

# FACTORS INFLUENCING ALCOHOL AND ILLICIT DRUG USE AMONGST FIRST YEAR MEDICAL STUDENTS

CODRUȚA ALINA POPESCU<sup>1</sup>, MIHAI HORAȚIU BOB<sup>2</sup>, VERONICA JUNJAN<sup>3</sup>, SEBASTIAN MIHAI ARMEAN<sup>4</sup>, ANCA DANA BUZOIANU<sup>5</sup>

<sup>1,2,4,5</sup>“Iuliu Hațieganu” University of Medicine and Pharmacy Cluj Napoca, <sup>3</sup>University of Twente, Institute of Innovation and Governance Studies, Netherlands

**Keywords:** medical students, alcohol, cannabis, personality

**Abstract:** The aims of this study were a) to investigate patterns of alcohol, smoking and illicit drug use and b) evaluate the relationship between substance abuse and personality factors in a cohort of 267 first year medical students. 12.3 % (men) and 11.8% (female) medical students reported to be drinking above the “low risk” level of alcohol. Illicit drug use was present amongst the students surveyed, with 12.4% having experimented with cannabis at some stage during their life. A significant proportion of the students (44.1%) suffered from anxiety. There are personality characteristics like extraversion and openness that influence the drug taking and drinking habits of students, suggesting that such individuals may still pursue these habits although they know these are not healthy habits. Considering these, it may be prudent to consider the promotion of harm reduction and safer use of drugs and alcohol in medical students.

**Cuvinte cheie:** studenți la medicină, alcool, cannabis, personalitate

**Rezumat:** Obiectivele acestui studiu au fost a) investigarea tiparelor consumului de alcool, tutun și droguri și b) studierea legăturii dintre abuzul de substanțe toxice și factorii de personalitate într-un studiu tip cohortă pe un lot de 267 de studenți la medicină. 12,3% (băieți) și 11,8% (fete) dintre studenți au recunoscut un consum de alcool peste nivelul de ”risc scăzut”. 12,4% dintre studenții chestionați au fumat cannabis cel puțin o dată în viață. O proporție semnificativă din populația studențească anchetată (44,1%) suferea de anxietate. Unele trăsături de personalitate cum sunt extroversia și deschiderea la noi experiențe au influențat tiparele consumului de droguri și alcool, ceea ce sugerează că persoanele în cauză perpetuau aceste obiceiuri deși erau conștienți de consecințele nefaste asupra stării lor de sănătate. Luând toate acestea în considerare, pare a fi oportună promovarea unui comportament sanogen în rândurile studenților facultății de medicină, cu reducerea consumului de substanțe toxice.

## INTRODUCTION

Substance abuse (such as alcohol and tobacco) represents an important health risk factor worldwide. According to the World Health Organization (WHO), the excess use of alcohol in 2011 lead to an estimated 2.5 million deaths yearly worldwide, and at European level, excess use of alcohol is the second largest risk factor for disease burden. Moreover, increased alcohol consumption accounts for 9% of deaths in the age group 15-29 years worldwide.(1) Also according to WHO (2), tobacco use is responsible annually for about six million deaths, out of which more than 600,000 related to indirect smoking. Alcohol and illicit drug use is increasing amongst the youth.(3) Rubington and Weinberg (4) define a social problem as “[...] an alleged situation that is incompatible with the values of a significant number of people who agree that action is needed to alter the situation”. The magnitude and health consequences of alcohol and tobacco consumption – especially amongst the youth – have called for action on behalf of governments which have designed and (to a certain extent) implemented policy to address the problem. However, in order to develop effective interventions, first an extensive description of the situation concerned is needed. Whereas the general data available to the international organizations provides information concerning health risks at the population level, it is important to investigate patterns of such health risk factors at category level. This study contributes to the increasing body of research

documenting substance abuse in a particular category of youth in Romania, namely medical students.

Research has revealed that some university students drink excessive amounts of alcohol and experiment with illicit drugs (5,6), and that medical students do not differ from many other student groups. Studies among medical students show that about 90% drinks alcohol.(7) However, according to some studies, medical students drink alcohol less in comparison with other academic students.(8) One possible explanation provided for this difference refers to the fact that medical students are exposed to personal health education during their undergraduate years, and they have the knowledge of the potential hazards of alcohol and illicit drugs.(9,10) The prevalence of risky alcohol drinking among medical students has been estimated between 30 % (based on interviews) (11) and 18% (based on Alcohol Use Disorders Identification Test -AUDIT questionnaire).(8)

The research on alcohol consumption among students has an extensive tradition in the North American context.(12) In a literature review investigating individual, social, and university-related factors related to alcohol consumption among university students in Europe (13), the authors warn about the transferability of the findings to other socio-cultural contexts, given – among other factors- the differences between drinking cultures and between alcohol policies between North America and Europe. An increasing body of research investigating patterns of alcohol and tobacco consumption in Europe (14,15)

<sup>1</sup>Corresponding author: Codruța Alina Popescu, Str. Avram Iancu, Nr. 31, Etaj. 2, Sala 72, Cluj-Napoca, România, E-mail. cpopescu@umfcluj.ro, Tel: +40722 957195

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addresses this gap. The primary risk factors indicated in the literature for alcohol consumption are a) gender (males tend to consume more alcohol than females); b) socialization (alcohol consumption tends to occur within social gatherings as opposed to drinking alone); c) housing situation (students living with parents or with family responsibilities tending to consume less alcohol), and d) social expectations (students tending to overestimate the alcohol consumption by peers).(13)

Alcohol and tobacco consumption are usually also strongly associated. Mixed results were registered in terms of the relationship between age and alcohol consumption (possibly because of the associations between age, year of study, and workload), as well as the relationship between alcohol consumption and academic field, where medical students tended to have lower consumption rates than their peers in other fields.(16)

According to WHO data, alcohol consumption among Romanian adults (aged 15+) was 15.3 litre pure alcohol (average over 2003-2005), level above the WHO European Region (12.2 liters per capita). There is a clear gender difference in terms of non-consumption, with 22.1% males and 51.6% females abstainers (defined as persons who did not drink in the past 12 months).

An additional WHO report (17) indicates that alcohol consumption in Central and Eastern European countries is, on average, higher than in the rest of the EU. Tobacco consumption is also widespread, WHO data indicating in 2011 prevalence rates of 38% for males and 18% for females.

Within this framework (and also considering measurement issues, given that WHO defines adult population as aged 15+) there is a clear need to investigate patterns of substance abuse among Romanian youth. A growing literature presenting results of empirical studies conducted within the Romanian context addresses the issue of substance abuse among medical students.

The study conducted by Dumitrescu in 2007 (16) confirms higher alcohol consumption among males than among females, higher levels of alcohol consumption among medical than among dental students, and an association between smoking and alcohol consumption. Brabete et alli (18) investigate within general population the relationship between gender norms and alcohol and tobacco consumption. The results indicate a clear correspondence between gender expectations and patterns of alcohol consumption, with higher consumption by males than by females.

Didilescu et al (19) focus specifically on tobacco consumption at dental students. The results confirm high rates of smoking also within the investigated sample of dental students (47.9% for males and 28.9 for females) and do not show differences in smoking behaviour associated to the year of study.

**PURPOSE**

The aim of this study was to investigate alcohol, smoking and illicit drug use and the influence of personality factors on these in a cohort of first year medical students.

**METHODS**

The study was conducted at the “Iuliu Hatieganu” University of Medicine and Pharmacy, Cluj-Napoca, during the first semester of the academic year 2013-2014. A total of 267 (90%) first year medical students from the Romanian-language programme responded to an anonymous survey, which included questions on alcohol consumptions, use of illicit drugs, tobacco and demographic information. In addition to the survey, the participants completed the Neo FFI personality inventory and

the STAI anxiety test. Written consent was obtained from the participants. Completion of the questionnaires was voluntary. Permission was obtained from the medical schools and Ethical Committee of University of Medicine and Pharmacy “Iuliu Hatieganu” prior to the start of the study. The questionnaire was distributed to students two months after the beginning of the first semester.

The Big Five Personality Inventory Short Form (NEO FFI) was developed by Costa and McCrae in 1992 (20) and adapted to Romanian language by Iliescu et al in 2010 (21). It consists of 60 items grouped into five subscales: Extraversion, Neuroticism, Agreeableness, Openness to experience and Conscientiousness. Each subscale has twelve items. Respondents rated each item on a 5-point Likert type scale anchored by “fully false=1” and “fully true= 5”. It is the most widely used and robust measure of personality traits with sound psychometric properties established by previous researchers (Costa & McCrae, 1992).

To measure anxiety, we used the Romanian version of the State-Trait Anxiety Inventory (STAI) (22). The STAI is comprised of two scales: the state and trait forms. Each scale consists of 20 items that indicate the presence or absence of anxiety symptoms. The State-Trait-Anxiety Inventory is one of the self-rating anxiety scales most commonly used in research and clinical practice.

**Statistical analysis**

Data were analysed using Statistical Package for Social Sciences (SPSS) version 20 for OS 10.9.1. Distributions of the studied variables were examined using Shapiro-Wilk tests. Statistical significance was assumed at  $\alpha \leq 0.05$ . Because the data did not have a normal distribution we used non-parametric statistics: Mann-Whitney U and Spearman correlation coefficients. Spearman correlations were used to investigate the relationship among personality variables and alcohol use.

**RESULTS**

*Demographics characteristics of the sample*

**Table no. 1. Demographics characteristics of the sample**

	<b>Male</b>	<b>Female</b>
sex (N, %)	86 (32.2%)	181 (67.8%)
age (Mean, SD)	19 (2.6)	19.8 (.092)
Parents (N, %)		
doctors (yes) (	41 (15.3%)	
mother, higher education	206 (76.9)	
father, higher education	190 (70.9)	
marital status (N, %)		
single	171 (64%)	
in a relationship	96 (36%)	
living situation (N, %)		
at home with the parents	48 (18%)	
university campus	124 (46.4%)	
rented apartment	95 (35.6%)	

Table no. 1 shows the demographic characteristics of the sample. A total of 267 student responded (response rate 90%). 181 (67.8%) were female students. Average age was 19 year in female students and 19.8 years in male students. 76.9% students' mothers' education and 70.9% students' fathers' education were higher education. 15.3% of the students had one of both parents, physicians. Students' relationship status were 171 (64%) single and 96 (36%) in a relationship. In terms of living conditions: 48 (18%) students were living at home with the parents, 124 (46.4%) were living in the university campus and 95 (35.6%) were living in rented apartments in the city.

*Alcohol consumption*

24.7% of the students did not drink alcohol.

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**Table no. 2. Alcohol consumption**

	N	%
Yes	201	75.3
No	66	24.7
Total	267	100.0

**Table no. 3. Mean units of alcohol units/week/type by gender**

Gender		beer	wine	spirits	total
		units/week	units/week	units/week	units/week
Male	Mean	1.98	2.28	3.63	7.90
	N	86	86	86	86
	SD	5.59	4.18	7.01	11.35
annual consumption (liters of pure alcohol)					4.74
female	Mean	1.54	2.45	1.42	5.42
	N	181	181	181	181
	SD	.85	5.14	3.47	6.22
annual consumption (liters of pure alcohol)					3.25
Total	Mean	1.68	2.39	2.13	6.22
	N	267	267	267	267
	SD	3.24	4.84	4.99	8.29

Amongst drinkers, the mean weekly alcohol consumptions in males was  $9.58 \pm 12.5$  units (range .36-79.5, median 5.16) and in females  $6.23 \pm 6.74$  (range median .92-29.75, median 4.34). One unit is defined as half pint beer/1 glass wine/1 measure of spirits.(23)

**Table no. 4. Prevalence of “low risk”, “medium-high risk” and “hazardous level” of alcohol consumption amongst student who drink**

		sex		Total
		male	female	
low risk	N	57	120	177
	% within sex	87.7%	88.2%	88.1%
medium to high risk	N	1	8	9
	% within sex	1.5%	5.9%	4.5%
hazardous risk	N	7	8	15
	% within sex	10.8%	5.9%	7.5%
Total	N	65	136	201
	% within sex	100.0%	100.0%	100.0%

87.7% of male and 88.2% of female drank within the low level of alcohol consumptions (1-21 units/week male, 1-14 units/week female). The remaining 1.5% male and 5.9% female drank within the “medium to high risk” (22-28 units/week male and 14-21 units/week female). 10.8% of men and 5.9% of female drank at the “hazardous risk level” (over 29 units/week male and over 22 units/week female). 10.1% of the students reported to be drinking more after beginning the university studies.

### Smoking

The frequency of current regular smoking was 13.9%.

**Table no. 5. The prevalence of smoking**

	N	%
daily	37	13.9
at least once a week	17	6.4
at least once every two weeks	20	7.5
at least once a month	15	5.6
not at all	178	66.7
Total	267	100.0

The mean number of cigarettes in male ( $11.52 \pm 6.54$ ) was significantly higher (Mann-Whitney  $U=101.5$ ,  $p<.03$ ) then

in female ( $6.95 \pm 4.94$ ).

**Table no. 6. Mean number of cigarettes/day**

Gender	Mean	N	SD	Mann-Whitney U	p
male	11.52	17	6.54	101.50	.03
female	6.95	20	4.94		
Total	9.05	37	6.10		

### Illicit drugs

Cannabis was the most frequently reported illicit drug “ever used” by the students. Table showed 9.76% of the student had used cannabis.

**Table no.7: Use of cannabis and other illicit drugs**

	N	%
Yes	33	12.4
No	234	87.6
Total	267	100.0
Cannabis	29	9.76
Amphetamines	4	1.49

### Anxiety

**Table no. 8. Level of anxiety**

	STAI Y1 state anxiety		STAI Y2 trait anxiety	
	Female	Male	Female	Male
Mean	44.40	40.58	45.99	41.78
N	181	87	181	87
SD	11.87	10.10	10.67	9.44
% of students with high anxiety level	35.1		44.1	

The mean STAI-Y1 state anxiety score was  $44.4 \pm 11.87$  in female students and  $40.58 \pm 10.1$  in male students. The mean STAI-Y1 trait anxiety score was  $45.99 \pm 10.67$  in female students and  $41.78 \pm 9.44$  in male students. 35.1% of the students showed high state anxiety and 44.1% of the students showed high trait anxiety.

### Personality characteristics

Mean Neo-FFI scores for Neuroticism were  $26 \pm 7.58$  (male) and  $31.95 \pm 19.66$  (female), Extraversion  $31.63 \pm 6.44$  (male) and  $32.32 \pm 5.7$  (female), Openness  $28.67 \pm 7.45$  (male) and  $28.2 \pm 6.29$  female, Agreeableness  $25.83 \pm 8.64$  (male) and  $27.08 \pm 5.08$  (female) and Conscientiousness  $35.65 \pm 6.86$  (male) and  $36.03 \pm 6.01$  (female).

### Associations

**Table no. 9. Spearman Rho correlations between personality characteristics and alcohol use (units/week)**

	Spearman Rho
STAI-Y1 state anxiety	-.059
STAI-Y2 trait anxiety	-.081
Neuroticism	-.056
Extraversion	.185**
Openness	.135*
Agreeableness	-.077
Conscientiousness	-.050

\*\* $p<.01$ , \* $p<.05$

Anxiety, Neuroticism, Agreeableness, Conscientiousness were not significantly correlated with alcohol use. Only significant correlations resulted from the tests were between alcohol use and Extraversion and Openness.

There were associations between alcohol consumption and cannabis use; the students who use cannabis drink more. There were associations between cannabis use and state anxiety, the students who use cannabis had lower level on state anxiety,

but not in trait anxiety.

**Table no. 10. Relationship between cannabis use, anxiety and alcohol consumption**

	Use of cannabis and other illicit drugs		Mann-Whitney U	P
	Yes	No		
Alcohol use (units/week)	9.99 ±9.92	5.69±7.91	2557.5	<.02
STAI-Y1 state anxiety	38.39±7.57	43.78±11.75	4998.00	<.012
STAI-Y2 trait anxiety	42.81±9.39	44.83±10.61	4294.5	>.296

### DISCUSSIONS

This study of a cohort of first year medical students two months after commencing their university study in the General Medicine programme at the University of Medicine and Pharmacy “Iuliu Hațieganu” Cluj-Napoca indicates that many were already drinking excessive amounts of alcohol and experimenting with illicit drugs, particularly cannabis before starting university life.

12.3 % of male and 11.8% of female medical students reported to be drinking above the ‘low risk’ level of alcohol. Illicit drug use was present amongst the students surveyed, with 12.4% having experimented with cannabis at some stage during their life.

A significant proportion of the students (44.1%) suffered from anxiety. In previous other studies in medical students (5,24) the anxiety scores did not relate to drinking.

As this study has revealed, there are personality characteristics like extraversion and openness that influence the drug use and drinking habits of students, suggesting that such individuals may still pursue these habits even though they know they are not healthy habits. In the light of these results, it may be prudent to consider the promotion of harm reduction and safer use of drugs and alcohol in medical students.

A limitation of the study, as with all questionnaire surveys, is the difficulty to assess the reliability and accuracy of the data. However the questionnaire was completed by the students on a voluntary, anonymous basis, which we think promotes a more reliable response.

### CONCLUSIONS

Current study contributes to the growing body of literature addressing a very important social problem -patterns the substance abuse use among youth in Romania-, while focusing specifically on the case of medical students. Medical students can be considered as a specific category of youth: given the academic programme they are pursuing, they are exposed to a more extended set of information concerning health consequences in substance abuse. One could therefore expect that, being exposed to relevant scientific information, the level of substance abuse would be lower than in the general (youth) population. In addition to the previous research conducted within Romanian context, this study incorporates also data concerning illicit drug use and personality characteristics of the group under study.

1. The prevalence of current regular smoking in first year medical students was 13.9%. This is lower than the level indicated by the national available data (25) with a total prevalence rate of 24.3% (daily smoking).
2. 12.4% respondents reported ever trying illicit drugs. Cannabis was the most frequently reported illicit drug “ever used” by the students. A recent report of EMCDDA (26) indicates Romania as one of the EU countries with very low prevalence in terms of cannabis consumption:

- 2.9% for adults between 15 and 34 years of age (the statistical data used in the report refers to 2009). Students surveys mentioned by EMCDDA indicate that the lifetime prevalence increased from 1% in 1999 to 7% in 2011.(27)
3. 24.7% of the students did not drink alcohol at all. This is lower compared to the available WHO data on Romania concerning abstainers (defined as persons who did not drink in the past 12 months) of 37.5%, but in the same time higher than the data on lifetime abstainers of 13.1%.(28)
4. Anxiety is highly prevalent in medical students.
5. Personality characteristics such as Extraversion and Openness are associated to the drug use and drinking habits of students.

The results concerning substance use indicate that, within the investigated sample, it seems to correspond to the general expectation drawn both by the literature as well as by the available international data. In terms of alcohol and tobacco use, the gender differences in terms of consumption are very clear, with males using higher quantities of alcohol and tobacco, with a higher frequency than females. The expectation that the level of substance use among medical students would be lower than in the general (youth) population is also generally confirmed (with caveats concerning cannabis use). The limits of the data used for comparison for the general (youth) population (such as different availability of statistical information for the general youth population) make us interpret the comparisons with general (youth) population with caution. A longitudinal multi centre study, combined with investigation of effects across time of availability of professional related information on health consequences of substance use would provide important insights relevant for designing health policy interventions aimed to reduce substance use among youth.

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