

# Alcohol use and abuse: a cross-sectional study among Italian adolescents

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## Keywords

Alcohol laws • Parents alcohol consumption • Alcohol initiation

## Summary

**Introduction.** Alcohol is recognized as one of four major risk factors for non-communicable diseases. Exposure to alcoholic beverages during the adolescence has been linked to increased heavier drinking habits: obviously, the age of alcohol initiation resulted an important determinant of alcohol dependence. The aim of this study is to analyze knowledge, attitudes and practices in alcohol habit of adolescent population.

**Methods.** 943 students from 13 schools (middle and upper secondary schools) of the Bari district were enrolled in the study: in each school one class for each age was randomly selected. The research was carried out by an anonymous, self-administered questionnaire which investigated alcohol consumption, knowledge of alcohol consumption of parents and knowledge of the law regulating alcohol consumption.

**Results.** 34.8% (328) have never consumed alcoholic drinks while 65.2% (615) declare the use of alcohol; the average age of alcohol initiation was 12.2 years. 35.7% (329/921) of mothers and 36.6% (335/915) of fathers drink alcohol only on special occasions. 17.9% (168/939) considered that alcohol could be free sale at all while 16.4% (154/939) reported that sale is forbidden for children under 14.

**Conclusions.** The higher prevalence of alcohol habits and the poor knowledge on alcohol law seemed to indicated the need of improving public health efforts in the prevention of alcohol consumption among Italian adolescents.

## Introduction

According to World Health Organization (WHO) estimate, approximately 2 billion people worldwide consume alcohol and almost 80 million showed an Alcohol-Use Disorder.

Globally, alcohol consumption has increased in recent decades, with a most important trend in Low and Middle-Income Countries. Alcohol actually causes 2.5 million deaths annually, representing 3.8% of the total worldwide mortality. 5.9% of all deaths worldwide are attributable to alcohol consumption; this percentage is greater than the proportion of deaths from HIV/AIDS (2.8%), violence (0.9%) or tuberculosis (1.7%). Also, 5.1% of the global burden of disease and injury is attributable to alcohol, as measured in disability adjusted life years (DALYs) [1, 2].

In the setting of a rising prevalence of Non-Communicable Diseases (NCDs), alcohol is recognized as one of four major NCDs risk factors by WHO: pre-decasing for non-communicable diseases is strong related to preventable heart disease, strokes, diabetes, cancers and asthma as a result of increased levels of exposure to tobacco use, unhealthy diets, physical inactivity and the harmful use of alcohol [3, 4]. Although alcohol is not known to be carcinogenic in animal experimentation, there is strong epidemiological evidence that consump-

tion of alcoholic beverages increases the risk of oral pharynx, esophagus, and larynx cancers. The risks are essentially thought to be related to ethanol content and appear to be linked to the most commonly used alcoholic beverages in each population. These risks show an increase linear with the amount of ethanol drunk, but it is still unclear whether there is any defined threshold below which no effect is evident.

Corrao G. et al published an important meta-analysis to evaluate the relationship between alcohol consumption and the risk of 15 diseases. Strong trends in risk were observed for cancers of the oral cavity, esophagus and larynx, hypertension, liver cirrhosis, chronic pancreatitis, and injuries and violence. Less strong direct relations were observed for cancers of the colon, rectum, liver, and breast. For all these conditions, significant increased risks were also found for ethanol intake of 25 g per day. Threshold values were observed for ischemic and hemorrhagic strokes. For coronary heart disease, a J-shaped relation was observed with a minimum relative risk of 0.80 at 20 g/day, a significant protective effect up to 72 g/day, and a significant increased risk at 89 g/day. No clear relation was observed for gastroduodenal ulcer [5]. We can describe several determinants of at risk use of alcohol: the volume of alcohol consumed over time; the pattern of drinking (occasional or regular drinking; the drink context; the quality and the safety of alcoholic

beverages). Alcohol is able to damage nearly every organ and system in the body. Its use contributes to more than 60 diseases and conditions: it is the fifth leading contributor to the global disease burden.

Alcohol abuse problem is associated with numerous social consequences, such as crimes, violence, unemployment and absenteeism. It generates health-care and societal costs and it contributes to disparities in health between and within countries.

Europe is the Region where alcohol consumption per capita is the highest in the world. Indeed, 75% of EU citizens reported to have drunk alcoholic beverages during the past 12 months. A quarter of the population (25%), however, appears not to have consumed alcohol at all at least during this period. Data about prevalence of alcohol consumption in Europe are based on respondents' own declarations. For cultural reasons, in some countries respondents tend to under-report their consumption, therefore we have to consider this concern when reading this analysis. In particular, differences between public opinion survey results and results of epidemiological studies are possible [1-4, 6].

Although country prevalence of alcohol consumers ranged between 60% in Italy to 93% in Denmark, the majority of EU Member States and acceding/candidate Countries seem to indulge in drinking some kind of alcoholic beverage. Most probably due to religious motives 53% of residents in the Turkish Cypriot Community declared they had not drunk any alcohol in the past 12 months. Conversely, the 14.7% of the world's population aged 15+ years lives in the WHO European Region, and in this Region more than a quarter (25.7%) of the total alcohol consumed worldwide is annually drunk [1].

In particular the alcohol abuse represents a big problem for European young people. 1 in 4 deaths among young men (aged 15-29) and 1 in 10 deaths among young women is due to alcohol abuse (often caused by road traffic accidents, homicide, violence and even liver disease). According to the WHO estimates, weekly drinking across the EU is reported by 5% of 11-year olds, 12% of 13-year olds and 29% of 15-year olds. Over 90% of 15-16 year-old Europeans have drunk alcohol at some point in their life with the average age for getting drunk for the first time being 14 years. In 2003, around 23% of 15-16 year-old boys in the EU reported binge drinking at least 3 times in the previous 30 days, according to European School Survey project on Alcohol and other Drugs (ESPAD) [5-9].

Although the age considered appropriate or acceptable for alcohol drink varies across nations, there is consistent agreement concerning the effect of alcohol on adolescents, both on the health both on the behaviors.

Exposure to alcoholic beverages before or during the early teenage years has been linked to increased heavier drinking habits: obviously, the age of alcohol initiation resulted an important element to predict the risk of alcohol dependence and it has been frequently investigated. The early-adolescent onset of alcohol use could be considered a marker of risk or a causal element of later dependence. Evidences suggested that alcohol initiation at ages 11-14 greatly heightens the risk of progression to the develop-

ment of alcohol disorders; adolescents therefore are a reasonable target for intervention strategies that seek to delay first use as a means of averting problems later in life. Therefore Boyd et al. supposed the "genetic predisposition" of development of alcohol dependence [10-12]. The relationship between age at first alcohol consumptions and development of various psychiatric comorbidities has been confirmed. A lot of local experience and studies concluded that young age at drinking onset is significantly related to alcohol dependence and to experience AUDs, psychotic symptoms, intermittent explosive disorder and panic disorder [13, 14].

It resulted that alcohol use in adolescents could reduce volume of hippocampus, prefrontal cortex as well as white matter, resulting in deleterious alterations of various cognitive abilities including memory, planning and spatial tasks [15].

The role of parents could be an important determinant of alcohol attitude. Parental control is negatively associated with alcohol and other substances use and abuse, whereas attending friends who consumed alcohol increases the risk of alcohol use and abuse. Specifically, poorly monitored adolescents are more likely to use drugs, and drug-using adolescents seek out like-minded friends [16].

The majority of reviews agreed with the conclusion that parental alcoholism increases the probability of problem drinking and even chemical dependency in children; frequently, in this context, young people are introduced to alcohol by their parents. The mistreatment of children, including sexual abuse, physical abuse and neglect, may also lead to childhood psychopathology and later to problem drinking. Instead, good family relations and good parental knowledge of the law regulating alcohol consumption can impact favorably upon adolescent outcomes, including alcohol use [17-19].

Due to the central role of alcohol prevention among adolescents, authors designed this study that seeks to analyze knowledge, attitudes and practices in alcohol habit of adolescent population.

## Methods

This is a cross-sectional study. The study was carried out in 2013.

943 students from 13 schools (middle and upper secondary schools) of the Bari district were enrolled in the study: schools were enrolled by a convenience sample and in each school one class for each age was randomly selected. The research was carried out by an anonymous, self-administered questionnaire, developed by the authors on the basis of most important evidences in the literature. The questionnaire has been validated in a pilot school class before the start of the survey.

The aim of the questionnaire was to develop a cognitive research on drink consumption, mainly by investigating the following end-points:

- alcohol consumption;
- knowledge of alcohol consumption of parents;

- knowledge of the law regulating alcohol consumption.

The questions required more than one options of answer.

### STATISTICAL ANALYSIS

Compiled questionnaires were exported to a Microsoft Office Excel spreadsheet and analyzed with STATA MP12 software.

All questionnaires were included in the statistical analysis even in case of missing. Therefore the number of data are different in the different questions.

Continuous variables are expressed as mean  $\pm$  standard deviation, range, median and IQR; categorical variables were expressed as proportions. For continuous variables the normality analysis was performed and, for those not normally distributed, a normalization model was set. For some variables, it was not possible the normalization, then non-parametric tests have been used.

T-student test for independent groups has been used to compare independent groups and chi-square test has been used to compare proportion between independent groups.

Spearman's ranks were used to investigate the relation between:

- age of respondents and knowledge of the law regulating alcohol consumption;
- age of respondents and age of alcohol initiation;
- age of respondents and mother's alcohol consumption;
- age of respondents and father's alcohol consumption;
- knowledge of the law and age of alcohol initiation;
- mother's alcohol consumption and father's alcohol consumption;
- age of alcohol initiation and mother's alcohol consumption;
- age of alcohol initiation and father's alcohol consumption;
- age of alcohol initiation and gender.

Significance was assumed for  $p < 0.05$ .

## Results

943 subjects were enrolled in the study, of which 521 were males (55.25%) and 422 females (44.75%), with an average age of  $14.4 \pm 2.2$  years (range 10-20).

Subjects included in this study attended 13 secondary school in the Bari district; the number of subjects per school ranged from 61 to 104.

Among subjects interviewed, 34.8% (328) have never consumed alcoholic drinks while 65.2% (615) declare the use of alcohol.

Among boys, 70.1% (365/521) consumed alcoholic drinks almost one time during the life: while among girls 59.2% (250/422) (Tab. I; chi-square = 12.0;  $p = 0.0005$ ). Among girls, the average age of alcohol initiation was  $12.7 \pm 3.9$ , while it was  $11.9 \pm 4.2$  years among males (Tab. II;  $t = 3.0$ ;  $p = 0.002$ ).

According to the opinion of our students, the frequency of alcohol consumption is more frequent among fathers than among mothers (Tab. III).

35.7% (329/921) of mothers and 36.6% (335/915) of fathers, drink alcohol only on special occasions (parties, recurrences, evenings in company, etc.). 34.96% (322/921) of mothers never consumes alcoholic drinks while among fathers, 12.9% (118/915) never drink alcohol (p < 0.0001). 17.7% (162/915) of fathers drink alcohol every day only during meals and 3.6% (33/915) also out of meals, while 8.25% of mothers (76/921) drink alcohol every day only during meals (p < 0.0001). 13.9% of interviewed subjects declared that they had not notice about the alcohol consumption of their parents (Tab. III).

939 students answered the question about knowledge of the Italian law on alcohol consumption in Italy. 17.9% (168/939) considered that alcohol could be free sale at all while 16.4% (154/939) reported that sale is forbidden

Tab. I. Prevalence of alcohol consumption, per gender.

Alcohol consumption	Male (%)	Female (%)	Total (%)
Nevers	156 (29.9%)	172 (40.8%)	328 (34.8%)
Almost one time during the life	365 (70.1%)	250 (59.2%)	615 (65.2%)
Total	521 (100%)	422 (100%)	943 (100%)

chi-square = 12.0;  $p = 0.0005$

Tab. II. Mean, standard deviation (DS), range, of age of alcohol habit beginning, per gender.

Age of alcohol habit beginning	Mean	DS	Range
Male	11.9	4.2	1-17
Female	12.7	3.9	1-19
Total	12.3	4.1	1-19

$t = 3.0$ ;  $p = 0.002$

Tab. III. Knowledge of enrolled subjects about parental alcohol consumption and differences between mothers and fathers.

Frequency	Parents (Total) (n = 1836)	Mothers (n = 921)	Fathers (n = 915)	Chi-square	p
Nevers	440 (24.0%)	322 (34.96%)	118 (12.9%)	122.6	< 0.0001
Every days during and also out of meals	45 (2.4%)	12 (1.3%)	33 (3.6%)	10.2	0.0014
Every days only during meals	238 (13.0%)	76 (8.25%)	162 (17.7%)	36.3	< 0.0001
4-5 times per week out of meals	15 (0.8%)	2 (0.2%)	13 (1.4%)	8.2	0.0042
4-5 times per week during meals	159(8,7%)	52 (5.6%)	107 (11.7%)	21.2	< 0.0001
Only during special parties	664 (36.2%)	329 (35.7%)	335 (36.6%)	0.16	0.69
Before drunk but now do not drink any more	19 (1%)	10 (1.1%)	9 (1%)	0.05	0.83
I don't know	256 (13.9%)	118 (12.8%)	138 (15.1%)	1.97	0.16

Tab. IV. Knowledge of enrolled subjects about Italian law on alcoholic sale, per gender

Law about selling of alcoholic beverage in Italy	Total (939)	Male (518)	Female (421)	Chi-square	p
Free to everyone	168 (17.9%)	86 (16.6%)	82 (19.5%)	1.3	0.25
Forbidden for children under 14 years of age	154 (16.4%)	78 (15.1%)	76 (18.0%)	1.5	0.22
Forbidden for children under 16 years of age	319 (34.0%)	181 (34.9%)	138 (32.8%)	0.5	0.5
Forbidden for children under 18 years of age	295 (31.4%)	171 (33.0%)	124 (29.4%)	1.4	0.2
I don't know	3 (0.3%)	2 (0.4%)	1 (0.2%)	0.2	0.7

for children under 14. 34.0% (319/939) of respondents think the sale forbidden for subjects aged less than 16 and 31.4% (295/939) for subjects aged less than 18 years. 0.3% (3/939) stated having no idea about this topic. There were no statistically significant differences in the distribution of these opinion between the two genders (Tab. IV).

Spearman's rank showed significant associations for:

- age of respondents and age of alcohol initiation ( $\rho = 0,7$ ;  $p = 0,000$ );
- age of respondents and father's alcohol consumption ( $\rho = -0,1$ ;  $p = 0,030$ );
- mother's alcohol consumption and father's alcohol consumption ( $\rho = 0,4$ ;  $p = 0,000$ );
- age of alcohol initiation and gender ( $\rho = -0,1$ ;  $p = 0,001$ ).

## Discussion and conclusions

This survey, carried out among a large sample of adolescents of Bari's district, shows an higher prevalence of subjects who reported alcohol initiation at young age. Only 35% of enrolled people had never drunk alcohol in their life: in female (40.8%) proportion resulted higher than male people (29.9%).

The majority of interviewed adolescents have had an alcoholic drink before the age of 15 years. The average age of first alcohol use resulted 12 years; in addition resulted a correlation between age of alcohol initiation and gender ( $\rho = -0,1$ ;  $p = 0,001$ ): boys experienced their first drink at younger age than girls. This elements is consistent with literature data: according the WHO "Global status report on alcohol and health 2014", an early initiation of alcohol use (before 14 years of age) is a predictor of impaired health status because it is associated with increased risk for alcohol dependence and abuse at later ages [1, 20]. Initiating alcohol use earlier in adolescence is associated with an increased risk of binge drinking and higher quantity of consumption in late secondary school; public health efforts must be oriented in supporting policy for delaying alcohol initiation for as long as possible to reduce the risk for problematic use in later adolescence and the alcohol-related harms that may accompany this use.

Alcohol habit seems to be very common among father: only 12.9% never consumed alcohol drinks, while more than 20% drink alcohol every day; on the contrary, 35% (322/921) of mothers never consumes alcoholic drinks. Several reviews confirmed that parents affected by alcohol use disorders display particular patterns of alcohol consumption and thereby increase the likelihood that their children will develop drinking patterns associated

with high risk of alcohol use disorders when they are introduced to alcohol [1, 21, 22].

Actually in Italy the sale of alcohol is forbidden for children under 18 years of age (Law No. 189, November 8, 2012); until this law prohibition already concerned people under 16 years. Although law provisions, young people resulted not well informed about sale restrictions of alcoholic drinks: 18% considered that alcohol's sale is free and 16% considered that alcohol's sale is forbidden only for children under 16 years of age [23].

This is a pilot study who investigate only some elements of young people attitude and practice about alcohol consume. Major weakness regarded the design (convenience sample) and the use of a questionnaire, because a part of respondents could not report their alcohol habits for fear of parents.

For the future, it would be necessary to add information about quantity of alcohol consumed: data from literature suggested that there is a dose-response relationship between alcohol and acute and chronic diseases and injuries causally impacted by alcohol. In addition it would be investigate the frequency of alcoholic drink consume and the presence of heavy episodic drinking (HED), that was justified as a temporary behaviour associated with the freedom of young students [24].

In this regard HBSC probably represents the pioneer cross-national study gaining insight into young people's well-being, health behaviours and their social context. This research, carried out in collaboration with the WHO Regional Office for Europe, is conducted every four years in 48 countries and regions across Europe and North America. With adolescents making about one sixth of the world's population, HBSC uses its findings to inform policy and practice to improve the lives of millions of young people. HBSC data of Italian adolescents reveal regional difference of alcohol consumption and frequency of heavy episodic drinking (HED). Our results seem in line with HBSC data [25].

However the study is consistent with literature data about alcohol habit in young people. Children, adolescents and elderly people are typically more vulnerable to alcohol-related harm from a given volume of alcohol than other age groups and frequently a greater proportion of the total alcohol consumed by young people is consumed during heavy drinking episodes [26].

Alcohol policies based on age-related vulnerability include partial or total advertising bans, restrictions on access to alcohol through minimum ages at which it is legal to purchase alcohol, and laws aimed to prevent any alcohol consumption by young people when driving vehicles. In considering the increasing burden of alcohol

disease in the last years WHO tried to define a global strategy to reduce the harmful use of alcohol: it contains a set of guiding principles for the development and implementation of alcohol policies, sets priority areas for global action, recommends ten target areas for national action, and gives a strong mandate to WHO to strengthen action at all levels [1, 27].

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The authors declare that there is no conflict of interest.

## Authors' contributions

SP analysed data; SP, GA and BA drafted the manuscript; GA and RD conceived the study; GA, FC, DMA and CMF collected data and reviewed the manuscript. GA, DDV and TS supervised the project and reviewed the manuscript. All authors discussed the results and contributed to the final manuscript.

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