



Risk Factors of Alcohol Consumption among Portuguese Adolescents and Young Adults: Data from the Global School-Based Student Health Survey

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Abstract

There is an increasing interest in the literature regarding the risks for alcohol abuse, particularly at young ages. The current study aimed to contribute to this topic by assessing the role of the relevant predictors on alcohol consumption among adolescents and young adults. The sample comprised 364 participants (202 female) that were assessed with the Global School-based Student Health Survey (GSHS - alcohol module), which addresses individual, family and social/environmental risk and protective factors on alcohol consumption. The outcome was defined as alcohol consumption severity in the last 30 days, assessed through a particular item of the GSHS. The regression analyses showed that the strongest predictors that may explain alcohol consumption were earlier onset of alcohol abuse and get into trouble because of alcohol abuse, although other risk factors related to exposure to Internet advertisements about alcohol might also explain alcohol consumption in young ages. The role of peers, particularly as regards to accepting drinks from friends was also a relevant predictor of alcohol consumption. Given these results, we consider that is important to ensure that alcohol advertising does not become available to children and adolescents, especially over the Internet. The results highlight also the importance of parents in supervising their children's behaviour mainly at a young age where alcohol initiation could have greater impact.

Keywords: Alcohol; Adolescents; Young adults; Substance use

Introduction

The consumption of alcohol among adolescents has increased in the last decades, being its pattern of initiation increasingly early [1]. The concern about alcohol consumption in adolescence in the developed countries has become a matter of debate, particularly in terms of public health, but also of social and cultural relevance. For this reason, health campaigns warning on the effects of excessive consumption have been promoted and legislated. However, the effectiveness of these measures in slowing the use of these substances still needs to be demonstrated [2].

In the US in 2011, a report from the National Center for Chronic Disease Prevention and Health Promotion has indicated that one in eight of US women reported binge drinking and that one in five high school female students who consume alcohol also reported binge drinking. The report also states that female adolescents are catching up quickly adolescent male when it comes to compulsive drinking and excessive consumption of alcohol, which results in 23,000 deaths of women and girls per year in the US [3].

Consequences of alcohol abuse

The consequences of alcohol abuse are severe and may impact on individual, familiar and social levels [4]. The physical deterioration due to chronic alcohol abuse is one of the main problems in patients with alcohol dependence syndrome [5]. Alcohol abuse is associated with multiple diseases, which range from cardiac diseases [6] and certain types of cancer [7] to neurological syndromes [8,9].

In adolescents, several studies have shown that mortality associated with alcohol consumption usually results from negligence of basic safety rules (unintentional injuries) such as those resulting from driving under the influence of alcohol [10] or even, homicide or suicide, the latter with a higher incidence in females [2].

Risks and protective factors for alcohol consumption

The identification of risk factors plays a key role in structuring and adaptation of prevention programs linked to alcohol consumption, especially when consumption appears in childhood/adolescence [11]. There are some factors that may predict later alcohol abuse. These factors such as unstable family environments, along with parents' alcohol consumption and low education levels, but also individual factors such as behaviour problems in school are among the most relevant predictors for binge drinking in both male and female adolescents [12,13]. At the same time, other studies also suggest that permissive behaviour from parents is related to early onset risk behaviours in adolescents [14] and highlight the importance of monitoring, communication and family supervision on the risks that young people face in their lives [15].

Along with individual and family risk factors, Whiteman et al. [16] sought to determine the influence of role models and their modelling effect on behaviour. In siblings, this influence may be exerted in two ways, in which younger siblings may be influenced positively or otherwise may lead them to deviant behaviour. The contact with peers can have a beneficial or detrimental effect. There is evidence that the activities carried out together with friends and neighbours have a positive effect, related though to a higher probability of alcohol consumption, particularly in boys [17]. In addition, boys also show a higher tendency to become involved in situations of aggression and violence as a result of alcohol consumption away from home, whereas violence in girls was linked to alcohol consumption at home [18]. Thus, interventions to reduce aggressive behaviour must include not only alcohol abstinence/reduction, but also individual and environmental risk factors [19]. Other environmental risk factors also include the role of advertising of alcoholic drinks, which have a strong impact on adolescents, but schools are also more involved to educate their students about the dangers of excessive alcohol consumption and to keep alcohol out of reach of younger students [20].

In contrast, some studies have also shown that parents' direct control

techniques on children's supervision may be protective factors for alcohol abuse, being associated with a lower probability of alcohol use, tobacco and drugs, while may be considered as an effective technique when children remain close to their parents. However, this monitoring strategy is increasingly difficult to achieve as children grow, as they are gaining autonomy and freedom. In these circumstances, parents should develop indirect control techniques simultaneously, such as knowledge. The control techniques (direct and indirect) appear also to be associated significantly with a decrease in delinquent behaviour [21].

Current study

Given the influence of multiple risk factors in the severity of alcohol consumption, the specific contributions of individual, family and social/environmental risk factors on alcohol consumption are not yet known. A couple of studies carried out in Portugal in the last five years have showed that the prevalence of alcohol consumption is high in school adolescents, especially in terms of binge drinking that are at the levels of the US [22]. The objective of our study was therefore to explore the most relevant risks for alcohol consumption among a sample of Portuguese adolescents and young adults. These predictors were retrieved from the Global School-based Student Health Survey (GSHS), a well-known instrument to assess behavioural risk factors and protective factors in several different topics associated with morbidity and mortality among children and adults worldwide. In the current study we have used the module regarding alcohol uses, which comprise items related to 1) alcohol use, 2) role of the media and advertising, and 3) knowledge, attitudes, skills, and sources of information.

Methods

Participants

The sample comprised 364 adolescents/young adults, 162 male (45%) with a mean age of 18.06 years old (SD=1.46) and 202 female (55%) with a mean age of 17.92 years-old (SD=1.32). The mean years of schooling were of 11 years (SD=1.50) for the whole sample. Most of these participants live with both their parents (52%). Regarding parental monitoring strategies, the majority of the participants are allowed to go out at night (89%), and do not have a specific time to return home (68%), but parents know where they are (90%). Most of the participants reported that the main motivation to drink alcohol was to be with their friends (64%), but also that it is not usual to have a drink offered by a stranger (92%), that alcohol consumption was not crucial to have sex (87%), and that 92% of them had sex with strangers after consuming alcohol (92%). Table 1 presents the descriptive analysis on sociodemographic and alcohol-related data.

Bivariate analyses were conducted to assess whether these distributions vary as a function of gender. Chi-square tests only showed a significant association with gender for the question "Have you ever had sex with strangers after consuming alcohol?" ($\chi^2(1)=14.253$; $p=0.000$), having more boys reporting yes than girls. Moreover, no statistical significant differences were found between gender and quantitative variables of age and education ($p>0.05$).

Measures

The survey was divided into two sections. The first section included questions regarding sociodemographic information, such as gender, age, years of schooling, family structure and marital status of the parents.

In the second section we used the GSHS, which is a survey developed by the World Health Organization (WHO) and Centres

for Disease Control and Prevention (CDC) in collaboration with the United Nations - UNICEF, UNESCO and UNAIDS.

This survey was devised to assist countries in the evaluation of behavioural risk factors and protective factors in ten leading causes of mortality and morbidity among children, adolescents and adults worldwide, namely: alcohol use, dietary behaviours, drug use, hygiene, mental health, physical activity, protective factors, sexual behaviours, tobacco use, violence and unintentional injury.

The development of this instrument was conducted mainly in students aged between 13 and 17 years old. In the current study, we have used the module related to alcohol consumption of the GSHS. It is worth mentioning that the different modules of the GSHS can be implemented separately. The items of this section (26 items) are intended to assess the consumption of alcohol at present, the amount of alcohol consumed, how the participants get alcohol, episodes of alcohol intoxication, and problems associated with alcohol consumption. The response format is Likert style in most of the questions-the exceptions are dichotomous and nominal response formats. This module is divided into three subsections: 1) general questions regarding alcohol use, which refer to the participant and their parents (Questions 1 to 14); 2) role of the media and advertising (Questions 15 to 21); and 3) knowledge, attitudes, skills, and sources of information (Questions 22 to 26). The reader can find more information about the questionnaire as well as the English and Spanish versions of the GSHS at the WHO website [23].

Procedure

The current version of the GSHS is originally available in English and Spanish. Thus, the first step of this study was to translate the instrument to Portuguese language. We have conducted the translation/adaptation of the module related to alcohol consumption by three independent

Gender		F	%	Are you allowed to go out at night?		F	%	
					Yes	325	89	
	Male	162	45		No	39	11	
	Female	202	55					
Motivation to drink alcohol?	To be with friends	207	64	Time to return home?	Yes	115	32	
	To socialize	75	24		No	249	68	
	To get drunk	14	4	Alcohol to have sex?	Yes	46	13	
	To forget problems	11	3		No	317	87	
	To feel more confident	4	1		Other			
	To have sex	4	1					
	With whom do you live?				Strangers paying drinks?	Yes	30	8
Both parents		188	52	No		332	92	
Mother		45	12	Sex with strangers after drinking?	Yes	28	8	
Father		12	3		No	336	92	
Grandparents		8	2					
None of the above		111	31					

Table 1: Descriptive analysis on sociodemographic and alcohol-related data.

experts in Psychology and Social Sciences with high proficiency in Portuguese and English languages. The retroversion of the Portuguese versions was done by a different expert with background in the same scientific area, which revealed a high correspondence between both modified and original versions.

The data collection was made in Lisbon in specific places known as popular to go out at night in Lisbon, namely at Bairro Alto and Santos in Lisbon downtown. Only alcohol users were included in the study. The participants were recruited under a convenience sampling method, in which they were approached individually and were explained the topic of study. This was held on Fridays and Saturdays, at night, between 9 pm and 1 am, between the months of February and April. After informed consent, the participants filled out the self-report questionnaire, which included a sociodemographic section and the alcohol module of the GSHS. Completion of the assessment protocol was made individually and took approximately 6 to 15 minutes.

We excluded 22 participants from the study due to problems detected when filling the questionnaire (incomplete questionnaires with missing responses).

Statistical analyses

The statistical analyses were carried out using SPSS v.20 (IBM Corporation). Given the main objectives of this study - to determine the most relevant risk and protective factors associated with alcohol consumption in adolescents and young adults; the statistical analyses were based on 1) descriptive statistics on the associated risk factors under study, 2) Chi-Square analysis to test the association between factors and the outcome and 3) regression analysis to determine the most important predictors of the outcome. The outcome was defined as alcohol consumption severity in the last 30 days, assessed through the Q5 "During the past 30 days, how many times did you drink so much alcohol that you were really drunk?" The significant associations were further explored using a logistic regression analysis to test the best predictors of this outcome as well as to estimate the Odds Ratio (OR) through Exp (B) for the effects of each predictor on the outcome.

Results

The descriptive analysis for items from the GSHS showed that most of individuals (37%) sometimes viewed alcohol advertisements (Q1), 46% drink beer more frequently (Q2), 36% reported having some friends drinking more than 5 drinks on one occasion (Q3), 39% reported that the first time had been drunk was over 16 years-old (Q4); 51% have not been drunk in the past 30 days (Q5), most of the individuals (92%) did not get into trouble because of alcohol (Q6), none of the parents drink alcohol in 31% of individuals (Q7), the bar, pub or disco are the most common places (53%) where individuals drink alcohol (Q8), 91% usually drink with their friends (Q9), most of the individuals (64%) are allowed to drink at home (Q10), in 73% of the individuals, age usually it is not a problem to buy alcohol (Q11), most of individuals (45%) have brother and sisters that drink alcohol (Q12), most of their friends (55%) drink alcohol (Q13), in 85% of the individuals, parents know that they drink alcohol (Q14).

Regarding section "Role of the media and advertising", 45% of individuals sometimes watch actors drinking alcohol when watching television (Q15), as well as for advertisements for alcohol in social events (40% - Q16), most of individuals (53%) reported having seen a few advertisements for alcohol in the television (Q17), billboards (55% - Q18), in newspaper or magazines (52% - Q19) and on the internet (49% - Q20), most of individuals did not have any article with

an alcohol brand (64% - Q21).

As for section "Knowledge, attitudes, skills, and sources of information", 55% reported that probably would accept a drink from a friend (Q22), 71% indicated that would be very easy to get alcohol (Q23), most of the individuals reported not have been taught in school for the problems associated with drinking alcohol (62% - Q24), the effects of alcohol use on decision making (63% - Q25), and how to tell someone to refuse to drink alcohol (73% - Q26). The distribution of these proportions in each of the variable is depicted in Table 2.

Following this analysis, we have tested the association between the outcome and the associated risks from the GSHS by using Chi-square estimates. It is worth noting that no significant associations were found between the outcome and gender ($p > 0.05$).

The results for the associated risks from the GSHS showed significant associations between the outcome and items Q2 ($\chi^2(7) = 30.358$; $p = 0.000$), Q3 ($\chi^2(4) = 26.906$; $p = 0.000$), Q4 ($\chi^2(6) = 54.485$; $p = 0.000$), Q6 ($\chi^2(3) = 26.272$; $p = 0.000$), Q7 ($\chi^2(4) = 11.661$; $p = 0.020$), Q8 ($\chi^2(6) = 13.336$; $p = 0.038$), Q9 ($\chi^2(4) = 24.715$; $p = 0.000$), Q10 ($\chi^2(2) = 13.315$; $p = 0.009$), and Q13 ($\chi^2(4) = 11.935$; $p = 0.018$).

For the section "Role of the media and advertising", the results only indicated significant associations between the outcome and items Q20 ($\chi^2(3) = 10.801$; $p = 0.013$), and Q21 ($\chi^2(1) = 16.098$; $p = 0.000$).

Finally, in "Knowledge, attitudes, skills, and sources of information" only item Q22 ($\chi^2(3) = 23.047$; $p = 0.000$) was found to be significantly associated with the outcome.

The above mentioned variables in which was observed a significant association with the outcome were then included in a logistic regression analysis as predictors of the outcome. The outcome was transformed in a binary variable, coded with 0 (corresponding to the original first category "0 times") and 1 (aggregating the original last 3 categories). The associated risks were transformed into dummy variables for each level (0 - absence of the attribute; 1 - presence of the attribute).

The logistic regression analysis was done separately for the group of items describing a) Individual and social risks for alcohol consumption, b) Role of the media and advertising, c) Knowledge, attitudes, skills, and sources of information. The binary variables were included into different blocks according to each item of the questionnaire. The method used for variable extraction was Forward Wald.

The first regression model was obtained for the individual and social risks that revealed a significant model with 0.32 (Nagelkerke R²) of variance explained by the predictors, being the model statistically significant ($\chi^2(14) = 100.147$; $p = 0.000$).

The most relevant predictors found were retrieved from item Q6 - 1 or 2 times get into trouble because of alcohol (OR=22.069) and item Q4 - had been drunk at 12 or 13 years of age (OR=11.980). These and the odds ratio for the remaining significant predictors can be found in Table 3.

As regards to the items from the section "Role of the media and advertising", the analysis showed that item Q20 - viewed a lot of advertisements for alcohol on the Internet, and item Q21 - to have an item with an alcohol brand logo may explain alcohol consumption. The variance explained was low, R²=0.03 (Nagelkerke R²), but the resulting model was still significant ($\chi^2(14) = 21.805$; $p = 0.000$) with Q20 option b (OR=2.257).

The regression analysis for each level of item Q22 "If one of your best friends offered you a drink of alcohol, would you drink it?" regarding

Q1		F	%		Q13		F	%
	Never	46	13			None	2	1
	Rarely	106	29			A few	21	6
	Sometimes	133	37			Some	74	20
	Almost daily	50	14			Most	200	55
	Daily	29	8			All	66	18
Q2					Q14			
	I do not drink alcohol	26	8			I do not drink alcohol	18	5
	Beer	158	46			Yes	305	85
	Wine	22	6			No	14	4
	Energy drinks	32	9			I do not know	23	6
	Shots	77	22		Q15			
	Liquors	7	2			I do not watch TV	8	2
	Vodka	17	5			Never	18	5
	Other drinks	15	4			Rarely	73	20
Q3						Sometimes	163	45
	None	7	2			Most of the time	87	24
	A few	93	26			Always	15	4
	Some	132	36		Q16			
	Most	98	27			I do not go to events	20	6
	All	34	9			Never	22	6
Q4						Rarely	86	24
	I was never drunk	56	15			Sometimes	145	40
	7 years old or younger	2	1			Most of the time	74	20
	8 or 9 years old	1	0			Always	17	5
	10 or 11 years old	3	1		Q17			
	12 or 13 years old	35	10			I have not watched TV	32	9
	14 or 15 years old	126	35			A lot	99	27
	16 years old or older	141	39			A few	193	53
Q5						None	40	11
	0 times	186	51		Q18			
	1 or 2 times	119	33			I do not seen a billboard	25	7
	3 or 9 times	46	13			A lot	99	27
	10 or more times	12	3			A few	200	55
Q6						None	39	11
	0 times	334	92		Q19			
	1 or 2 times	23	6			I have not seen magazine	63	17
	3 or 9 times	5	1			A lot	48	13
	10 or more times	2	1			A few	188	52
Q7						None	63	17
	Neither	112	31		Q20			
	My father	105	29			I have not used Internet	12	3
	My mother	27	7			A lot	66	18
	Both	110	30			A few	181	50
	I do not know	10	3			None	104	29
Q8					Q21			
	I have never had a drink	8	2			Yes	224	64
	At home	25	7			No	129	37
	At someone else's hom.	39	11		Q22			
	At school	4	1			Definitely not	12	3
	On an open area	56	16			Probably not	31	9
	At a bar, pub or disco	190	53			Probably yes	201	55
	In a restaurant	39	11			Definitely yes	120	33
Q9					Q23			
	I do not drink alcohol	21	6			Impossible	9	3
	With my friend	330	91			Very difficult	6	2
	With my family	7	2			Fairly difficult	12	3
	With newly know pers.	2	1			Fairly easy	69	19
	I usually drink alone	2	1			Very easy	260	71
Q10						I do not know	8	2
	I do not drink alcohol	27	8		Q24			

	Yes	232	64		Yes	107	29
	No	101	28		No	227	62
Q11					I do not know	30	8
	I do not tried to buy	89	25	Q25			
	Yes	7	2		Yes	106	29
	No	265	73		No	230	63
Q12					I do not know	28	8
	I am the only son	57	16	Q26			
	Yes	162	45		Yes	65	18
	No	128	36		No	266	73
	I do not know	14	4		I do not know	33	9

Table 2: Descriptive analysis on GSHS items.

Dependent variable	Adjusted Nagelkerke R ²	Chi-square	Predictors	Exp (B)
Outcome	0.32	100.147	Q6 option b Q4 option e Q2 option b Q4 option g Q6 option d Q4 option f Q9 option b Q9 option d Q13 option c	22.069 11.980 9.805 6.120 4.180 4.093 1.602 1.070 0.467
Outcome	0.03	8.616	Q20 option b	2.257
Outcome	0.08	33.372	Q22 option d Q22 option a	2.364 0.120

Q6 option b: 1 or 2 times get into trouble because of alcohol; Q4 option e: 12 or 13 years old the first time get drunk; Q2 option b: beer as most common drink; Q4 option g: 16 years old or older the first time get drunk; Q6 option d: 10 or more times get into trouble because of alcohol; Q4 option f: 14 or 15 years old the first time get drunk; Q9 option b: drinking usually with friends; Q9 option d: drinking usually with newly known persons; Q13 option c: to have some friends that drink alcohol; Q20 option b: to see a lot advertisements for alcohol on the Internet; Q22 option d: accepting (definitely) a drink from the best friend; Q22 option a: not accepting (definitely) a drink from the best friend.

Table 3: Logistic linear regression.

knowledge, attitudes, skills, and sources of information section, indicated that the levels “Definitely not” and “Definitely yes” were the best predictors of alcohol consumption, but in opposite directions: (OR=0.120) and (OR=2.364), respectively. The variance explained by the predictors was R²=0.08, being this model significant through the Chi-square statistic ($\chi^2(2)=23.770$; $p=0.000$).

Discussion

In this investigation we aimed at studying the role of individual, social and environmental factors on alcohol consumption among adolescents and young adults that go out at night. We have developed a survey with questions inquiring about the role of individual factors, but it also included the GSHS, which allows a comprehensive assessment of social and environmental aspects that may contribute to alcohol consumption. This study reports the data from a sample of adolescents and young adults that were recruited in Lisbon nightlife.

Surprisingly, our results did not show an influence of gender on alcohol consumption, which is in agreement with the data from the report of the National Center for Chronic Disease Prevention and Health Promotion [3] that suggests a growing trend of alcohol abuse among women. Particularly, these findings suggest that girls are at high risk for alcohol-related harms, because the physiological tolerance to alcohol is lower in women than in men [24].

Despite these results, there are other studies indicating that the average level of alcohol consumption remains higher in boys in late adolescence [25].

Moreover, the strongest factors associated with alcohol consumption were get into trouble because of alcohol and earlier onset of alcohol

abuse, with adolescents that were involved 1 or 2 times into trouble or those who get drunk at 12 or 13 years old were more likely to consume alcohol. It was also shown that having beer as the most common drink predicts also alcohol consumption. These results suggest a link between problematic behaviours and alcohol consumption such as evidenced in boys [18]. On the other hand, these results may also highlight the need for proper parental guidance and awareness, particularly in early adolescence, because early onset of alcohol consumption may put adolescents at great risk of later alcohol abuse and dependence [26].

The early initiation of alcohol consumption has been defined as one of the most relevant predictors for future health problems. Drinking alcohol before age 16 was significantly associated with an increased risk for excessive drinking in adulthood, both in male and female [27].

Our results suggest also that being frequently exposed to alcohol advertisements on the Internet might explain alcohol consumption in adolescents and young adults [20], which may also highlight the importance of parental control on Internet use [28].

Furthermore, the question inquiring, “If one of your best friends offered you a drink of alcohol, would you drink it?” resulted in two different predictors of alcohol consumption. Accepting drinks (definitely yes) from a friend was more likely to be associated with alcohol consumption than not accepting drinks (definitely not), which is in line with previous results from Pavlova and colleagues [17], emphasizing the role of peers in alcohol consumption.

The literature has shown that initial drinking experiences occur mostly in individuals with friends who already have drinking habits [29]. It is therefore important that technicians who work with adolescents raise awareness about this subject and help parents supervising their

children's behaviour. Although this was not an experiment manipulating the role of Internet advertisement, our overall results suggest that it is important that society promotes a sense of social responsibility in how alcohol brands advertise their products, disapproving alcohol advertising on media or events that may be directly available to children and adolescents.

However, one of the main limitations of this study is related to the lack of control of alcohol levels. It was our concern to include in the study only participants that were not drunk, but recruitment did not include formal alcohol testing. We recommend that further studies control for alcohol levels using alcohol testing (e.g., breath alcohol tests). It will be important also that future research include more representative samples than only adolescents/young adults that go out at night in the weekend.

Overall, the obtained results suggest a stronger association of the outcome (alcohol consumption) with individual risk factors that include problematic behaviours, but also other related to onset of alcohol abuse. On the other hand, there was also an association of the outcome with environmental factors such as exposure to Internet advertisements that may explain alcohol consumption. The role of peers, particularly as regards to accepting drinks from friends was also a relevant predictor of alcohol consumption.

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References

- Grob C, Neumann M, Kalkbrenner M, Mick I, Lachnit A, et al. (2014) A retrospective analysis of psychosocial risk factors modulating adolescent alcohol binge drinking. *Eur Addict Res* 20: 285-292.
- Gallimberti L, Chindamo S, Buja A, Forza G, Tognazzo F, et al. (2011) Underage drinking on Saturday nights, sociodemographic and environmental risk factors: A cross-sectional study. *Subst Abuse Treat Prev Policy* 6: 1-8.
- Kanny D, Liu Y, Brewer RD, Eke PI, Cox SN, et al. (2011) Vital Signs: Binge Drinking Among Women and High School Girls- United States. *MMWR* 2013 62: 9-13.
- Gatti U, Soellner R, Schadee H, Verde A, Rocca G (2013) Effects of delinquency on alcohol use among juveniles in Europe: results from the ISRD-2 study. *Eur J Crim Pol Res* 19: 153-170.
- González-Reimers E, Santolaria-Fernández F, Martín-González MC, Fernández-Rodríguez CM, Quintero-Platt G (2014) Alcoholism: a systemic proinflammatory condition. *World J Gastroenterol* 20: 14660-14671.
- Schoepf D, Heun R (2015) Alcohol dependence and physical comorbidity: Increased prevalence but reduced relevance of individual comorbidities for hospital-based mortality during a 12.5-year observation period in general hospital admissions in urban North-West England. *Eur Psychiatry* 30: 459-468.
- Carr BI, Guerra V, Steel JL, Lu SN (2015) A Comparison of Patients with Hepatitis B- or Hepatitis C-Based Advanced-Stage Hepatocellular Carcinoma. *Semin Oncol* 42: 309-315.
- Moselhy HF (2001) Frontal lobe changes in alcoholism: a review of the literature. *Alcohol Alcohol* 32: 357-368.
- Oscar-Berman M, Marinkovic K (2007) Alcohol: Effects on neurobehavioral functions and the brain. *Neuropsychol Rev* 17: 239-257.
- Mancha BE, Rojas VC, Latimer WW (2012) Alcohol use, alcohol problems, and problem behaviour engagement among students at two schools in northern Mexico. *Alcohol* 46: 695-701.
- Lammers J, Goossens F, Lokman S, Monshouwer K, Lemmers L, et al. (2011) Evaluating a selective prevention programme for binge drinking among young adolescents: Study protocol of a randomized controlled trial. *BMC Public Health* 11: 126-134.
- Rees D, Sabia J (2013) Forced intercourse, mental health, and human capital. *Southern Econ J* 80: 324-344.
- Weichold K, Wiesner M, Silbereisen R (2014) Childhood predictors and mid-adolescent correlates of developmental trajectories of alcohol use among male and female youth. *J Youth Adolesc* 43: 698-716.
- Daire A, Turk J, Johnson J, Dominguez V (2013) Parental bonding and its effect on adolescent substance use and sexual debut. *Adulthood* 12: 54-64.
- Nappi C, Thakral C, Kapungu C, Donenberg G, DiClemente R, et al. (2009) Parental monitoring as a moderator of the effect of family sexual communication on sexual risk behaviour among adolescents in psychiatric care. *AIDS Behav* 13: 1012-1020.
- Whiteman S, Jensen A, Maggs J (2014) Similarities and differences in adolescent siblings' alcohol-related attitudes, use, and delinquency: evidence for convergent and divergent influence processes. *J Youth Adolesc* 43: 687-697.
- Pavlova M, Silbereisen R, Sijko K (2014) Social participation in Poland: links to emotional well-being and risky alcohol consumption. *Soc Indic Res* 117: 29-44.
- Mair C, Cunradi C, Gruenewald P, Todd M, Remer L (2013) Drinking context-specific associations between intimate partner violence and frequency and volume of alcohol consumption. *Addiction* 108: 2102-2111.
- White H, Fite P, Pardini D, Mun EM, Loeber R (2013) Moderators of the dynamic link between alcohol use and aggressive behavior among adolescent males. *J Abnorm Child Psych* 41: 211-222.
- Ahern J, Margerison-Zilko C, Hubbard A, Galea S (2013) Alcohol outlets and binge drinking in urban neighbourhoods: the implications of nonlinearity for intervention and policy. *Am J Public Health* 103: e81-e87.
- Kopak A, Ayers S, Lopez V, Stevenson P (2011) Parental monitoring, alcohol, and marijuana use among Hispanic and non-Hispanic white adolescents: findings from the Arizona Youth Survey. *J Drug Issues* 41: 461-485.
- Reis A, Barros J, Fonseca C, Parreira L, Gomes M, et al. (2011) Prevalência da Ingestão de Alcool nos Adolescentes – Estudo PINGA [Prevalence of alcohol use in adolescents – PINGA study]. *Rev Port Clin Geral* 27: 338-346.
- WHO (2013) Global School-Based Student Health Survey (GSHS): 2013 Core Questionnaire Modules.
- Frezza M, di Padova C, Pozzato G, Terpin M, Baraona E, et al. (1990) High blood alcohol levels in women: the role of decreased gastric alcohol dehydrogenase and first-pass metabolism. *N Engl J Med* 322: 95-99.
- Windle M (2003) Alcohol use among adolescents and young adults. *Alcohol Res Health* 27: 79-85.
- Atwoli L, Mungla PA, Ndung'u MN, Kinoti KC, Ogot EM (2011) Prevalence of substance use among college students in Eldoret, western Kenya. *BMC Psychiatry* 11: 34.
- Strauch ES, Pinheiro RT, Silva RA, Horta BL (2009) Alcohol use among adolescents: a population-based study. *Rev Saude Publica* 43: 647-655.
- Lin EY, Caswell S, You R, Huckle T (2012) Engagement with alcohol marketing and early brand allegiance in relation to early years of drinking. *Addict Res Theory* 20: 329-338.
- Pechansky F, Szobot CM, Scivoletto S (2004) Alcohol use among adolescents: concepts, epidemiological characteristics and etiopathogenic factors. *Rev Bras Psiquiatr* 26: S14-17.