



Pattern of alcohol consumption of adolescents of a provincial town of the Lazio Region (Italy)

Noemi Bevilacqua^a, Massimo Morassut^a, Maria Cecilia Serra^a, Giorgio Casadei^b,
Francesca Cecchini^a

^a Council for Agricultural Research and Economics (CREA) – Research Centre for Viticulture and Enology, Velletri (Rome), Italy

^b Regional Agency for agricultural development and innovation of Lazio (ARSIAL), Rome, Italy
Email: francesca.cecchini@crea.gov.it

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Abstract

Alcohol consumption in Italy has shown a change in the model of consumption: from a model defined as Mediterranean to a model comparable to that of northern European countries. With regard to teenagers' drinking habits in particular, it is possible to see a new pattern of consumption which is a far cry from that of their peers of past decades. The consumption is concentrated on one occasion and is characterized by the simultaneous ingestion of different alcoholic beverages, often spirits, far from meals. It has also changed the purpose of alcohol drinking from being one of conviviality to the loss of self-control. To study this phenomenon a representative sample of 500 adolescents from the town of Velletri (Rome), was investigated. 76.8% of the sample declared the consumption of alcoholic beverages; 67.1% declared beer, 55.1% wine and 54.1% spirit consumption. The greater alcohol consumption occurs during the weekend, but a considerable number of students also declared that they consumed wine at mealtimes (38.3%). The average age of the first exposure to alcohol consumption is very low: from 10 to 15 and in general the first drunkenness episode occurs at 14. This sample confirms the magnitude of the problem and calls for a further analysis to better understand the phenomenon.

Keywords: Adolescent, Alcohol Consumption, Mediterranean Drinking Pattern

1. Introduction

Alcohol has been produced and drunk in Europe for thousands of years, and it derives from several beverages of different kinds and alcohol content (Anderson et al., 2006). Europe is the region with the highest mean consumption: 11

L/per capita for each adult per year (Anderson et al., 2006). The alcohol consumption habits of Italy, and, more in general, the whole Mediterranean region has been defined as “Mediterranean consumption model”. It is characterized by the consumption of moderate amounts of alcoholic beverages, mainly wine, during meals

(Rimm and Ellison, 1995). The study that identified the importance of Mediterranean diet for the first time was the Seven Country Study. This study also recognized the function of moderate drinking at mealtimes in the Mediterranean-style diet for its role in the prevention of cardiovascular diseases (Kromhout et al., 1989; Keys, 1970; Serafini et al., 1998; Farchi et al., 2000; Khemayanto et al., 2014; Bonaccio et al., 2015). Several epidemiological studies show that moderate wine consumption in adulthood reduces cardiovascular morbidity and mortality mainly owing to the polyphenols that exert a number of important biologic activities on the cardiovascular system (Gresele et al., 2011; Arranz et al., 2012; Rifler et al., 2012; Chiva-Blanch et al., 2013). The protective effect could involve the control of postprandial hyperlipaemia reducing the cholesterol oxidation products (Natella et al., 2001; Zern et al., 2005). Other authors have confirmed the specific free radical scavenging capacities of polyphenols derived from the different grape constituents: berry, skin (Falchi et al., 2006; Giannini et al., 2011) and seeds (Moretti et al., 2011; Cecchini et al., 2013; Ky et al., 2015). The positive effect of these beverages is linked to two assumptions: moderate drinking at mealtimes and consumption for adults only. Moderate alcohol consumption is defined in 2-3 alcoholic units for adult men and 1-2 for adult women (INRAN, 2003), an alcohol unit containing about 12 g of alcohol. The importance of age is linked to the considerable presence and activity of alcohol dehydrogenase (ADH). ADH is the hepatic enzyme that catalyzes the reversible oxidation of primary or secondary alcohols to aldehydes or ketones and is essential for alcohol metabolism. This enzyme begins to be present and active in the human body only around 16-18 years of age and is completely developed at around 20-21 (Brunetto et al., 2008; Maninelli, 2011). For this reason, alcohol ingested at an early age could not be completely metabolized and can remain toxic in the body.

Unfortunately, over the years, just as for the Mediterranean diet habits, we have also abandoned the typical pattern of alcohol consumption: moderate consumption at mealtimes has given to phenomena of episodic abuse (Scafato et al., 2009). Alcohol consumption is a serious worldwide public health problem, because of its high prevalence

and the important psychosocial and physical health burden caused by its harmful use (WHO, 2015).

Children, adolescents and elderly people are more vulnerable to alcohol-related harm from a given volume of alcohol than other age groups (Hilton, 1987; Midanik and Clark, 1995; Mäkelä and Mustonen, 2000; WHO, 2015). Also, the early initiation of alcohol use (before 14 years of age) is a predictor of impaired health status because it is associated with an increased risk of alcohol addiction and abuse later on in life (Grant and Dawson, 1997; Grant, 1998; DeWit et al., 2000; Kraus et al., 2000; Sartor et al., 2007). Among young people, at least part of the greater risk is related to the fact that, typically, a greater proportion of the total alcohol consumed by them is consumed during heavy drinking episodes (US Surgeon General, 2007; WHO, 2015). With regard to patterns of alcohol abuse in adolescents, the World Health Organization (WHO, 2015) reported a prevalence of 7.5% worldwide. However, the highest rate of heavy drinking among adolescents is to be found in the European Region (16.5%).

During the last 40 years, the overall pro capita alcohol consumption in Italy has decreased: from 116 L/per capita per year in 1961 to 66.6 L/per capita in 2009 (drafted by FAO-FBS, 2014). But this decrease is associated to a reduction in the consumption of beverages with moderate and low alcohol content. The Italian drinking behavior has often been assumed to protect young people from hazardous and harmful alcohol consumption in contrast with those of Northern European countries characterized by heavy episodic drinking, often with the intent of intoxication (Calafat et al., 2010; Mäkelä et al., 2006). The phenomenon of youth drinking patterns was the subject of some in-depth studies (HBSCa, 2013; Currie et al., 2012; Scafato et al., 2009; Cavallo et al., 2013). Youth drinking patterns seem to gradually merge into a single model characterized by heavy episodes of drunkenness in all European regions including the Mediterranean area and Italy (Calafat et al., 2010; Allaman et al., 2010). Another habit is on the rise among Mediterranean and Italian adolescents: the so-called binge drinking, the drinking of five or more alcoholic drinks in one drinking session (Prina, 2011). This attitude takes the Italian adolescents even farther from the Mediterranean drinking pattern.

The aim of this study is to verify alcoholic behavior in a sample of adolescents living in the suburban district of Rome and to confirm the dangerous drinking direction of Italian peers.

2. Materials and Methods

In Velletri there are 5 secondary schools, the school population of between 14 and 18 was in 2016 about 4700 students. The students in the first two years were 2500. A representative sample of 500 students was identified by a cluster sampling on the first two classes of one secondary school, randomly selected. The pupils filled in an anonymous questionnaire.

An “ad hoc” questionnaire, based on the literature data and tested in a sub-group of students not included in the sample, was given to the students in order to collect information about alcoholic attitudes.

The questionnaire consists of a series of questions on drinking patterns (such as the kind of alcohol consumed, the attitude to drinking at mealtimes, drinking during the weekend, fasting before drinking) and the binge drinking habit. Finally, each student was asked about the first exposure to alcohol. In addition, the questionnaire was structured so as to divide the sample between abstainers and drinkers. For the present work aperitifs, cocktails and spirits were grouped in the ‘spirits’ category. Binge drinking was defined as the drinking of five or more alcoholic drinks on one drinking occasion.

The response rate was 85.2% of the sample. The statistic elaboration was run through the Statistic package software (Version 7.1, StatSoft Inc., Tulsa, OK). Frequencies, means and standard deviation were calculated for all the variables, the analysis on the associated risk factor was run testing the significativity by means of the t-Student test and the YATES Chi squares test.

3. Results

The 426 teenagers involved in the study are on average 15 years of age; 48.5% of them are females.

Results show (Table 1) a significant higher ($p \leq 0.01$) wine consumption in males with re-

spect to females, while no significant differences were detected between males and females concerning beer and spirit consumption.

Drinking patterns	Males (%)	Females (%)	All (%)
Abstainers	20.6	26.0	23.3
Wine consumers	67.2a	46.9b	55.1
Beer consumers	68.6	66.4	67.1
Spirit consumers	55.4	53.4	54.1

Table 1. General drinking patterns of the sample, different letters in line indicate significant difference.

Data referred to the attitude of alcohol consumption showed that among wine consumers, 57.4% consume it during the weekend and 38.3% at mealtimes. Among beer drinkers, 77.5% consume it during weekend and only 19.7% with meals. Spirits were drunk during the weekend by 97.1% of the consumers. In all the cases no differences between genders was registered. In general, all the alcoholic beverages were mostly consumed during the weekend.

Table 2 shows the average age of the first taste of alcoholic beverages. Part of the sample tested alcoholic beverages before 10 years of age: 11.1% of sample tested wine, 7.3% tested beer, and 1.2% spirits.

First taste	Age (years)
Wine	11±3
Beer	12±2
Spirits	14±1
Drunkness	14±1

Table 2. Average age of first taste of different alcoholic beverages. Mean values $\pm$ standard deviation.

We underline that alcoholic beverages are often tested during childhood or adolescence. Also, abstainer pupils had often tasted an alcoholic beverage at least once.

A significant association ($p \leq 0.05$) was recorded between the attitude to drinking alcoholic beverages and the age of the first taste of wine or beer. The first exposure of consumer teenagers was at about 11 and 12 for wine and beer, respectively.

The 54.1% of students declaring spirit consumption was asked also to specify the kind of beverage consumed (Figure 1). Among the several beverages the most frequently consumed was vodka (36.6% of preferences), followed by rum (22.7%), cocktails (16.7%) and gin (12.9%).

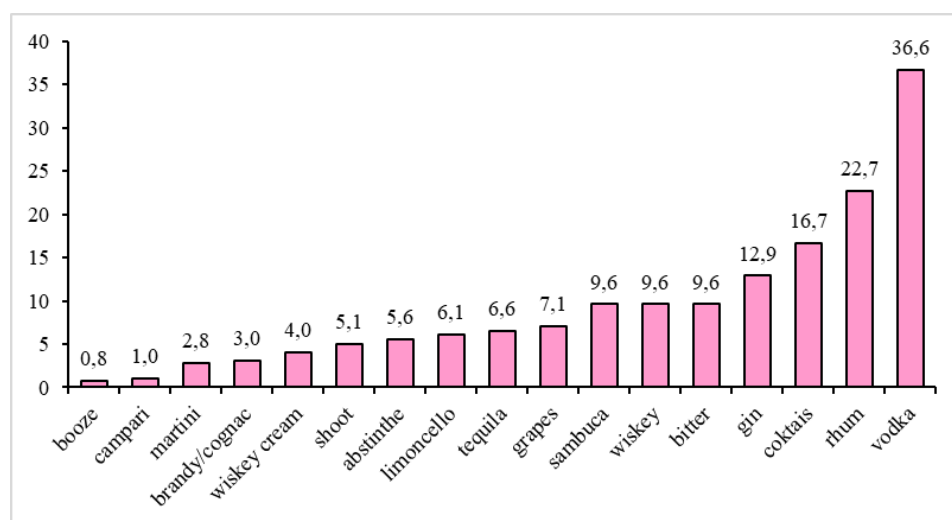


Figure 1. Different typologies of spirit consumed expressed as percentage (%) of total spirit beverages consumed.

30.8% of the sample declared episodes of binge drinking during the last year with no differences among genders. A significant association ($p \leq 0.01$) between binge drinking and the age of the first alcoholic beverage consumption was found. The adolescents were divided into two groups: the students that tasted alcoholic beverages before 14 being defined as “early drinkers” and the ones that tasted alcohol after 14 defined as “late drinkers”. Higher percentages of binge drinkers were found among early drinkers (45.4%) with respect to “late drinkers” (15.1%).

The frequency of binge drinking episodes in the last year was 5.1 ± 0.5 with significant differences ($p \leq 0.05$) between males (6.5 ± 1.2) and females (3.3 ± 0.6). Table 3 shows the mean number of binge drinking episodes between early and late drinkers. No significant differences were found between early and late wine drinkers, while significant differences ($p \leq 0.05$) were found for beer and spirits.

Finally, in addition to binge drinking, the 35.2% of our sample also declared that they mixed more than one alcoholic beverage for a single drinking occasion, with no significant differences among gender. Between them, 50.2% of early drinkers and 16.0% of late drinkers used to mix different alcoholic beverages during the same drinking occasion, respectively. These differences are statistically significant ($p \leq 0.05$).

Alcoholic beverage	Early drinkers	Late drinkers
Wine	5.1 ± 1.2^a	4.8 ± 1.0^a
Beer	6.2 ± 0.9^a	2.9 ± 0.7^b
Spirits	7.4 ± 1.3^a	3.9 ± 0.8^b

Table 3. Episodes (number) of binge drinking in the last years. In line different letters indicate significant differences. Mean values $\pm$ standard deviation.

4. Discussion

In our sample, the percentage of students declaring to be abstainers is 23.3%, data are comparable with the HBSC ones (Health Behaviour in School-aged Children): they reported 21.2% of abstainers in the Lazio region (HBSCb, 2010) and 20.4% in the whole of Italy (HBSCa, 2013). The sample declared that they consumed, typically, alcoholic beverages during the weekend. In addition, a high percentage are used to drinking alcohol far from meals. The habit of consuming alcohol at mealtimes is an important protective factor because in this way approximately 20% of the ingested alcohol is oxidized before it can be absorbed (Paton, 2005; Sadler, 2007). The attitude to drinking alcoholic beverages already from an early age confirms a low adherence to the typical Mediterranean drinking pathway (Cecchini et al., 2015).

The percentage of students who declared drinking wine was 55.1%, 67.1% for beer and 54.1% for spirits, delineating a different drinking pattern with respect to the one recorded from other Italian studies. According to the Italian National Institute for Statistics (ISTAT, 2017) 51.7% of the Italians over 11 years of age drink wine, 47.8% beer and 43.2% spirits. According to the Italian Society for Pediatrics (SIP) (SIP, 2014) 46.0% of Italian adolescents drink wine, 50.4% beer and 23.8% spirits.

Of the 55.1% of the sample that is used to drinking wine, 6.9% declared a daily consumption, 27.6% a frequent consumption and 65.5% a sporadic consumption. According to SIP (2014) the Italian adolescents declared a frequent consumption in 4.2% of the sample and a sporadic one in 41.2%.

Of the 67.1% of the sample that declared drinking beer, 54.3% stated that they consumed it sporadically, 35.2% frequently and 10.5% daily. For SIP (2014) those consuming beer were 14.2%, of which 5.9% frequently and 43.8% sporadically.

In addition, beer is generally consumed in a 330ml mug or in 330 ml cans and the grams of alcohol in a beer with a gradation of 4.5% v/v is about 12g in the standard portion of 330 ml and about 21g in a beer with a gradation of 8% v/v. Therefore, the consumption of beer can easily

exceed the recommendations for the adult population.

In addition, 54.1% of the sample declared a consumption of spirits, giving data that is in disagreement with the ISTAT (2014) data (14.6%). This habit is dangerous at all ages, but especially during the adolescent period. High alcohol content over 30% v/v can cause a faster rise in blood alcohol. The carbonated drink can also increase the rate of absorption (Paton, 2005), with the spirits drunk by adolescents often being rich in carbonate and sugar. The presence of simple sugars accelerates the alcohol metabolism providing a substrate that helps to convert NADH into NAD⁺ (Cederbaum, 2012). In the sample a high percentage of students (16.7%) reported the consumption of cocktails, often accompanied by large amounts of sugars that also makes the drink more palatable.

Finally, 30.8% of the sample reported binge drinking episodes, 33.8% of boys and 27.6% of girls, in agreement with the HBSC data (HBSCa, 2013): 39% for boys and 24% for girls.

Many studies have documented a relation between first drinking at an early age and alcohol-related problems in adolescence and adulthood (Meier et al., 2015; Kuntsche et al., 2013; De Wit et al., 2000; Eliassen et al., 2009; Grant et al., 1997). Moreover, in our study the earlier the alcohol consumption the greater the number of binge drinking episodes is, confirming the relation found also in the literature.

The sample showed a peculiar alcohol-drinking pattern characterized by a considerable number of students drinking wine, beer and spirits. It confirms the already alarming national data and shows a worse picture. One reason may be represented by the average age of the sample investigated, which was 15 with respect to 13 of the national one (SIP, 2014) or 11-17 of the Italian sample (ISTAT, 2017). Further analyses are needed to better comprehend the phenomenon and understand the several factors that can interact with it.

5. Conclusions

In conclusion, the Velletri adolescents showed alarming drinking habits, different from

the Mediterranean drinking patterns. Those preliminary results underline the urgent need for prevention plans with the purpose of creating the idea of drinking awareness. An educational program is planned involving institutions, school teachers and researchers. This plan will be addressed to the students in order to explain the problems related to alcohol abuse and to give the instruments to raise awareness with regard to drinking alcohol. The distribution of specific guidelines could also be useful among the young population of Velletri. Moreover, research in Europe and Italy on alcohol consumption should be intensified.

References

1. Allamani A., Beccaria F. and Voller F., "The puzzle of Italian drinking", *Nordic Studies on alcohol and drug*, 27, 2010, pp. 465-478.
2. Anderson P. and Baumberg B., *Alcohol in Europe. A public health perspective. A report for the European Commission*, Institute of Alcohol Studies, UK, 2006.
3. Arranz S., Chiva-Blanch G., Valderas-Martínez P., Medina-Remón A., Lamuela-Raventós R.M. and Estruch R., "Wine, beer, alcohol and polyphenols on cardiovascular disease and cancer", *Nutrients*, 4, 7, 2012, pp. 759-781.
4. Bonaccio M., Di Castelnuovo A., De Curtis A., Costanzo S., Persichillo M., Donati M.B., Cerletti C., Iacoviello L. and de Gaetano G., "Adherence to the Mediterranean diet is associated with lower platelet and leukocyte counts: results from the Moli-sani study", *Blood*, 8, 123, 19, 2014, pp. 3037-3044.
5. Brunetto G.P., Candio D., Filippini D. and Zermiani M. (Eds.), *Alcol: informazioni dalla ricerca*, Dipartimento delle Dipendenze di Verona, 2008.
6. Calafat A., Blay N.T., Hughes K., Bellis M., Juan M., Duch M. and Kokkevi A., "Nightlife young risk behaviours in Mediterranean versus other European cities: are stereotypes true?", *European Journal of Public Health*, 21, 3, 2011, pp. 311-315.
7. Cecchini F., Bevilacqua N. and Morassut M., "Adolescenti e bevande alcoliche: evoluzione dello stile alimentare mediterraneo", *La Rivista di Scienza dell'Alimentazione*, 1, 2015, pp. 33-40.
8. Cecchini F., Moretti S., Giannini B. and Carbone K., "Phytochemical Profiles and Antiradical Capacity of Grape Seed Extracts from Different Italian Cultivars. Reusing of Winery by-Products", in *Cultivars: Chemical Properties, Antioxidant Activities and Health Benefits*, 2013, pp. 137-156.
9. Cederbaum A.I., "Alcohol metabolism", *Clinical Liver Disorders*, 16, 4, 2012, pp. 667-685.
10. Chiva-Blanch G., Magraner E., Condines X., Valderas-Martínez P., Roth I., Arranz S., Casas R., Navarro M., Hervas A., Sisó A., Martínez-Huélamo M., Vallverdú-Queralt A., Quifer-Rada P., Lamuela-Raventós R.M. and Estruch R., "Effects of alcohol and polyphenols from beer on atherosclerotic biomarkers in high cardiovascular risk men: a randomized feeding trial", *Nutrition, Metabolism & Cardiovascular Diseases*, 25, 1, 2015, pp. 36-45.
11. Currie C., Zanotti C., Morgan A., Currie D., de Looze M., Roberts C., Samdal O., Smith O. and Barnekow V. (Eds.), *Social determinants of health and well-being among young people. Health Behaviour in School-aged Children (HBSC) study: international report from the 2009/2010 survey*, WHO Regional Office for Europe, 2012, Copenhagen (Health Policy for Children and Adolescents, No. 6).
12. De Wit D.J., Adlaf E.M., Offord D.R. and Ogborne A.C., "Age at first alcohol use: a risk factor for the development of alcohol disorders", *American Journal of Psychiatry*, 157, 2000, pp. 745-750.
13. Eliassen M., Kjaer S.K., Munk C., Nygård M., Sparén P., Tryggvadottir L., Liaw K.L. and Grønbaek M., "The relationship between age at drinking onset and subsequent binge drinking among women", *European Journal of Public Health*, 19, 2009, pp. 378-382.
14. Falchi M., Bertelli A., Lo Scalzo R., Morassut M., Morelli R., Das S., Cui J. and Das D.K., "Comparison of cardioprotective abilities between the flesh and skin of grapes", *Journal of Agricultural and Food Chemistry*, 54, 2006, pp. 6613-6622.

15. FAO, "Food Balance Sheet", http://faostat3.fao.org/faostat-gateway/go/to/download/FB/*E.
16. Farchi G., Fidanza F., Giampaoli S., Mariotti S. and Menotti A., "Alcohol and survival in the Italian rural cohorts of the Seven Countries Study", *International Journal of Epidemiology*, 29, 4, 2000, pp. 667-671.
17. Giannini B., Cecchini F. and Moretti S., "Nutraceutical property of Italian red and white cultivar and wine", *Proceedings of the Second Edition of the International Conference Series on Wine Active Compounds*, 2011, pp. 321-322.
18. Grant B.F., "Age at smoking onset and its association with alcohol consumption and DSM-IV alcohol abuse and dependence: results from the National Longitudinal Alcohol Epidemiologic Survey", *Journal of Substance Abuse*, 10, 1998, pp. 9-73.
19. Grant B.F. and Dawson D.A., "Age at onset of alcohol use and its association with DSM-IV alcohol abuse and dependence: results from the National Longitudinal Alcohol Epidemiologic Survey", *Journal of Substance Abuse*, 9, 1997, pp. 103-110.
20. Gresele P., Cerletti C., Guglielmini G., Pignatelli P., de Gaetano G. and Violi F., "Effects of resveratrol and other wine polyphenols on vascular function: an update", *Journal of Nutrition Biochemistry*, 22, 3, 2011, pp. 201-211.
21. HBSCa, "Rapporto sui dati 2010", in Cavallo F., Giacchi M., Vieno A., Galeone D., Tomba A., Lamberti A., Nardone P. and Andreozzi, Rapporti ISTISAN 13/5, 2013.
22. HBSCb Italia, *Stile di Vita e salute dei giovani in Età scolare, Rapporto sui dati regionali HBSC 2009-2010*, Regione Lazio, 2010.
23. Hilton M.E., "Demographic characteristics and the frequency of heavy drinking as predictors of self-reported drinking problems", *British Journal of Addiction*, 82, 1987, pp. 913-925.
24. INRAN – Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione, *Linee guida per una sana alimentazione italiana*, Rome, INRAN, 2003.
25. ISTAT, "Il consumo di alcol in Italia, anno 2016. Report Istat", Rome, 2017 <https://www.istat.it/it/archivio/198903>.
26. Keys A. (Ed.), *Seven Countries: A multivariate analysis of death and coronary heart disease*, Cambridge, Harvard University Press, 1980.
27. Khemayanto H. and Shi B., "Role of Mediterranean diet in prevention and management of type 2 diabetes", *Chinese Medical Journal*, 127, 20, 2014, pp. 3651-3656.
28. Kraus L., Bloomfield K., Augustin R. and Reese A., "Prevalence of alcohol use and the association between onset of use and alcohol-related problems in a general population sample in Germany", *Addiction*, 95, 2000, pp. 1389-1401.
29. Kromhout D., Keys A., Aravanis C., Buzina R., Fidanza F., Giampaoli S., Jansen A., Menotti A., Nedeljkovic S. and Pekkarinen M., "Food consumption patterns in the 1960s in seven countries", *American Journal of Clinical Nutrition*, 49, 5, 1989, pp. 889-894.
30. Kuntsche E., Rossow I., Simons-Morton B., Ter Bogt T., Kokkevi A. and Godeau E., "Not Early Drinking but Early Drunkenness Is a Risk Factor for Problem Behaviors Among Adolescents from 38 European and North American Countries", *Alcoholism, Clinical and Experimental Research*, 37, 2, 2013, pp. 308-314.
31. Ky I. and Teissedre P.L., "Characterisation of Mediterranean grape pomace seed and skin extracts: polyphenolic content and antioxidant activity", *Molecules*, 20, 2, 2015, pp. 2190-2207.
32. Mäkelä K. and Mustonen H., "Relationships of drinking behaviour, gender and age with reported negative and positive experiences related to drinking", *Addiction*, 95, 2000, pp. 727-736.
33. Mäkelä P., Gmel G., Grittner U., Kuendig H., Kuntsche S., Bloomfield K. and Room R., "Drinking patterns and their gender differences in Europe", *Alcohol*, 41, 1, 2006, pp. 8-18.
34. Maninelli R., "Children health and alcohol exposure", *Medico e Bambino*, 30, 2011, pp. 565-570.
35. Meier M.H., Hall W., Caspi A., Belsky D.W., Cerdá M., Harrington H.L., Houts R., Poulton R. and Moffitt T.E., "Which adolescents develop persistent substance

- dependence in adulthood? Using population-representative longitudinal data to inform universal risk assessment”, *Psychological Medicine*, 1, 2015, pp. 1-13.
36. Midanik L.T. and Clark W.B., “Drinking-related problems in the United States: description and trends, 1984- 1990”, *Journal of studies on alcohol*, 56, 1995, pp. 395-402.
 37. Moretti S., Comandini M.C., Valori R. and Cecchini F., “Antioxidant activities of grape seeds from different cultivars and clones of central Italy”, *Proceedings 17th International Symposium of the Group of International Expert of vitivinicultural System for Cooperation* (GiESCO), (Asti-Alba, 29 August - 2 September 2011), pp. 115-118.
 38. Natella F., Ghiselli A., Guidi A., Ursini F. and Scaccini C., “Red wine mitigates the postprandial increase of LDL susceptibility to oxidation Free Radic”, *Biology and Medicine*, 30, 9, 2001, pp. 1036-1044.
 39. Paton A., “Alcohol in the body”, *British Medical Journal*, 8, 330 (7482), 2005, pp. 85-87.
 40. Prina F., *Glossario Italiano di Alcolologia. Osservatorio permanente sui giovani e l'alcol*, Rome, 2011
 41. Rifler J.P., Lorcerie F., Durand P., Delmas D., Ragot K., Limagne E., Mazué F., Riedinger J.M., d'Athys P., Hudelot B., Prost M., Lizard G. and Latruffe N., “A moderate red wine intake improves blood lipid parameters and erythrocytes membrane fluidity in post myocardial infarct patients”, *Molecular Nutrition and Food Research*, 56, 2, 2012, pp. 345-351.
 42. Rimm E.B. and Ellison R.C., “Alcohol in the Mediterranean diet”, *American Journal of Clinical Nutrition*, 61, 6, 1995, pp. 1378S-1382S.
 43. Sadler D., “Alcohol and alcoholism University of Dundee: Department of Forensic Medicine”, 2007, <http://www.dundee.ac.uk/forensicmedicine/notes/notes.html>.
 44. Sartor C.E., Lynskey M.T., Heath A.C., Jacob T. and True W., “The role of childhood risk factors in initiation of alcohol use and progression to alcohol dependence”, *Addiction*, 102, 2007, pp. 216-225.
 45. Scafato E., Ghirini S., Galluzzo L., Farchi G. and Gandin C., per il Gruppo di Lavoro CSDA (Centro Servizi Documentazione Alcol), *Epidemiologia e monitoraggio alcol-correlato in Italia. Valutazione dell'Osservatorio Nazionale Alcol – CNESPS sull'impatto dell'uso e abuso di alcol ai fini dell'implementazione delle attività del Piano Nazionale Alcol e Salute*, Rome, Istituto Superiore di Sanità, 2009, (Rapporti ISTISAN 09/4).
 46. Serafini M., Maiani G. and Ferro-Luzzi A., “Alcohol-free red wine enhances plasma antioxidant capacity in humans”, *Journal of Nutrition*, 128, 6, 1998, pp. 1003-1007.
 47. SIP - Società Italiana di Pediatria, *Abitudini e Stili di Vita degli Adolescenti Italiani, indagine annuale della Società di Pediatria Italiana*, 2014.
 48. US Surgeon General, *Surgeon General's call to action to prevent and reduce underage drinking*, Washington (DC), Department of Health and Human Services, Office of the Surgeon General, 2007.
 49. WHO - World Health Organization, *Global status report on alcohol and health*, Geneva, Switzerland, WHO Press, 2015.
 50. Zern T.L., Wood R.J., Greene C., West K.L., Liu Y., Aggarwal D., Shachter N.S. and Fernandez M.L., “Grape polyphenols exert a cardioprotective effect in pre - and postmenopausal women by lowering plasma lipids and reducing oxidative stress”, *Journal of Nutrition*, 135, 8, 2005, pp. 1911-1917.