ปัจจัยที่มีความสัมพันธ์ กับระดับอันตรายจากการดื่มแอลกอฮอล์ ของนักศึกษา ระดับอาชีวศึกษา

Factors Associated with Hazardous Alcohol Use among Vocational College Students

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บทคัดย่อ

การศึกษาภาคตัดขวางนี้มีวัตถุประสงค์ เพื่อหาปัจจัยที่มีความสัมพันธ์ กับระดับอันตราย จากการดื่มแอลกอฮอล์ ในนักศึกษาวิทยาลัยอาชีวะศึกษา แผนกก่อสร้าง ไฟฟ้า และบัญชี จำนวน 900 คน ในเขตเทศบาลเมือง จังหวัดนครราชสีมา สุ่มตัวอย่างหลายขั้นตอน โดยสุ่มนักศึกษา 5 แห่ง จาก 12 แห่ง ตามขนาดสถานศึกษา ตามอัตราส่วนเพศ และระดับการศึกษา การดื่มแอลกอฮอล์ระดับอันตรายประยุกต์ใช้เกณฑ์การแบ่งตามการทดสอบออร์ดิด สถิติที่ใช้ คือ การวิเคราะห์เชิงเดี่ยว และ การถดถอยพหุโลจิสติก เฉพาะกลุ่มที่ดื่มระดับอันตรายร้อยละ 35.7 เป็นชายร้อยละ 72.3 หญิงร้อยละ 24.8 สัดส่วนระดับอันตรายจากการดื่มเพิ่มขึ้นตามอายุที่เพิ่มทั้งสองเพศ ผลการวิเคราะห์เชิงซ้อน การดื่มของเพื่อนเกี่ยวข้องกับการดื่มเฉพาะเพศชาย การดื่มของญาติไม่มีผลต่อทั้งสองเพศ ในเพศหญิง พิจารณาจากระดับเกรดเฉลี่ยต่ำสุด จะเสี่ยงต่อการดื่มระดับอันตรายเป็นห้าเท่าของเพศหญิงที่เกรดเฉลี่ยสูงสุด (ORa 5.02, 95% CI 1.32 – 19.13) การเลือกแผนกเรียนเฉพาะเพศหญิง แผนกช่างไฟฟ้า (OR_a 0.01, 95% CI 0.01 – 0.38) แผนกบัญชี (OR_a 0.06, 95% CI 0.01 – 0.88) จะเสี่ยงต่ำกว่าแผนกก่อสร้าง เช่นเดียวกับเพศชาย ถ้าเลือกเรียนแผนกช่างไฟฟ้าจะเสี่ยงต่ำกว่าเพียง 0.43 เท่า ของผู้ที่เลือกเรียนช่างก่อสร้าง (OR_a 0.43, 95% CI 0.24 – 0.77) สรุปปัจจัยที่ศึกษาพบเด่นชัดในเพศหญิง ผู้ที่มีระดับเกรดเฉลี่ยต่ำสัมพันธ์กับระดับอันตรายจากการการดื่มแอลกอฮอล์ทั้งสองเพศ อาจกล่าวได้ว่าการดื่มมีผลเสียต่อการเรียน

Abstract

The aim of this cross – sectional study was to investigate the factors associated with hazardous alcohol use. Nine hundred adolescents participated in this investigation studying in the fields of construction, electricity and accounting at vocational colleges at the municipality of Nakhon Ratchasima Province. A multistage sampling technique was used for selecting the students from a total of 5 colleges considering the size of the college, the male/

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female ratio and whether the students were enrolled in a certificate or diploma course. Hazardous alcohol drinking was assessed by applying the Alcohol Use Disorder Identification Test (AUDIT). For statistical assessment a univariate analysis and multivariate logistic regression was applied. From all students 35.7% were found to be hazardous alcohol drinkers. From those 72.3% were males and 24.8% female students. The proportion of hazardous alcohol drinkers increased with age for both genders. The multivariate examination indicated that alcohol drinking of peers had an influence on males but not on females and alcohol consumption of siblings had no influence on hazardous alcohol drinking for males and females. Learning abilities of female students as assessed by the Grade Point Average (GPA) were related to hazardous alcohol drinking. The consumption of alcohol by females with the lowest Grade Point Average (GPA) was five times higher in comparison with those female students with the highest GPA (adj. OR 5.02, 95% CI 1.32 – 19.13). The selection of study subjects also had an influence on alcohol drinking of female students. Studying in order to become an electrician (adj. OR 0.01 95% CI 0.01 – 0.38) and the selection of accounting as study subject (adj. OR 0.06, 95% CI 0.01 – 0.88) had a protective effect in terms of alcohol drinking in comparison to those females studying construction. A similar relationship was found for male students only for the variable 'studying to become an electrician' which had a preventive effect for male students (adj. OR 0.43, 95% CI 0.24 – 0.77) in comparison with students studying construction. It is concluded that lower GPA is associated with higher risks of hazardous drinking.

คำสำคัญ: แอลกอฮอล์ระดับอันตราย นักศึกษาระดับอาชีวศึกษา
Keywords: hazardous alcohol use, vocational college students

Introduction

Alcohol consumption is widespread in nearly all age groups in Thailand and elsewhere. In western countries it seems that heavy or 'binge' drinking among adolescents is frequent and increasing now also in developing countries (WHO, 2004). Wechsler et al.(2000) pointed out that students of universities and colleges might be especially at risk to be alcohol drinkers. At the time they enter universities or colleges they are in a difficult stage of physical and mental development while changing their identity from adolescent hood to becoming adults. In addition they are separated from home and parents and are coming under the influence of peers. Initiation rituals and experimentation of alcohol drinking might be additional opportunities to fall prone to the temptation of alcoholic beverages (Jackson, 1997). Heavy episodic drinking in adolescence is associated with several serious consequences; such as motor vehicle injuries, suicide, sexual assault and risky sexual behavior (National Institute on Alcohol Abuse and Alcoholism, 2003) with the danger to acquire sexual transmitted diseases and unwanted pregnancies (WHO, 2001). A study of hazardous alcohol consumption among upper secondary school students, Nakhon Ratchasima Province, Thailand revealed that hazardous drinking of students was 12.6 %, while peer alcohol intake of both genders was related to hazardous alcohol consumption and GPA > 3.0 was a protective factor (Chaveepojnkamjorn, 2007).

To know more about the circumstances related to hazardous drinking among college students might be useful in planning preventive activities focusing especially on vulnerable groups and the most important factors related to hazardous alcohol consumption. The question is whether often applied activities against alcohol consumption of adolescents for instance influencing peer groups not to drink help to reduce the

frequency of drinking alcohol substantially or whether other important factors are related to alcohol consumption as well. The aim of this study was to investigate factors assumed to be related to hazardous alcohol use among vocational college students in the Nakhon Ratchasima Province in Thailand.

Material and Methods

A cross-sectional study was conducted from August to September 2005 among vocational college students in Nakhon Ratchasima Province. A multistage sampling technique was used for selecting 900 students from all 5 colleges within the municipality of the province. Sampling considered the size of the colleges, the male/female rate, and the proportion of enrollment in the diploma or certificate course. For assessing hazardous alcohol consumption the Alcohol Use Disorders Identification Test (AUDIT) has been applied (Saunders et al., 1993). Study subjects were classified into 2 groups according to alcohol intake (yes = 321 (35.7%) no = 579 (64.3%)). Individuals with a score of ≥ 8 were classified as hazardous drinkers (Babor et al, 2001). Information was obtained by face to face interviews and weight as well as height measurements were taken by well trained health staff. The nutritional status was assessed by calculating the Body Mass Index (BMI (kg/m^2)) for each study participant. Information obtained from the questionnaire provided for this report include age of participants, nutritional status of the participants assessed by BMI, indicators of the educational level, family relationship, drinking habits of parents, siblings and peers.

Statistical analysis

For evaluation of the results common statistical software was used. Results are given separately for male and female students by percent, crude Odds Ratio (OR), 95 % Confidence Interval (CI) of the OR and the p-value. Univariate analysis was performed using Chi-square tests to differentiate proportional exposures between the hazardous drinkers and the non-hazardous drinkers for categorical variables. A multiple logistic regression was used by entering all variables assessed in relation to hazardous alcohol drinking separated for males and females to estimate the adjusted OR and the 95 % CI of the OR as measures of association. Assessment of the statistical significance was considered at p-value <0.05.

Ethic consideration

The details of the study were explained and informed consent was obtained by asking all participants to sign the forms if they agreed. Permission for conducting the study was obtained by the Human Research Board of the Mahidol University, Thailand.

Results

The study group comprised a higher proportion of males in comparison to females. The majority of students were above 16 years old. Slightly over 50% of male and female students were enrolled in the certificate courses. Most of the male students studied construction while females selecting accounting by preference as their study topic. Males with a Grade Point Average (GPA) of 2.1 to 3.0 accounted for 56% and females for 62%. The nutritional status measured by the (BMI) was between 18.5 to 23 for the majority of males and females but approximately a quarter of males and over 60% of females were below the recommended BMI value of 18.5. The majority of students admitted had good family relationships. The majority of fathers and

mothers as well as siblings occasionally drank alcohol and alcohol consumption of peers was frequent.

Tables 1 and 2 show univariate determinations of factors of interest associated with hazardous alcohol consumption, separately for male and female students. Hazardous drinking was very common in males and involved almost 15.7% of male students at the age of 16 years and younger. About 56.6% of male students and about 21.6% of female students above the age of 16 years had to be classified as hazardous drinkers. Hazardous drinking of male students was associated to a certain extent to a reduced nutritional status (BMI <18.5) but consumption of alcoholic beverages had no statistically significant effect on the BMI of female students. College students have the choice to select one of three major tracks of studies i.e. construction, electrician and accounting. While the selection of any of the tracks was not statistically associated with hazardous drinking of male students, it was significantly related to drinking habits of female students. Studying electrician (OR 0.03, 95% CI 0.02 – 0.41) or accounting (OR 0.03, 95% CI 0.03 – 0.25) had a protective effect on consuming alcoholic beverages in comparison to those females studying construction. An increasing level of education indicated by achieving higher levels of certificates and diplomas prevented neither male nor female students from hazardous drinking. In fact a higher achievement in the educational level increased significantly the risk of belonging to the group of hazardous drinkers in that the OR for males at Diploma 1 and 2 level is 3.1 and 3.2 respectively and for females the OR according to the achievement levels Certificate 3, Diploma 1 and 2 is 27.6, 10.6 and 14.6 respectively. The Grade Point Average (GPA) selected here as another indicator of the educational level was not related to hazardous drinking for male but for female students. A decrease in the GPA increased significantly the risk to belong to the group of hazardous drinkers in that a GPA of 2.1 to 3.0 was associated with an OR of 3.6 and an a GPA of 2 and below with an OR of 4.1. Family relationships and drinking habits of parents did not predict whether they belong to the group of hazardous drinkers or not neither for male nor for female students. Occasional alcohol drinking of siblings was significantly related to the drinking habits of male students only with an OR of 2.1. Alcohol drinking habits of peers increased the risk of both genders significantly to be associated with the group of hazardous drinkers.

Table 3 displays the results of a multivariate analysis of independent factors found to be significantly related to hazardous alcohol consumption in the univariate exploration. The calculation was separately performed for male and female students. Hazardous alcohol consumption was selected as the dependent variable. The independent variables selected were entered into the model simultaneously and explained the variation of the dependent variable to 35.8% (Nagelkerke R^2 0.358) for males and to 33.4% (Nagelkerke R^2 0.334) for females. For males only the increase in age and drinking habits of peers remained statistically significant and directly related to hazardous alcohol drinking. Since only very few male students selected accounting as major subject for their studies, only two major study subjects remain of interest for male students and choosing to study to be an electrician turns out to be a preventing factor for hazardous alcohol drinking. A low GPA and to achieve a Diploma 2 level increases the risk for hazardous alcohol drinking. Risk assessment for female hazardous drinking resulted in a different pattern compared with their male counterparts in that age was not significantly related to drinking. Low GPA, educational level as well as major study subjects were related to hazardous alcohol drinking among female students. However drinking habits of siblings and peers did not determine alcohol drinking of female students.

Table 1. Factors associated with the hazardous alcohol consumption of male vocational college students.

Variable	Males				
	No. hazardous drinkers/total	**Hazardous drinkers (%)**	**OR_c**	**95% CI**	**p-value**
Age (yrs)					<0.001
≤16	21/134	15.67	1		
>16	245/433	56.58	7.01	4.24 -11.59	
Education level					<0.001
Certificate 1-2	78/223	33.47	1		
Certificate 3	19/59	32.20	0.94	0.51 - 1.73	
Diploma 1	89/146	60.96	3.10	2.02 - 4.76	
Diploma 2	80/129	62.02	3.24	2.07 - 5.07	
Major field of study					<0.042
Construction	217/440	49.32	1		
Electrician	48/120	40.00	0.68	0.45 - 1.03	
Accounting	1/7	14.29	0.17	0.20 - 1.43	
Grade Point Average					<0.783
>3.0	26/59	44.07	1		
2.1 – 3.0	141/303	46.53	1.11	0.63 - 1.94	
≤2.0	88/180	48.89	1.21	0.67 - 2.19	
BMI					<0.093
18.5-23.0	175/356	49.16	1		
<18.5	56/143	39.16	0.67	0.45 - 0.98	
>23.0	35/68	51.47	1.09	0.65 - 1.84	
Family relationship					<0.001
Good	174/359	48.47	1		
Fair	78/188	41.49	0.75	0.53 - 1.07	
Poor	14/20	70.00	2.48	0.93 - 6.60	
Father alcohol drinking					<0.032
Never	73/167	43.71	1		
Occasional[a]	150/318	47.17	1.15	0.78 - 1.67	
Usual[b]	42/78	53.85	1.50	0.87 - 2.57	
Mother alcohol drinking					<0.333
Never	172/382	45.03	1		
Occasional[a]	84/163	51.53	1.29	0.89 - 1.87	
Usual[b]	10/21	47.62	1.11	0.46 - 2.67	
Sibling alcohol drinking					<0.378
Never	95/243	39.09	1		
Occasional[a]	132/232	56.89	2.05	1.43 - 2.96	
Usual[b]	15/31	48.38	1.46	0.69 - 3.09	
Peer alcohol drinking					<0.001
Never	5/84	5.95	1		
Occasional[a]	144/311	46.30	13.62	5.37 -34.56	
Usual[b]	117/172	68.02	33.61	12.88 -87.69	

[a] 2-4 times/month, [b] ≥ 2 times/week

Table 2. Factors associated with the hazardous alcohol consumption of female vocational college students.

Variable	Females				
	No. hazardous drinkers/total	Hazardous drinkers (%)	OR_c	95% CI	p-value
Age (yrs)					<0.001
≤16	3/92	3.26	1		
>16	52/241	21.58	8.16	2.48 -26.85	
Education level					<0.001
Certificate 1-2	3/134	2.24	1		
Certificate 3	19/49	38.78	27.65	7.68 -99.53	
Diploma 1	16/82	19.51	10.58	2.57 -37.62	
Diploma 2	17/68	25.00	14.56	4.09 -51.79	
Major field of study					<0.040
Construction	6/7	85.71	1		
Electrician	2/13	15.38	0.03	0.02 -0.41	
Accounting	47/313	15.02	0.03	0.03 -0.25	
Grade Point Average					<0.019
>3.0	5/81	6.17	1		
2.1 – 3.0	37/194	19.07	3.58	1.35 - 9.48	
≤2.0	8/38	21.05	4.05	1.23 -13.39	
BMI					<0.063
18.5-23.0	33/181	18.23	1		
<18.5	18/127	14.17	0.74	0.39 - 1.38	
>23.0	4/25	16.00	0.85	0.27 - 2.65	
Family relationship					<0.073
Good	32/208	15.38	1		
Fair	20/111	18.02	1.21	0.65 - 2.23	
Poor	3/14	21.43	1.50	0.39 - 5.67	
Father alcohol drinking					<0.023
Never	21/95	22.11	1		
Occasional[a]	24/172	13.95	0.57	0.29 - 1.09	
Usual[b]	10/56	17.86	0.76	0.33 - 1.77	
Mother alcohol drinking					<0.179
Never	29/181	16.02	1		
Occasional[a]	21/140	15.00	0.93	0.50 - 1.70	
Usual[b]	4/11	36.36	2.99	0.82 -10.89	
Sibling alcohol drinking					<0.542
Never	24/142	16.90	1		
Occasional[a]	25/152	16.44	0.96	0.52 - 1.78	
Usual[b]	3/10	30.00	2.11	0.51 - 8.73	
Peer alcohol drinking					<0.007
Never	7/107	6.54	1		
Occasional[a]	40/208	19.23	3.40	1.46 - 7.88	
Usual[b]	8/18	44.44	11.43	3.42 - 38.12	

[a] 2-4 times/month, [b] ≥ 2 times/week

Table 3. Multivariate analysis of factors associated with hazardous alcohol consumption of vocational college students.

Variable	Crude OR	Adjusted OR	95% CI	p-value
Males*				
Age (yrs)				0.001
≤16	1	1		
>16	7.01	3.28	1.60 - 6.71	
Grade Point Average				0.045
>3.0	1	1		
2.1 – 3.0	1.11	1.53	0.78 - 2.97	
≤2.0	1.21	2.22	1.07 - 4.60	
Education level				0.044
Certificate 1-2	1	1		
Certificate 3	0.94	1.04	0.43 - 2.51	
Diploma 1	3.10	1.68	0.93 - 3.04	
Diploma 2	3.24	2.19	1.16 - 4.12	
Major field of studies				0.015
Construction	1	1		
Electrician	0.68	0.43	0.24 - 0.77	
Accounting	0.17	0.19	0.02 - 1.78	
Sibling alcohol drinking				0.040
Never	1	1		
Occasional[a]	2.05	1.63	1.05 - 2.52	
Usual[b]	1.46	0.71	0.29 - 1.74	
Peer alcohol drinking				<0.001
Never	1	1		
Occasional[a]	13.62	8.57	2.92-25.21	
Usual[b]	33.61	25.41	8.33-77.47	
Females*				
Age (yrs)				0.759
≤16	1	1		
>16	8.16	0.76	0.12 - 4.55	
Grade Point Average				0.015
>3.0	1	1		
2.1 – 3.0	3.58	4.08	1.33- 12.43	
≤2.0	4.05	5.02	1.32- 19.13	
Education level				0.001
Certificate 1-2	1	1		
Certificate 3	27.65	23.36	4.27-127.61	
Diploma 1	10.58	9.32	1.58- 54.81	
Diploma 2	14.56	18.02	2.99-108.52	
Major field of study				0.030
Construction	1	1		
Electrician	0.03	0.01	0.01- 0.38	
Accounting	0.03	0.06	0.01 -0.88	
Sibling alcohol drinking				0.722
Never	1	1		
Occasional[a]	0.96	0.96	0.45 - 2.07	
Usual[b]	2.11	1.62	0.26 - 9.89	
Peer alcohol drinking				0.188
Never	1	1		
Occasional[a]	3.40	1.98	0.76 - 5.15	
Usual[b]	11.43	2.81	0.56-13.99	

[a] 2-4 times/month, [b] ≥ 2 times/week
*Nagelkerke R^2 for male 0.358; for female 0.334

Discussion and Conclusion

The proportion of hazardous drinkers of college students as found here are quite high as expected since a previous survey undertaken within the Nakhon Ratchasima Province revealed that 16.6% of youngsters (both sexes combined) of the general population drank alcohol (National Statistical Office, 2003). This study found that 35.7% of college students of all age groups and approximately 25% of female college students were hazardous alcohol drinkers. The majority of alcohol consumption in the northeastern region was determined to be 27.6% for the age group of 25 to 34 years old, 23.7% for the ones 35 to 44 years old, 18.1% for those 15 to 24 years old and 17.3% for individuals in the age of 45 to 54 years (National Statistical Office, 2005). Although the proportion of alcohol drinking among females in this study is significantly lower compared with male students, it still has to be considered quite high compared with the ordinary female population of this age. Gender differences in alcoholic beverage use had been reported from other countries as well (Latimer et al., 2004; Young et al., 2002; Chen et al., 2004; Poulin et al., 2005) and this is in accordance with the findings of this communication. The rather high proportion of hazardous alcohol drinking females also corresponds to the findings of Assanangkornchai et al., (2007) who hinted towards the trend that alcohol use was becoming more common in Thai women. However the results achieved for males in this investigation in general indicate that it is common for the overwhelming majority of college students to be hazardous alcohol drinkers. The usually higher risk ratios for female drinkers in comparison to male drinkers for variables pointing in the same direction for both genders, such as for GPA, educational level and field of studies and the fact that siblings and peer alcohol drinking did not affect female drinking suggest that hazardous female alcohol drinkers are more distinctively different from non-hazardous alcohol female drinkers in comparison to males. Major factors determining non-alcohol drinking females seem to be related to learning abilities, as indicated by the preventive effect of high GPA and to the selection of the major study subject, here to be studying electrician and accounting. The assumption is that to study topics of construction is less intellectually challenging than studying to be an electrician and accounting (the latter applies only for females, since only eight male students had been found studying accounting). Another explanation might be that students enrolling in the field of construction are derived from a different socio-economic background compared with the other topics. The particular field of study seems to be a proxy indicator for hazardous or not-hazardous drinking habits, based on factors yet to determined and probably rooted in the cultural, educational and socio-economic family background of the students which has not been explored here. Further studies concentrating on this aspect would be of value. The authors are not aware of any such study, at least not yet in Thailand. It is concluded that especially females studying construction are prone to the risk of hazardous alcohol drinking. Student's academic performance had been found to be inversely related to alcohol drinking habits elsewhere (Paschall and Freisthler, 2003). In this study academic achievement as assed by gaining different higher certificates and diplomas astonishingly has the contrary effect of what was assumed, in that an increased educational level increases the risk of hazardous alcohol drinking and this was found especially for female students. It might be assumed that this factor is confounded heavily by age in that actually the increase in age and not the achievements of climbing up to higher educational levels is related to alcohol consumption. The grade points seemed to

reflect the academic performance of the students to some extent and thus are a better indicator of the academic performance of the students than certificates and diplomas. Nevertheless intellectual ability seems to have an influence on alcohol drinking habits for both genders in that lower GPAs were associated with higher risks of hazardous drinking.

The results obtained from this study indicate that to prevent hazardous drinking of college students needs a rather sophisticated approach and more studies to explore the cultural and socio-economic background of hazardous alcohol drinking of adolescents.

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References

Assanangkornchai, S., Pattanasattayawong, U., Samangsri, N., Mukthong. 2007. A. Substance use among high-school students in southern Thailand: trends over 3 years (2002-2004). **Drug Alcohol Depend** 86: 167-174,

Babor, T.F., Higgins-Biddle, J.C., Saunders, J.B., Monteiro, M.G. 2001. AUDIT The Alcohol Use Disorders Identification Test: Guidelines for use in primary care. 2nd ed. Geneva: WHO; Document No. WHO/SMD/MSB/01.6a.

Chaveepojnkamjorn,W.,Pichainarong,N.2007.Factors associated with alcohol consumption among upper secondary school students. Southeast Asion J Trop Med public Health 38 (1): 146 – 151.

Chen, K., Sheth. A.J., Elliott, D.K., Yeager. 2004. A. Prevalence and correlates of past-year substance use, abuse, and dependence in a suburban community sample of high-school students. **Addict Behav** 29: 413-423.

Jackson, C. 1997. Initial and experimental stages of tobacco and alcohol use during late childhood: relation to peer, parent, and personal risk factors. 1: **Addict Behav.** 22: 685-698.

Latimer, W.M., Floyd, L.J., Vasquez, M., O'Brien, M., Arzola, A., Rivera, N. 2004. Substance use among school-based youths in Puerto Rico: differences between gender and grade levels. **Addict Behav.** 29: 1659-1664.

National Institute on Alcohol Abuse and Alcoholism. 2003. Underage drinking: a major public health challenge. Rockville: NIAAA; Alcohol alert No. 59, 2003.

National Statistical Office, 2003. Health and Welfare Survey 2003 Northeastern. Bangkok: Statistical Forecasting, Bureau, 22 – 23.

National Statistical Office, 2005. Drinking and Smoking Behavioral Survey 2004 Bangkok: Statistical Forecasting Bureau, 296.

Paschall, M.J., Freisthler, B. 2003. Does heavy drinking affect academic performance in college? Findings from a prospective study of high achievers. **J. Stud. Alcohol** 64: 515-519.

Poulin, C., Hand, D., Boudreau, B., Santor, D. 2005. Gender differences in the association between substance use and elevated depressive symptoms in a general adolescent population. **Addiction** 100: 525-535.

Saunders, J.P., Aasland, O.G., Babor, T.F., de la Fuente, J.R., Grant, M. 1993. Development of the Alcohol Use Disorders Identification Test

(AUDIT) : WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption – II. **Addiction** 88(6): 791–804.

Wechsler, H., Lee, J.E., Kuo, M., Lee, H. 2000. College binge drinking in the 1990s: a continuing problem - results of the Harvard School of Public Health 1999 College Alcohol Study. **J. Am. Col. Hlth** 48: 199-210.

World Health Organization. 2001. Sexual relations among young people in developing countries: evidence from WHO case studies. [Online] [Cite 12 January 2005]. Available from: http://www.who.int/reproductive-health/publications

World Health Organization. 2004. Global status report on alcohol 2004. Geneva: World Health Organization.

Young, S.E., Corley, R.P., Stallings, M.C., Rhee, S.H., Crowley, T.J., Hewitt, J.K. 2002. Substance use, abuse and dependence in adolescence: prevalence, symptom profiles and correlates. **Drug Alcohol Depend.** 68: 309-322