

Socioeconomic Factors and Health Risk Behaviors among University Students in Turkey: Questionnaire Study

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Aim	To explore relations between socioeconomic factors and health risk behaviors in university students in Turkey.
Methods	A total of 650 students currently enrolled at the university in Ankara were selected for the study by means of a circular sampling method. They answered a questionnaire on health risk behaviors. We used multivariate analysis to analyze the relations between socioeconomic variables and each of the following participants' behaviors in the last year: use of cigarettes, alcohol, or drugs; driving under the influence of alcohol; unprotected sex; attempted suicide; self-mutilation; physical fighting; carrying firearms or edged weapon; not wearing a safety belt in motor vehicles; or riding a motorcycle without a helmet.
Results	Health risk behaviors in university students were in general related to low socioeconomic status, except for alcohol use, which was related to high socioeconomic status. Among female students whose mothers had completed high school, 81.9% used alcohol, compared with less than 68% of female students whose mothers had not completed high school or had completed university ($P < 0.001$). Also, 4.0% of female students whose mothers had completed high school had attempted suicide, compared with less than 1.5% of female students whose mothers had not completed high school or had completed university ($P = 0.026$). In male students, important variables were parental education level and paternal employment status. Among male students who had unemployed fathers, 66.7% used cigarettes ($P = 0.015$), 26.7% engaged in substance use ($P < 0.010$), and 4.4% attempted suicide ($P < 0.050$) in comparison with 11.9 and 0.7%, respectively, of male students whose fathers were employed. Logistic regression showed male gender to be associated with an increase in all risk behaviors (odds ratio 1.114, 95% confidence interval 1.652-5.622, $P < 0.001$).
Conclusion	This study confirms the findings of similar studies in western developed countries, suggesting that relations between socioeconomic variables and health risk behaviors in young people reflect a basic phenomenon not greatly influenced by culture.

Adolescents make up 20% of the world population (1). In Turkey, adolescents and young adults also comprise an important part of the population (2). As a time of new experiences and intense psychological stress, adolescence is also a time of increased risks, especially those associated with sexuality and substance use (3,4). Adolescents' risks include cigarette smoking, alcohol consumption, substance use, eating disorders, physical fighting, violent behavior, and driving sa-

fety (4). In the United States, health risk behaviors in young people are regularly monitored by the Centers for Disease Control and Prevention (CDC) through the Youth Risk Behavior Surveillance System (YRBSS) (5). The pregnancy rate of approximately 6% for women aged 15-19 (2) indicates that there is a need for such studies in Turkey as well. Also, as Turkish society becomes increasingly westernized, the risks of unplanned pregnancy and sexually transmitted diseases in the under-18

age group may increase to the levels comparable to those of a recent study in the UK (6).

The use of tobacco, alcohol, and other drugs often begins in adolescence, and most people who drink alcohol begin doing so in their adolescent years (7-9). In Turkey, tobacco, alcohol, and substance use begin as early as the age of 11 (2). Risks associated to alcohol and other drugs include decreased academic success (10,11) and increased participation in violence (11), as well as an increased exposure to traffic accidents and unsafe sex (4). Alcohol-impaired driving is frequently an important factor in deaths and injuries in traffic accidents. When alcohol or other drugs are used, safety belt use decreases (12-15). Also, although the risk of injury is high in adolescents, safety belt use is low in this age group (16).

Another important risk factor for serious injury and death is weapon carrying (17). Among young people aged 15-24 in Turkey, an estimated 130,000 handguns were found. Of suicides committed with handguns, 36% occurred in this age group (2). In adolescents, weapon carrying is associated with increased alcohol and substance use, and carrying weapons to school is associated with violent behavior at school (18,19). Physical fighting, as a risk factor for injury, is also associated with subsequent weapon carrying and weapon-induced injury (20).

A particularly troubling health risk behavior in young people is self-mutilation, which has been associated with stress and anxiety (21). This behavior was included in the questionnaire of the present study, to address the apparent increase in self-mutilation among young people in Turkey.

An even more troubling behavior among young people is attempted suicide, although very few data have been collected on this problem in Turkey. Suicide itself is traditionally rare in Islamic societies, but this may be changing in Turkey. Whereas a study in the United States found suicide to be the third leading cause of death in 10 to 19 year-olds (22), suicide in Turkey amounts to 20% of deaths among 15 to 24 year-olds (2).

The relations between socioeconomic variables and risk behaviors in young people have been poorly explored in Turkey (4,23-26). The purpose of this study was to make a cross-sectional survey of university students in Ankara. Turkey provides an interesting setting for this research, given

the country's accelerating evolution away from its traditional Islamic roots and toward industrialization and membership in the European Union.

Participants and Methods

Sample

A sample of 650 students of Baskent University in Ankara was selected by stratified sampling. Students currently enrolled in their preparatory year (English language study as a preparation for the university) or in one of the four university years were selected from 39 different university departments by a systematic circular method and were asked to complete a questionnaire form containing questions on health risk behaviors and socioeconomic variables. Of the invited students, 10 chose not to participate (1.5%). Of 640 participants, there were 313 (48.9%) men and 327 (51.1%) women. The average age was 21.4 ± 2.0 years. According to the study year, there were 122 preparatory year students, 75 women and 47 men. A total number of first year students was 158, 70 women and 88 men. There were 132 second year students, 64 women and 68 men. There were 138 students in the third year, 72 women and 66 men. Ninety students were in the fourth year, 46 women and 44 men.

Questionnaire

The questionnaire was adapted from the CDC's YRBSS methodology (8), and the criteria for risk behaviors were as follows: cigarette smoking – at least one cigarette a day in a continuous 6-month period in the last year; substance use – using illegal drugs, or inhaling volatile substances for their drug effect on at least one occasion in the last year; alcohol-influenced driving – driving a car within one hour or less after consuming one standard alcoholic beverage on at least one occasion in the last year; alcohol use – drinking five or more standard alcoholic beverages in a single day on at least one occasion in the last year; self mutilation, attempted suicide, physical fighting, unprotected sex, riding a motorcycle without a helmet, and driving without a safety belt – engaging in this kind of behavior on at least one occasion in the last year was defined as sufficient for a positive response. Questions about socioeconomic situation addressed whether students lived with their families or not; parental level of education (did not finish high school, finished high school, finished uni-

versity); and parental employment status (full-time employed, part-time employed, unemployed) (27). Questions related to sexual health and socioeconomic situation were designed by the authors of the present study. Reliability was tested by repeating the questionnaire with 56 randomly chosen students from the original sample. Kappa statistics (28) were within 0.9-1.0 interval.

The study was approved by the Institutional Review Board of Baskent University and was conducted with the students' informed consent. The study was completed during May-December 2003.

Statistical Analysis

Data were analyzed with SPSS 11.5 for Windows (SPSS Inc., Chicago, IL). Statistical relations between individual risk behaviors and socioeconomic variables were examined by χ^2 analysis. Relations between individual risk behaviors and gender, age, university year, living at home, and parental education and employment status were analyzed by logistic regression. Next, a total risk score was determined for each participant by assigning "1" or "0" to each of the 11 categories of risk behaviors, according to the participant's responses. This gave a possible range of 0-11 for each participant's total risk score. Then, a logistic regression was done to examine the relations between total risk scores and socioeconomic variables.

Results

Table 1 shows the distribution of participants' socioeconomic variables and university year by gender. A significantly higher proportion of male students were living with their families (70.6% vs 57.8% female students, $P=0.001$). A significantly higher number of female students' mothers had only high school education (45.6%, 35.5%, $P<0.001$), and significantly more male students' mothers had university education (50.8%, 32.1%, $P<0.001$).

Driving or riding in a car without a safety belt, taking part in a physical fight and self-mutilation did not vary by study year for either gender (Table 2).

The distribution of cigarette smoking by study year was similar for male and female students (Table 2). The prevalence of smoking in preparatory-year students was approximately 50%

Table 1. Demographic characteristics of participants by gender

Demographic characteristics	No. (%) of participants		P*
	women (n=327)	men (n=313)	
Year at University:			0.072
preparatory year [†]	75 (22.9)	47 (15.0)	
1st	70 (21.4)	88 (28.1)	
2nd	64 (19.6)	68 (21.7)	
3rd	72 (22.0)	66 (21.1)	
4th	46 (14.1)	44 (14.1)	
Living with family:			0.001
yes	189 (57.8)	221 (70.6)	
no	138 (42.2)	92 (29.4)	
Maternal education:			<0.001
did not complete high school	73 (22.3)	43 (13.7)	
completed high school	149 (45.6)	111 (35.5)	
completed university	105 (32.1)	159 (50.8)	
Paternal education:			0.009
did not complete high school	46 (14.1)	30 (9.6)	
completed high school	91 (27.8)	65 (20.8)	
completed university	190 (58.1)	218 (69.6)	
Maternal employment status:			0.356
employed	119 (36.4)	125 (39.9)	
unemployed	208 (63.6)	188 (60.1)	
Paternal employment status:			0.291
employed	270 (82.6)	268 (85.6)	
unemployed	57 (17.4)	45 (14.4)	

* χ^2 -test.

[†]Students at this university undergo a preparatory year of English language study.

and was lowest among first-year students (39.2%), followed by a sharp increase in prevalence among third-year students (65.2%). Weapon-carrying varied significantly by gender and study year. Most male students who carried weapons attended the first two years at the university (Table 2). Whereas between-study year differences were not seen in alcohol use and alcohol-influenced driving among female students, these behaviors in male students increased throughout the four years at university. Substance use was reported more by male (11.3-21.2%) than female students (2.8-16.7%). Substance use among female students increased across the study years. In third-year female students, substance use was significantly higher than in other years (16.7%, $P=0.020$). No female students reported having unprotected sexual relations in the last year. Among male students, unprotected sex was most common in third-year students (21.2%), but differences by study year were not statistically significant ($P=0.103$). Suicide attempts in males were found only among second year students but, study year differences were not statistically significant for female students ($P=0.540$). Riding a motorcycle without a helmet was also more common among male students ($P<0.001$). Also, significantly fewer students in the higher university years rode a motorcycle without a helmet ($P=0.007$).

Table 2. Reported risk behaviors in male and female students at individual study year

Risk behaviors	No. (%) of students in the study year					P*
	preparatory	1st	2nd	3rd	4th	
Cigarette use:						
men	23 (48.9)	34 (38.6)	30 (44.1)	40 (60.6)	26 (59.0)	0.044
women	39 (52.0)	28 (40.0)	34 (53.1)	50 (69.4)	26 (56.5)	0.013
all	62 (50.8)	62 (39.2)	64 (48.5)	90 (65.2)	52 (57.8)	<0.001
Alcohol use:						
men	33 (70.2)	68 (77.2)	54 (79.4)	62 (93.9)	36 (81.8)	0.021
women	53 (70.7)	46 (65.7)	54 (84.4)	46 (63.9)	32 (69.6)	0.083
all	86 (70.5)	114 (72.2)	108 (81.8)	108 (78.3)	68 (75.6)	0.196
Substance use:						
men	10 (21.2)	10 (11.3)	10 (14.7)	8 (12.1)	6 (13.6)	0.593
women	4 (5.3)	2 (2.8)	6 (9.4)	12 (16.7)	2 (4.3)	0.020
all	14 (11.5)	12 (7.6)	16 (12.1)	20 (14.5)	8 (8.9)	0.377
Driving under the influence of alcohol:						
men	4 (8.5)	12 (13.6)	12 (17.6)	22 (33.3)	8 (18.2)	0.007
women	0	4 (5.7)	2 (3.1)	2 (2.8)	0	0.176
all	4 (3.3)	16 (10.1)	14 (10.6)	24 (17.4)	8 (8.9)	0.007
Unprotected sex:						
men	6 (12.8)	12 (13.6)	4 (5.9)	14 (21.2)	4 (9.0)	0.103
women	0	0	0	0	0	-
all	6 (4.9)	12 (7.6)	4 (3.0)	14 (10.1)	4 (4.4)	0.122
Suicide attempt:						
men	0	0	4 (5.8)	0	0 (0.0)	0.006
women	2 (2.7)	2 (2.8)	0	2 (2.8)	0 (0.0)	0.540
all	2 (1.6)	2 (1.3)	4 (3.0)	2 (1.4)	0 (0.0)	0.496
Self-mutilation:						
men	4 (8.5)	10 (11.4)	8 (11.8)	8 (12.1)	4 (9.1)	0.963
women	2 (2.7)	6 (8.6)	2 (3.1)	4 (5.5)	2 (4.3)	0.499
all	6 (4.9)	16 (10.1)	10 (7.6)	12 (8.7)	6 (6.7)	0.572
Physical fighting:						
men	8 (17.1)	8 (9.0)	8 (11.8)	8 (12.1)	0	0.094
women	0	2 (2.8)	2 (3.1)	2 (2.8)	0	0.461
all	8 (6.6)	10 (6.3)	10 (7.6)	10 (7.2)	0	0.143
Carrying a gun or sharp weapon:						
men	12 (25.5)	10 (11.4)	2 (2.9)	6 (9.0)	4 (9.0)	0.004
women	0	4 (5.7)	0	0	0	0.005
all	12 (9.8)	14 (8.9)	2 (1.5)	6 (4.3)	4 (4.4)	0.023
Riding a motorcycle without a helmet:						
men	14 (29.8)	24 (27.3)	20 (29.4)	12 (18.2)	12 (27.3)	0.566
women	14 (18.7)	14 (20.0)	10 (15.6)	0	6 (13.0)	0.003
all	28 (23.0)	38 (24.1)	30 (22.7)	12 (8.7)	18 (20.0)	0.007
Driving without a safety belt:						
men	27 (57.4)	52 (59.1)	36 (52.9)	38 (57.6)	20 (45.4)	0.624
women	33 (44.0)	36 (51.4)	30 (46.9)	24 (33.3)	18 (39.1)	0.242
all	60 (49.2)	88 (55.7)	66 (50.0)	62 (44.9)	38 (42.2)	0.243

* χ^2 -test.

Relations between socioeconomic factors and risk behaviors are shown in Tables 3 and 4, separately for male and female students. For male students, low maternal and paternal level of education and paternal part time employment were found to be closely related to risk behaviors. None of the other socioeconomic factors beside paternal education level were found to have any statistical effect. Among male students whose fathers had not completed high school, 66.7% were smoking and this percentage was the highest among socioeconomic factors for male students (66.7%, $P=0.015$). Alcohol use was more prevalent in students who lived with their families (84.2%, $P<0.050$) or whose parents had at least

high school education. Greater substance use was associated to parental low education level and lack of full-time employment. As shown in Tables 5 and 6, attempted suicide was closely related to the lack of paternal full-time employment (4.4%, $P<0.050$). Physical fighting and weapon-carrying were related to the lack of maternal university education (16.2%, 19.8%, $P<0.010$). Weapon-carrying was closely related to maternal unemployment (13.8%, $P<0.050$). Driving without a safety belt was associated with parental education level and living away from the family. Unprotected sex and self-mutilation were related to low paternal education levels. There was significantly less alcohol use (81.9%, $P<0.001$) and attempted suicide among

Table 3. Reported risk behaviors in male and female students by family socioeconomic factors

Health risk behaviors	No. (%) of students					
	living with family		mother employed*		father employed*	
	yes	no	no	yes	no	yes
Men:						
cigarette use	109 (49.3)	44 (47.8)	98 (52.1)	55 (44.0)	30 (66.7) [†]	123 (45.9)
alcohol use	186 (84.2) [‡]	67 (72.8)	146 (77.7)	107 (85.6)	37 (82.2)	216 (80.6)
substance use	30 (13.6)	14 (15.2)	34 (18.1) [§]	10 (8.0)	12 (26.7) [†]	32 (11.9)
driving under the influence of alcohol	44 (19.9)	14 (15.2)	36 (19.1)	22 (17.6)	6 (13.3)	52 (19.4)
unprotected sex	32 (14.5)	8 (8.7)	22 (11.7)	18 (14.4)	4 (8.9)	36 (13.4)
suicide attempt	4 (4.0)	0 (0.0)	2 (1.1)	2 (1.6)	2 (4.4)	2 (0.7)
self-mutilation	26 (11.8)	8 (8.7)	18 (9.6)	16 (12.8)	8 (17.8)	26 (9.7)
physical fighting	26 (11.8)	6 (6.5)	18 (9.6)	14 (11.2)	2 (4.4)	30 (11.2)
carrying a gun or sharp weapon	30 (13.6)	4 (4.3) [†]	26 (13.8) [†]	8 (6.4)	4 (8.9)	30 (11.2)
riding motorcycle without a helmet	58 (26.2)	24 (26.1)	52 (27.7)	30 (24.0)	14 (31.1)	68 (25.4)
not wearing a safety belt	113 (51.1)	60 (65.2) [†]	115 (61.2) [†]	58 (46.4)	21 (46.7)	152 (56.7)
Women:						
cigarette use	109 (57.7)	68 (49.3)	112 (53.8)	65 (54.6)	34 (59.6)	143 (53.0)
alcohol use	132 (69.8)	99 (71.7)	146 (70.2)	85 (71.4)	43 (75.4)	188 (69.6)
substance use	16 (8.5)	10 (7.2)	18 (8.7)	8 (6.7)	4 (7.0)	22 (8.1)
driving under the influence of alcohol	2 (1.1)	6 (4.3)	6 (2.9)	2 (1.7)	2 (3.5)	6 (2.2)
unprotected sex	-	-	-	-	-	-
suicide attempt	4 (2.1)	2 (1.4)	6 (2.9)	0	0	6 (2.2)
self-mutilation	8 (4.2)	8 (5.8)	10 (4.8)	6 (5.0)	2 (3.5)	14 (5.2)
physical fighting	2 (1.1)	4 (2.9)	4 (1.9)	2 (1.7)	2 (3.5)	4 (1.5)
carrying a gun or sharp weapon	4 (2.1)	0 (0.0)	2 (1.0)	2 (1.7)	2 (3.5)	2 (0.7)
riding a motorcycle without a helmet	18 (9.5)	26 (18.8) [§]	30 (14.4)	14 (11.8)	2 (3.5)	42 (15.6) [§]
not wearing a safety belt	73 (38.6)	68 (49.3)	95 (45.7)	46 (38.7)	27 (47.4)	114 (42.2)

*Full employment.

[†] $P=0.010$, χ^2 -test.[‡] $P\leq 0.001$, χ^2 -test.[§] $P\leq 0.015$, χ^2 -test.^{||} $P\leq 0.041$, χ^2 -test.[¶] $P\leq 0.025$, χ^2 -test.

female students whose mothers had completed only high school (4.0%, $P=0.026$). Motorcycle riding without a helmet was more frequent in female students who lived away from their family (18.8%, $P<0.050$), whose mothers had only high school education (21.5%, $P<0.001$), and whose fathers were employed full-time (15.6%, $P<0.050$). No female students reported having unprotected sex in the last year.

Cigarette use, alcohol-influenced driving, and weapon-carrying increased with age (Tables 5 and 6). Whereas the youths in the early years of university had a greater tendency toward weapon-carrying, those in the later years tended more toward driving under the influence of alcohol and riding a motorcycle without a helmet (Table 6). Self-mutilation, riding a motorcycle without a helmet and cigarette use were associated with high paternal education level, and higher alcohol use were more prevalent among students with high parental education level (Tables 5 and 6). Weapon-carrying and driving without a safety belt was associated to living at home with family (Table 6). Male gender was closely associated with a high total risk score for all behaviors (Tables 5 and 6).

Discussion

In this study, approximately 52% of the students reported that they smoked cigarettes regularly. Smoking was more prevalent among female students, whereas drinking alcohol was more prevalent among male students. The overall rate of substance use was 11% in female and 14% in male students. Driving under the influence of alcohol was uncommon among female students (2.4%), with nine times higher rate for male students (18.5%). The overall rate of attempted suicide was 1.6%. This rate was lower than in other studies. In the United States, this rate is 8.3%, 7% in Colombia, and 4.7% in Canada (4). Compared with 17% rate reported for university students in western settings (28), the rate of attempted suicides in this study was somewhat low. A major reason for this may be that suicide is forbidden in Islamic culture, and Turkish society is still quite religious with respect to topics such as suicide.

None of the female students reported engaging in unprotected sex. The lack of response may be due to the fact that topics related to sexuality are still largely a taboo for young women in Turkish society, despite Turkey's ongoing wes-

Table 4. Reported risk behaviors in male and female students by parents' education

Health risk behaviors	No. (%) of students					
	maternal education			paternal education		
	<HS*	HS	>HS	<HS	HS	>HS
Men:						
cigarette use	22 (51.2)	57 (51.4)	74 (46.5)	20 (66.7)	31 (47.7)	102 (46.8)
alcohol use	26 (60.5) [†]	96 (86.5)	131 (82.4)	19 (63.3)	50 (76.9) [†]	184 (84.4) [†]
substance use	8 (18.6)	22 (19.8)	14 (8.8) [‡]	10 (33.3) [†]	8 (12.3)	26 (11.9)
driving under the influence of alcohol	4 (9.3)	26 (23.4)	28 (17.6)	2 (6.7)	14 (21.5)	42 (19.3)
unprotected sex	2 (4.7)	16 (14.4)	22 (13.8)	2 (6.7)	12 (18.5)	26 (11.9)
suicide attempt	2 (4.7)	0	2 (1.3)	2 (6.7) [§]	0	2 (0.9)
self-mutilation	6 (14.0)	12 (10.8)	16 (10.1)	6 (20.0)	10 (15.4)	18 (8.3)
physical fighting	0 (0.0)	18 (16.2) [§]	14 (8.8)	0 (0.0)	10 (15.4)	22 (10.1)
carrying a gun or sharp weapon	2 (4.7)	22 (19.8) [†]	10 (6.3)	2 (6.7)	12 (18.5)	20 (9.2)
riding motorcycle without a helmet	12 (27.9)	30 (27.0)	40 (25.2)	4 (13.3)	16 (24.6)	62 (28.4)
not wearing a safety belt	29 (67.4)	68 (61.3)	76 (47.8) [§]	18 (60.0)	45 (69.2) [§]	110 (50.5)
Women:						
cigarette use	36 (49.3)	85 (57.0)	56 (53.3)	24 (52.2)	59 (64.8)	94 (49.5)
alcohol use	38 (52.1)	122 (81.9) [†]	71 (67.6)	27 (58.7)	64 (70.3)	140 (73.7)
substance use	6 (8.2)	16 (10.7)	4 (3.8)	2 (4.3)	12 (13.2)	12 (6.3)
driving under the influence of alcohol	2 (2.7)	4 (2.7)	2 (1.9)	0 (0.0)	4 (4.4)	4 (2.1)
unprotected sex	-	-	-	-	-	-
suicide attempt	0	6 (4.0) [§]	0	2 (4.3)	2 (2.2)	2 (1.1)
self-mutilation	2 (2.7)	8 (5.4)	6 (5.7)	2 (4.3)	6 (6.6)	8 (4.2)
physical fighting	2 (2.7)	2 (1.3)	2 (1.9)	0	4 (4.4)	2 (1.1)
carrying a gun or sharp weapon	0	2 (1.3)	2 (1.9)	0	2 (2.2)	2 (1.1)
riding a motorcycle without a helmet	2 (2.7)	32 (21.5) [†]	10 (9.5)	4 (8.7)	12 (13.2)	28 (14.7)
not wearing a safety belt	33 (45.2)	64 (43.0)	44 (41.9)	20 (43.5)	39 (42.9)	82 (43.2)

*HS - high school.

[†]P<0.001, χ^2 -test.[‡]P=0.025, χ^2 -test.[§]P<0.010, χ^2 -test.**Table 5.** Risk factors (odds ratio and 95% CI) for individual risk behaviors in Turkish university students: first group of risk behaviors*

Risk factors	Cigarette use	Alcohol use	Substance use	Driving under the influence of alcohol	Unprotected sex	Suicide attempt	Self-mutilation
Male gender	0.78 (0.56-1.10)	1.91 (1.29-2.85) [†]	2.41 (1.39-4.18) [†]	8.86 (4.06-19.35) [†]	N/A	0.71 (0.18-2.74)	2.61 (1.36-5.02) [†]
Year at university:							
1st	1.06 (0.56-1.98)	0.69 (0.34-1.38)	1.29 (0.45-3.66)	0.66 (0.17-2.61)	1.54 (0.33-7.26)	N/A	0.38 (0.10-1.46)
2nd	0.73 (0.40-1.35)	0.68 (0.34-1.34)	0.81 (0.29-2.31)	1.88 (0.66-5.35)	2.00 (0.51-7.84)	N/A	0.77 (0.24-2.44)
3rd	0.85 (0.47-1.51)	1.30 (0.65-2.59)	1.27 (0.48-3.35)	1.71 (0.62-4.73)	0.62 (0.13-2.91)	N/A	0.65 (0.20-2.09)
4th	1.54 (0.87-2.71)	1.11 (0.58-2.12)	1.87 (0.75-4.65)	3.26 (1.27-8.33) [†]	2.70 (0.78-9.42)	N/A	0.95 (0.33-2.76)
Parents' employment status:							
mother employed	0.94 (0.60-1.48)	0.62 (0.36-1.07)	1.07 (0.52-2.21)	1.21 (0.59-2.50)	0.90 (0.38-2.10)	1.77 (0.21-14.61)	0.71 (0.31-1.60)
father employed	1.41 (0.89-2.24)	1.47 (0.85-2.55)	1.44 (0.76-2.72)	0.55 (0.24-1.28)	0.49 (0.15-1.58)	1.03 (0.20-5.23)	1.73 (0.79-3.81)
Parents' education:							
mother university graduate	1.14 (0.70-1.85)	0.47 (0.26-0.86) [†]	0.42 (0.19-0.92) [†]	0.75 (0.35-1.62)	1.32 (0.50-3.47)	0.68 (0.07-6.97)	1.24 (0.49-3.13)
father university graduate	0.64 (0.42-0.95) [†]	1.94 (1.21-3.12) [†]	0.91 (0.50-1.64)	1.35 (0.67-2.73)	0.56 (0.22-1.41)	0.49 (0.10-2.38)	0.36 (0.17-0.77) [†]
Age	1.21 (1.09-1.34) [†]	0.90 (0.81-1.00)	1.00 (0.86-1.16)	1.18 (1.01-1.37) [†]	1.12 (0.91-1.37)	0.77 (0.48-1.23)	0.84 (0.69-1.02)
Living at home with family	1.13 (0.79-1.60)	1.17 (0.78-1.73)	0.99 (0.56-1.72)	1.15 (0.63-2.11)	2.08 (0.88-4.87)	3.08 (0.58-16.46)	1.20 (0.61-2.36)
Nagelkerke R ²	0.145	0.166	0.116	0.285	0.382	0.280	0.106

*Abbreviations: CI - confidence interval; N/A - not available.

[†]P<0.005.[‡]P<0.001.

ternization. So we were not able to make the analysis of unprotected sex in female students in this study. In male students, the overall unprotected sex rate was 13%. This rate is also somewhat low compared with that in other studies, such as 50% in South Africa (30) and 25% in Denmark (31). Lower rate than in Western countries could be attributed to the reluctance of young people in Turkey to engage in sexual behaviors that carry serious risks, despite the increasing popularity of the most aspects of western lifestyles.

Self-mutilation rate among students in this study (8%) was somewhat higher than in other studies, compared with the rate of 2% the United States (21). In the past 30 years in Turkey, self-mutilation among youths of low socioeconomic status has been a growing problem. An important factor seems to be that the youths at risk see no way to overcome the inequalities they encounter in society. The stratified nature of Turkish society continues to be an important cause of stress. The traditional concept of fate also reinforces the feeling of lack

Table 6. Risk factors (odds ratio and 95% CI) for individual risk behaviors in Turkish university students: second group of risk behaviors*

Risk factors	Physical fighting	Carrying a gun or sharp weapon	Riding motorcycle without a helmet	Not wearing a safety belt
Male gender	7.20 (2.86-18.14) [†]	10.52 (3.48-31.78) [†]	2.44 (1.57-3.79) [†]	1.79 (1.28-2.50) [†]
Year at university:				
1st	N/A	4.83 (1.14-20.54) [‡]	1.56 (0.72-3.38)	1.26 (0.68-2.35)
2nd	N/A	4.18 (1.07-16.27) [‡]	1.38 (0.65-2.91)	1.47 (0.81-2.68)
3rd	N/A	0.35 (0.05-2.20)	1.34 (0.66-2.74)	1.29 (0.73-2.30)
4th	N/A	1.28 (0.32-5.19)	0.43 (0.19-0.98) [‡]	1.18 (0.67-2.07)
Parents' employment status:				
mother employed	0.78 (0.32-1.90)	1.28 (0.51-3.25)	1.08 (0.62-1.88)	1.46 (0.93-2.28)
father employed	0.67 (0.22-2.04)	0.71 (0.24-2.12)	0.76 (0.41-1.40)	0.87 (0.56-1.37)
Parents' education:				
mother university graduate	0.60 (0.23-1.56)	0.44 (0.17-1.17)	0.63 (0.35-1.13)	0.98 (0.61-1.59)
father university graduate	0.94 (0.41-2.19)	1.06 (0.44-2.56)	2.01 (1.21-3.33) [†]	0.91 (0.61-1.35)
Age	0.83 (0.65-1.05)	1.29 (1.05-1.57) [†]	1.01 (0.90-1.14)	0.97 (0.88-1.06)
Living at home with family	1.13 (0.51-2.53)	5.43 (1.81-16.29) [†]	0.79 (0.51-1.22)	0.66 (0.47-0.94) [†]
Nagelkerke R ²	0.283	0.453	0.177	0.106

*CI - confidence interval; N/A - not available.

[†]P≤0.005.[‡]P≤0.001.

of alternatives that appears to be associated with self-mutilation, and this may be another reason for higher rates found in this study than in others.

Male gender and high maternal education level were associated with substance use. The rate of substance abuse in male students decreased with increasing age whereas in female students, substance abuse, cigarette, and alcohol usage increased with increasing age. High maternal and paternal education levels were also associated with students' increased alcohol use. Having a father with high education was a risk factor for cigarette smoking. However, the most important variable for cigarette smoking was students' age. Similarly, Tuinstra et al (32) found more frequent alcohol use among older youths and wealthy youths in the Netherlands, whereas cigarette smoking was less common in these groups. In contrast to this, Canada's national health survey suggested that low socioeconomic status was a factor for cigarette smoking and alcohol use (4).

Risk behaviors associated with living at home were weapon-carrying and riding a motorcycle without a helmet. Weapon-carrying is frequently an indicator of more violent behavior (18,19) and may be related to a feeling of insecurity in younger university students. Higher percentage of male students who lived away from their parents used alcohol.

According to Turkish laws, safety belt and a helmet is obligatory for everyone. Although in the last couple of years there has been an increasing number of education programs throughout Turkey for increasing the use of seat belt and a helmet, the rate of seat belt and helmet usage in

young population is still not satisfactory. In this situation, it seems that education and study programs have to be reorganized.

Alcohol-influenced driving, and alcohol use in general, was more prevalent in male students. Being male was associated with greater alcohol use. In several studies, male gender was shown to be a risk factor (32). In our study, logistic regression showed male gender to be associated with increase in all risk behaviors.

This study was conducted in Turkey's capital city. For this reason, it may not be representative of the situation in rural areas. Also, since the study included only currently enrolled university students, results may not be applicable to young people of the same age who do not have university education. As the female students did not answer the questions relating to unprotected sex, it was not possible to make the analysis of this subject in female students.

In conclusion, our study showed that there is an important relation between risk behaviors and socioeconomic variables among university students in Turkey. Also, we showed that their risk behavior and health risks were in some aspects similar to those reported for university students in other settings but also revealed specific problems related to cultural specificities of Turkish society. The study also indicated potential targets for interventions in improving the health status of students.

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