FACTORS ASSOCIATED WITH ALCOHOL CONSUMPTION AMONG UPPER SECONDARY SCHOOL STUDENTS

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Abstract. A cross-sectional study was conducted to explore factors associated with alcohol consumption among upper secondary school students in Nakhon Ratchasima Province. A multistage sampling technique was used for selecting 850 students from 6 schools and subjects were classified into 2 groups according to hazardous alcohol drinking (yes = 107, no = 743) by the Alcohol Use Disorders Identification Test (AUDIT). Data were collected by questionnaire from August to September 2005. Descriptive statistics, the chi-square test and multiple logistic regression were used to analyze data. The results showed the percent of hazardous drinking was 12.59. Most of the students were ≤ 16 years old (51.41%) and in the science program (52.68%). Univariate analysis revealed the socio-demographic factors of gender, grade point average (GPA), monthly expenditure, age, and educational level were significantly associated with alcohol drinking ($p<0.05$). Sibling and peer alcohol intake were associated with hazardous alcohol consumption ($p<0.05$). Multivariate analysis, after adjusting for age, educational level and gender, revealed only 3 factors associated with male alcohol consumption: peer usual alcohol intake (OR = 23.46, 95% CI = 7.29-75.43) and peer occasional alcohol intake (OR = 5.57, 95% CI = 2.02-15.31), GPA > 3.0 (OR = 0.29, 95% CI = 0.11-0.73). Only 2 factors were associated with female alcohol drinking: peer usual alcohol intake (OR = 63.41, 95 % CI = 9.24-435.31) and peer occasional alcohol intake (OR = 7.94, 95 % CI = 1.89-33.43). As a result, peer groups and close friends should be considered carefully when attempting to reduce the risk of alcohol consumption.

INTRODUCTION

The World Health Organization (WHO) estimates there are about 2 billion people worldwide who consume alcoholic beverages and 76.3 million with a diagnosable alcohol use disorder (WHO, 2004). The use of alcohol may result in a large number of adverse consequences in such widely differing areas as physical and mental health, traffic safety, violence, and labor productivity. The trend of infectious diseases is mostly decreasing while problems of non-infectious diseases and alcohol use are continually increasing.

Alcohol consumption is a leading risk factor for disease in low mortality on developing countries and the third largest risk factor in developed countries. Alcohol causes 1.8 million deaths (3.2% of the total) and a loss of 58.3 million (4% of the total) Disability-Adjusted Life Years (WHO, 2002). Alcohol is estimated to cause about 20-30% of esophageal cancer, liver cancer, cirrhosis of the liver, homicides, epileptic seizures, and motor vehicle accidents worldwide (WHO, 2002). Worldwide, 5% of all deaths between the ages of 5 and 29 in 1990 were attributable to alcohol use (Murray and Lopez, 1997). Alcohol consumption is widespread in nearly all age

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groups. Survey and anecdotal data from countries around the globe suggest that a culture of sporadic heavy or "binge" drinking among young people may be spreading from developed to developing countries. In addition, there are increasing efforts to promote alcohol use in the past 30 years (Jernigan, 2001). Results from a WHO report show a higher proportion of young people have a higher risk of drug and alcohol dependence after they had become adults (WHO, 2002).

In 2004, the National Statistical Office of Thailand found 32.71% of Thais ≥ 15 years old use alcohol. The majority of alcohol consumption is in the northeastern region in those age 25-34 years (27.56%), 35-44 years (23.75%), 15-24 years (18.11%) and 45-54 years (17.30%) (National Statistical Office, 2005). A survey of Nakhon Ratchasima Province revealed the percent of alcohol use in youth was 16.60% (National Statistical Office, 2003). This indicates alcoholic risk groups are the working group and youth group. Youth have a greater chance of developing alcoholism when they become adults. In order to control alcohol use among adolescents, a knowledge of the factors related to drinking is useful in organizing preventive activities, such as information and education campaigns.

The aim of this study was to determine the risk factors for hazardous alcohol consumption among upper secondary school students in Nakhon Ratchasima Province. It focused on the influence of family and peers in alcohol consumption among upper secondary school students.

MATERIALS AND METHODS

Study population and data collection techniques

A cross-sectional study was conducted from August to September, 2005 in order to determine the risk factors that contribute to hazardous alcohol consumption among upper secondary school students in Nakhon Ratchasima Province. The proposal was reviewed and approved by the Ethics Committee for Human Research of the Faculty of Public Health, Mahidol University. The target population was upper secondary school students who live in Nakhon Ratchasima. A multistage sampling technique was used for selecting 850 students from 6 schools (Ratchasima Withayalai School, Ratchasima Withayalai School 2, Suranari Withaya School 2, Boonwattana School, Boonwattana School 2 and Mahisara Thibodi School). The study subjects were classified into 2 groups according to hazardous alcohol intake (yes = 107, no = 743) by the Alcohol Use Disorders Identification Test (AUDIT). Subjects with scores ≥8 were classified as hazardous drinkers (Babor *et al*, 2001). Each subject signed a written consent form and were willing to participate in the present study. Face to face interviews and weight and height measurements were performed by trained health staff. The questionnaire consisted of 4 parts: socio-demographic, history of alcohol drinking, the Alcohol Use Disorders Identification Test and relationship and history of alcohol drinking in family and peer groups. The details of the study were explained and informed consent was obtained from all participants. Socio-demographic factors were displayed by percent, crude odds ratio, 95% CI of OR and p-value. Univariate analysis was performed using chi-square tests to differentiate proportional exposures between hazardous drinkers and the non-hazardous drinkers for categorical variables which were employed in order to discover suitable variables. Multiple logistic regression was used to estimate the adjusted odds ratios and their 95% CI of OR as measures of associations, including identification and adjustment for confounding variables. Statistical significance was set at a p-value <0.05.

RESULTS

The proportion of alcohol consumption

was 12.59% for the total of 850 upper secondary school students. Age and gender distribution groups were nearly equal (female 50.59%, male 49.41%), age group (≤16 years 51.41%, >16 years 48.59%) with the educational level range of 31-36% for MS 4-MS 6, respectively. The majority of study subjects were in the science program (52.68%), had a grade point average of 2.0-3.0 (47.12%) had a BMI of 18.5-23.0 kg/m^2 in about half (50.60%), had a monthly expenditure of 1,000-2,000 baht (51.81%), a monthly family income of <10,000 baht (40.44%) and good family relationships (53.03%). The frequencies of alcohol intake were in fathers (53.65%), none in mothers (65.64%), none in sibling (59.86%), and none in peers (51.25%).

On univariate analysis, the factors significantly associated with hazardous alcohol consumption by Pearson chi-square test ($p < 0.001$) were male sex (OR = 3.71; 95% CI = 2.33-5.91), grade point average (GPA) >3.0 (OR = 0.31; 95 % CI = 0.16-0.59), monthly expenditure >2,000 baht (OR = 3.58; 95% CI = 1.74-7.45), sibling usual alcohol intake (OR = 4.83; 95% CI = 2.04-11.29), peer usual alcohol intake (OR = 53.83; 95% CI = 24.23-117.37), peer occasional alcohol intake (OR = 8.78; 95% CI = 4.42-17.45), and age greater than 16 years were significantly associated with alcohol consumption. Grade level MS 6 (OR = 1.71; 95% CI = 1.02-2.87), monthly expenditure 1,000-2,000 baht (OR = 2.12; 95% CI = 1.09-4.23), and sibling occasional alcohol intake (OR = 1.69; 95% CI = 1.08-2.65) were also significantly associated. The other variables were not significantly associated (Table 1).

On multivariate analysis, after being adjusted for age and educational level, and separating by gender, gender was found to be a modifier. There were only four factors included in the model: GPA, monthly expenditure, sibling alcohol intake, and peer alcohol intake. None of the statistically significant variables were excluded. Upon adjusting for potential confounders, only three variables in males were significantly associated with hazardous drinking. Peer usual and occasional alcohol intake were 23.46 times and 5.57 times more at risk for alcohol drinking than those who had no peers who drank alcohol, respectively (95 % CI = 7.29-75.43 and 95% CI = 2.02-15.31). A GPA >3.0 was a protective factor (OR = 0.29; 95% CI = 0.11-0.73). There were only 2 factors in females which were significant: sibling usual and occasional alcohol intake were 63.41 times and 7.94 times more at risk for alcohol drinking than those who had no peers who drank alcohol, respectively (95% CI = 9.24-435.31 and 95% CI = 1.89-33.43), as shown in Table 2.

DISCUSSION

The majority of subjects were age ≤ 16 years (51.41%) and studied in the science program (52.68%). The proportion of hazardous alcohol drinking was 12.59% which could be underestimated. One reason for this could be fear their parents or caregivers would find out, particularly in females. Gender stratification was utilized on multivariate analysis because of being an effect modifier. These confounding factors (age group and educational level) were controlled by multiple logistic regression. Results of academic performance revealed that males with poor or moderate GPA had a greater chance of drinking than those with a good GPA, we found no association in females. This is different from some studies which found no important effect on student academic performance (Paschall and Freisthler, 2003). One study indicated illicit users of opioid analgesics were more likely to be male, have high rates of alcohol use, and lower GPA (McCabe *et al*, 2005). GPA was examined to determine its influence on cigarette, alcohol, and illicit drug use (Thomas and Hsiu, 1993; Schulenberg *et al,* 1994; Hallfors *et al,* 2006). The frequency of peer drinking

Table 1

Factors associated with hazardous alcohol consumption among upper secondary school students.

Variables	Hazardous drinker		Crude OR	95% CI	p-value
	No. hazardous drinkers/total	%			
Gender (n = 850)					
Female	26/430	6.05	1		
Male	81/420	19.29	3.71	2.33-5.91	c
Age group (yr) (n = 850)					
≤ 16	42/437	9.61	1		
> 16	65/413	15.74	1.76	1.16-2.66	b
Education level (n = 850)					
MS 4	26/267	9.74	1		
MS 5	37/301	12.29	1.3	0.76-2.21	NS
MS 6	44/282	15.6	1.71	1.02-2.87	a
Education program (n = 822)					
Science	48/433	11.09	1		
Art	37/318	11.63	1.06	0.67-1.67	NS
Others	13/71	18.31	1.79	0.92-3.52	NS
Grade Point Average (n = 694)					
2.0 - 3.0	51/327	15.59	1		
< 2.0	18/97	18.56	1.21	0.64-2.26	NS
> 3.0	15/270	5.56	0.31	0.16-0.59	c
BMI (n = 836)					
18.5 - 23.0	49/423	11.58	1		
< 18.5	41/291	14.09	1.25	0.80-1.95	NS
> 23.0	16/122	13.11	1.15	0.63-2.11	NS
Monthly expenditure (baht) (n = 718)					
< 1,000	13/183	7.1	1		
1,000 - 2,000	52/372	13.98	2.12	1.09-4.23	a
> 2,000	35/163	21.47	3.58	1.74-7.45	c
Monthly family income (baht) (n = 596)					
< 10,000	30/241	12.45	1		
10,000 - 20,000	20//159	12.58	1.01	0.53-1.93	NS
> 20,000	24/196	12.24	0.98	0.53-1.81	NS
Family relationship (n = 841)					
Good	49/446	10.99	1		
Fair	54/372	14.52	1.38	0.89-2.12	NS
Poor	Apr-23	17.39	1.71	0.47-5.61	NS
Father alcohol intake (n = 835)					
Never	31/271	11.44	1		
Occasional[d]	59/448	13.17	1.17	0.72-1.92	NS
Usual[e]	17/116	14.66	1.33	0.67-2.62	NS
Maternal alcohol intake (n = 841)					
Never	74/552	13.41	1		
Occasional[d]	30/270	11.11	0.81	0.50-1.30	NS
Usual[e]	Mar-19	15.79	1.21	0.27-4.56	NS
Sibling alcohol intake (n = 837)					
Never	49/501	9.78	1		
Occasional[d]	47/304	15.46	1.69	1.08-2.65	a
Usual[e]	Nov-32	34.38	4.83	2.04-11.29	c
Peer alcohol intake (n = 841)					
Never	10/431	2.32	1		
Occasional[d]	59/342	17.25	8.78	4.42-17.45	c
Usual[e]	38/68	55.88	53.33	24.23-117.37	c

NS = not significant; [a] $0.01 < p < 0.05$; [b] $0.001 < p < 0.01$; [c] $p < 0.001$; [d] 2-4 times/month; [e] ≥ 2 times/week.

Table 2
Multivariate analysis of factors associated with hazardous alcohol consumption among upper secondary school students.

Variable	Adjusted OR	95% CI	p-value
Males			
Grade Point Average			
2.0-3.0	1		
< 2.0	0.83	0.36-1.88	NS
> 3.0	0.29	0.11-0.73	[a]
Monthly expenditure (baht)			
< 1,000	1		
1,000-2,000	1.24	0.50-3.05	NS
> 2,000	1.48	0.56-3.89	NS
Sibling alcohol drinking			
Never	1		
Occasional	0.79	0.39-1.61	NS
Usual	1.92	0.39-9.35	NS
Peer alcohol drinking			
Never	1		
Occasional	5.57	2.02-15.31	[a]
Usual	23.46	7.29-75.43	[b]
Females			
Grade Point Average			
2.0-3.0	1		
< 2.0	2.21	0.29-16.45	NS
> 3.0	1.01	0.28-3.57	NS
Monthly expenditure (baht)			
< 1,000	1		
1,000- 2,000	2.12	0.39-11.44	NS
> 2,000	5.64	0.86-36.95	NS
Sibling alcohol drinking			
Never	1		
Occasional	0.78	0.21-2.87	NS
Usual	3.45	0.49-24.36	NS
Peer alcohol drinking			
Never	1		
Occasional	7.94	1.89-33.43	[a]
Usual	63.41	9.24-435.31	[b]

NS = not significant; [a] $p < 0.01$; [b] $p < 0.001$.

had a strong influence on drinking in both genders. It was agreed that modeling by best friends and the perceived prevalence of use among same-age peers were most strongly related to the initiation and experimentation stages of alcohol use (Jackson, 1997). One study found that initial levels of peer alcohol use were significantly related to changes in adolescent alcohol use, whereas initial adolescent alcohol use was also significantly related to changes in peer alcohol use (Bray, 2003). The more peers drink the more stu-

dents drink. Therefore parents and caregivers should be careful regarding peer groups and have enough education to give advice regarding the disadvantages of alcoholic drinks to reduce the frequency and quantity of alcohol consumption among adolescents.

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