

ORIGINAL PAPER

ALCOHOL CONSUMPTION IN ADOLESCENTS

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Abstract

Aim: To determine the level of alcohol consumption in a selected group of adolescents. **Design:** A descriptive cross-sectional study. **Methods:** The data were obtained using a part of the standardized ESPAD questionnaire for assessing consumption of alcoholic beverages. The sample comprised 422 students from seven secondary schools of different types in the city of Ostrava. For statistical analysis, the chi-squared test and Fisher's exact test (for $n \leq 5$) were used. The data were processed using Stata v. 10. **Results:** More than half of respondents first tried alcohol before the age of 15. The most frequent alcohol-related problems were unprotected sex, decreased school performance and problems with parents or friends. Incomplete families were found to be an important factor in adolescents preferring and more frequently drinking beer. **Conclusion:** The study confirmed results reported by the Europe-wide survey ESPAD, namely that adolescents start to drink alcohol as early as before they turn fifteen.

Keywords: alcohol, adolescent, gender, consumption, family background.

Introduction

Alcohol consumption in adolescence is a serious societal issue. Most teenagers first encounter alcohol whilst still at primary school. According to data from the European School Survey Project on Alcohol and Other Drugs (ESPAD), alcohol consumption has remained nearly unchanged since the mid-1990s (Úřad vlády ČR, 2012).

Over the past 100 years, developed countries have witnessed an earlier onset of adolescence and overall population growth. The so-called secular acceleration means not only a more rapid pace of mental and physical maturation but also a longer time for completing the development of one's full potential. Thus, the period of childhood becomes shorter and the onset of full adulthood is delayed (Langmeier, Krejčířová, 2006). Despite these factors, alcohol is more dangerous for the adolescent population than for adults as adolescents have a smaller body size, lower weight and smaller volume of blood. If an adolescent consumes the same amount of alcohol as an adult person, the alcohol concentration in their blood is higher.

Moreover, alcohol is much more slowly eliminated from the body in adolescents. They develop hypoglycemia more rapidly, potentially leading to unconsciousness. Adolescents become addicted to alcohol more easily than adults (Machová, Kubátová 2009). The addiction occurs within years in adults but only takes months to develop in adolescents and its course may be rather dramatic, with intoxication resulting in death not being uncommon. Adolescent alcohol consumers who become addicts clearly display slower psychosocial development, particularly in the areas of emotional maturation, social skills, education and self-control, leading to problems in various areas of their lives (Nešpor, 2011).

If alcohol poisoning occurs and a child or adolescent is admitted to a health care facility, circumstances of the acute intoxication must be analyzed. It has to be viewed in a wider context of their psychosocial history. As long as acute intoxication is merely their first contact with addictive substances, it should be sufficient if both short- and long-terms risk of alcohol abuse are adequately explained to the patient and their family. In such cases, severe intoxication requiring hospital admission is sufficient warning for children and their families, leading to adaptations made to child-raising patterns, namely better monitoring of their leisure time and devoting more

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time to the children's extracurricular activities (Kabiček, Černá, 2005). As stated by Hladík (2009), health care is mainly helpful in dealing with an intoxicated child's acute condition but also aids in secondary or tertiary prevention. Primary prevention may be greatly influenced by representatives of any society, including ours.

Aim

The survey aimed at assessing consumption of alcoholic beverages in a selected group of secondary school students. The sub-goals were to ascertain when their first experiences occurred, the frequency of alcoholic beverage consumption, adolescents' problems related to alcohol consumption and the influence of the family on drinking.

Methods

Design

The survey was designed as a descriptive cross-sectional study.

Sample

The sample comprised students from seven secondary schools. To calculate alcohol consumption data, students aged 16–19 years were included in the study. From a total of 422 (100%) respondents, 275 (65%) were males and 147 (35%) were females, with the following age distribution: 49 (12%) 19-year-olds, 52 (12%) 18-year-olds, 167 (40%) 17-year-olds and 154 (36%) 16-year-olds.

Data collection

Data were collected between March and June 2012. School heads or deputy heads were approached with questionnaires. Teachers were asked to distribute the questionnaires to students who consented to participate. Out of a total of 500 distributed questionnaires, 480 were completed (a response rate of 96%); of those, 58 contained incomplete data and were excluded.

The data were obtained using a part of a standardized questionnaire of a modified Czech version of the European School Survey Project on Alcohol and Other Drugs or ESPAD (Evropská školní studie o alkoholu a jiných drogách, 2009), an instrument to assess consumption of alcoholic beverages in young persons. The modified questionnaire contained 20 alcohol-related items.

The ESPAD project is a collaborative effort of independent research teams in more than 40 European countries and the largest cross-national research project on adolescent substance use in the world. The overall aim with the project is to repeatedly collect comparable data on substance use among 15- to 16-year-old students in as many European countries as possible (ESPAD, 2012). The Czech Republic joined the project in 2003 (Šťastná, 2010).

Data analysis

Descriptive data analysis was carried out using the absolute (n) and relative frequencies (%), arithmetic mean (M), standard deviation (SD), minimum and maximum, and median. For statistical analysis, the chi-squared test and Fisher's exact test (for $n \leq 5$) were used; a 95% confidence interval (CI) was calculated for proportions. The statistical tests were performed at a significance level of 5%. The data were processed using Stata v. 10.

Results

First experience with alcohol

The first time students drank an alcoholic beverage, they were less than 15 years old. A vast majority of them (83%) tried alcohol before the age of 15, namely beer (82.9%), alcopops (56.4%), wine (62.1%) and spirits (56.9%). After the age of 15, the percentages were as follows: beer 11.4% of respondents, alcopops 21.3%, wine 17.5% and spirits 29.6% (Table 1).

Table 1 Ages at which adolescents first drank an alcoholic beverage

	Beer			Alcopops			Wine			Spirits		
	%	95% CI		%	95% CI		%	95% CI		%	95% CI	
Never	5.7	3.5	7.9	22.3	18.3	26.3	20.4	16.5	24.2	13.5	10.2	16.8
14 years or less	82.9	79.3	86.5	56.4	51.6	61.1	62.1	57.4	66.7	56.9	52.1	61.6
15 years or later	11.4	8.3	14.4	21.3	17.4	25.3	17.5	13.9	21.2	29.6	25.2	34.0

CI – confidence interval

Frequency of alcohol consumption during the last 30 days

When asked about alcohol consumption during the last 30 days, only 23% of students stated that they had had no drinks. The others reported the following frequencies: 1 day / 30 days 14.5%, 2 days / 30 days 16.4%, 3 days / 30 days = 20.1%, 1 day / week 9.7%, 2 days / week 10.9%, 3–4 days / week 4.7 %, every or nearly every day / 30 days 1 %.

Alcohol consumption by gender

There were no statistically significant differences in the frequency of alcohol consumption between male and female students ($p = 0.1051$) (Table 2). Similarly, no differences were found in alcohol consumption during the last 12 months ($p = 0.0539$). The only significant difference was noted in alcohol consumption over the last 30 days ($p = 0.0377$), with male students drinking more frequently than their female counterparts.

Table 2 Frequency of alcohol consumption by gender

Frequency	Gender	Never n (%)	1–2x n (%)	3–5x n (%)	6–9x n (%)	10–19x n (%)	20–39x n (%)	40x or more n (%)	p-value
During the last 12 months	Males	25 (9.09)	35 (12.73)	42 (15.27)	39 (14.18)	66 (24.00)	25 (9.09)	43 (15.64)	0.0539
	Females	11 (7.48)	28 (19.05)	26 (17.69)	24 (16.33)	31 (21.09)	19 (12.93)	8 (5.44)	
During the last 30 days	Males	72 (26.18)	83 (30.18)	60 (21.82)	31 (11.27)	24 (8.73)	5 (1.82)	0 (0.00)	0.0377
	Females	40 (27.21)	62 (42.18)	27 (18.37)	12 (8.16)	4 (2.72)	0 (0.00)	2 (1.36)	

Adolescents' problems related to alcohol consumption

The alcohol consumption-related problems most frequently identified by students were unprotected sex, decreased school performance, fights and

problems with parents or friends (Table 3). Also mentioned were accidents, injuries or trouble with police. Only few students ($M = 1.05$) were victimized by robbery or theft or hospitalized or admitted to an emergency room.

Table 3 Adolescents' problems resulting from alcohol consumption (over the last 12 months)

Problems	n	Median	M	SD	Min	Max
Physical fight	422	1	1.44	0.93	1	7
Accident or injury	422	1	1.33	0.63	1	4
Problems with parents	422	1	1.45	0.90	1	7
Problems with friends	422	1	1.46	0.91	1	7
Bad result at school	422	1	1.35	0.95	1	7
Victimized by robbery or theft	422	1	1.05	0.28	1	5
Trouble with police	421	1	1.17	0.60	1	7
Hospitalized or admitted to an emergency room	422	1	1.05	0.32	1	5
Sexual intercourse without a condom	422	1	1.56	1.38	1	7
Sexual activities that were regretted the next day	422	1	1.24	0.67	1	7

M – mean, *SD* – standard deviation, *Min* – minimum, *Max* – maximum

Influence of the family on the frequency of alcohol consumption

The study also ascertained how many respondents lived in complete and incomplete families (complete family refers to a family consisting of both parents living in the same household, irrespective of whether they are biological or not; incomplete family refers to a family comprising only one parent irrespective of

the cause). A total of 312 students (74%) stated that they lived in complete families (198 males and 114 females), as opposed to 110 students (26%) living in incomplete families (77 males and 33 females). Table 4 shows on how many occasions students bought alcoholic beverages for their own consumption, with regard to their family status.

Statistically significant differences between students from complete and incomplete families were observed for beer ($p = 0.0415$), alcopops ($p = 0.0306$)

and spirits ($p = 0.0361$), with alcoholic beverages being more frequently bought by students from incomplete families.

Table 4 Frequency of purchasing alcoholic beverages by adolescents (over the last 30 days)

Beverages	Family	Frequency						p-value
		Never n (%)	1-2x n (%)	3-4x n (%)	6-9x n (%)	10-19x n (%)	20x or more n (%)	
Beer	Incomplete	56 (50.91)	30 (27.27)	12 (10.91)	9 (8.18)	2 (1.82)	1 (0.91)	0.0415
	Complete	194 (62.18)	69 (22.12)	24 (7.69)	12 (3.85)	7 (2.24)	6 (1.92)	
Alcopops	Incomplete	76 (69.09)	23 (20.91)	9 (8.18)	2 (1.82)	0 (0.00)	0 (0.00)	0.0306
	Complete	249 (79.81)	38 (12.18)	19 (6.09)	1 (0.32)	2 (0.64)	3 (0.96)	
Wine	Incomplete	89 (80.91)	18 (16.36)	2 (1.82)	1 (0.91)	0 (0.00)	0 (0.00)	0.3296
	Complete	226 (85.26)	34 (10.90)	4 (1.28)	3 (0.96)	3 (0.96)	2 (0.64)	
Spirits	Incomplete	64 (58.18)	27 (24.55)	11 (10.00)	6 (5.45)	2 (1.82)	0 (0.00)	0.0361
	Complete	214 (68.59)	68 (21.79)	11 (3.53)	7 (2.24)	7 (2.24)	5 (1.60)	

Alcoholic beverages preferred by adolescents

Statistically significant differences between male and female students were noted for beer ($p < 0.001$), alcopops ($p = 0.001$) and wine ($p = 0.002$). While beer was consumed by males (56%) much more frequently than females (32%), alcopops (27%) and

wine (24%) were more often consumed by females students. Statistically insignificant differences were found between males and females who never drank alcohol ($p = 0.843$) and those who did not drink spirits ($p = 0.656$) (Table 5).

Table 5 Alcoholic beverages consumed by adolescents during the last days

Beverages	Gender	n	%	p-value
I never drink alcohol	Males	24	8.64	0.843
	Females	12	8.16	
Beer	Males	157	56.52	<0.001
	Females	47	31.96	
Alcopops	Males	38	13.68	0.001
	Females	40	27.20	
Wine	Males	33	11.88	0.002
	Females	35	23.80	
Spirits	Males	73	26.28	0.656
	Females	42	28.56	

Discussion

The survey results confirmed the seriousness of the problems related to alcohol consumption in adolescents. For each alcoholic beverage, more than half of the respondents indicated that they had tried it before the age of 15. Particularly alarming is the fact that nearly all (94%) had drunk alcohol. The findings

concerning the first experiences with alcohol are consistent with the ESPAD report. Nearly six out of ten 15- to 16-year-old students had tried alcohol at least once when aged 13 years or younger; at the same age, as many as 12% of them had got drunk. Similar tendencies were reported in all countries participating in the project (ESPAD 2012). According to a 2006 report published by the National

Institute on Alcohol Abuse and Alcoholism, as many as 75% of 17- to 18-year-olds, more than two-thirds of 15- to 16-year-olds and two-fifths of 13- to 14-year-olds have experiences with alcohol. The average age of first use of alcohol decreased considerably, from 17.5 years in 1965 to 14 years in 2003 (NIAAA, 2006). Similar results were reported by Ferreira and Torgal (2010) and by Swendsen et al. (2012), with nearly 30% of secondary school students having their first experience with alcoholic beverages before the age of 13. Less than half of respondents consumed 5 or more alcoholic drinks once or twice every weekend. Approximately 6% of 1,500 participating adolescents met the criteria for the diagnosis of alcohol abuse and dependence. The first use of alcohol before reaching the age of 15 was also mentioned in a German report of the study *Studie zur Gesundheit von Kindern und Jugendlichen in Deutschland* or KiGGS, comprising 17,641 children and adolescents younger than 18 years. At the age of 11 years, 10% of girls and 20% of boys had experiences with alcohol; at the age of 12, the rates were 25% and 33%, respectively. As many as 85% of 15-year-olds and virtually all 17-year-olds had experiences with drinking alcohol. Compared to the present survey, with 82.9% of respondents trying alcohol before the age of 15, the German report showed a somewhat lower rate (70%) (Bergmann et al., 2013). The Czech report *Národní zpráva o zdraví a životním stylu dětí a školáků*, that was based on the WHO's international survey *Health Behaviour in School-aged Children* or HBSC, mapped children's lifestyle determinants in 2010. Data from the survey have confirmed that children encounter alcohol at a young age; they try it by the time they reach the age of 13 (Kalman et al., 2010).

In the present survey, more than 50% of students stated that over the last 30 days, they had drunk an alcoholic drink, on average, less than once a week. One in seven students drank alcohol several times (2–4 x) weekly and 1.36% of adolescents drank every or nearly every day. Although the international ESPAD (2011) project does not provide direct comparison, it determines the proportion of adolescents drinking alcohol over the last 30 days. Alcohol consumption is highest in the Czech Republic. According to Kalman et al. (2010), three out of four 15-year-olds, irrespective of gender, drink alcohol every month. Alcohol consumption rates tend to increase quite significantly with age.

As for the amount of alcohol consumed on a single occasion, five or more glasses may be considered an excessive volume. In the present survey, nearly a third of students drank five or more glasses of alcohol. Nearly a tenth of students reported drinking

ten or more glasses of alcohol on a single occasion (1 glass = 0.2 L of beer/wine or 0.025 L of spirits), corresponding to, for instance, 10 beers or half a liter of spirits. Similar results were presented in the Polish part of ESPAD 2011, with one in five students in the 15–16 age category drinking five or more glasses of alcohol on a single occasion of the last 30 days; in the 17–18 category, the proportion rose to a third (Sierosławski, 2011). A study by Clark confirmed that with advancing adolescence, binge drinking and drinking to intoxication becomes relatively common. The earlier 2007 ESPAD also provided a comparison of regions within the Czech Republic. According to the report, the most frequent regular drinkers were students from Prague and the Central Bohemian Region, with more than a third of them drinking alcohol five times a month; the least frequent drinkers were students from the Moravian-Silesian Region (16%) and Carlsbad Region (19.3%) (Csémy, Chomynová, Sadílek, 2009).

There were no marked differences in alcohol consumption between male and female students. However, there was a significant difference in alcohol consumption during the last 30 days, with males drinking more frequently than females. The same findings were produced by the ESPAD (2011) and a study by Ferreira and Torgal (2010). Sierosławski (2011) found differences in alcohol consumption between males and females, with rates being approximately 4% higher in males in both age categories (15–16 years; 17–18 years). According to Feliz, teen girls were more likely to see benefits in drug and alcohol use than boys. The most frequently identified benefit was the possibility to forget their troubles such as depression, family problems or exam-related stress. Thus, girls were more susceptible to abuse drugs and alcohol.

In the present survey, the most frequently stated problems resulting from alcohol use during the last 12 months were unprotected sex, decreased school performance, fights and problems with parents or friends. In the ESPAD (2011), the most commonly identified problems were bad results at school and serious problems with friends or parents. In the Polish ESPAD, the most typical problems due to alcohol were problems with parents, performing poorly at school, problems with friends, physical fights and accidents or injuries in the 15–16 age group, and performing poorly at school, problems with parents, physical fights, problems with friends and sexual intercourse without a condom in students aged 17–18 years (Sierosławski, 2011). Clark (2004) noted that alcohol use-related disorders were virtually absent in children younger than 14 years. In the 14–18 age category, more than a fifth of respondents had at least

one symptom of alcohol abuse or dependence as listed in the *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition. Another serious consequence of alcohol consumption is suicide, mentioned by Esposito-Smythers and Spirito (2004). There is a higher proportion of alcohol and other substance users among adolescents who committed or at least attempted suicide.

As for purchasing alcoholic beverages, students from complete families bought less alcohol for their own use than their counterparts from incomplete families. In a HBSC study, Krch and Csémy (2006) focused on the relationship between the family structure and development of certain health-threatening habits. Children raised in complete families had relatively fewer such habits. Unlike the other children, children from complete families stated that they had meals together with some members of their family, usually did not miss their main meals, had more physical activity, got involved in sports with their parents more frequently, smoked less and drank less alcohol. The study results suggest that losing a parent is a risk factor in the development of the child's lifestyle. In the investigated context, family was a comprehensive factor, with an important role played by the family atmosphere and parents' education. Surprisingly, incomplete families showed more joint activities and better control over some risky habits than families with one step-parent.

The present study found differences in preferred alcoholic beverages between male and female students. While males preferred beer, girls consumed alcopops and wine more frequently; the findings are consistent with those reported by the ESPAD (2011) and Sierosławski (2011). According to Kalman et al. (2010), beer is considerably more preferred to wine by subjects of both genders and all age categories. With increasing age, consumption rates for spirits and mixed drinks approach those for wine. Among 15-year-olds, two in five boys and 1 in five girls drink beer. Preferences for particular kinds of alcohol is related to the so-called drinking culture that may be determined by historical, cultural and socioeconomic factors. According to Ferreira and Torgal (2010), alcoholic beverages most frequently consumed by students of both genders are spirits.

Conclusion

Although the legal drinking age, or the minimum age at which a person can purchase alcoholic beverages, in the Czech Republic is 18 years, more than half of teenagers first try alcohol before the age of 15. The present survey showed no significant difference in the frequency of alcohol consumption between male

and female students. Incomplete families were found to be an important factor in adolescents preferring and more frequently drinking beer. Czech society has traditionally had a very tolerant attitude towards not only regular drinking but also excessive drinking. As a result, these tolerant norms in adults form the attitudes of children and young people towards alcohol. Very soon, they consider drinking as a normal and essential component of social contacts.

Ethical aspects and conflict of interest

In the survey, recommended ethical principles were adhered to. All respondents were informed about the objectives, how the results would be published and their anonymity protected. The subjects volunteered to participate and gave written consent to the use of their data. The authors claim that they are unaware of any conflict of interests.

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Author contribution

Conception and design (MH, IP), data collection (MH), data analysis and interpretation (MH), drafting the manuscript (IP), critical revision of the manuscript (IP, MH), finalization of the manuscript (IP).

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