Demographic and social correlates of tobacco, alcohol and cannabis use among 15–16-year-old students in Albania: Results of the ESPAD survey

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ABSTRACT

AIMS – Our aim was to assess the demographic and social factors associated with lifetime use of tobacco, alcohol and cannabis among school students aged 15–16 in Albania in order to make information and knowledge available for health promotion specialists working on substance use prevention. **DESIGN** – This cross-sectional study was conducted in March–May 2011 in the framework of the European School Survey Project on Alcohol and Other Drugs (ESPAD). In total, 3189 students born in 1995 participated in the survey. The standardised ESPAD questionnaire was used to collect data about substance use. **RESULTS** – Our multivariable adjustment analysis showed that being a male and having easy access to cigarettes were the only universal factors significantly increasing the likelihood of ever using tobacco, alcohol or cannabis. Own smoking was strongly and significantly associated with alcohol and cannabis use. The associations of own substance use with peer substance consumption were weak to moderate. **CONCLUSIONS** – Own smoking seems to be the most important single independent risk factor which strongly and significantly predicted alcohol and cannabis use among Albanian school students. Policy makers need to strengthen the rule of law whereas health promotion professionals should firmly address smoking in adolescence through target interventions.

KEYWORDS – Albania, alcohol, adolescents, cannabis, ESPAD, tobacco

Introduction

Alcohol, tobacco and cannabis, the best-known amongst psychoactive substances, are used virtually in all countries of the world (WHO, 2011; UNODC, 2013). The prevalence of psychoactive substance use generally varies with age, peaking among young adults and then declining substantially (Falk, Yi & Hiller-Sturmhöfel, 2006; Moore et al., 2005; Pomerleau et al., 2005; Stinson, Ruan, Pickering, & Grant, 2006). Even younger people than this are not strangers to tobacco, alcohol and cannabis: considerably high proportions of adolescents have used them at least on one occasion during their lifetime (Bauman & Phongsavan, 1999; Roy, Wibberley,

& Lamb, 2005; Leatherdale, Hammond, & Ahmed, 2008; O'Loughlin, Karp, Koulis, Paradis, & Difranza, 2009; Danielsson, Wennberg, Hibell, & Romelsjö, 2012).

Substance use has been linked to a number of demographic and social characteristics of individuals. For example, the prevalence of alcohol, tobacco and cannabis use is argued to be higher among males (Bauman & Phongsavan, 1999; Hibell et al., 2012; SAMHSA, 2012), while reversed gender trends have also been documented. For example, the 2011 European School Survey Project on Alcohol and other Drugs (ESPAD) studying substance use among 15–16-year-old students found a higher lifetime prevalence among females of tobacco, alcohol and cannabis use in 8, 8 and 2 European countries, respectively, out of 36 participating nations (Hibell et al., 2012). In any case, the gender differences in the prevalence of alcohol and tobacco are small, especially in developed countries (Bloomfield, Gmel, Neve, & Mustonen, 2001; Hibell et al., 2012).

Other studies have reported that substance use could be linked with school attainment (King, Meehan, Trim, & Chassin, 2006; Chatterji, 2006), the adolescents' socio-economic status (Hanson & Chen, 2007a), studying in schools of capital cities (Bandason & Rusakaniko, 2010) and peers who use psychoactive substances (Ennett et al., 2006).

It is important to study substance use epidemiology because it is associated with important health and economic consequences for both individuals and society as a whole. The harmful health effects of tobacco and excessive alcohol use are well-documented beyond doubt: tobacco has been linked to lung cancer and cancers of upper digestive tract, stomach, pancreas, kidney and cervix uteri as well as coronary and heart disease and myocardial infarction (CDC, 2004; Prescott, Hippe, Schnohr, Hein, & Vestbo, 1998) whereas excess use of alcohol is linked with higher risk of mortality and cancers of different types (Gronbaek et al., 1998; Hart, Smith, Hole, & Hawthorne, 1999). Alcohol also contributes to a series of social harms, ranging from violence (Room & Rossow, 2001) to divorce (Leonard & Rothbard, 1999) and child abuse (Barber & Gilbertson, 1999). In addition to the health effects, alcohol and tobacco may jeopardise the financing of national health systems (Single, Robson, Xie, & Rehm, 1998; Fenoglio, Parel, & Kopp, 2003), and the treatment of alcohol-related problems and consequences may increase the costs of social welfare and criminal justice systems (Weisner, 2001). Cannabis is also associated with increased costs to society (Rehm et al., 2007).

There is evidence that tobacco, alcohol and cannabis are interconnected in the sense that, in certain individuals, they may stimulate initiation and further mutual use as well as the use of other illegal drugs. For instance, it is suggested that the initiation of cannabis use is usually preceded by the use of alcohol and tobacco (Valenzuela & Fernández, 2011), whereas cannabis is often regarded as a pathway to using heavier illegal substances (Kenkel, Mathios, & Pacula, 2001; Hall & Lynskey, 2005; Fergusson, Boden, & Horwood 2006; 2008; Valenzuela & Fernández, 2011). Furthermore, the earlier the use of a psychoactive substance is initiated the higher the likelihood of continued use and escalation of use toward other illicit drugs later in life (Valenzuela & Fernández, 2011).

It is therefore evident that studying the factors associated with substance use in adolescence may give us insights into targeted interventions which aim to prevent or reduce the use of psychoactive substances among youngsters.

In Albania, adolescent substance use occurs in the context of robust legislation, which is frequently not enforced. Specific laws limit the purchasing and distribution of tobacco and alcohol for people under 18 years of age, and the distribution of cannabis is considered an illegal activity (Ministry of Health, 2014). A wide range of activities, including high-level meetings, discussions, school campaigns and media coverage, seek to enforce the law and discourage people from using psychoactive substances (Ministry of Health, 2014). These efforts have had only limited success.

In addition, there is little scientific knowledge in Albania about correlates of substance use among school adolescents. A limited number of surveys have tackled smoking and alcohol prevalence in adult population in Albania (Vakeflliu, Argjiri, Peposhi, Agron, & Melani, 2002; Shapo, Gilmore, Coker, McKee, & Shapo, 2003; Bozicevic, Gilmore, & Oreskovic, 2004; Ross, Zaloshnja, Levy, & Tole, 2008; Burazeri & Kark, 2010; ADHS, 2009), but they have excluded adolescents and have often not reported at all about cannabis use. Moreover, reports among adolescent populations from studies such as the Youth Risky Behaviour Survey among students aged 15–19 (YRBS, 2009), the Global Youth Tobacco Survey among 13–15-year olds (GYTS, 2004) and the European School Survey Project on Alcohol and other Drugs among 15–16-year-old students (ESPAD, 2011) have given only prevalence rates of substance use according to basic demographic variables without controlling for potential confounding effects.

In this context, our aim was to assess the factors associated with tobacco, alcohol and cannabis use among school adolescents in Albania in order to enable health promotion specialists to better target and tailor potential prevention activities in this South-Eastern European country.

Methodology

A cross-sectional survey was conducted in Albania during March–May 2011 within the framework of the ESPAD survey.

Study population and sampling

The ESPAD survey targets school children turning 16 during the year of data collection or, otherwise, if we refer to the 2011 data collection wave, school children born in 1995 (Hibell et al., 2012). In Albania, this cohort of children is found in two different school systems: in the 9th grade (final year) of secondary school and in the first year of high school (10th graders). This is because Albanian children start school at either 6 or 7 years of age (parental choice). Of the 72,081 children born in 1995 (Institute of Statistics), only 45,949 were within the school system in 2011 (Ministry of Education and Sciences, 2010). Of these, 44,817 were covered by the sampling frame, but there was no information on the remaining 26,132 children. Some of them may have moved abroad, died or dropped out from school. The sampling frame thus represents 97.5% of the 1995 birth cohort found in the school system in Albania at the time of the survey.

The sample size requirements and the sampling strategy have been described

elsewhere (ESPAD, 2011). In short, a three-stage stratified random sample of classes was employed. Of the 7230 students expected to be interviewed, only 6377 were present in the selected classes at the time of the survey, thus yielding a response rate of 88.2%. Of the interviewed students, 3189 belonged to the 1995 birth cohort, which meets the ESPAD sample size requirement. Our report refers to these 3189 students born in 1995.

All the selected schools and classes agreed to participate.

Data collection
The translated version of the ESPAD questionnaire was used to collect data on substance use among school adolescents in Albania.

The data collection process occurred during 16 March–19 May 2011, following much preliminary work in order to gain access to the selected schools. The questionnaires were distributed to the children of selected classes by experts of the Institute of Public Health (IPH) in Tirana, ensuring the fulfilment of general requirements for completion of self-administered questionnaires as suggested by the ESPAD methodology. For this purpose, the attendance of the IPH expert during class survey was mandatory but the attendance of the teacher was optional: if pupils felt more comfortable to fill in the questionnaire without the presence of the teacher, then he/she was kindly asked to leave for the entire duration of the interview. When the teacher stayed in class, the IPH experts were instructed to gently instruct him/her not to walk around the classroom.

Children were encouraged to freely express their opinion and, in order to ensure anonymity, the completed questionnaires were wrapped in individual envelopes.

Measures
The lifetime prevalence of tobacco and cannabis use was assessed through the questions: "*On how many occasions (if any) during your life have you smoked?*" and "*On how many occasions (if any) during your lifetime have you used marihuana or hashish (cannabis)?*" with those reporting 0 times classified as "*never users*" and those reporting any occasion classified as "*lifetime users*". The lifetime prevalence of alcohol use was assessed through the question: "*When (if it happened) did you drink beer, wine or spirits (at least one glass) for the first time?*" with those reporting "*never*" classified as "*never drinkers*".

We also acquired information about social characteristics of respondents (friends who smoke, friends who drink or use cannabis and the degree of difficulty of finding psychoactive substances) in order to describe the sample and to assess various associations. Information about friends who use psychoactive substances was dichotomised into "*no friends who smoke, no friends who drink or no friends who use cannabis* vs. *having friends who smoke, drink or use cannabis*". The information about the degree of difficulty of finding substances was categorised into "*impossible/very difficult/difficult* vs. *easy/very easy* vs. *don't know*". Information about school attainment was explored by the question "*Which of the following describes better your average grade at the end of last semester?*". For our purposes, this information was categorised into "*majority of grades 9s–10s; majority 6–8s; majority of grades 4s–5s*".

Lastly, we also collected information about basic demographic indicators such as school type (*public* vs. *private*), school location (*urban* vs. *rural*), school system (*secondary* vs. *high school*) and geographic location (*Tirana* vs. *all other regions*).

Statistical analysis
Absolute numbers and their respective percentages were reported to describe the baseline characteristics of the survey respondents. Chi square test was used to check for statistically significant differences in the distribution of proportions of variables.

Binary logistic regression was used to assess the association of lifetime tobacco, alcohol and cannabis use (dichotomised into *lifetime use* vs. *never use*) with demographic and social characteristics of respondents. In the first step, unadjusted or crude odds ratios (ORs) of lifetime substance use and their respective 95% confidence intervals (95% CIs) were calculated and reported. In the second step, multivariable adjusted ORs of substance use and their respective 95% CIs and P-values were calculated. All the logistic models were checked to comply with the Hosmer-Lemeshow goodness-of-fit assumptions. All models satisfied these assumptions.

The Statistical Package for Social Sciences (SPSS), version 15.0, was used for the statistical analyses.

Results
In total, 3189 students participated in the ESPAD survey in Albania in 2011. More than half of the participants (55%) were females. There were no significant differences in the distribution of gender, school system and type of school by geographic location of school (Tirana versus all other regions) (P>0.05) (Table 1).

The prevalence of lifetime tobacco, alcohol and cannabis use was 40.8%, 80.6% and 4.4%, respectively. The proportion of lifetime tobacco and alcohol users was significantly higher in Tirana than in the other regions, whereas no regional difference was evident on the prevalence of lifetime cannabis use (Table 1). Significantly more students in Tirana than in other regions found it easy or very easy to get cigarettes. Also, students in Tirana schools reported significantly more friends who smoke, drink or use cannabis compared to students from other regions (Table 1).

The prevalence of lifetime tobacco, alcohol and cannabis use according to demographic and social characteristics of participants is shown in Table 2. In general, the lifetime prevalence of tobacco, alcohol and cannabis use was significantly higher among males, urban schools, students who had friends who smoke, drink or use cannabis, those who find it easy to get cigarettes or alcohol and among students with worse average grades.

The univariate analysis of the factors associated with substance use is presented in Table 3. All the independent variables in the table significantly increased the likelihood of lifetime tobacco use. Conversely, some variables such as geographic location and type of school were not significantly associated with lifetime and/or cannabis use (Table 3).

In multivariable adjusted analysis, the factors more strongly correlated with significantly increased likelihood of lifetime tobacco use were being a male (OR=2.6), having friends who smoke (OR=2.3), finding cigarettes easily/very easily (OR=2.1),

Table 1. Baseline characteristics and prevalence of lifetime tobacco, alcohol and cannabis use among 15–16-year-old students, Albania 2011

Variable	Tirana	All other regions	Total
Total	*854 (26.8)*	*2335 (73.2)*	*3189 (100.0)*
Gender [A]			
Boys	391 (45.8) *	1045 (44.8)	1436 (45.0)
Girls	463 (54.2)	1290 (55.2)	1753 (55.0)
Type of school [A]			
Public	764 (89.5)	2069 (88.6)	2833 (88.8)
Private	90 (10.5)	266 (11.4)	356 (11.2)
School location [B]			
Urban	717 (84.0)	1567 (67.1)	2284 (71.6)
Rural	137 (16.0)	768 (32.9)	905 (28.4)
School system [A]			
Secondary school	347 (40.6)	955 (40.9)	1302 (40.8)
High school	507 (59.4)	1380 (59.1)	1887 (59.2)
Average grade [B]			
Majority 9s–10s	374 (44.1)	737 (31.9)	1111 (35.2)
Majority 6s–8s	444 (52.4)	1410 (61.1)	1854 (58.7)
Majority 4s–5s	30 (3.5)	161 (7.0)	191 (6.1)
Lifetime smoking [B]			
No	446 (52.5)	1432 (61.6)	1878 (59.2)
Yes	404 (47.5)	891 (38.4)	1295 (40.8)
Lifetime drinking [A]			
No	140 (17.5)	445 (20.1)	585 (19.4)
Yes	661 (82.5)	1774 (79.9)	2435 (80.6)
Lifetime cannabis use [A]			
No	799 (94.6)	2210 (96.0)	3009 (95.6)
Yes	46 (5.4)	93 (4.0)	139 (4.4)
Difficult to get cigarettes [B]			
Impossible/Very difficult/difficult	345 (40.8)	1143 (49.7)	1488 (47.3)
Easy/very easy	308 (36.4)	524 (22.8)	832 (26.5)
Don't know	192 (22.7)	633 (27.5)	825 (26.2)
Difficult to get alcohol [†][B]			
Impossible/Very difficult/difficult	226 (27.0)	821 (36.2)	1047 (33.7)
Easy/very easy	474 (56.6)	992 (43.7)	1466 (47.2)
Don't know	138 (16.5)	455 (20.1)	593 (19.1)
Friends who smoke (Yes) [B]	733 (86.3)	1789 (77.3)	2522 (79.8)
Friends who drink (Yes) [B]	716 (85.6)	1710 (74.5)	2426 (77.5)
Friends who use cannabis (Yes) [B]	384 (45.6)	670 (29.2)	1054 (33.6)

* Absolute number of students who use the given substance and column percentages (in parenthesis). Discrepancies in the total numbers are due to missing information.
[†] Refers to degree of difficulty in getting any type of alcoholic beverages: beer, wine, spirits.
[A] P>0.05 according to chi square test.
[B] P<0.01 according to chi square test.

having a low school attainment (OR=3.2) and lifetime use of alcohol and cannabis (OR=3.7 and OR=6.3). Upon multivariable adjustment, lifetime tobacco use was not significantly associated with school sys-

tem, school location and having drinking friends (Table 4).

The picture is different when it comes to lifetime use of alcohol. Upon multivariable adjustment, some factors associ-

Table 2. Prevalence of lifetime tobacco, alcohol and cannabis use by demographic and social characteristics among students 15–16 years old, Albania 2011.

Variable	Lifetime smoking		Lifetime alcohol		Lifetime cannabis	
	No	Yes	No	Yes	No	Yes
Gender	A		A		A	
Boys	639 (*44.8*) *	787 (*55.2*)	176 (*13.2*)	1160 (*86.8*)	1290 (*91.3*)	123 (*8.7*)
Girls	1239 (*70.9*)	508 (*29.1*)	409 (*24.3*)	1275 (*75.7*)	1719 (*99.1*)	16 (*0.9*)
Geographic location	A		B		B	
Tirana	446 (*52.5*)	404 (*47.5*)	140 (*17.5*)	661 (*82.5*)	799 (*94.6*)	46 (*5.4*)
All other regions	1432 (*61.6*)	891 (*38.4*)	445 (*20.1*)	1774 (*79.9*)	2210 (*96.0*)	93 (*4.0*)
Type of school	A		B		B	
Public	1704 (*60.5*)	1114 (*39.5*)	532 (*19.8*)	2155 (*80.2*)	2678 (*95.8*)	117 (*4.2*)
Private	174 (*49.0*)	181 (*51.0*)	53 (*15.9*)	280 (*84.1*)	331 (*93.8*)	22 (*6.2*)
School location	A		A		A	
Urban	1276 (*56.1*)	1000 (*43.9*)	358 (*16.6*)	1801 (*83.4*)	2138 (*94.7*)	119 (*5.3*)
Rural	602 (*67.1*)	295 (*32.9*)	227 (*26.4*)	634 (*73.6*)	871 (*97.8*)	20 (*2.2*)
School system	A		A		B	
Secondary school	821 (*63.6*)	469 (*36.4*)	288 (*23.5*)	939 (*76.5*)	1237 (*96.4*)	46 (*3.6*)
High school	1057 (*56.1*)	826 (*43.9*)	297 (*16.6*)	1496 (*83.4*)	1772 (*95.0*)	93 (*5.0*)
Average grade	A		B		A	
Majority 9s–10s	725 (*65.4*)	384 (*34.6*)	225 (*21.0*)	848 (*79.0*)	1079 (*97.4*)	29 (*2.6*)
Majority 6s–8s	1055 (*57.2*)	791 (*42.8*)	313 (*17.9*)	1436 (*82.1*)	1738 (*95.2*)	87 (*4.8*)
Majority 4s–5s	76 (*40.2*)	113 (*59.8*)	37 (*22.0*)	131 (*78.0*)	162 (*87.6*)	23 (*12.4*)
Friends who smoke	A		A		A	
No	509 (*80.3*)	125 (*19.7*)	213 (*34.3*)	408 (*65.7*)	622 (*98.7*)	8 (*1.3*)
Yes	1354 (*53.9*)	1159 (*46.1*)	362 (*15.2*)	2014 (*84.8*)	2364 (*94.8*)	130 (*5.2*)
Friends who drink	A		A		A	
No	515 (*73.7*)	184 (*26.3*)	225 (*33.2*)	453 (*66.8*)	677 (*97.6*)	17 (*2.4*)
Yes	1332 (*55.1*)	1087 (*44.9*)	343 (*15.0*)	1950 (*85.0*)	2279 (*95.0*)	121 (*5.0*)
Friends who use cannabis	A		A		A	
No	1369 (*65.9*)	708 (*34.1*)	448 (*22.5*)	1547 (*77.5*)	2034 (*98.3*)	35 (*1.7*)
Yes	482 (*45.9*)	568 (*54.1*)	127 (*12.9*)	860 (*87.1*)	938 (*90.3*)	101 (*9.7*)
Difficult to get cigarettes	A		A		A	
Impossible	1011 (*68.2*)	472 (*31.8*)	323 (*22.7*)	1099 (*77.3*)	1441 (*97.8*)	33 (*2.2*)
Easy/very easy	308 (*37.1*)	522 (*62.9*)	80 (*10.2*)	703 (*89.8*)	733 (*89.3*)	88 (*10.7*)
Don't know	525 (*64.0*)	295 (*36.0*)	161 (*20.8*)	612 (*79.2*)	794 (*97.8*)	18 (*2.2*)
Difficult to get alcohol †	A		A		A	
Impossible	771 (*74.1*)	270 (*25.9*)	361 (*35.6*)	654 (*64.4*)	1027 (*98.9*)	11 (*1.1*)
Easy/very easy	672 (*45.9*)	792 (*54.1*)	79 (*5.8*)	1293 (*94.2*)	1337 (*92.5*)	108 (*7.5*)
Don't know	370 (*63.0*)	217 (*37.0*)	124 (*22.0*)	440 (*78.0*)	569 (*96.9*)	18 (*3.1*)

* Number of individuals and row percentages (in parenthesis). Discrepancies in the total numbers are due to missing information.
† Refers to degree of difficulty in getting any type of alcoholic beverages: beer, wine, spirits.
A P-value <0.01 according to chi square test.
B P-value >0.05 according to chi square test.

ated with significantly higher likelihood of lifetime alcohol use were being a male (OR=1.8), finding alcohol easily/very eas-ily (OR=7.0) and lifetime tobacco use (OR=3.7) (Table 4).

Factors associated with significantly

Table 3. Association of lifetime use of tobacco, alcohol and cannabis with demographic and social variables among students 15–16 years old, Albania 2011; unadjusted odds ratios (ORs) from binary logistic regression

Variable	Unadjusted (univariate) models[*]					
	Lifetime smoking		Lifetime alcohol		Lifetime cannabis	
	OR (95%CI) [†]	P-value	OR (95%CI)	P-value	OR (95%CI)	P-value
Gender Boy	3.00 (2.59-3.48)	**<0.001**	2.11 (1.74-2.57)	<0.001	10.24 (6.1-17.3)	**<0.001**
Geographic location Tirana	1.46 (1.24-1.71)	<0.001	1.18 (0.96-1.46)	0.114	1.37 (0.95-1.97)	0.090
Type of school Private	1.59 (1.28-1.99)	<0.001	1.30 (0.96-1.78)	0.092	1.52 (0.95-2.43)	0.080
School location Urban	1.60 (1.36-1.88)	<0.001	1.80 (1.49-2.18)	<0.001	2.42 (1.50-3.92)	**<0.001**
School system High school	1.37 (1.18-1.58)	<0.001	1.29 (1.29-1.85)	<0.001	1.41 (0.98-2.02)	0.061
Average grade [‡] Majority 4s or 5s	2.81 (2.05-3.85)	<0.001	0.94 (0.63-1.39)	0.755	5.28 (2.98-9.36)	<0.001
Friends who smoke Yes	3.48 (2.82-4.30)	<0.001	2.90 (2.38-3.55)	<0.001	4.28 (2.08-8.78)	<0.001
Friends who drink Yes	2.28 (1.89-2.75)	<0.001	2.82 (2.32-3.44)	<0.001	2.11 (1.26-3.54)	0.004
Friends who use cannabis Yes	2.28 (1.96-2.65)	<0.001	1.96 (1.58-2.43)	<0.001	6.26 (4.23-9.26)	<0.001
Difficult to get cigarettes Easy/very easy	3.63 (3.04-4.34)	<0.001	2.58 (1.99-3.36)	<0.001	5.24 (3.48-7.90)	<0.001
Difficult to get alcohol Easy/very easy	3.37 (2.83-4.00)	<0.001	9.03 (6.96-11.7)	<0.001	7.54 (4.03-14.1)	<0.001
Lifetime tobacco use Yes	-	**-**	6.15 (4.74-7.99)	<0.001	20.62 (11-39.4)	<0.001
Lifetime alcohol use Yes	6.15 (4.74-7.98)	**<0.001**	-	**-**	7.87 (2.89-21.4)	<0.001
Lifetime cannabis use Yes	20.62 (11-39.4)	<0.001	7.87 (2.89-21.4)	**<0.001**	-	**-**

[*] These models represent the unadjusted (crude) odds ratios of substance use by selected dependent variables.
[†] Odds ratios (OR): lifetime substance use vs. never substance use and 95% confidence interval (CI) (in parenthesis).
[‡] Odds ratios (OR) of substance use of among students with majority of grades 4s or 5s versus students with majority of grades 9s or 10s.

higher likelihood of lifetime cannabis use were being a male (OR=6.5), having friends who smoke or use cannabis (OR=2.7 and OR=4.4, respectively), having a low school attainment (OR=2.9), finding alcohol easily/very easily (OR=2.8) and lifetime tobacco use (OR=6.3) (Table 4).

Discussion

This is the first study using the standardised ESPAD questionnaire to explore in detail the demographic and social factors associated with lifetime use of legal and illegal psychoactive substances among school adolescents in Albania. Our results suggest that, after controlling for various independent variables, the only universal

Table 4. Association of lifetime use of tobacco, alcohol and cannabis with demographic and social variables among students 15–16 years old, Albania 2011; multivariable-adjusted odds ratios (ORs) from binary logistic regression

Variable	Multivariable-adjusted models[*]					
	Lifetime smoking		Lifetime alcohol		Lifetime cannabis	
	OR (95%CI)[†]	P-value	OR (95%CI)	P-value	OR (95%CI)	P-value
Gender Boy	2.58 (2.15-3.10)	**<0.001**	1.83 (1.44-2.34)	**<0.001**	6.46 (3.62-11.5)	**<0.001**
Geographic location Tirana	1.23 (1.01-1.59)	**0.044**	0.87 (0.67-1.12)	0.273	1.00 (0.65-1.54)	0.993
Type of school Private	1.34 (1.01-1.76)	**0.041**	0.87 (0.61-1.25)	0.451	0.86 (0.48-1.56)	0.624
School location Urban	1.08 (0.88-1.34)	0.448	1.22 (0.96-1.56)	0.102	1.38 (0.78-2.45)	0.273
School system High school	1.17 (0.97-1.41)	0.088	1.14 (0.91-1.42)	0.257	1.19 (0.77-1.83)	0.446
Average grade [‡] Majority 4s or 5s	3.22 (2.09-4.93)	**<0.001**	1.38 (1.09-1.74)	**0.007**	2.94 (1.44-5.99)	**0.003**
Friends who smoke Yes	2.28 (1.70-3.07)	**<0.001**	1.50 (1.11-2.02)	**0.008**	2.72 (0.95-7.81)	0.062
Friends who drink Yes	1.13 (0.86-1.49)	0.378	1.50 (1.11-2.01)	**0.008**	1.93 (0.89-4.16)	0.092
Friends who use cannabis Yes	1.37 (1.13-1.67)	**0.002**	0.93 (0.70-1.22)	0.595	4.36 (2.68-7.12)	**<0.001**
Difficult to get cigarettes Easy/very easy	2.12 (1.69-2.66)	**<0.001**	0.63 (0.44-0.89)	**0.009**	1.88 (1.14-3.10)	**0.013**
Difficult to get alcohol Easy/very easy	1.42 (1.14-1.78)	**0.002**	7.03 (5.13-9.62)	**<0.001**	2.78 (1.33-5.84)	**0.007**
Lifetime tobacco use Yes	-	-	3.74 (2.78-5.04)	**<0.001**	6.34 (3.21-12.6)	**<0.001**
Lifetime alcohol use Yes	3.71 (2.76-4.99)	**<0.001**	-	-	1.42 (0.48-4.21)	0.529
Lifetime cannabis use Yes	6.28 (3.16-12.5)	**<0.001**	1.51 (0.52-4.38)	0.450	-	-

[*] These models were simultaneously adjusted for all the factors presented in the table.
[†] Odds ratios (OR): lifetime substance use vs. never substance use and 95% confidence interval (CI) (in parenthesis).
[‡] Odds ratios (OR) of substance use of among students with majority of grades 4s or 5s versus students with majority of grades 9s or 10s.

factors which significantly increased the likelihood of ever using either tobacco, alcohol or cannabis were being a male, low school attainment and easily getting cigarettes and alcohol. Having friends who smoke significantly increased the likelihood of ever smoking and drinking whereas having friends who use cannabis significantly increased the likelihood of ever tobacco and cannabis use. In this sample of school adolescents, lifetime tobacco use was a significant strong risk factor for both alcohol and cannabis use. Furthermore, we demonstrated that school system (secondary vs. high) and location (urban vs. rural) were not significantly associated with any substance use among this cohort of students, while studying in

the capital city or private schools slightly but significantly increased the likelihood of ever smoking.

Our findings are mostly in concordance with those reported in the international literature. The prevalence of lifetime tobacco, alcohol and cannabis use among 15–16-year-old students in Albania is slightly lower compared to other countries in the region such as Bosnia and Herzegovina (Republika Srpska), Montenegro and Serbia (except for tobacco prevalence which was lower in Montenegro) with boys exhibiting higher prevalence in all cases. However, the gender difference regarding lifetime prevalence of substance use in Albania is substantially larger than in other countries of this region. For example, the lifetime prevalence of tobacco, alcohol and cannabis use was 26, 20 and 8 percentage points higher among boys than girls in Albania, respectively, compared to gender differences of 6, 10 and 5 percentage points, respectively, in Montenegro (Hibell et al., 2012). When compared to the more developed European countries (such as France, Germany or Italy), the same pattern is noticed but the cross-country differences are even bigger: the overall prevalence of substance use among Albanian school adolescents is much lower than in most developed countries for any of the substances under study, but the gender differences are larger in Albania except for cannabis (Hibell et al., 2012). In addition, in some European countries the prevalence of tobacco, alcohol and cannabis use is higher among girls (Hibell et al., 2012).

The particularly large gender differences in the prevalence of substance use may indicate that Albanian society is still a traditional one where more males than women are involved in substance use. This pattern also seems to apply to youngsters. However, this is changing: the increasing trend in the prevalence of lifetime substance use among adolescents in Albania is accompanied by narrowing gender differences, when more females become involved with the use of psychoactive substances. Studies suggest that the prevalence of substance use among school girls is increasing faster than the increase noticed for boys. For instance, the 2004 GYTS survey reported a 17% gender difference in the prevalence of lifetime smoking (41% in boys and 24% in girls) (GYTS, 2004). In 2005 the prevalence of ever tobacco use among students was 64% in boys and 47% in girls (17% gender difference), but in 2009 the difference had narrowed to 15% (68% in boys vs. 53% in girls). Regarding ever alcohol use, the gender difference was 25% in 2005 (68% in boys vs. 43% in girls), whereas in 2009 it had already narrowed down to 14% (79% in boys vs. 65% in girls) (YRBS, 2009). The narrowing of the alcohol gender gap is also evident in other countries, as Kuntsche et al. (2011) have suggested in a survey of 23 European and North American countries, with drunkenness gender differences reduced considerably during the eight-year study period. Such findings suggest that the cultural and gender convergence is responsible for the unification of drunkenness frequency between genders (Kuntsche et al., 2011). These dynamics imply that we may be witnessing a "westernization" (Heath, 2004) of the Albanian society regarding the use of psychoactive substances.

Very little is known about urban–rural differences in the prevalence of substance use among school adolescents in Albania.

A survey has suggested the lifetime prevalence of psychoactive substances to be higher among students in urban areas and the capital city (YRBS, 2009; ARHS, 2002; ESPAD, 2011). The present survey clearly demonstrates that school location (either urban vs. rural or Tirana vs. other regions) and school type (public vs. private) are not significant correlates of substance use among school adolescents in Albania except for lifetime smoking which shows weak associations with borderline significance with Tirana region and private school students (Table 4).

The association between substance use and school location and type varies from country to country. A study did not find significant associations between smoking by school type (public vs. private) (Bandason & Rusakaniko, 2010). The majority of studies included in a literature review suggested that the prevalence of smoking was higher among adolescents of low socio-economic status whereas the rest of studies showed mixed results (Hanson & Chen, 2007b). Our survey adds to that body of literature suggesting no significant association between school location (urban vs. rural) and smoking during adolescence. On the other hand, studying in private schools was significantly associated only to lifetime tobacco use in our survey. The majority of private schools in Albania are found mainly in Tirana, and the students in these schools are invariably well off. In this regard, the positive association between smoking and private schools (signifying higher SES) is supported by the international literature (Hanson & Chen, 2007b). Also, the lack of significant associations between school location and type with adolescent alcohol and cannabis use is in accordance with previous research (Hanson & Chen, 2007b).

The other significant universal risk factor for substance use among adolescents which emerged in our survey after controlling for a number of confounding effects was tobacco smoking, which highly increased the likelihood of ever alcohol and cannabis use four- and sixfold, respectively, whereas alcohol and cannabis use were not significantly associated. Our results are compatible with those reported in the international literature, which suggests that tobacco is a major independent risk factor for other legal and illegal substance initiation and use through the "gateway" theory (Pierce, Naquin, & Gilpin, 1991; Torabi, Bailey, & Majd-Jabbari, 1993; Lindsay & Rainey, 1997; Biederman et al., 2006; Valenzuela & Fernández, 2011). Also, cannabis use could serve as a gateway toward using other heavier illicit drugs (Fergusson, Boden, & Horwood 2006; Valenzuela & Fernández, 2011). Different studies suggest that the overwhelming majority of substance using adolescents start with tobacco, followed by alcohol consumption, cannabis and potentially escalating toward other illicit drugs (Fergusson et al., 2006; Valenzuela & Fernández, 2011). However, other reports support the theory that alcohol is the gateway drug (Welte & Barnes, 1985; Kirby & Barry, 2012). In this regard, our results are more supportive of the tobacco gateway theory among Albanian adolescents.

The associations between peers who use substances with own substance use was present in our survey even though they were not strong, except for cannabis use. Our findings suggest that having smoking friends increased one's likeli-

hood of using tobacco or alcohol by 2.3 and 1.5 times, respectively, while having cannabis using friends was significantly associated with lifetime tobacco and cannabis use. Our results in general support the well-established international findings regarding substance using among adolescents and their peers (Ennett et al., 2006). However, having alcohol using peers did not appear to be associated with one's substance use in our sample, except for alcohol, a finding which finds some support in the international literature (Andrews, Tildesley, Hops, & Li, 2002). The inconsistent findings between peer and adolescent substance use in our survey, especially as regards peer alcohol use, may be an indication of complex and specific peer contexts, networks and relationships (Ennett et al., 2006) among Albanian adolescents. This calls for more research in the future.

The negative association between school attainment with tobacco and cannabis use mimics similar findings from the literature which suggest that young students with below average results are significantly more likely to have ever used tobacco, alcohol and cannabis compared to students doing better than average (Leatherdale et al., 2008). Also, substance use is negatively associated with years of school completed (Engberg & Morral, 2006; Chatterji, 2006).

Another independent risk factor for psychoactive substance use among Albanian adolescents is the availability of alcohol and tobacco. Students who find it easy to get cigarettes or alcohol are significantly more likely to have ever used tobacco, alcohol or cannabis. The high availability and easy access of youngsters to psychoactive substance is a common phenomenon (Ogilvie, Gruer, & Haw, 2005). Al-

though Albania has an anti-tobacco law and restrictions on underage use of alcohol which prohibit the sales of such substances to those under 18, adolescents find ways of gaining access all the same. This is partly because the state structures are unable to monitor the implementation of legislation. There is therefore an urgent need to ensure the rule of law in order to reduce adolescents' access to these substances – even though their access to psychoactive substances is rather complex, operating on a large scale through peers and relatives. Such "social availability" (DiFranza & Coleman, 2001; Swahn, Hammig, & Ikeda, 2002; Ogilvie et al., 2005) hinders the control of youth access to licit and illicit drugs. Knowledge and information about the social availability of tobacco, alcohol and cannabis in Albania is scant and merits further investigation.

Study limitations

Our study has several limitations. The cross-sectional design does not permit us to draw conclusions about the temporality of events. The interpretation of results therefore warrants caution. We relied on self-reported information from participating students, which does not allow us to rule out the presence of reporting bias especially regarding sensitive issues such as illegal drug use. Therefore, it is very likely that the prevalence of illegal substance use is underestimated in our survey. Moreover, we collected information about the students present at selected classes on the day of the survey. This leaves out students who were absent on the day. If the missing students should be different with regard to substance use compared to those present then this aspect could have had an

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effect on our estimation of prevalence of tobacco, alcohol and cannabis use. However, we think that there is no good reason to believe that this is the case. Also, we estimated the lifetime alcohol prevalence using a proxy question which asked about the age when respondents had first consumed a glass of beer, wine or spirits and not the original question "*On how many occasions (if any) during your life have you drunk alcohol?*" because the answers proved problematic. Perhaps different results could have been obtained if we had used the original question. However, we do believe that the proxy question used in our case yields similar information for distinguishing between never and ever substance users.

The strong points of the present survey are the large sample size, the sampling procedure and the coverage of around 250 schools in all parts of the country. This enables a generalisation of findings to the entire 1995 cohort in the Albanian school system. Furthermore, we used the standardised ESPAD questionnaire which allows fair comparisons of substance use with other European countries. Lastly, this is the first time that a scientific paper, controlling for a fairly wide range of demographic and social confounding factors, reports on factors associated with substance use among Albanian adolescents.

Conclusions

Our study provides new evidence regarding the demographic and social factors associated with the use of psychoactive substances among school adolescents in Albania through using a multivariable adjusting approach. We have demonstrated that the prevalence of lifetime tobacco, al-

cohol and cannabis use among 15–16-year-old students in Albania is comparable to that of neighbouring countries but lower than in most Western European countries. However, the prevalence of substance use is on the rise. Males predominate in substance use but the gender gap is narrowing. This suggests that interesting developments are taking place in the Albanian society. Own smoking emerged as the most important single independent risk factor strongly and significantly correlated with alcohol and cannabis use. The fact that tobacco products are almost freely available to anyone in Albania may facilitate access to and use of such products, leading to increased exposure to smoking peers and ultimately to increased prevalence of tobacco use among Albanian adolescents. Therefore, our main conclusion is that although substance use among adolescents is associated with various demographic and social factors, smoking in young ages may represent the "real" threat and should be the primary target of health behaviour promotion interventions in secondary and high school students of Albania.

Practical implications
The finding that smoking might be the main determinant of substance use among Albanian adolescents leads to important implications for both policy makers and health promotion professionals. With regard to policy implications, evidence suggests that tobacco consumption is sensitive to increasing prices (Ranson & Jha, 2002; Ogilvie et al., 2005; Levy, Ross, Zaloshnja, Shuperka, & Rusta, 2008). In Albania, the price of cigarettes is relatively not high, making tobacco affordable to youngsters. Pricing, together with ensuring the rule of

legislation about smoking in public places, is the main political action to be taken, as the advertising ban and the enforcing of clearly visible health warnings on tobacco products do not seem to have had the desired effect. With regard to health promotion, there is room for professionals to get involved in addressing the tobacco challenge during adolescence through comprehensive educative interventions, tailored according to the needs of risk groups identified in this paper.

Declaration of interest None.

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