Early alcohol use and risk of later alcohol problems.

Uso precoce de álcool e risco de problemas futuros.

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Abstract

Objectives: To investigate the relationship between age of onset, alcohol consumption patterns and related problems. **Methods**: In 2004, one self-administered questionnaire was completed by 2074 students from 5th to 11th grades of schools in Paulínia (SP). Data collection was conducted at the classroom without the presence of the teacher. The participation in the study was voluntary and anonymous. **Results**: The prevalence of lifetime alcohol use among the students was 62.2%. The mean age of first use of alcohol was 12.35 (sd=2.72) and ranged between 5 and 19 years of age. In 78% of the cases the first use occurred before the age of 15, and more than 22% of the students reported having tried alcohol before adolescence (before 10 years of age). There were significant differences regarding current consumption patterns (drunkenness and heavy alcohol use, i.e., 5 or more doses per episode) when compared to the mean age of first use. The results also show a relationship between the age of first alcohol experimentation and the use of tobacco and other drugs. **Conclusions:** The data reveal that the adolescents experiment alcohol in early ages, what impacts the current consumption patterns. This study emphasizes the need of actions regarding public alcohol policies in Brazil in order to prevent or delay the initiation of alcohol use and its related problems.

Keywords:

Adolescent

Age of onset

Alcoholic Beverages/ *provision & distribution

Alcohol Drinking/*adverse effects/*prevention & control

Public Policy

Resumo

Objetivos: Investigar a relação entre idade de início de uso de álcool, padrão de consumo e problemas relacionados. **Material e Método**: Em 2004, um questionário de auto-preenchimento foi respondido por 2074 alunos de 5ª série do ensino fundamental a 3ª série do ensino médio do município de Paulínia (SP). A coleta de dados foi realizada em sala de aula, sem a presença do professor. A participação no estudo era voluntária e anônima. **Resultados**: A prevalência de uso na vida de álcool entre os estudantes foi de 62,2%. A média de idade de primeiro uso de álcool foi de 12,35 (sd= 2,72) variando entre 5 a 19 anos, em 78% dos casos o primeiro uso de álcool ocorreu antes dos 15 anos, sendo que mais de 22% dos adolescentes relataram que experimentaram bebida alcoólica ainda na pré-adolescência (10 anos ou menos). Houve diferenças significantes para padrão de consumo atual (embriaguez e consumo de 5 ou mais doses por ocasião) quando comparadas com as médias de idade de primeiro uso. Os dados também mostram associação entre a idade de experimentação do álcool e o uso de tabaco e outras drogas. **Conclusões**: Os dados revelam que os jovens experimentam álcool em idade precoce e esta tem impacto no padrão de consumo atual. Esse artigo enfatiza a necessidade de ações imediatas em relação às políticas públicas do álcool no Brasil para prevenir ou adiar o início do consumo de álcool e problemas relacionados.

Descritores:

Adolescentes

Bebidas alcoólicas/*provisão e distribuição

Consumo de Bebidas Alcoólicas/*efeitos adversos/*prevenção e controle

Idade de início

Política Social

Introduction

Alcohol use among adolescents has increased in the last decades[1]. The habit of drinking has become part of the Western young culture, the exception being the total abstinence within adolescence[2]. National and foreign surveys point out that at the end of high-school nearly 60 to 90% of adolescents have consumed some kind of alcoholic beverage, being drunkenness and binge drinking present in the last month among 20 to 50% of cases[3-7]. Alcohol consumption among youngsters is related to several acute complications, such as increase in the risk of injuries, violence, driving drunk and unprotected sex[1].

Despite the decrease of alcohol consumption in adultness[8, 9], due to the need of adapting to the social, cultural and economic expectations and obligations at this new phase of life, a significant proportion of users (20 to 40%) evolve to complications related to maintaining the use, among them dependence[10].

Starting the use of alcohol from pre-adolescence up to the first phase of adolescence stands among the risk factors associated with the appearance of such complications in adulthood[10-12]. Besides, there is an increasing consensus that early alcohol consumption, especially heavy use, is associated with cognitive impairment (memory, attention, planning) in adulthood, due to the neurotoxic action of alcohol on the developing brain structures of adolescents[13]. The same behavior is also associated with the higher risk of non-intentional injuries[14], fights[15], car accidents[16] and higher incidence of tobacco consumption among adolescents[17].

The period of highest incidence of alcohol experimentation seems to be in the age range between 14 and 15 years[18]. Several studies point out that alcohol consumption in this age range is a higher risk for future complications, which decreases after the age of 16 In this sense, DeWit et al. (2000)[10] performed a survival analysis with 5,856 subjects in the community, with antecedents of lifetime alcohol use, randomly selected during the Ontario Mental Health Supplement (1990 – 1991) and noticed a dependence rate of nearly 14% among subjects who started the use of alcohol before the age of 14 and of only 2% for those who had their first episode of use after the age of 19. The risk of abuse was equally discrepant: nearly 13% and less than 3%, respectively[10]. Grant et al. (2001) accomplished a study with 5,792 subjects in the community, randomly selected by the National Longitudinal Survey of Labor Market Experience in Youth (NLSY), in the US, and found that the probability of alcohol dependence decreased between 5 and 9% for each year in which experimentation was delayed[12]. Wells et al. (2004), in turn, have followed up for 25 years one cohort with 1265 newborns in New Zealand, assessing them yearly up to the age of 16 and afterwards at the ages of 18, 21 and 25. Analyzing the beginning of consumption in their sample at the age of 16, the authors have not found relationship between age (16 years) and risk of dependence, suggesting that such relationship occurs in earlier ages[19].

Even considering the existence of several other factors capable of influencing the drinking behavior of the youth, such as family and social context, personality, expectations and beliefs, price, commercial availability and easiness of acess,[20] the age of onset of alcohol consumption has been relevant

in the literature and was used as a basis for the planning of public policies, such as the establishment of a minimal legal age to purchase and consume alcoholic beverages.

Despite the increase in the comprehensiveness and in the number of studies on alcohol consumption in Brazil, there are no studies which consider the impact of age of onset and the risk of future problems. Based on this presupposition, this study aimed to delineate a profile of students in the city of Paulínia (SP), taking into account: age of onset, consumption pattern of alcoholic beverages and related problems. This study is part of a community trial, pioneer in Brazil, for the reduction of alcohol-related problems in the city of Paulínia (SP) and the results obtained should be used to substantiate public policies on alcohol in the city. This is the first time that a representative sample of the student population of a Brazilian city is used for this purpose.

Method

Subjects

The sampling allotment was accomplished based on the lists of enrolled students, which were provided by schools. Of the 2387 students allotted from the 78 classrooms, 2074 were present in the classroom at the moment of the study and filled in the questionnaire. For data analysis blank questionnaires were excluded as well as those in which students answered positively to the use of fictitious drugs, giving an answer rate of 87%. The final population studied had 1990 students, aging 11 to 21 years (M = 14.9, sd = 2.28); of these,

88% aged under 18 years and 54.5% were females. Grades were grouped as follows: 28.9% studied at the 5th and 6th grades; 23% attended the 7th and 8th grades and 48.01% coursed 9th up to 11th grades. The population studied is predominantly catholic (59.9%), does not work (76.2%), lives with their parents (71.1%), and 50.3% are middle-class (C), 26.2% belonged to the upper class (A/B) and 23.5% to the lower class (D/E).

Proceedings

This is cross-sectional epidemiological study with a random sample of students from the 5th up to the 11th grade, at public and private schools in Paulínia (SP), from morning, afternoon and evening periods. The sample selection was probabilistic and had a 97.5% confidence level. A stratified sampling planning was considered and the distribution was proportional to the strata sizes.

Data collection was accomplished from October to November 2004. All students of selected classrooms who were present at the collection moment comprised this sample. The participation was voluntary and anonymous. Students answered individually to a self-administered questionnaire, applied by two trained professionals per classroom and without the presence of the teacher. One question with the name of fictitious drugs was inserted in the questionnaire in order to verify inconsistencies and the lack of attention to answer the survey. The application sessions lasted from 20 minutes up to 1 hour and a half depending on the students´ grade; the data collection in most of the classrooms was concluded in less than 60 minutes.

Instruments

The questionnaire developed for this study was based on the instrument used by the Prevention Research Center - Pacific Institute for Research and Evaluation (PRC/PIRE) - in studies with youngsters[21] and we added sets of questions from the GSHS - Global School-based Student Health Survey – developed by the WHO in collaboration with UNICEF, UNESCO and e UNAIDS with technical and scientific counseling from the Center for Disease Control and Prevention (CDC)[22], and from the questionnaire of the Brazilian Information Center on Psychotropic Drugs (CEBRID) which is used in surveys with students[6].

Data Analysis

We used the SPSS - *Statistical Package for the Social Sciences*, version Windows 13.0, as the database and statistical analysis instrument. We performed a descriptive analysis of the data in order to analyze the socio-demographic profile of the sample studied, as well as the behavior and consequences of alcohol consumption variables, and we obtained simple frequencies for categorical variables (gender, social class, religion, etc.) and summary measures (mean, median, standard deviation) for numeric variables (age, age of onset, etc.). In order to verify the association between two categorical variables we used the chi-square test (X^2).

We used the Student's t test to compare two groups and the Analysis of Variance (ANOVA) to compare more than two groups. The comparisons between means were performed with homocedasticity tests (a necessary

presupposition for the comparison of means). In case homocedasticity was not met, the degrees of freedom of the tests were dully corrected. Multiple Comparison Tests (Duncan, in case of homocedasticity and Dunett C, otherwise) were accomplished after we detected inter-group differences. These comparisons aim to verify which groups have statistically different means. In order to analyze the age of onset of tobacco use we used the lineal regression, using the age of first alcohol use as the dependent variable. For all tests we adopted a significance level of 5%.

Ethics Committee

This study was submitted to the Research Ethics Committee of the São Paulo Hospital/Federal University of São Paulo (Project Nº 0259/06).

Results

Lifetime prevalence of alcohol use and age of onset

Of the 1990 students, 1230 (62.2%) have already consumed alcohol in lifetime. The mean age of the first use was 12.35 years (*sd=2.72*), ranging between 5 and 19 years, being of 14 years or less for 78% of the sample and under 18 years in 99.1% of the cases. There was no significant difference regarding the age of first use between genders. Table 1 shows the frequencies of age of first alcohol use by categories and gender. Table 2 shows the frequencies of the mean age of first alcohol use among students by their current ages.

Alcohol use and drunkenness in lifetime and in the last 12 months

Comparing the frequencies of alcohol use in the last 12 months, students who had drunk at least once per week in the last year, were younger at their first use (*M*=11.97), whereas the mean age of first use for respondents with consumption frequency of up to thrice per month in the same period was 12.44 years ($F_{1,1169}$=5.21; p=0.023). There were no differences between ages of first use for drunkenness in lifetime or in the last 12 months.

Consumption patterns in the last 30 days

Table 3 displays data related to the consumption patterns in the *last 30 days* among adolescents (alcohol use, drunkenness and binge drinking episodes), by age of first use and gender.

Drunkenness

Data show that the lower the age of first use, the higher the frequency of drunkenness in the last 30 days. Mean age of first use in students who reported drunkenness in 12 days or more in the last month was 9.2 years, whereas those who have not reported drunkenness used alcohol, in average, at the age of 12.41 years ($F_{3,1143}$=2.554; p-value=0.05).

Binge drinking in the last 30 days

There were no significant differences regarding the frequency of binge drinking in the last 30 days when mean ages of first use were compared. However, there was significant difference as to the amount of doses by episode in the last 30 days; students who reported that they commonly drank 5 or more doses (binge

drinkers) tried alcohol in an earlier age (*M*=11.83) than those who consumed 4 doses or less by episode (*M*=12.44) ($F_{1,1139}$=6.141; p-value=0.013).

Similar results are found when assessing the number of doses per episode for each type of beverage. Adolescents who commonly drank 5 or more doses of wine in the last 30 days (*M*=10.56; $F_{3,969}$=6.080; p<0.001) started earlier when compared to those who drank one dose per episode. Regarding beer, those who commonly drank 5 or more doses (*M*=10.56), compared to those who drank up to two doses per episode (*M*=12.41), ($F_{3,969}$=6.256; p-value<0.001). As to alcopops, those who drank 5 or more doses on the same occasion had lower mean age of alcohol first use than those who drank up to 2 doses per episode in the last month, *M*=11.61 and *M*=12.92, respectively ($F_{3,915}$=2.759; p-value=0.041).

In relation to the preferred type of beverage that is, the one they most frequently drink, students who reported drinking more frequently distilled beverages had lower age of onset than those who preferred alcopops (*M*=12.07 and *M*=12.97; $F_{4,1133}$=2.618; p-value=0.034).

Context of drinking

Students who normally drink with family members tried alcohol before those who drink with their friends, *M*=11.68 and *M*=12.73, respectively ($F_{3,1142}$=13.789; p-value<0.001).

Regarding the way in which they acquired alcoholic beverages in the last consumption occasion, adolescents who got them at home or from family members had lower mean age than those who bought them, *M*= 11.62 and *M*=12.89, respectively ($F_{3,1145}$=13.468; p-value<0.001).

Tobacco use

When comparing means, tobacco use is also related to earlier age of onset of alcohol use. Students who had never smoked started to drink later than those who reported lifetime tobacco use (*M*=11.13; $F_{1,1157}$=5.664; p-value=0.017) as well as those who have used tobacco in the last 30 days (*M*=11.97; $F_{1,1144}$=4.746; p-value=0.030). The results of the linear regression, presented in table 4, show that the earlier the experimentation of alcohol, the earlier the use of tobacco, and for each year of delay in the use of alcohol, there is an increase of 0.31 years in the age of onset of tobacco consumption (p<0.001).

Use of other drugs in the last 12 months

Students who reported any drug use in the last 12 months had earlier age of onset of alcohol use than those who did not consume drugs in the last year (*M*=12.06, $F_{1,1110}$=3.940; p-value=0.047). When analyzed separately (per each drug), there were significant differences for the use of cannabis (*M*=11.76, $F_{1,1098}$=6.069; p-value=0.014), of tranquilizers (*M*=11.60, $F_{1,1084}$=3.967; p-value=0.047), and opiates (*M*=9.17, $F_{1,1082}$=8.277; p-value=0.004)

Discussion

Limitations of this study

The study was performed with students, being excluded from the sample adolescents who dropped out or who have already finished their studies. Besides, the data collection was not remade for students who did not attend school in the day the questionnaire was applied. As this is a cross-sectional study, it only allows seeing the “picture” in a certain time point. Of note also, data obtained were related to the “report” of the behavior rather than to the behavior itself, giving room to over- or under-representation of the behavior.

Although the data collection was performed at classroom, during the school period, without the presence of the teacher, being the participation volunteer, with anonymity and confidentiality assured, possible information biases should be considered when answering the questionnaire, such as: lack of attention or understanding; memory error; lack of seriousness; haste to finish the questionnaire; self-censorship and suspicion that school authorities might demand access to the questionnaires answered. On the other hand, self-administered instruments use to leave respondents more comfortable to answer the questions, especially those they consider confidential. It may be that the instrument used was extensive enough to discourage some students, especially those with reading difficulties and also the youngest. This might have happened despite being offered the possibility of skipping questions, ideally used to decrease the answering time of the youngest students, based on the presupposition that these had less experiences related to the behaviors studied. Although the sample was representative of Paulinia’s population, this study was

conducted only in this city and as it is not part of a more comprehensive multicentric study, its findings may not be generalizable. Nevertheless, it allows comparing its findings with national and international studies. Despite its limitations, the current study reveals important data.

This study highlighted that the start of alcohol consumption increases the risk of related complications, especially the current occurrence of unduly alcohol use patterns (intoxication and binge drinking) and the presence of tobacco and other drugs consumption. This finding is in accordance with the literature[2, 23, 24].

Although the investigation about the relationship between the age of onset and the current patterns of consumption of alcohol was restricted to pre-adolescence and adolescence, its findings point out to important issues, all addressed in the literature. *Firstly*, the risk of maintaining, in adulthood, the consumption patterns acquired in adolescence. Different studies point out that adolescents who have early moderate and heavy use of alcohol tend to keep such patterns in adulthood[2]. Andersen et al. (2003)[1] accomplished a follow-up study with a sample with 847 15-year-old adolescents, randomly selected from the Danish National Register of Birth System, and who were interviewed again at the age of 19 (n=729). Alcohol consumption at the age of 15 (regardless the pattern) has increased the probability of alcohol use above the WHO patterns at the age of 19 (OR=1.1 – 3.5) for both genders. The presence of alcohol consumption at the age of 15 is a predictive factor for the use above the normal patterns (WHO) at the age of 19. Therefore, the trajectory of alcohol consumption during adolescence is an important predictive factor about the

alcohol consumption pattern in adulthood[25]. *Secondly,* drinking in adolescence (especially in its first phase), increases the chance of evolution towards dependence, both when compared to the absence of consumption[26], and to the consumption in later phases of adolescence[27]. In this sense, for six years, Bonomo et al. (2004)[28] have followed up a sample with 1,943 students, randomly selected from schools in Victoria (Australia), being initially interviewed at the ages of 14-15 and afterwards at the ages of 20-21. The recreational use of alcohol in adolescence was clearly predictive of dependence at the beginning of adulthood. DeWit et al. (2000)[10], in turn, has accomplished a survival analysis with 5,856 individuals in the community with antecedent of alcohol use in lifetime, randomly selected during the Ontario Mental Health Supplement (1990 – 1991). The authors noticed a dependence rate of almost 14% among individuals who started the consumption of alcohol before the age of 14 and of only 2% for those who had their first episode of use after the age of 19. The risk of abuse was equally discrepant: nearly 13% and less than 3%, respectively. Lastly, Grant et al. (2001)[12] accomplished one study with 5,792 individuals in the community, randomly selected by the National Longitudinal Survey of Labor Market Experience in Youth (NLSY), in the United States, and noticed that the probability of alcohol dependence decreased by 5 – 9% per each year the experimentation was delayed.

The early start of alcohol consumption has been also associated with higher chance of tobacco and drug use in the last 30 days. In consonance with these findings, Jackson et al[17] have followed up for five years 4,831 adolescents randomly selected to participate in the National Longitudinal Study of

Adolescent Health (AddHealth*)* and in the Adolescent Health Risk Study (AHRS). The authors noticed that alcohol consumption was predictive of the use of cigarettes, especially at earlier ages. Similarly, Grant et al.[29] have interviewed 8,160 male twins. After excluding the genetic and environmental influence, the authors noticed that the more precocious the start of alcohol use, the higher the current risk of use of illicit drugs.

Despite the relevance of the age of onset of alcohol consumption as a predictor of future alcohol-related complications, the development of alcohol harmful use and dependence in adulthood is influenced by innumerable prediction factors, being these sometimes considered as more important and determinant than drinking in adolescence[30]. For example, the association between starting the consumption and the facilitated access to alcohol increases the probability of adopting more heavy patterns of alcohol use after reaching the majority[8]. Within the family, the presence of antecedents of alcoholism and unduly use of alcohol by family membrers[27 2 31], as well as the presence of negative interactions with the parents[32, 33] increase the risk of dependence among those who started drinking precociously, when compared to precocious users of alcohol who were free from these variables. Regarding the psychiatric comorbidities, mood and personality disorders seem to increase the risk of developing unduly use of alcohol among those who started drinking precociously[2]. The presence of impulsiveness and conduct disorders increase the probability of unduly alcohol use among adolescent users[12, 31, 34, 35]. Lastly, other psychosocial variables, such as low schooling level, living conditions, maternal alcohol consumption[36], and low engagement with school[32] seem also to increase the risk of future problems.

Nevertheless, the identification of alcohol consumption in pre-adolescence and the beginning of adolescence as a risk period for the development of unduly use of alcohol deserves attention. At ages of 11-14 adolescents experience a great variety of psychological and social changes, which will be valuable instruments for their functioning in adulthood. The starting of alcohol use in this period may critically interfere with this process, leading to an escalade to heavier and more frequent consumption patterns. In this age range, adolescents are undergoing crucial transitions, which are sources of anxiety and stress, which may lead to an increase in academic and social problems. Adolescents who start drinking (and using other drugs) in this context have higher chances of adopting the frequent use of alcohol as a strategy to deal with these situations. The current study has detected the presence of precocious drinking among a group of students of a middle-sized city in the state of São Paulo, relating it to the current occurrence of unduly use of alcohol, tobacco and other drugs: findings which suggest the urgent need to adopt public policies capable of delaying the start of alcohol consumption among youngsters. Systematic nation-wide epidemiological studies might greatly contribute to help the understanding and follow-up of the predictive factors of alcohol consumption, as well as its consequences.

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REFERENCES

1. Andersen A, Due P, Holstein BE, Iversen L. Tracking drinking behaviour from age 15-19 years. *Addiction* 2003; **98**: 1505-11.
2. Chassin L, Fora DB, King KM. Trajectories of alcohol and drug use and dependence from adolescence to adulthood: the effects of familial alcoholism and personality. *J Abnorm Psychol* 2004; **113**: 483-98.
3. Carlini-Cotrim B, Gazal-Carvalho C, Gouveia N. [Health behavior among students of public and private schools in the metropolitan area of Sao Paulo, Brazil]. *Rev Saude Publica* 2000; **34**: 636-45.
4. Schmid H, Ter Bogt T, Godeau E, Hublet A, Dias SF, Fotiou A. Drunkenness among young people: a cross-national comparison. *J Stud Alcohol* 2003; **64**: 650-61.
5. Hibell B, Andersson B, Bjarnasson B., al. e. The 2003 ESPAD Report: Alcohol and Other Drug Use Among Students in 35 European Countries. . Swedish Council for Information on Alcohol and Other Drugs (CAN) and the Pompidou Group at the Council of Europe. Stockholm, Sweden., 2004
6. Galduroz JC, Noto AR, Fonseca AM, Carlini EA. *V Levantamento Nacional Sobre o Consumo de Drogas Psicotrópicas entre Estudantes do Ensino Fundamental e Médio da Rede Pública de Ensino nas 27 Capitais Brasileiras- 2004.* CEBRID - Centro Brasileiro de Informações sobre Drogas Psicotrópicas, Departamento de Psicobiologia, Escola Paulista de Medicina, 2004, 2004.
7. Substance Abuse and Mental Health Services Administration. Results from the 2004 National Survey on Drug Use and Health: National

Findings Office of Applied Studies, NSDUH Series H-28, DHHS Publication No. SMA 05-4062. Rockville, MD., 2005.

8. Casswell S, Pledger M, Pratap S. Trajectories of drinking from 18 to 26 years: identification and prediction. *Addiction* 2002; **97**: 1427-37.
9. Vega WA, Aguilar-Gaxiola S, Andrade L et al. Prevalence and age of onset for drug use in seven international sites: results from the international consortium of psychiatric epidemiology. *Drug Alcohol Depend* 2002; **68**: 285-97.
10. DeWit DJ, Adlaf EM, Offord DR, Ogborne AC. Age at first alcohol use: a risk factor for the development of alcohol disorders. *Am J Psychiatry* 2000; **157**: 745-50.
11. Guo J, Collins LM, Hill KG, Hawkins JD. Developmental pathways to alcohol abuse and dependence in young adulthood. *J Stud Alcohol* 2000; **61**: 799-808.
12. Grant BF, Stinson FS, Harford TC. Age at onset of alcohol use and DSM-IV alcohol abuse and dependence: a 12-year follow-up. *J Subst Abuse* 2001; **13**: 493-504.
13. Brown SA, Tapert SF. Adolescence and the trajectory of alcohol use: basic to clinical studies. *Ann N Y Acad Sci* 2004; **1021**: 234-44.
14. Hingson RW, Heeren T, Jamanka A, Howland J. Age of drinking onset and unintentional injury involvement after drinking. *Jama* 2000; **284**: 1527-33.
15. Hingson R, Heeren T, Zakocs R. Age of drinking onset and involvement in physical fights after drinking. *Pediatrics* 2001; **108**: 872-7.

16. Hingson R, Heeren T, Zakocs R, Winter M, Wechsler H. Age of first intoxication, heavy drinking, driving after drinking and risk of unintentional injury among U.S. college students. *J Stud Alcohol* 2003; **64**: 23-31.

17. Jackson KM, Sher KJ, Cooper ML, Wood PK. Adolescent alcohol and tobacco use: onset, persistence and trajectories of use across two samples. *Addiction* 2002; **97**: 517-31.

18. Coleman L, Cater S. Fourteen to 17-year-olds' experience of 'risky' drinking--a cross-sectional survey undertaken in south-east England. *Drug Alcohol Rev* 2004; **23**: 351-3.

19. Wells JE, Horwood LJ, Fergusson DM. Drinking patterns in mid-adolescence and psychosocial outcomes in late adolescence and early adulthood. *Addiction* 2004; **99**: 1529-41.

20. Babor T. *Alcohol : no ordinary commodity : research and public policy*. Oxford University Press, Oxford ; New York, 2003.

21. Grube JW, Stewart K. Guide to Conducting Youth Surveys. Office of Juvenile Justice and Delinquency Prevention, U.S. Department of Justice, Washington, DC. 1999 Available online:http://www.udetc.org/documents/YouthSurveys.pdf.

22. Centers for Disease Control and Prevention. Global School-based Student Health Survey Core Questionnaire Modules. Available at: http://www.cdc.gov/gshs/questionnaire/index.htm.

23. York JL, Welte J, Hirsch J, Hoffman JH, Barnes G. Association of age at first drink with current alcohol drinking variables in a national general population sample. *Alcohol Clin Exp Res* 2004; **28**: 1379-87.

24. Pitkanen T, Lyyra AL, Pulkkinen L. Age of onset of drinking and the use of alcohol in adulthood: a follow-up study from age 8-42 for females and males. *Addiction* 2005; **100**: 652-61.

25. Toumbourou JW, Williams IR, Snow PC, White VM. Adolescent alcohol-use trajectories in the transition from high school. *Drug Alcohol Rev* 2003; **22**: 111-6.

26. Guilamo-Ramos V, Jaccard J, Turrisi R, Johansson M. Parental and school correlates of binge drinking among middle school students. *Am J Public Health* 2005; **95**: 894-9.

27. Warner LA, White HR. Longitudinal effects of age at onset and first drinking situations on problem drinking. *Subst Use Misuse* 2003; **38**: 1983-2016.

28. Bonomo YA, Bowes G, Coffey C, Carlin JB, Patton GC. Teenage drinking and the onset of alcohol dependence: a cohort study over seven years. *Addiction* 2004; **99**: 1520-8.

29. Grant JD, Scherrer JF, Lynskey MT et al. Adolescent alcohol use is a risk factor for adult alcohol and drug dependence: evidence from a twin design. *Psychol Med* 2006; **36**: 109-18.

30. Prescott CA, Kendler KS. Age at first drink and risk for alcoholism: a noncausal association. *Alcohol Clin Exp Res* 1999; **23**: 101-7.

31. Kuperman S, Chan G, Kramer JR et al. Relationship of age of first drink to child behavioral problems and family psychopathology. *Alcohol Clin Exp Res* 2005; **29**: 1869-76.

32. Kuperman S, Schlosser SS, Kramer JR et al. Risk domains associated with an adolescent alcohol dependence diagnosis. *Addiction* 2001; **96**: 629-36.

33. Power TG, Stewart CD, Hughes SO, Arbona C. Predicting patterns of adolescent alcohol use: a longitudinal study. *J Stud Alcohol* 2005; **66**: 74-81.

34. Hill SY, De Bellis MD, Keshavan MS et al. Right amygdala volume in adolescent and young adult offspring from families at high risk for developing alcoholism. *Biol Psychiatry* 2001; **49**: 894-905.

35. Finn PR, Bobova L, Wehner E, Fargo S, Rickert ME. Alcohol expectancies, conduct disorder and early-onset alcoholism: negative alcohol expectancies are associated with less drinking in non-impulsive versus impulsive subjects. *Addiction* 2005; **100**: 953-62.

36. Alati R, Najman JM, Kinner SA et al. Early predictors of adult drinking: a birth cohort study. *Am J Epidemiol* 2005; **162**: 1098-107.

Table 1. *Frequencies of age of first alcohol use by categories and gender*.

Age of first use in categories	Gender				Total	
	M		F		T	
	n	%	n	%	n	%
10 years or below	132	25.0	129	20.1	261	22.3
11 - 12 years	132	25.0	163	25.3	295	25.2
13 -14 years	138	26.1	219	34.1	357	30.5
15 years or above	126	23.9	132	20.5	258	22.0
Total	528	100.0	643	100.0	1171	100.0

M= male F= female T=total

$X^2 = 0.014$

Table 2. *Frequencies of mean age of first alcohol use among students, by current age.*

Current Age	N	Mean age of first alcohol use	Standard deviation	Standard error	95% confidence interval for mean		Min	Max
					Lower limit	Upper limit		
11	38	8.6053	1.93879	.31451	7.9680	9.2425	5	11
12	68	10.1176	1.48152	.17966	9.7590	10.4763	6	12
13	123	10.6992	2.07615	.18720	10.3286	11.0698	5	13
14	124	11.2903	2.13669	.19188	10.9105	11.6701	5	15
15	166	12.0663	2.18573	.16965	11.7313	12.4012	5	15
16	236	13.0508	2.20192	.14333	12.7685	13.3332	5	16
17	221	13.1131	2.69694	.18142	12.7556	13.4707	5	17
18	118	14.1441	2.29930	.21167	13.7249	14.5633	5	18
19	38	14.0526	3.36072	.54518	12.9480	15.1573	5	19
20	10	13.8000	3.85285	1.21838	11.0438	16.5562	7	19
21	17	15.7059	3.07743	.74639	14.1236	17.2882	6	19
Total	1159	12.3555	2.71399	.07972	12.1991	12.5119	5	19

$F_{10,1148}$=42.551, p-value<0.001

Table 3. *Percentage of frequency of consumption patterns in the last 30 days by gender and age range of first consumption.*

	Alcohol use *n*=1159						**Drunkenness** *n* =1147						**Binge drinking - 5 or more doses** *n* =1110					
Gender	**M**		**F**		**T**		**M**		**F**		**T**		**M**		**F**		**T**	
Age of starting	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
<=10	87	66.9	74	58.7	161	68.1	33	25.8	25	20.0	58	22.9	38	32.2	34	28.1	72	30
11-12	82	62.6	108	66.7	190	56.9	24	18.8	17	10.6	41	14.2	34	27.6	48	30.8	82	29
13-14	95	69.3	143	65.6	238	60.7	31	22.8	39	18.1	70	19.9	46	34.8	50	24.0	96	28
15 +	90	72.0	78	60.0	168	65.9	25	20.3	23	17.6	48	18.9	44	35.5	28	21.9	72	28
Total	354	67.7	403	63.3	757	65.3	113	21.9	104	16.5	217	18.9	162	32.6	160	26.1	322	29

Legend: M= male; F= female; T= total

Table 4. Linear regression for age of first tobacco consumption.

Age of starting tobacco consumption				
Variables	**coefficient**	**Standard error**	**T**	**p-value**
(Constant)	1.17	0.93	1.26	0.207
Age of first alcohol use	0.31	0.04	7.72	< 0.001
Age	0.49	0.06	8.00	< 0.001
Gender				
Male	-0.57	0.20	-2.79	0.005
Economic class				
AB	0.19	0.29	0.66	0.512
C	0.09	0.26	0.33	0.744
Work	-0.17	0.23	-0.72	0.471
Catholic	0.29	0.20	1.41	0.160
Domicile – living with				
Mother	0.52	0.28	1.88	0.061
Father	-1.92	0.63	-3.07	0.002
Mother and stepfather	-0.38	0.39	-0.99	0.325
Father and stepmother	-0.32	0.76	-0.42	0.672
Other family members	-0.38	0.46	-0.83	0.409
Others	-0.91	0.55	-1.65	0.100
R^2 = 0.35				