



Research Article

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Unawareness of Alcoholic Content of Alcopops among 13-Year Old Italian Teenagers

Roberta Agabio^{1,2*}, Alessandra Mereu³, Paolo Contu³ and Gian Luigi Gessa^{1,2,4}¹Department of Biomedical Sciences, Section of Neuroscience and Clinical Pharmacology, University of Cagliari, Italy²Center of Excellence on Neurobiology of Dependence, University of Cagliari, Italy³Department of Public Health, Clinical Medicine and Molecular, University of Cagliari, Italy⁴CNR Neuroscience Institute, University of Cagliari, Italy

Abstract

Aims: Alcopops are ready-mixed drinks containing approximately the same amount of alcohol as beer, usually sweet, and flavoured, particularly appealing to young people. The present study was aimed to investigate whether young adolescents aged 12-14 years, corresponding to the average age of the first drink, are capable of identifying the presence of alcohol in these beverages.

Methods: Administration of a questionnaire comprising 8 questions investigating knowledge and consumption of different alcoholic and non-alcoholic beverages to a sample of 13-year old Italian students.

Results: More than 20% of a sample of 224 students reported that they were unaware of the alcoholic content of alcopops at the age of the first drink. The number of students unable to distinguish alcopops from non-alcoholic beverages was significantly higher than students who were not able to distinguish beer from alcohol-free beverages.

Conclusions: At the age of the first drink, the identification of alcopops as alcoholic beverages is more difficult than that of other beverages containing the same amount of alcohol. Information aimed at increasing the ability of adolescents to distinguish between alcoholic and non-alcoholic beverages should be provided to young adolescent students before they start drinking.

Keywords: Alcohol; Alcopops; Unawareness; Teenagers

Introduction

The use of alcohol among adolescents is a major public health concern. Drinking in young people increases the risks of injury, homicide, suicide, risky sexual behaviour and teenage pregnancy, in addition to a wide range of less severe physical and psychological harms [1,2]. In Europe, it has been evaluated that one in four deaths in young men aged between 15-29 years is related to alcohol [3]. Moreover, exposure of the developing brain to alcohol disrupts cortical development and alters higher executive functions in a manner that promotes continued impulsive behaviour, with heavy alcohol consumption increasing the likelihood of alcohol dependence, the most severe alcohol use disorder [4,5]. Accordingly, individuals who start drinking before the age of 14 are four times more likely to become alcohol dependent at some time in their life as compared to those who first consume alcohol at the age of 20 or older [6,7].

Despite its severe consequences, the use of alcohol in adolescents is extremely widespread, and adolescent alcohol dependence is becoming an increasingly common problem [8]. A large study recently carried out, the European School Survey Project on Alcohol and Other Drugs (ESPAD), conducted by administering a questionnaire to more than 100,000 students from 35 European countries, found that, in Europe, approximately 90% of 15-16 year old students have drunk alcohol at least once in their life, with 50% of these having become intoxicated at least once [9]. According to this study, the alcoholic beverage preferred by 15-16 year old students is beer, followed by spirits, wine, and alcopops [9].

Alcopops are ready-mixed drinks containing 5-7% alcohol by volume, usually sweet, flavoured, and served in small bottles varying from 200 to 275 ml [10,11]. The sweet taste of alcopops makes them particularly attractive to adolescents, particularly girls [9,11]. In Italy, students start to drink alcoholic beverages earlier than in other

European Countries, having their first drink at an average age of 12.2 years, compared to 14.6 years throughout Europe [12]. Reducing alcohol-related harm in young people is a major priority worldwide [13,14]. Several primary prevention programs have been developed to reduce, or at least delay the onset, of adolescent alcohol consumption [15,16]. These programs consist in educational interventions aimed at raising awareness and imparting knowledge and psychological interventions for the purpose of developing peer resistance skills. However, the effects achieved are typically modest or transient [17].

Several studies have investigated the knowledge of alcoholic content of beverages and alcohol-related harm by different portions of general populations. For example, among health operators, to estimate their ability to translate the amount of alcohol assumed by patients into units of alcohol [18-20], and among adult population, to estimate the perception of alcohol-related risks [21]. The awareness of alcoholic content of beverage has been evaluated also among young people with the aim to investigate their knowledge of the low-risk drinking guidelines [22,23], and perception of risks [24-26]. Interestingly, a study also evaluated the ability of kindergarten children (5 and 6 years old)

***Corresponding author:** Roberta Agabio, Department of Biomedical Sciences, Section of Neuroscience and Clinical Pharmacology, University of Cagliari, Cittadella Universitaria, S.S. 554, Km. 4.5, I-09042, Monserrato (CA), Italy, Tel: +39-070-675-4325; Fax: +39-070-675-4320; E-mail: agabio@unica.it

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to correctly identify alcoholic beverages [27]. All these studies found that the knowledge of the alcoholic content of beverages and alcohol-related harm appears to be limited. Among the different alcoholic beverages, alcopops may be even more difficult to be identified as alcoholic beverages because they resemble soda or other soft non-alcoholic drinks. Accordingly, it has been reported that a significant rate of teenagers think that alcopops contain less alcohol than beer [10].

We hypothesised that a significant rate of students aged from 12-14 years, corresponding to the average age of the first drink, may be not able to identify the presence of alcohol in alcopops. To evaluate this hypothesis, a simple questionnaire containing questions aimed at investigating the knowledge and consumption of different beverages (alcoholic and non-alcoholic) was prepared and administered to a sample of 13-year old Italian students. Because alcopops contain the same amount of alcohol as beer, answers of student's relatives to beer and alcopops were compared to evaluate possible differences in their identification as alcoholic beverages.

Materials and Methods

Sampling procedure and selection of schools

Data were collected by a sample of 13-year old children from two middle schools of the Province of Cagliari, Italy. In Italy, children frequent primary school from the ages of 6 to 10, and then middle school, from 10 to 13. The Province of Cagliari comprises approximately 560,000 inhabitants, and, to collect a representative sample reflecting the demographic characteristics of this area, which includes both small towns and large cities, two different schools were selected. The first school was representative of large cities, being located in a town of approximately 70,000 inhabitants; the second school was representative of small cities as it was located in a town of approximately 7,000 inhabitants. The study was conducted in conjunction with the education authority of the Province of Cagliari.

Eligibility of children

All children in their final year (correspondingly roughly to 13-year old students) at school on the day of the study were considered eligible to take part and asked to fill in the questionnaire.

Informed consent

Headmasters and teachers from the two schools were informed of the aims of the study, and invited to take part. It was explained that participation would entail a one-off visit lasting approximately 30 minutes by a researcher to each class in their final year. It was stressed that at no point would participating schools or individuals be identified and that the confidentiality of children's answers to the questionnaires would be protected at all times. Informed consent was obtained from headmasters of both schools.

Administration of questionnaires

The day of administration of the questionnaire was scheduled by researchers, headmasters and teachers while children were unaware of the project. All children in their final year of middle school who were at school on the day were asked to complete the questionnaire under the supervision of the class teacher. Before filling in the questionnaire, a researcher explained to students that the study was aimed at investigating consumption habits for different beverages, reading the list of beverages included in the questionnaire, and showing picture of the same.

Questionnaire

A questionnaire containing 8 questions in Italian was prepared. Each question referred to the following beverages: beer, Coca Cola, alcopops, fruit juice, wine, orange juice, spirits, and chinotto (a bitter, dark alcohol-free beverage). Before administration of the questionnaire, a picture with the images of these beverages was shown to students, specifying that the questions would relate to these. The 8 questions and possible answers were as follows:

- 1) In your opinion, do the following beverages contain alcohol? Yes, No, I don't know;
- 2) Have you ever drunk any of these beverages? Yes, No;
- 3) How old were you when you had a glass of one of the following beverages for the first time? Age in years;
- 4) How often do you usually drink a glass of one of the following beverages: Never, Number of times per year, month, week, Every day;
- 5) What is the highest number of glasses of the following beverages that you have ever drunk in a single occasion: Numbers;
- 6) Have you ever forgotten anything you did or said while you were drinking? Yes, No;
- 7) Have you ever been drunk? Never; Once; From 2 to 5 times; More than 5 times;
- 8) Where do you usually drink the following beverages? At home, In public, In both places.

Administration of the questionnaire took approximately 20 minutes.

Statistical analysis

Analyses were conducted using Graph Pad Prism (version 3; Graph Pad Prism Inc). Ages of different groups are reported as mean values \pm standard errors; other data are reported as numbers and proportions. Number of students who were unaware as to whether different beverages contained alcohol was calculated as the sum of the replies "no" and "I don't know" to the first question. Differences in means were statistically analyzed using the unpaired, 2-tailed Mann-Whitney test, while differences in proportions were assessed using a χ^2 test and odds ratios with 95% confidence intervals.

Differences between proportions were analysed with z-test; using Bonferroni correction for multiple tests, the level of significance was set at $P < 0.001$.

Possible relationship between different questions was analyzed by a multivariate logistic regression performed through a backward stepwise procedure based on eliminating the least significant interaction and independent variables at each step. Data were analysed using the Statistical Package for the Social Sciences (version 19, SPSS Inc., Chicago, IL, USA).

Results

Questionnaires were administered to 229 pupils; 5 (2.2%) questionnaires were rejected because students failed to provide their age and/or gender, yielding a final sample size of 224. This number corresponds to approximately 5% of 13-year old children residing in the Province of Cagliari. Table 1 shows sociodemographic features of pupils and answers provided to the first 7 questions of the questionnaire. As

	Girls	Boys	Total	Differences between girls and boys			Differences between alcopops and beer (total sample)
				P	C.I 95%		
n (%)	104 (46.4)	120 (53.6)	224 (100.0)	-	-	-	-
Age in years (mean ± S.E)	12.9 ± 0.1	13.0 ± 0.1	13.0 ± 0.0	0.04	-	-	-
Question 1: Children who were unaware that the following drinks contain alcohol							
Alcopops n (%)	28 (26.9)	17 (14.2)	45 (20.1)	0.02	0.021922	0.233206	-
Beer n (%)	10 (9.6)	4 (3.3)	14 (6.2)	0.06	-0.00231	0.12795	< 0.01
Wine n (%)	17 (16.3)	5 (4.2)	22 (9.8)	< 0.01	0.042238	0.201352	-
Spirits n (%)	1 (1.0)	4 (3.3)	5 (2.2)	0.21	-0.01347	0.060911	-
Any type of drink n (%)	37 (35.6)	26 (21.7)	63 (28.1)	0.02	0.021206	0.256999	-
Question 2: Children who had drunk one of the following beverages							
Alcopops n (%)	61 (58.6)	79 (65.8)	140 (62.5)	0.27	-0.05532	0.198912	-
Beer n (%)	41 (39.4)	68 (56.6)	109 (48.6)	< 0.01	0.043275	0.301596	< 0.01
Wine n (%)	33 (31.7)	55 (45.8)	88 (39.3)	0.03	0.014734	0.267317	-
Spirits n (%)	1 (1.0)	4 (3.3)	5 (2.2)	0.21	-0.01347	0.060911	-
Any type of drink n (%)	74 (71.2)	95 (79.2)	169 (75.4)	0.16	-0.03328	0.193537	-
Question 3: Age at the first consumption of the following drinks							
Alcopops (mean age ± S.E)	11.5 ± 0.2	11.7 ± 0.1	11.6 ± 0.1	-	-	-	-
Beer (mean age in years ± S.E)	10.7 ± 0.3	10.6 ± 0.2	10.6 ± 0.2	-	-	-	-
Wine (mean age in years ± S.E)	10.7 ± 0.3	9.8 ± 0.3	10.2 ± 0.2	-	-	-	-
Spirits (mean age in years ± S.E)	11.3 ± 0.5	11.6 ± 0.4	11.5 ± 0.3	-	-	-	-
Any type of drink (mean age in years ± S.E)	10.0 ± 0.4	9.7 ± 0.3	9.8 ± 0.2	-	-	-	-
Question 4: Children who reported consuming the following drinks at least once a week							
Alcopops n (%)	6 (5.7)	21 (17.5)	27 (12.1)	< 0.01	0.035883	0.198733	-
Beer n (%)	3 (2.9)	19 (15.8)	22 (9.8)	< 0.01	0.056679	0.202295	0.55
Wine n (%)	8 (7.7)	16 (13.3)	24 (10.7)	0.16	-0.0231	0.135922	-
Spirits n (%)	1 (1.0)	5 (4.2)	6 (2.7)	0.12	-0.00832	0.072425	-
Any type of drink n (%)	14 (13.5)	34 (28.3)	48 (21.4)	< 0.01	0.044778	0.252658	-
Question 5: Children who reported having drunk 4 or more glasses of the following beverage on a single occasion							
Alcopops n (%)	2 (1.9)	23 (19.3)	25 (11.2)	< 0.01	0.098348	0.249745	-
Beer n (%)	2 (1.9)	13 (10.9)	15 (6.7)	< 0.01	0.028272	0.151753	0.14
Wine n (%)	1 (1.0)	6 (5.0)	7 (3.1)	0.07	-0.00261	0.084216	-
Spirits n (%)	2 (1.9)	5 (4.2)	7 (3.1)	0.32	-0.02189	0.067464	-
Any type of drink n (%)	5 (4.8)	30 (25.0)	35 (15.6)	< 0.01	0.0237	0.166043	-
Question 6: Children who reported having forgotten something following use of alcohol							
n (%)	9 (8.7)	19 (15.8)	28 (12.5)	0.09	-0.01298	0.156566	-
Question 7: Children who reported having been drunk at least once in their lives							
n (%)	8 (7.7)	30 (25.0)	38 (16.9)	< 0.01	0.080204	0.26595	-

Table 1: Socio demographic features of a sample of adolescent students and answers provided to the first 7 questions of an 8-item questionnaire.

expected from the recruitment strategy, pupils had a mean age of 13 years and were divided almost equally between the genders (Table 1).

As shown in Table 1, the majority of students (75%) reported having drunk at least one alcoholic beverage in their lives, having started approximately at the age of 10 years. Approximately 15% of students reported having drunk 4 or more glasses of some form of alcoholic drink on a single occasion, having forgotten something following use of alcohol, and having been drunk at least once in their lives.

Table 2 illustrates the answers given to the last question in the questionnaire relating to places students most frequently consumed alcoholic beverages. As shown, children reported drinking beer, wine, and spirits mostly at home and alcopops mostly in public, with no differences observed between the genders (Table 2).

Despite the alcoholic content of alcopops and beer is the same, a

significant higher rate of students (20.1%) confused alcopops with non-alcoholic beverages compared to the rate of students unable to identify beer as an alcoholic beverage (6.2%; $P < 0.0001$; see Question 1). Moreover, a significantly higher rate of students reported that they have drunk alcopops (62.5%) compared to the rate of students who reported to have drunk beer (48.6%; $P = 0.0043$; see Questions 2).

Conversely, the rates of students who reported to regularly drink alcopops and to have drunk 4 or more glasses of alcopops did not differ from those who reported to regularly drink beer and to have drunk 4 or more glasses of beer (see Question 4 and 5, respectively), even if a large number of students did not answer question 5.

The relationship between having drunk 4 or more glasses of different alcoholic beverages and having been drunk among students was analyzed. The multivariate logistic analysis showed that all the

Question 8: Where do you usually drink the following beverages?			
n (%)	At home	In Public	In both places
Beer			
Girls	34 (32.7)	9 (7.5)	3 (2.8)
Boys	37 (30.8)	26 (21.7)	6 (5.0)
Total	71 (31.7)	35 (15.6)	9 (4)
Alcopops			
Girls	14 (13.6)	37 (35.9)	7(6.8)
Boys	17 (14.2)	55 (45.8)	6 (5.0)
Total	31 (13.9)	92 (41.3)	13 (5.8)
Wine			
Girls	29 (27.9)	4 (3.8)	1 (1.0)
Boys	42 (35.0)	10 (8.3)	10 (8.3)
Total	71 (31.7)	14 (6.3)	11 (4.9)
Spirits			
Girls	16 (15.4)	11 (10.6)	3 (2.9)
Boys	25 (20.8)	19 (15.8)	7 (5.8)
Total	41 (18.3)	30 (13.4)	10 (4.5)

Table 2: Results of the last question in an 8-item questionnaire administered to a sample of 13-year old students.

interactions were not statistically significant; therefore, they were eliminated from the model. However, the probability of having been drunk was 8.39 times higher in students who reported to have drunk four or more glasses of beer ($P=0.03$; $OR=8.39$; $CI\ 2.089 - 33.765$) and 11.7 times higher in students who reported to have drunk four or more glasses of alcopops ($P<0.001$; $OR =11.73$; $CI\ 4.226-32.589$).

Discussion

The present study was aimed at investigating whether a significant rate of students aged from 12-14 years, corresponding to the average age of the first drink, may be not able to recognize the presence of alcohol in alcopops. The results of this study found that a significant higher rate of students (20.1%) confused alcopops with non-alcoholic beverages compared to the rate of students unable to identify beer as an alcoholic beverage. This finding indicates that the identification of alcopops as alcoholic beverages is more difficult than that of other alcoholic beverages containing the same amount of alcohol.

This result is easily explained by the main features of alcopops. Indeed, they are sweet beverages, often carbonated and/or fruit-flavoured, that resemble soda or other soft drinks, and their pleasant taste tends to conceal the taste of alcohol [10,11,28-30]. Accordingly, a significant rate of teenagers believe that alcopops contain less alcohol than beer [10,31-33]. Some recent studies revealed that young people are generally inaccurate in their estimate of alcoholic content of beverages [22,23,34], but the results of the present study indicates that more than 1/5 of students believe that alcopops are not alcoholic beverages at the age of their first drink.

It has been argued that alcopops may induce adolescents to initiate earlier onset of alcohol consumption and to increase their volume of drinking [35-37]. Conversely, several studies found that evidence of an association between alcopops consumption and higher risks of negative consequences in adolescents is scarce [11,28,29,38-41]. The results of the present study confirm that these beverages are particularly appealing to young people as more than 60% of the students reported that they have drunk alcopops [9,11,42]. Moreover, the results of the present study also show that students who reported to have drunk four or more glasses of alcopops had a significant higher probability to have been drunk at last once in their life. Thus, their consumption by

adolescents, as well as that of the other alcoholic beverages assumed by adolescents, constitutes a cause of concern.

Increasing the knowledge of motivations behind the adolescents' preference may be useful to improve the effectiveness of interventions designed to prevent and reduce alcohol consumption in adolescents [38,40,43]. A recent study aimed at investigating drinking motives in a group of Italian adolescents of 15-19 years old found a positive relationship between experimentation-transgression motives and elevated consumption of alcopops, and underlined the importance to make adolescents aware of the risks related to the consumption of these "light" alcoholic beverages [31]. But, this would require that children know which beverages contain alcohol and which do not. More extensive studies should be undertaken to further investigate the unawareness of alcoholic content of alcopops in young teenagers. If the unawareness of alcoholic content of alcopops is confirmed, information aimed at increasing the ability of adolescents to distinguish between alcoholic and non-alcoholic beverages should be included as one of the main focuses of prevention projects devoted to very young students who have not yet started to drink. Indeed, if a proportion of young people are unaware of the alcoholic content of alcopops, they may likewise ignore the alcohol-related risks and damage linked to consumption of the beverages they fail to classify as alcoholic drinks. All children should be made aware that alcopops contain alcohol and that the amount of alcohol of one bottle is approximately equal to one can of beer (333 ml, 5% alcohol by volume), one glass of wine (125 ml, 12% alcohol by volume), or one small glass of spirits (40 ml, 40% alcohol by volume). It is fundamental that information on alcoholic beverages should be given to young students before they start drinking.

The present study has some limitations such as the limited number of students included in the trial, the adoption of a new questionnaire, and the lack of answers obtained in some questions (for instance question 5). These limitations may induce to believe that information collected in this study may differ from those collected by other studies. However, students' habits of alcohol use were evaluated to establish whether data obtained in the present sample overlap with those obtained by larger studies investigating adolescent alcohol habits. Concerning this latter evaluation, the present study found that more than 70% of 13-year old students reported having consumed an alcoholic drink at least once in their lives. This finding is similar to those reported by other recent Italian studies: for instance, it has been found that 85% of adolescents of 15-19 years old were drinkers [31], and that approximately 25% of Italian 12-13 years old students had drunk on the previous Saturday [44]. In the UK, more than 50% of a group of 11-15 years old students reported having consumed at least one alcoholic drink in their lives [39]. The ESPAD study found that approximately 90% of 15-16 year olds had consumed alcohol at least once [9]. Moreover, data obtained in the present research revealed that approximately 17% of 13-year old students had been drunk at least once in their lives; according to the ESPAD study 14% of students reported having been drunk at the age of 13 or before [9]. According to our research, students preferred to drink wine, beer, and spirits at home, and drank alcopops mostly in public. Another study conducted in the UK found that 14.5 year old students preferred to drink wine and beer at home or at friends' houses, and cider and fortified wines in public [45]. Finally, the present research confirmed onset of drinking at the very early average age of 9.8 years in Italian students. On the whole, taking into account that students in our sample were younger than those of the other studies, it

may be concluded that the data obtained overlap with those of the other studies, and confirm that, despite legal restrictions, very young students have no problems in obtaining alcoholic beverages.

Conclusion

In conclusion, the results of the present study show that a large number of 13-year old students were incapable of distinguishing the alcoholic content of alcopops. If the unawareness of alcoholic content of these alcoholic beverages is confirmed, information aimed at increasing the ability of adolescents to distinguish between alcoholic and non-alcoholic beverages should be provided to very young students before they start drinking.

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