of the CAGE Questionnaire was done by Gul et al. [12] and it was shown that with cut-off score of 2+ the CAGE revealed a specificity of 86% and a sensitivity of 75 to 97% in detecting alcohol use disorders.

Statistical analysis

In the first step univariate analyses were carried out on the relationships between demographic and background variables and alcohol use. Alcohol use was taken as either the presence or the absence of alcohol use problem according to the CAGE2+ score, and drinking alcohol at least once a month or more frequently. Relationships between alcohol use and gender, school, academic year, subjective evaluation of academic performance, place of habitation of the family during the last ten years, place of residence of the student, education of the father and the mother, subjective evaluation of the family income and frequency of drinking in the past year were examined with χ^2-square analysis.

Next, the relationships which were found to be significant in the univariate analyses were reassessed using logistic regression models. The presence of alcohol use problems according to the CAGE2+ cut-off score or the frequency of drinking (at least once a month or less frequently) were taken as dependent variables in the logistic regression analysis. Finally, the same univariate and multivariate statistical procedures were performed by taking individual items of the CAGE Questionnaire as dependent variables.

All statistical analyses were executed by using SPSS 13.0.

Results

Of the whole student sample 63.3% (n = 1,088) reported that they had ever tried drinking alcohol (Istanbul 67.5%, Ankara 67.6%, Izmir 76.8%, Mersin 54.2%, Muğla 51.6%). The prevalence of drinking more than once during life-time was 50.6%, whereas 12.7% of the sample stated that they had tried drinking only once during life time. A quarter of the students (25.3%, n = 436) reported that they had been drinking in the past week, and nearly half (48.5%, n = 835) had used alcohol in the past year. The students who had consumed alcohol during past year were inquired about the frequency of drinking, and 65.0% (n = 574) answered that they had been drink-

Table 1 Sociodemographic characteristics of the student sample

	N	%
Gender		
Male	864	50.2
Female	854	49.7
Not stated	2	0.1
Place of living in the last 10-year period		
Urban	1,356	78.8
Rural	308	17.9
Foreign country	30	1.7
Not stated	26	1.6
School		
Istanbul	294	17.1
Ankara	551	32.0
Izmir	253	14.7
Mersin	273	15.9
Mugla	349	20.3
Academic year		
Year 1	332	19.3
Year 2	375	21.8
Year 3	382	22.2
Year 4	532	30.9
Not stated	99	5.8
Academic performance		
Poor	156	9.1
Average	962	55.9
Good	522	30.4
Very good	73	4.2
Not stated	7	0.4
Residence		
At home with family	673	39.1
At home with friends	518	30.1
At home alone	79	4.6
In student dormitory	366	21.3
Other	75	4.4
Not stated	9	0.5
Education of the father		
Illiterate	12	0.7
Primary school	564	32.8
High school	452	26.3
College/university	564	32.8
Not stated	128	7.4
Education of the mother		
Illiterate	60	3.5
Primary school	782	45.4
High school	452	26.3
College/university	289	16.8
Not stated	137	8.0
Family income		
Poor	73	4.2
Average	853	49.6
Good	702	40.8
Very good	87	5.1
Not stated	5	0.3
Total	1,720	100.0

ing once a month or more frequently. The overall prevalence of alcohol use problems according to CAGE2+ was 9.7% (19.9% among the students who used alcohol during the past year). Regarding the CAGE items, 24.8% of the past year drinkers felt they ought to cut down on their drinking, 16.6% had been annoyed by other people's criticisms of their drinking, 24.8% felt bad or guilty because of drinking, 4.6% had consumed alcohol in the morning.

The subgroup of the sample who reported that they had consumed alcohol in the past-year excluding the rest of the sample was statistically analysed in order to detect the factors which differed those who had problems with alcohol use and the ones who did not have alcohol use problems despite their use of alcohol during the past year (Table 2).

Male students used alcohol more frequently ($\chi^2 = 37.402$, $P = 0.000$) and more problematically (according to CAGE) ($\chi^2 = 25.160$, $P = 0.000$) compared with the females. As educational status of the father ($\chi^2 = 9.392$, $P = 0.009$) and the mother ($\chi^2 = 18.049$ $P = 0.000$) increased, a higher percentage of the subjects consumed alcohol. A greater percentage of students in the "good" family income group than in the other income groups stated that they drank alcohol once a month or more frequently ($\chi^2 = 8.651$, $P = 0.034$). A significantly smaller number of students who stayed in dormitory consumed alcohol at least once a month when compared with students who were living with their family or with friends or alone at home in the univariate analysis ($\chi^2 = 21.087$, $P = 0.000$).

A smaller number of students who were living with their family were CAGE2+ ($\chi^2 = 10.107$, $P = 0.039$). Presence of alcohol problem according to CAGE2+ was found to be significantly related with lower educational level of both the mother ($\chi^2 = 14.690$, $P = 0.001$) and the father ($\chi^2 = 6.348$, $P = 0.042$) in contrast to the frequency of drinking which was related to higher educational level of the parents.

In order to examine this controversy, univariate analyses were conducted for each item of the CAGE Questionnaire. The three CAGE items, namely Cut-down, Annoyed, Guilty were all related to the educational status of the mother. A significantly higher percentage of students in the lowest maternal educational group (illiterate and primary education) gave positive answers to the Annoyed ($\chi^2 = 16.218$, $P = 0.000$) and Guilt items ($\chi^2 = 15.975$, $P = 0.000$). Positive responses to the Cut-down item increased as the maternal educational level decreased ($\chi^2 = 15.936$, $P = 0.001$). Positive answers to the Annoyed ($\chi^2 = 7.449$, $P = 0.024$) and Guilt ($\chi^2 = 17.153$, $P = 0.000$) items increased as the paternal educational level decreased. Lower subjective academic performance was significantly related to positive Eye-opener item answers ($\chi^2 = 8.822$, $P = 0.032$), and low family income was related with more positive answers to the Guilt item ($\chi^2 = 13.219$, $P = 0.004$).

Table 2 Relationship between alcohol use and sociodemographic factors in past-year drinkers-univariate analysis

	CAGE2+		Drinking once a month or more frequently	
	N	%	*N*	%
Gender				
Male	115	25.8***	338	75.4***
Female	51	12.3	236	55.8
Place of living (last 10-year)				
Urban	138	19.4	481	66.9
Rural	23	18.3	75	59.1
Foreign country	5	29.4	11	68.8
School				
Istanbul	29	18.7	97	63.0***
Ankara	59	17.8	238	72.3
Izmir	20	14.4	105	72.9
Mersin	27	24.3	57	50.0
Mugla	31	25.4	77	59.2
Academic year				
Year 1	27	20.8	73	56.6
Year 2	31	17.6	118	66.7
Year 3	39	19.0	139	66.2
Year 4	57	18.8	211	68.3
Subjective evaluation of academic performance				
Poor	17	21.3	60	74.1
Average	90	18.9	322	66.3
Good	54	20.6	165	62.5
Very good	5	13.2	25	67.6
Residence				
At home with family	55	15.2*	238	66.1
At home with friends	48	19.1	186	72.4
At home alone	14	26.9	44	80.0
In student dormitory	36	24.8	83	54.6***
Other	11	26.2	22	53.7
Education of the father				
Illiterate/primary school	40	25.8*	90	55.6**
High school	60	19.7	234	66.4
College/university	56	16.4	238	69.4
Education of the mother				
Illiterate/primary school	71	26.6**	169	60.1
High school	56	16.5	212	63.5
College/university	27	13.8	156	78.0***
Subjective evaluation of family income				
Poor	8	26.7	16	53.3*
Average	85	20.9	258	63.1
Good	69	18.6	270	70.7
Very good	4	8.0	28	58.3

***$P < 0.001$, **$P < 0.01$, *$P < 0.05$, statistical analysis were done on the subjects who used alcohol in the past year

The statistically significant relationships were additionally tested by constructing logistic regression models. Maternal and paternal education variables were not taken in the same model, since it was assumed that they would be highly correlated. In general both the univariate and the multivariate analyses revealed similar results with a few exceptions. The educational level of the parents was related with the Annoyed item of the CAGE Questionnaire in the univariate but not in the multivariate analysis. The significant relationships between family income and the Guilty item and drinking once a month or more frequently, and the

relationship between subjective academic performance and the Eye-opener item in the univariate analysis did not appear in the multivariate analysis.

In the logistic regression models, male students tended to have problems with alcohol about three times more than females (Tables 3, 4). Place of residence was still significantly related with alcohol use problems according to the CAGE, and also frequency of drinking. Although living in the dormitory seemed to be protective in terms of frequent drinking, just the opposite was true when CAGE scores are considered. Likewise, as educational level of the parents increased, the odds of having alcohol problems according to the CAGE decreased, whereas the odds of drinking at least once a month increased (Table 4). In order to be able to elucidate this controversy, individual items of the CAGE Questionnaire were taken as dependent variables in logistic regression models (Table 5). Students whose mothers were illiterate or primary school graduate tended to give more positive answers to the Cut-down, Annoyed and Guilty items. The odds of giving positive answer to the Cut-down and the Eye-opener items among those living alone was greater than the other residence groups. The predictors of positive answer to the Eye-opener item were male gender, living alone at home, and residence of the family being in a foreign country. Paternal educational level being in the illiterate/primary school category was significantly related with more positive answers to the Guilty item.

Table 3 Relationship between the CAGE items and sociodemographic variables-univariate analysis

	Cut-down		Annoyed		Guilty		Eye-opener	
	N	%	*N*	%	*N*	%	*N*	%
Gender								
Male	130***	28.3***	97	21.8***	138	30.5***	29	6.4**
Female	77	17.9	42	10.0	69	16.3	9	2.1
Place of living (last 10-year)								
Urban	168	22.9	107	15.0	175	24.2	27	3.7
Rural	34	25.8	26	20.3	29	22.0	8	6.0
Foreign country	5	29.4	4	23.5	4	23.5	3	17.6*
School								
Istanbul	29	18.4	23	14.7	35	22.2	8	5.1
Ankara	72	21.3	60	18.0	74	22.1	16	4.8
Izmir	29	20.0	15	10.7	31	21.5	5	3.5
Mersin	33	28.7	19	17.1	29	25.4	2	1.7
Mugla	44	33.1*	22	17.6	39	30.7	7	5.4
Academic year								
Year 1	29	22.3	17	13.3	29	22.3	6	4.6
Year 2	40	22.1	29	16.3	40	22.2	12	6.7
Year 3	53	24.9	27	13.0	54	25.7	9	4.2
Year 4	73	23.1	59	19.3	74	23.7	8	2.6
Academic performance								
Poor	21	24.7	19	22.9	23	27.7	8	9.6*
Average	119	24.1	77	16.1	110	22.5	23	4.7
Good	62	23.0	39	14.8	69	25.9	6	2.3
Very good	5	13.2	4	10.8	6	15.8	1	2.6
Residence								
With family	67	18.2**	49	13.4	69	18.8**	13	3.5
With friends	67	24.9	42	16.7	70	26.8	14	5.4
Alone	19	36.5	15	28.8	8	15.4	7	13.5**
In dormitory	43	28.9	27	18.4	46	30.9	1	0.7
Other	8	18.2	5	11.6	13	30.2	3	6.8
Education of the father								
Illiterate/primary School	46	28.6	36	23.1*	56	34.8***	3	1.9
High school	79	24.9	48	15.6	77	24.8	14	4.5
College/university	69	19.7	46	13.4	63	18.3	17	4.9
Education of the mother								
Illiterate/primary school	84	30.0***	62	23.1***	87	31.8***	11	4.0
Secondary/high school	80	22.9	40	11.7	72	20.8	15	4.4
College/university	29	14.4	26	13.2	34	17.3	8	4.0
Subjective evaluation of family income								
Poor	10	31.3	6	20.0	10	31.3	2	6.3
Average	109	26.0	69	16.8	117	28.1**	13	3.1
Good	80	20.7	60	16.1	76	20.1	22	5.8
Very good	8	16.0	4	8.0	5	10.2	1	2.0

***$P < 0.001$, **$P < 0.01$, *$P < 0.05$

Table 4 Relationship between alcohol use and sociodemographic factors-multivariate analysis

Factor	CAGE2+		Alcohol use at least once a month	
	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)	Model 4 OR (95% CI)
Gender				
Female	1	1	1	1
Male	2.99 (1.99–4.55)***	2.88 (1.89–4.41)***	2.46 (1.76–3.45)***	2.60 (1.85–3.64)***
School				
Ankara	–	–	1**	1*
Istanbul			0.75 (0.47–1.20)	0.79 (0.50–1.27)
Izmir			1.04 (0.63–1.70)	1.15 (0.70–1.89)
Mersin			0.42 (0.25–.69)***	0.50 (0.30–0.83)**
Mugla			0.66 (0.37–1.06)	0.74 (0.43–1.26)
Residence				
At home with family	1**	1*	1*	1*
At home with friends	0.97 (0.61–1.53)	0.91 (0.57–1.44)	1.61 (1.05–2.47)*	1.51 (0.99–2.32)
At home alone	1.43 (0.67–3.03)	1.40 (0.66–2.97)	2.43 (1.15–5.11)*	2.31 (1.10–4.87)*
In student dormitory	2.25 (1.35–3.74)**	2.11 (1.26–3.53)**	0.92 (0.59–1.43)	0.96 (0.62–1.50)
Education of the father				
Illiterate/primary school	1.51 (0.91–2.50)	–	1	–
Secondary/high school	1.28 (0.84–1.97)		1.60 (1.03–2.50)*	
College/university	1		1.75 (1.09–2.80)*	
Education of the mother				
Illiterate/primary school	–	2.06 (1.21–3.50)**	–	1**
Secondary/high school		1.34 (0.79–2.27) 1*		1.26 (0.86–1.84)
College/university		1*		2.58 (1.58–4.22)***
Family income				
Poor	–	–	1	1
Average			1.54 (0.64–3.70)	1.76 (0.73–4.24)
Good			2.27 (0.93–5.56)	2.41 (0.98–5.90)
Very good			1.49 (0.51–4.36)	1.32 (0.45–3.91)

Discussion

Alcohol consumption by university students in Turkey has not reached the levels reported in Europe and in the United States. Prevalence of any more than drinking on special occasions among university students changed from 42 to 95% in West Europe, and from 52 to 75% in Eastern European countries [9]. In the present study prevalence of drinking more than once during life-time was 50.6%. Prevalence of drinking in the past year changed between 64 and 80% in a sample of American college students [10]. The corresponding figure was 48.5% in the present study. Kraus et al. [16] reported that 91.3% of males and 87.3% females among a general population sample of 18–24 year-old past year drinkers in Germany consumed alcohol once a month or more frequently. In the present study the corresponding rates were 75.4 and 55.8%, respectively. Prevalence of life-time alcohol use in the present study was 63.3%. This rate is still lower when compared with that found among university students in Israel (74%) [14], in Lebanon (70.8%) [15], and in Rio de Janeiro, Brazil (96.4%) [21].

Several studies done in various regions of Turkey indicated that over the last 25 years prevalence rates of life-time use of alcohol among university students changed between 36 and 82% [25]. Ögel et al. [18] found prevalence rate of alcohol use as 53.6% in Istanbul youth between 18–25 years of age. In a general survey done by the Association of Turkish Psychologists life-time prevalence of alcohol use was found as 38.7% among 15–24 year-old males and it was 16.0% in female population at the same age group [26]. Prevalence of current drinking among individuals between 20–29 years of age was found as 36.7 [4]. When the CAGE scores are considered, the prevalence of alcohol use problems was found as 2.0% between the ages of 15 and 24 in general Turkey population [26], 2.2% among a general population sample over 15 years of age in Ankara [6], 19.9% in an Istanbul sample aged between 20 and 29 [4]. In this study, prevalence of alcohol problems is considerably high (9.6%) when compared with the results of the mentioned studies done in general population samples except the latter one. Akvardar et al. [3] reported that prevalence of drinking problems according to CAGE2+ positiveness was 20% in junior and 22% in senior medical students. Higher prevalence rates of alcohol use problems among the university students may be related to the university life being a particular period of life in terms of beginning a new life far from family control, passing an important milestone in identity development, entering a different social environment, and meeting with the university culture comprising its specific characteristics. All these changes can also bring difficulties and stresses which can facilitate drinking behaviour. Drinking is a way of socializing among peers as well as imitating adult roles.

Regarding the CAGE items, 24.8% of past-year drinkers felt they ought to cut down on their drinking,

Table 5 Relationship between CAGE items and sociodemographic variables-multivariate analysis

	Cut-down OR (95% CI)	Annoyed OR (95% CI)[a]	Annoyed OR (95% CI)[b]	Guilty OR (95% CI)[a]	Guilty OR (95% CI)[b]	Eye-opener OR (95% CI)
Gender						
Female	1	1	1	1	1	1
Male	1.95 (1.35–2.82)***	2.31 (1.52–3.53)***	2.42 (1.59–3.69)***	2.53 (1.72–3.71)***	2.59 (1.77–3.82)***	2.57 (1.11–5.94)*
School						
Ankara	1	–	–	–	–	–
Istanbul	0.93 (0.54–1.59)					
Izmir	0.85 (0.51–1.43)					
Mersin	1.19 (0.69–2.03)					
Mugla	1.68 (0.98–2.86)					
Residence						
With family	1*	–	–	1*	1*	1*
With friends	0.93 (0.60–1.46)			1.08 (0.71–1.64)	1.10 (0.73–1.67)	1.15 (0.51–2.58)
Alone	1.99 (1.02–3.90)*			0.58 (0.25–1.38)	0.59 (0.25–1.41)	3.41 (1.20–9.67)*
In dormitory	1.58(0.97–2.57)			1.86 (1.15–3.01)*	1.96 (2.22–3.15)**	0.15 (0.02–1.22)
Father's education						
Illiterate/primary school	–	–	1.59 (0.95–2.64)	–	1.80 (1.11–2.91)*	–
High school			1.07 (0.68–1.68)		1.35 (0.90–2.03)	
College/university			1		1	
Mother's education						
Illiterate/primary school	2.29 (1.36–3.85)**	1.70 (1.02–2.85)*	–	1.74 (1.06–2.87)*	–	–
High school	1.89 (1.15–3.11)*	0.84 (0.49–1.45)		1.22 (0.75–1.98)		
College/university	1**	1**		1		
Family income						
Poor	–	–	–	2.11 (0.58–7.70)	2.01 (0.55–7.38)	–
Average				1.95 (0.72–5.25)	2.02 (0.75–5.41)	
Good				1.56 (0.58–4.21)	1.63 (0.60–4.37)	
Very good				1	1	
Residence (family)						
Rural	–	–	–	–	–	1*
Urban						1.77(0.74–4.25)
Foreign country						6.41(1.47–28.03)*
Academic performance						
Poor	–	–	–	–	–	1
Average						2.89 (0.33–25.16)
Good						1.46 (0.19–11.46)
Very good						0.63 (0.07–5.71)

[a]Model includes maternal education
[b]Model includes paternal education

16.6% had been annoyed by other people's criticisms of their drinking, 24.8% felt bad or guilty because of drinking, 4.6% had consumed alcohol in the morning. More or less in parallel with these results, the figures are respectively, 31, 22.5, 27.3, and 8.1% among drinkers in the 20–29 age group in another study [4]. In another study carried out in Turkey, 42% of drinkers among medical students gave positive answers to the Guilt item [3]. In the present study, the controversy between the findings related to the CAGE positiveness and frequency of drinking is probably due to the overrating of the Guilty item in Turkish culture. In Turkey the sociocultural context including traditional, moral and religious reasons and also stigmatization of alcohol use might have contributed to this overrating.

The wide range of prevalence rates found in various studies in Turkey necessitates investigation of variables related with alcohol use in the country. The results of this study show that some characteristics tend to be associated with alcohol use problems among university students.

A consistent relationship was found between gender and alcohol use in many studies [4, 13, 16, 17]. Akvardar et al. [4] reported that men were more likely to be CAGE positive (CAGE 2+) than women. This is related with both biological [22] and sociocultural variables. Women are biologically more intolerant to alcohol, and easily get drunk, however "drunken woman" image and drinking behaviour in women is socially more unacceptable compared with men, and this distinction seems to be more valid for Turkey population. Additionally, males seem to have more unhealthy lifestyles than women as vonBothmer and Fridlund [28] reported that male university students in Sweden tended to drink too much as unhealthy lifestyle habits in general compared to the female students. They also reported that it was more com-

mon among male students to have the opinion that drinking is a part of student life and that use of alcohol makes it easier to socialize.

Oksuz and Malhan [19] studied factors associated with risky behaviours in a sample of Turkish University students, and they found that high maternal and paternal educational levels were associated with increased alcohol use. Similarly Dantzer et al. [9] reported that odds of heavy drinking were reduced among students whose parents were less educated, and Passos et al. [21] reported that past-month alcohol use was about 20% higher among university students with college educated parents. In a study on Chinese university students [1] it was found that mother's educational level was not associated with alcohol use. There are other studies which showed that alcohol drinking problems were associated with high socioeconomic level [5, 14, 27]. According to our results, paternal education and particularly maternal education seem to be predictive for alcohol use and problems of the university youth with alcohol use.

Several studies done in college student samples in the United States showed that students living in on-campus residences and dormitories tended to drink more [13]. University hall non-residents were 2.1 times more likely than those who were staying at the university hall to be ever-drinkers [1]. In contrast, we found that living alone or living at home with friends increased the risk of drinking once a month or more frequently, but this was not true for living in student dormitory. Student dormitories in Turkey have some rules such as strictly determined entrance hours, being unable to stay out without permission, and prohibition of alcoholic drinks. When the CAGE items were taken separately, it was found that living alone increased the Cut-down item positiveness nearly twice, whereas living in the dormitory makes the student more prone to feel guilty about his drinking behaviour. Moreover, living in a dormitory or at home with friends or alone entails diminished exposure to parental controls and more frequent exposure to peer influences, therefore to opportunities to engage in such problem behaviours as drinking.

The male student who lives alone and whose parents' educational level is low feels the need to cut down on drinking. An interesting point is that although the proportion of frequent drinkers increase as the maternal level of education raises, these students gave more negative responses to the Cut-down item. This may be due to a more tolerant family environment of the student whose mother has higher educational level. The relationship between the low educational level of the family and feeling guilty about his drinking behaviour according to the CAGE may indicate conservative structure of the family. Higher positiveness of the Guilt item of the CAGE Questionnaire was found in several other surveys done in Turkey [3, 4].

The male student who lives alone and whose family lives in a foreign country has the risk of having problems with alcohol according to the Eye-opener item of the CAGE Questionnaire. Dantzer et al. [9] also reported that heavy drinkers among university students were more likely to live away from home. Proximity to parents appear to play a role in protecting the student from alcohol problems, as indicated by our results and lower rates of drinking problems in students who live with their parents in other studies [9, 10, 13].

There may be some underestimation of the prevalence of alcohol use as a result of the absentees being omitted from the student population. As any other targeted study, there are limitations about the representativeness of the sample of the present study, but while the prevalence indicators of alcohol use may vary in other universities in Turkey, the factors associated to alcohol use are unlikely to differ, and this is the first large-scale multicenter university survey which investigated correlates of alcohol use problems.

We suggest that preventive efforts should aim providing alternative ways of socialization other than alcohol use behaviour for the university students. This can be achieved by supporting organization of the youth's life through activities such as sports, giving responsibility within social projects, and supporting various student clubs of specific purposes such as arts and other intellectual activities.

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