

PSYCHOSOCIAL FACTORS AND PATTERNS OF ALCOHOL CONSUMPTION IN YOUNG ADULTS FROM WESTERN ROMANIA

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Abstract: According to the most recent WHO report, worldwide, 3 million deaths were related to the harmful use of alcohol. In Romania, the deaths rates of young people attributable to high alcohol intake are higher than European averages. The aim of this study was to identify the psychosocial factors that are associated with increased alcohol consumption in young Romanian adults.

Methods. We targeted 142 young adults, aged between 18 and 35 years, without any known chronic pathology or Alcoholics Anonymous history. Socio-demographic status, alcohol consumption, drinking behaviors, associated smoking, anxiety, depression and aggressive behavior have been collected by applying different questionnaires.

Results. 86.6% were current drinkers. Alcohol consumption was associated with male gender, lower education, and current smoking. The risk of binge drinking increased with male gender (3.86-fold) and rural origin (4.72-fold) and decreased with beginning drinking at an older age (0.88-fold) and having a stable relationship. The anxiety levels were higher in the non-drinker group compared with current drinkers. Higher physical aggression scores were present in binge drinkers.

Conclusion. In young Romanian adults, alcohol consumption not only reaches a high incidence but also follows worrying patterns of consumption. Urgent preventive strategies to increase responsibility and awareness are needed.

Keywords: healthy young adults, alcohol behaviors, heavy drinking, binge drinking, aggression, anxiety and depression.

INTRODUCTION

Mortality and morbidity associated with alcohol misuse are overwhelming, as well as the socio-economic burden. According to the last WHO report, in 2016, worldwide, 3 million deaths (5.3% of all deaths) were related to the harmful use of alcohol, and also alcohol was responsible for 7.2% of all premature deaths among persons 69 years of age and younger. The most affected by alcohol consumption were younger people compared to older persons, 13.5% of all deaths among those 20–39 years of age being attributed to alcohol [1]. According to WHO Europe 2019 Alcohol fact sheets, in Romania, 20.1% of deaths among 15 to 19 years of age

and 25.5% of deaths among 20 to 24 years of age, were attributable to heavy alcohol intake, being higher than European averages [2].

About 2.3 billion people are current drinkers, the average alcohol per capita consumption in the world's population over 15 years of age being at the level of 6.4 liters of pure alcohol in 2016, with the highest levels of alcohol consumption being observed in countries of the European Region [1, 3]. More than a quarter (26.5%) of all adolescents (15–19-year-old) are current drinkers, but young people of 15–24 years, especially men, when they are current drinkers, they often practice heavy episodic drinking, which is defined as consuming at least 60 grams or more of pure alcohol

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on at least one occasion in the past 30 days [1,4].

The causality for excessive alcohol consumption in some individuals is complex and multifactorial. Multiple biological and psychosocial factors, often interconnected, are responsible for diverse alcohol-related behavior, ranging from simple alcohol experimentation to regular drinking or severe alcohol dependence. It is generally accepted that a family history of alcoholism represents an important risk factor for the development of alcoholism, but in the majority of cases, the motivation to drink involves psycho-social elements like alcohol's ability to reduce stress and anxiety and to enhance a positive mood [1,5]. In addition, Romanian parents generally have a permissive attitude towards young people drinking, and sometimes even facilitate early initiation of alcohol [6]. External social factors also exert an important role, like the influence of the entourage, sensations seeking or the image that oneself desires to project into society. Unfortunately, alcohol misuse is often associated with other negative habits like smoking or drug abuse [1, 5, 7]. Multiple studies have shown that early onset of drinking as young adult modulates brain activity and increases the risk to develop alcohol addiction, having negative effects on health in general [8–10].

The European Union (EU) has an action plan to reduce harmful use of alcohol 2012-2020. There are 10 action areas that are measured, and in 2016, compared with the EU averages, Romania had significantly lower scores in several areas like: awareness, community and workplace action, reducing the negative consequences of drinking and alcohol intoxication, reducing the public health impact of illicit alcohol and informally produced alcohol, monitoring and surveillance [11].

There are few English-language studies from a multidisciplinary perspective, focused on alcohol consumption in Romania. They usually describe substance use, high-risk behavior or include only high school or university students [6, 12, 13]. This study will contribute to fill a gap in the specialized literature by tackling the patterns of alcohol consumption along with numerous psychosocial factors that could highlight the profile of the young drinker in Romania.

We hypothesized that high alcohol intake in young adults is associated with different types of factors, such as social (family history, relationship), economical (income) and psychological (anxiety, depression), that all have an impact on aggressive behavior.

The aim of this study was to establish the psychosocial factors that are associated with increased

alcohol consumption in a community of young Romanian adults, high school or college graduates, who reported drinking but were not aware that the amount of their intake placed them in the category of drinkers, to identify a relevant profile of young drinkers and to establish the prevalence of behaviors like anxiety, depression or aggression in this group.

Our results on alcohol consumption and variables like gender, and psychosocial factors may help public health authorities to design an evidence-based prevention program that targets the groups predisposed to high alcohol consumption.

MATERIALS AND METHODS

Participants

This study followed a prospective cross-sectional design and a consecutive sampling model, and was conducted between January 15 and March 15, 2020, when the COVID-19 pandemic imposed the cease of our evaluations before we reached the targeted sample size of 233 patients. This resulted in a 6.42% margin of error for this study.

The study was performed in a Cardiovascular Prevention and Rehabilitation Clinic and was approved by the Hospital's Ethics Committee (223/14.01.2020). The study targeted young adults, aged between 18 and 35 years, in a good state of health, without any known chronic pathology or previous Anonymous Alcoholics history. Exclusion criteria were: the presence of any cardiovascular, pulmonary, gastrointestinal, hematologic or renal diseases, acute or chronic inflammatory diseases, performance athletes, history of malignancy. All subjects in the hospital outpatient setting who met the above criteria were asked to participate in this study. The refusal rate was 7.8% (1 man, 11 women). Study procedures were designed to protect patient anonymity and to allow for voluntary participation. 142 young adults took part in the study and all signed the informed consent form. They admitted alcohol consumption but considered it within normal limits. Overall, 96 (67.6%) were male and 46 (32.3%) were female. Mean age of participants was 28.44 ± 4.34 years, their origin was from various villages and cities from western Romania, which includes 4 counties: Timis, Arad, Hunedoara and Caras-Severin. The main symptoms for outpatient presentation were palpitations, vertigo or lipothymia. In some cases, mandatory yearly medical checkups revealed excessive alcohol consumption.

Instruments

The data collected for each patient comprised 5 sections: 1. sociodemographic status; 2. alcohol consumption and drinking behaviors; 3. smoking status; 4. anxiety and depression evaluation; 5. aggressive behavior.

Sociodemographic status contained questions about age, gender, geographic origin, educational degree, income levels, marital status and family situation: family support, a family drinking-dependence history, family alcohol-related pathologies (cardiomyopathy, liver cirrhosis). We assessed alcohol consumption and drinking behavior using the validated Romanian version of the AUDIT questionnaire (Alcohol Use Disorder Identification Test), which is a 10-item screening tool developed by the World Health Organization (WHO) [14]. Participants were questioned about the preferred beverages they usually consume (beer, wine, spirits), weekly alcohol intake, and the age when they started drinking. The AUDIT questionnaire comprises 3 subscales: Consumption score (3 questions, maximum possible score = 12; 6 or higher may indicate a risk of alcohol-related harm), Dependence score (3 questions, maximum possible score = 12; 4 or higher suggests alcohol dependence) and Self-perceived alcohol-related personal problems (the last 4 questions of the questionnaire). The last section addresses feelings of guilt or remorse after drinking, having troubles to remember things after drinking, concerns from family or friends about their drinking, or injury inflicted upon someone while being under the influence of alcohol. Scoring any point in this last section requires further investigation to determine whether the problem is of current concern and requires intervention.

The notion of an alcohol unit is a measure that allows the estimation of the pure alcohol content of a drink. In Romania, by consensus, one unit of alcohol is equivalent to 12 grams of pure alcohol [15]. The number of alcohol units in each serving of beverage depends on its size and concentration. For example, a 330mL–5% beer dose contains 16.5mL or 13grams of pure alcohol (1.1 units of alcohol), while a 500ml–5% beer dose contains 25mL or 19.72 grams of pure alcohol (1.64 units of alcohol). In our study, 330ml of beer, or 125ml of wine, or 40mL of spirits represented 1 unit of alcohol. In the literature, there is no clear definition of heavy or binge drinking. We defined binge drinking as consuming at least 6 standard drinks (units) on a single occasion, and heavy drinking as consuming at least 16 units for men and 10 units for women, in a week [16].

Smoking status was assessed using short questions about smoking habits. Two groups were identified: current or former smokers and non-smokers. Pack-years index was calculated for standard manufactured cigarettes, by multiplying the number of packs smoked per day by the number of years the person has smoked [17].

For the assessment of anxiety and depression, we used the HADS questionnaire [18], which is a 14-item self-rating assessment tool that consists of a 7-item subscale for both depression and anxiety. A compiled score of 7 or greater in the subscale indicates symptoms of mental disorder and a score of 10 or greater indicates clinically significant anxiety or depression.

The AQ-12 (Aggression Questionnaire) [19] is a 12-item instrument, consisting of 4 subscales: Physical Aggression, Verbal Aggression, Anger, and Hostility. There are no threshold values for categories, the scores obtained are directly proportional to the level of aggression.

Statistical Analysis

Data are presented as average \pm standard deviation (numerical variables with Gaussian distribution), median and interquartile range (numerical variables with non-Gaussian distributions) respectively percentage from the sub-group total and number of individuals. Continuous variables distributions were tested for normality using the Shapiro-Wilk test. A Chi-square test was employed to evaluate the significance of the differences in the proportions of drinking along with sociodemographic variables. Kruskal Wallis and Mann-Whitney U-test were used for comparing AUDIT, HAD, AQ-12, weekly intake and pack-year index between groups. Spearman correlation was employed to assess the relationship between AQ-12 and AUDIT, weekly intake and drinking start age. The individual impact of several confounding factors on the variance of a continuous variable was assessed by building multivariate regression models. The quality of the model was described using the accuracy of prediction and by Nagelkerke's R². The predictors, in the final regression equations, were accepted according to a repeated backward-stepwise algorithm in order to obtain the most appropriate theoretical model to fit the collected data. In this study, a p-value of 0.05 was considered the threshold for statistical significance. Data were analyzed using SPSS v26 statistical software package (SPSS Inc, Chicago, IL, USA) for Linux.

RESULTS

Our study included 142 participants, aged between 18 and 35 years, mean age 28.44 ± 4.34 years. There were 96 men (67.6%) and 45 women (31.9%). All of them had at least 12 years of education, 70.4% lived in urban areas and more than half had a high income. 123 of them (86.6%) admitted an alcohol intake that, according to the AUDIT questionnaire, designated them as drinkers, only 19 subjects (13.4%) being considered as non-drinkers (Table 1).

Patterns of alcohol consumption by sociodemographic factors

When questioned about drinking habits, the prevalence of non-drinkers was only 13.4% (19 cases) of all 142 subjects. There was a statistically significant difference between genders in reported increased alcohol intake, 93.7% in men and 71.7% in women ($p=0.001$, Chi-square test). By comparison, only 6.3% males compared to 28.3% females were abstainers. Among those who admitted drinking, there was no statistically significant difference between genders

Table 1. General characteristics of study population (n=142)

Age	29 [26-32]
Male gender	96 (67.6%)
Urban area	100 (70.4%)
Education	
High school	30 (21.1%)
College	112 (78.9%)
Income	
Low	30 (21.1%)
Medium	24 (16.9%)
High	88 (62%)
Marital status	
Single	63 (44.4%)
Stable relationship	52 (36.6%)
Married	27 (19.1%)
Family history	
Moral support	118 (83.1%)
Alcohol Dependence	66 (46.5%)
Alcohol-related pathology	15 (10.6%)
Hospital Anxiety and Depression Scale questionnaire	
Anxiety	6 [3-8]
Depression	3 [1-6]
Alcohol consumption	
Drinkers	123 (86.6%)
AUDIT questionnaire	6 [4.5-9]
Binge drinking (>6 units on occasion)	96 (68.1%)
Heavy drinking	35 (24.6%)
Weekly intake (units)	8 [6-15]
Drinking start (age)	18 [17-21]
Alcohol type	
Beer	56%
Wine	25%
Distilled Drinks	19%
Smoking	
Incidence	54.9%
Pack-year index	8 [3-15]

regarding binge or heavy drinking.

There were no differences in AUDIT scores and weekly alcohol intake regarding origin, education, income or marital status. Higher incidence of binge drinking was recorded in the rural area (80%), in subjects with lower education levels (91.7%), low income (100%) and in singles (94.7%). As for heavy drinking, we identified a lower incidence in subjects in a stable relationship, and even a lower incidence in those who were married, with no differences regarding origin, education level or income (Table 2).

Childhood impact on alcohol consumption behavior

Drinkers with family moral support had a statistically significant lower AUDIT score (5 vs. 7, p=0.001) and lower weekly alcohol intake (6.5 vs. 9, p=0.02), while there were no differences in binge and heavy drinking (p=0.558; p=0.078). There was no statistically significant difference in AUDIT score, weekly intake, binge, or heavy drinking between those

with or without alcohol-dependence history in their family (p=0.610; p=0.668; p=0.453; 0.265). Family alcohol-related pathologies were marginally associated only with binge drinking (p=0.06), and no association with heavy drinking (p=0.341), AUDIT score (p=0.896), or weekly intake (p=0.555) was found (Table 2).

Patterns of alcohol consumption by smoking status

Smokers had higher AUDIT scores compared to non-smokers (8 vs. 5, p<0.001) and higher weekly alcohol intake (13 vs. 6, p<0.001). Although binge drinking did not show any differences related to smoking status, heavy drinking was higher in the smoking group (91.4% vs. 8.6%, p<0.001, Chi-square test) (Table 3). Smokers were 17 times more likely to be heavy drinkers than were non-smokers (OR 16.9; 95%CI 4.8-59.6; p<0.001). Smoking history (pack-years) was associated with alcohol drinking years duration (r=0.329, p=0.006, Spearman`s test).

Table 2. Patterns of alcohol consumption by sociodemographic factors (n=123)

		AUDIT	p ^a	Weekly intake (units)	p ^a	Binge drinking	p ^b	Heavy drinking	p ^b
Gender	Male	7 [5-9.7]	<0.001*	9 [6-16.2]	0.025*	80%	0.388	28.9%	0.860
	Female	5 [1-6]		6 [5-10]		72%		27.3%	
Origin	Rural	6 [5-11]	0.450	8 [6-17.7]	0.553	91.7%	0.019*	30.6%	0.740
	Urban	6 [4-9]		8 [6-15]		72.4%		27.6%	
Education	High School	6 [4.7-11]	0.336	9 [7-15]	0.420	100%	0.002*	33.3%	0.525
	College	6 [4-8]		8 [6-15]		71.9%		27.1%	
Income	Low	6 [4.7-11]	0.874	8.5 [6.2-16.5]	0.115	100%	0.014*	36.5%	0.900
	Moderate	6 [5.2-8]		7.5 [3.2-11.7]		75%		29.7%	
Marital status	High	6 [4-9]	0.241	8 [6-17]	0.214	72%	<0.001*	33.3%	0.001*
	Single	7 [5-9]		7 [5-15]		94.7%		94.7%	
	Stable relationship	6 [5-11]	0.214	8.5 [6-18.2]	0.214	71.4%	0.558	71.4%	0.078
	Married	5 [3-8]		8 [5.2-13.7]		50%		50%	
Family history	Moral support [#]	5 vs. 7	0.001*	6.5 vs. 9	0.02	77.1% vs. 83.3%	0.558	11.1% vs. 31.4%	0.078
	Dependence-Drinking [#]	6.5 vs. 6	0.610	9 vs. 7	0.668	76.2% vs. 80%	0.453	26.7% vs. 30.2%	0.265
	Alcohol-related pathology [#]	7.5 vs. 6	0.896	9 vs. 7	0.555	75.7% vs. 100%	0.006	16.7% vs. 29.7%	0.341

^aKruskal-Wallis or Mann-Whitney U test; ^bChi-square test; *statistically significant differences (p < 0.05), # Yes vs. No.

Table 3. Patterns of alcohol consumption by smoking status (n=123)

Smoking status	AUDIT	p ^a	Weekly intake (units)	p ^a	Binge drinking	p ^b	Heavy drinking	p ^b
Smokers	8	<0.001*	13	<0.001*	73.7%	0.277	91.4%	<0.001*
Smokers	5		6		81.8%		8.6%	
Non-smokers								

^aMann-Whitney U test; ^bChi-square test; *statistically significant differences (p < 0.05)

Alcohol dependence symptoms domain

The incidence of alcohol dependence symptoms (AUDIT dependence score ≥ 4) in our study was 2.1%, all three cases were men and smokers.

Alcohol-related problems

From the 142 subjects, 60 (42.2%) scored at least one point at AUDIT alcohol-related problems. There was no difference regarding age, gender, origin, education, income, or smoking status in alcohol-related problems. We found that subjects without family moral support had a statistically significant higher incidence of alcohol-related problems (57.1% vs. 0%, $p < 0.001$, Chi-square test). Married people had a statistically significant lower incidence of alcohol-related problems than unmarried people (25% married vs. 50% stable relationship vs. 57.9% single; $p = 0.025$, Chi-square test).

Factors associated with increased alcohol consumption

In order to assess the independent factors that predict AUDIT scores, we employed a backward

multivariate linear regression. Our regression equation proved to be a good fit for the model, explaining 26% of AUDIT scores ($R^2 = 0.260$). In multivariable analysis, AUDIT scores were significantly associated with male gender, lower education, and current smoking (Table 4).

In order to assess the independent factors that predict the risk of binge drinking, we employed a backward multivariate logistic regression model. Our regression equation proved to be a good fit for the model, explaining 40.4% of binge drinking ($R^2 = 0.404$). The risk of binge drinking increases with male gender (3.86-fold) and rural origin (4.72-fold). The risk decreases with beginning drinking at an older age (0.88-fold), stable relationship and married status (Table 5).

Anxiety, Depression, and Alcohol

The anxiety scores HAD-A were higher in the non-drinker group compared with current drinkers (7 vs. 5.44, $p = 0.011$, Mann Whitney U test), while there was no difference in HAD-D depression scores (3.17 vs. 3.63, $p = 0.299$, Mann Whitney U test). Although non-

Table 4. Multivariable linear regression of factors associated with AUDIT scores (n=142)

Variables	β coefficient	Standard error	95% Confidence interval	p
Gender (male)	4.186	1.140	1.910 ; 6.462	<0.001
Education	-2.201	1.072	-4.342 ; -0.059	0.044
Smoking	4.306	1.991	0.324 ; 8.288	0.05

Table 5. Multivariable logistic regression for binge drinking (n=142)

Variable	Odd Ratio	95% Confidence interval	p
Male gender	3.386	1.024 ; 11.193	0.046
Rural origin	4.728	1.178 ; 18.975	0.028
Marital status:			
Single	1		
Stable relationship	0.140	0.032 ; 0.605	0.001
Married	0.048	0.009 ; 0.245	
Drinking start (age)	0.887	0.789 ; 0.996	0.043

Table 6. Anxiety and depression levels in drinkers and abstainers (n=142)

HAD classification	HAD-Anxiety		HAD-Depression	
	Non-drinkers (n=19)	Drinkers (n=123)	Non-drinkers (n=19)	Drinkers (n=123)
Normal (non-case)	9 (47.3%)	96 (78.1%)	16 (84.2%)	114 (92.7%)
Borderline	9 (47.3%)	15 (12.2%)	3 (15.8%)	9 (7.3%)
Case	1 (5.4%)	12 (9.7%)	-	-
<i>p</i>	0.001*		0.217	

Chi-square test; *statistically significant differences ($p < 0.05$).

Table 7. Correlation between alcohol and aggression in drinkers (n=123)

AQ-12	AUDIT	Weekly intake (units)	Drinking start (age)
Physical Aggression	0.148	0.196*	-0.490*
Verbal Aggression	0.217*	0.278*	-0.359*
Anger	0.031	0.236*	-0.392*
Hostility	0.083	-0.113	-0.426*

Spearman correlation test, the numbers represent the rho coefficient; *statistically significant differences ($p < 0.05$).

drinkers had higher HAD-A scores, there were more anxiety cases in the drinking group (Table 6).

We did not find any statistically significant association between anxiety levels and alcohol drinking patterns (AUDIT consumption, dependence, problems or binge drinking and heavy drinking). As for depression severity, we highlighted a marginal association with heavy drinking and identified that all heavy drinkers were non-cases (30.7%), while we evidenced in 9 non-heavy drinkers (100%) borderline depression levels ($p=0.049$, Chi-square test).

Alcohol and Aggression

Drinkers had higher physical aggression scores compared to non-drinkers (4 vs. 3, $p=0.036$, Mann Whitney U test), while there were no differences in verbal aggression, anger, or hostility. The onset of alcohol consumption at an early age correlated with elevated levels of aggression in all four domains (Table 7). We also evidenced higher physical aggression scores in binge drinkers ($p=0.005$) as well as hostility ($p=0.021$, Mann Whitney U test). A similar pattern of anger was detected in heavy drinkers.

DISCUSSION

In our study, conducted on a community of young people with middle or higher levels of education, most of them with an average or high income, we evidenced in 86.6% an excessive alcohol intake, according to the AUDIT questionnaire. They recognized alcohol consumption, but considered it within normal limits and were not aware that their alcohol intake places them in the category of drinkers. They considered that occasionally drinking large amounts of alcohol is within normal behavior limits and is socially acceptable. According to the AUDIT questionnaire, we evidenced that 86.6% of them were chronic drinkers, only 13.4% of participants drinking accepted amounts of alcohol. More than half of them recognized binge drinking and almost a quarter were heavy drinkers. We did not find a statistically significant association between harmful drinking and a family history of alcoholism or alcoholism-related pathology, but the absence of family support definitely favored a higher AUDIT score with increased weekly alcohol intake.

In 2018 WHO reported a worldwide decrease of heavy drinking defined as 60 or more grams of pure alcohol on at least one occasion at least once per month. However, prevalence rates among drinkers of 15–24

years were higher than in the total population. Young people of 15–24 years, when they are current drinkers, often drink in heavy drinking sessions [1]. The impact of a family history of alcoholism on drinking behavior is a debated topic in the medical literature. Most probably there is a combination of biological and psychosocial factors, beginning with exposure to negative influences in childhood, associated with temper or personality, and interacting with environmental influences, that all determine this behavior [1,20]. Also, the tendency to binge and heavy drinking in young adults represents a general concern, many studies trying to find strategies to overcome this problem [4].

Most of the participants included in our study consumed alcohol in form of beer, followed by wine and only 19% preferred spirits, a situation also reported for Romania in the Global Status Report on Alcohol and Health 2018 (56% beer, 25% wine, and 19% spirits). This situation is somewhat different from the global beverage preferences, reported by WHO in the 2018 report (spirits 44.8% of total reported alcohol consumption, followed by beer 34.3% and lastly by wine 11.7%), a pattern that suffered only minor changes since 2010 [1].

In this study, we analyzed the association between current drinking and smoking, and we highlighted a strong link between smoking history (pack-years) and alcohol drinking years. Smokers had higher AUDIT scores and were more prone to heavy drinking. Similar data are debated in other studies [7, 21].

We tried to determine which factors influenced drinking behavior in our participants by employing a multivariate regression. Current drinking prevailed in men, while binge and heavy drinking were significantly higher in singles and persons with a middle level of education and lower-income, coming from rural areas. It also was strongly associated with smoking. By using a similar regression model, we documented that male gender and rural origin were more frequent in participants with binge drinking, while those who started drinking at an older age or were married were less prone to this behavior. We failed to document statistically significant associations between anxiety levels and alcohol drinking patterns, although we documented that drinkers have lower anxiety scores but also a higher incidence of anxiety cases. A number of studies indicate that sensitivity to the anxiolytic effects of ethanol positively correlates with ethanol consumption [22, 23]. Psychological stress in patients with chronic conditions seems to correlate to higher

anxiety levels which can lead to increased alcohol consumption [24]. In our study, we did not identify any depression cases, and the association with alcohol was weak, but other studies revealed that the presence of either anxiety or depression disorder doubled the risk of the second disorder [25, 26].

Drinkers had significantly higher physical aggression scores compared to non-drinkers, a pattern that was more obvious in participants who reported heavy or binge drinking. A study which evaluated aggressive behaviors among 15-16 year old Romanian high school students, showed that binge drinking was associated with physical fighting [27]. Another study on high school and college students from two counties in Romania showed that alcohol consumption was associated with violence, delinquency and illicit drug use [12]. In a recent study, aggressive behavior in beer drinkers was associated with increased cerebral activity in the ventral striatum on functional MRI examination [28]. Also based on functional MRI, a significant relationship was reported between hyperactivity in the dorsomedial and dorsolateral prefrontal cortex and alcohol-related aggression [29]. A meta-analysis showed that 48% of victims had consumed alcohol before aggression incidents, and 37% of offenders had consumed alcohol to the point of inebriation [30]. In addition, it has also been reported that other psychoactive substances are detected next to alcohol in one-third of the offenders, which potentially can increase the risk of a crime [31]. In young adults, an association between cyber aggression and alcohol use was found in a study on 1140 participants [32].

Multiple psychosocial factors influence the alcohol-related behavior of individuals, their motivation to drink, and the evolution of drinking patterns during a life span. Numerous scientific articles debated over motivational factors responsible for unhealthy alcohol consumption and emphasized that probably the most powerful motivation implies the ability of alcohol to reduce anxiety and to induce relaxation, helping the individual to overcome stress [33, 34]. In a study on young adults, aged 18-30 years old, which included Romanian college students, the common reasons for young adults to first try alcohol were curiosity (67.8%), to be like peers (17.9%), adult influences (6.5%) and alcohol consumption occurring frequently with a group of friends (62.3%) [6]. The impact exerted by alcohol begins in adolescence and varies during life, being more pronounced in adults and older people. A review of alcohol use among university students revealed that students who

began drinking at younger ages were more likely to practice binge drinking and had higher levels of alcohol intake [35]. Alcohol-related behavior is modulated by multiple other determinants like society, entourage, family, being well-known that people who are married or live in a stable relationship drink lower amounts of alcohol and are less prone to binge or heavy drinking [36, 37]. These last aspects were also evident in our study. Often individuals are not aware of the amount of their weekly alcohol intake, especially beer being considered as a foodstuff. Correcting this misperception and awareness of the increased harmful alcohol consumption, particularly in adolescents and young people could represent a priority of Governmental strategies in fighting against pathological drinking behavior.

LIMITATION

Participants may be ashamed of their alcohol consumption, which could influence their response to the AUDIT questionnaire. As in other studies of this nature, the data may also be limited by virtue of the fact that the tools rely upon self-reports, which may be subject to biases. Another limitation is represented by the fact that the cross-sectional study design assesses simultaneously the exposure and the outcome, in general losing the temporal relationship. Despite the limitations mentioned above, the prevalence obtained in this study is likely to closely represent the alcohol intake pattern of consumption among educated young adults from western Romania.

In conclusion, in young Romanian adults, alcohol not only reaches a high incidence but also follows worrying patterns of consumption i.e. binge and heavy drinking, which are frequently accompanied by physical and verbal aggression, anger and hostility. In most cases, individuals are not aware of any danger associated with alcohol consumption, mainly because it is considered normal for socializing. These patterns of consumption can have a tremendous impact on health and society in the long run, therefore urgent preventive strategies to increase responsibility and awareness are needed. In Romania, there is only a weak representation of Alcoholics Anonymous, and these strategies should be developed by joint actions of the Ministries of Health, Education and of volunteer non-governmental organizations. Drinkers have in common social and demographic features that could be used to target public health interventions.

Conflict of interest

The authors declare that they have no conflict of interest.

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