

ASSOCIATION BETWEEN SPORTS AND ALCOHOL CONSUMPTION AMONG THAI UNIVERSITY STUDENTS

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Abstract. There is little research in Thailand exploring the relationship between sports and alcohol consumption. Therefore, we aimed to determine preference for sports, participation in sports and exposure to alcohol advertising while watching or attending sporting events is associated with alcohol consumption to guide further policy interventions. We conducted a multi-stage stratified cluster sampling survey to select university students from all regions of Thailand. All students aged 17-25 years from the selected universities were invited to complete a self-administered questionnaire. Adjusted odds ratios (AOR) and 95% confidence intervals (CI) were obtained from multivariate logistic regression models to assess the independent effects of each variable on three outcomes: attitude toward alcohol, current drinking and binge drinking. A total of 1,279 students who included in the study, 70.6% were female. Eighty eight percent of study subjects stated they were exposed to alcohol advertising while watching or attending a sporting event. Students who participated in sport were more likely to drink alcohol (AOR=1.7; 95% CI: 1.24-2.28) and binge drink (AOR=1.6; 95% CI: 1.10-2.25) than students who did not participate in sport. Students who watch or attend sporting events and who participate in sports are exposed to alcohol advertising, and students who participate in sports are more likely to consume alcohol. Alcohol advertising at sporting or on television needs to be discussed and measures taken to reduce alcohol consumption. Further studies need to be conducted to determine which interventions are effective in reducing alcohol consumption in this population.

Keywords: sport participation, exposure to alcohol advertising in sport, alcohol consumption, university student

INTRODUCTION

In 2012, 5.9% of all deaths worldwide

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(3.3 million) were estimated to be attributable to alcohol consumption (WHO, 2014). An estimated 16% of drinkers aged ≥ 15 years worldwide engage in heavy episodic drinking (WHO, 2014). Alcohol consumption among young people is reported to be associated with appetite change, weight loss, eczema, headaches, sleep disturbance, brain damage, mental health problems, anxiety, depression and

death from liver disease (Newbury-Birch *et al*, 2009). In 2011, the National Statistical Office of Thailand reported that 31.5% of those aged ≥ 15 years were current drinkers and the prevalence of alcohol consumption rose by 9.5% from 2001 to 2011 (National Statistical Office, 2011).

One factor that effects alcohol consumption, particularly among teenagers, is alcohol advertising (Anderson *et al*, 2009; Smith *et al*, 2009). Young people are an important target group for the alcohol industry because they represent the market of tomorrow (Eurocare, 2008). For many years, the alcohol industry has used alcohol advertising in sport as a marketing tool to promote their products. The alcohol industry in Thailand spends an average of approximately 1,000 million bahts per year on alcohol advertising (Thamarangsi *et al*, 2013). Alcohol companies sell their product through sport advertising and by marketing their brand directly and indirectly, especially aiming for adolescents (Vantamay, 2012). Youth are more exposed to television alcohol advertising than other age groups (Pettigrew *et al*, 2012; Patil *et al*, 2014).

Available evidence indicates that alcohol advertising influences young people's attitudes about drinking (Smith *et al*, 2009; Mart, 2011; Chang *et al*, 2014), the amount of alcohol they consume (Grenard *et al*, 2013; Tanski *et al*, 2015), the decision to increase alcohol use (Jones *et al*, 2011) and to binge drink (Morgenstern *et al*, 2014; Saffer *et al*, 2015). Most studies (Jones *et al*, 2011; Grenard *et al*, 2013; Chang *et al*, 2014) about alcohol advertising show these companies focus on television advertising during children's programs or at peak viewing times. Advertising is effective in capturing the attention of youth. A study from Australia found television viewers were exposed to a higher volume of

alcohol advertising during sports broadcasts than during other programming (VicHealth, 2014). A study by the Royal Australia College of Physicians found 61% of New South Wales residents were concerned about the influence of alcohol in Australian sport (Alexander, 2016). Children and adolescents are exposed to alcohol marketing while watching their favorite players and teams compete (The Royal Australasian College of Physicians, 2016). There is little data regarding the effect of alcohol advertising in sports and alcohol consumption by youth. Therefore, the objective of this study was to determine if there is an association between alcohol consumption and the preference for sports, participation in sports and the exposure to alcohol consumption while watching or attending sporting events among Thai university students.

MATERIALS AND METHODS

Study setting and design

We conducted a cross sectional study among undergraduate university students aged 17-25 years throughout Thailand. This study was conducted from December 2013 to March 2014.

Sample size and sampling technique

We used a formula given by Krejcie and Morganas (1970) to determine the sample size of 1,279 students. A multi-stage stratified cluster sampling survey to select study subjects was as follows: we divided the country into four regions: North, Northeast, Central (including East) and South. One province was randomly selected from each region. Then, one university of each type (public, private, autonomous) was randomly selected from each selected province. Finally, a selected number of students based on the

university size were chosen and asked to participate.

Measurements

We designed a self-administrated questionnaire based on peer-reviewed literature especially in Thailand. The content and wording of the questions were written for the Thai context. The questionnaire was composed of seven parts (sport involvement-3 parts, alcohol consumption, attitude about alcohol consumption, binge drinking, demographics). Three experts in alcohol research assessed the content validity of the questionnaire. Two pilot surveys were conducted to assess the reliability and applicability of the questionnaire in October-November 2013, giving a reliability score of 0.74.

Variables

Sport involvement. This section consisted of three parts. The first part of sport involvement asked about the frequency of exposure to alcohol advertising while watching a sporting event on television, (≥ 3 times per week, 1-2 times per week, 1-3 times per month, and < 1 time per month). The second part of sport involvement asked about sport preferences using the following two questions: "Do you like to watch sport?" ("yes" or "no"); "How often do you watch competitive sports?" The second part also asked whether the subject monitored the outcomes of sporting events ("yes" or "no") and "Do you own any sporting merchandise?" ("yes" or "no"). The third part of sport involvement asked: "Do you actively participate in sport?" ("yes" or "no"). Those who responded "yes" were asked to specify the sport(s) they participate in.

Alcohol involvement. This section asked whether or not the subject had ever consume alcohol. (Response options includ-

ed, "never consumed", "consumed but not in the past 12 months" and "consumed in the past 12 months"). The students who answered "never consumed" were classified as lifetime abstainers. Students who answered they had consumed alcohol within the past 12 months were classified as current drinkers. Students who answered they had consumed alcohol but not in the past 12 months were classified as former drinkers.

Attitude about alcohol consumption. Attitude about alcohol consumption. This section consisted of 26 items obtained from previously studies of attitudes about drinking among Thai adolescents (Auratchachairat, 2007; Khankam, 2007). Possible responses used a 5-point Likert scale (1=totally disagree, 2=disagree, 3=neutral, 4=agree and 5=totally agree). The scores were averaged; those with a score 3.0 were considered to have a positive attitude about alcohol consumption.

Binge drinking. This section asked if the subject had ever consumed more than 5 standard alcoholic drinks during one drinking session in the previous 12 months ("yes" or "no").

Demographic characteristics. The section asked the subject's gender, age, province of residence, university type, faculty and grade-point average (GPA).

Data analysis

Frequencies and percentages were used to describe the characteristics of the students, their preferences for, participation in and attitudes about sports, their alcohol consumption status and their attitudes about alcohol. Age was categorized into two groups using a cut-point of 20 years since this is the legal age at which Thai people can buy alcohol. Multivariate logistic regression analyses were used to assess the independent effects of

all variables regarding three outcomes: attitudes about alcohol, current drinking and binge drinking, adjusting for the student's demographic characteristics. Statistical Package for the Social Sciences (SPSS), version 18 (IBM, Armonk, NY) was used for all analyses. A p -value <0.05 was considered statistically significant. Records with missing data were excluded case-wise when tabulating frequencies and model outcomes.

Ethical considerations

All study subjects gave informed consent prior to participation. This study was approved by the Research Ethics Board of the Institute for the Development of Human Research Protection for Thailand.

RESULTS

Characteristics of the students

A total of 1,279 subjects were included in the study, 70% female, 63.6% aged ≥ 20 years. The mean [\pm standard deviation (sd)] age of the study subjects was 20.4 (± 1.8) years with a range of 17-25 years. Fifty-five point three percent of study subjects were enrolled in the Science and Technology faculties and the rest were enrolled in the Humanities and Social Sciences faculties. The students' grade-point averages (GPA) ranged from 1.00 to 4.00 (Table 1).

Sport involvement

Eighty-one percent of subjects liked to watch sports, 46% had ever attended a live sporting event. Sixty percent of male subject had participated in sports and 40% of female subjects had participated in sports. Eighty-eight percent of subjects reported having been exposed to alcohol advertising during sports, football (67%) was the sport with the most reported alcohol advertisements, followed by volleyball (30%), and boxing (2%). Thirty-five

Table 1
Characteristics of study subjects.

Characteristics	Number (%)
Gender	
Female	895 (70.0)
Male	368 (28.8)
Unknown	16 (1.2)
Age group	
<20 years	410 (32.1)
≥ 20 years	814 (63.6)
Unknown	55 (4.3)
Provinces	
Nakhon Pathom	417 (32.7)
Ubon Ratchatani	346 (27.1)
Chiang Rai	292 (22.9)
Nakhon Si Thammarat	224 (17.6)
University types	
Public	758 (59.3)
Autonomous	406 (31.7)
Private	115 (9.0)
Faculties	
Science and Technology	707 (55.3)
Humanities and Social Sciences	518 (40.5)
Unknown	54 (4.2)
Grade-point average ($n=994$)	
3.00-4.00	454 (35.5)
2.01-2.99	505 (39.5)
1.01-2.00	35 (2.7)
Unknown	285 (22.3)

percent of female subjects reported being exposed to alcohol advertising while watching sports on television, occurring ≥ 3 times per week while 18% of male subjects reported being exposed to alcohol advertising while watching sports on television (Table 2).

Alcohol consumption among students

Thirty-seven percent of subjects were current drinkers, 59.5% reported binge drinking in the previous 12 months and 26% were former drinkers. The prevalence of binge drinking among all students was

Table 2
Preference for and participation in sports, and exposure to alcohol advertising at sports events among study subjects.

Sport involvement	Number (%)	Percentage by gender	
		Male	Female
Preferences for sport			
Likes to watch sports	1,031 (80.6)	87.2	78.2
Monitors results of sports events	748 (73.0)	76.6	71.5
Owens sporting merchandise	466 (45.6)	64.3	37.2
Previously attended a sporting event			
Yes	578 (45.2)	60.4	39.6
No	692 (54.1)	39.6	60.4
Unknown	9 (0.7)	n/a	n/a
Previously watched sports on television			
Yes	1,084 (84.8)	88.8	84.1
No	186 (14.5)	11.2	15.9
Unknown	9 (0.7)	n/a	n/a
Type of sport previously watched			
Football	425 (33.2)	55.6	45.9
Volleyball	279 (21.8)	20.7	40.2
Boxing	71 (5.6)	11.7	6.1
Racing	45 (3.5)	8.7	3.1
Other (badminton, tennis, golf)	36 (2.8)	3.3	4.8
Unknown	432 (33.1)	n/a	n/a
Exposure to alcohol advertising			
Yes	1,121 (87.6)	85.7	89.8
No	149 (11.6)	14.3	10.2
Unknown	9 (0.8)	n/a	n/a
Frequency of alcohol advertising while watching sports on television			
<1 time/month	151 (11.8)	27.0	8.7
1-3 times/month	284 (22.2)	27.3	26.4
1-2 times/week	314 (24.6)	28.2	29.6
≥3 times/week	321 (25.1)	17.6	35.3
Unknown	209 (16.3)	n/a	n/a
Type of sport			
Football	850 (66.5)	75.8	63.7
Volleyball	384 (30.0)	18.8	35.1
Boxing	31 (2.4)	5.4	1.2
Unknown	14 (1.1)	n/a	n/a

n/a, not applicable.

thus 22.4%. The mean (\pm SD) attitude score about alcohol was 3.04 (\pm 0.59) indicating the majority of students had a positive attitude toward alcohol consumption (Table 3).

Factors associated with a positive attitude about alcohol consumption, current drinking status and binge drinking status

Male subjects were more likely to be current drinkers [Odds ratio (OR) =1.7;

Table 3
Alcohol consumption among study subjects.

Alcohol consumption	Number (%)	Percentage by gender	
		Male	Female
Drinking status			
Current drinker	472 (36.9)	50.8	32.3
Former drinker	326 (25.5)	25.0	26.3
Lifetime abstainer	454 (35.5)	24.2	41.4
Unknown	27 (2.1)	n/a	n/a
Binge drinker (<i>n</i> =472)			
Yes	281 (59.5)	(64.6)	56.2
No	191 (40.5)	(35.4)	43.8
Attitude about alcohol			
Positive	1,127 (88.1)	88.4	93.0
Negative	104 (8.1)	11.6	7.0
Unknown	48 (3.8)	n/a	n/a

n/a, not applicable.

95% confidence intervals (CI): 1.22-2.40] and binge drinkers (OR=1.9; 95% CI: 1.30-2.70) than females. After adjusting for demographic characteristics, students who participated in sport were more likely to drink alcohol (adjusted OR=1.7; 95% CI: 1.24-2.30) and binge drink (adjusted OR=1.6; 95% CI: 1.10-2.24), compared to students who did not participate in sport (Table 4).

DISCUSSION

In this study among Thai university students, nearly 40% of subjects were current drinkers. The majority of students liked to watch sporting events and reported being exposed to alcohol advertising while watching sport on television or while attending sporting events. Male subjects were more likely to participate in sports than female subjects. Subjects who participated in sport were more likely to drink alcohol (OR=1.68; 95% CI:1.24 - 2.28) and binge drink (OR=1.58; 95% CI:1.10 - 2.25).

Our results show the degree to which alcohol companies advertise to university students. The alcohol industry advertises their products with on-screen logo placement during television broadcasts commercials intermissions (Sherriff *et al*, 2010; Gee *et al*, 2013; Alcohol Concern, 2014). In Thailand, there are alcohol advertising regulations. Section 32 of the Alcohol Control Act B.E. 2551 (2008) states any alcohol advertisements made by manufacturers of alcoholic beverages can only be displayed to give information without displaying pictures of the alcohol products, except for the display of symbols of alcoholic beverages or the company manufacturing the alcoholic beverage (Department of Disease Control, 2011). Alcohol advertising on mass media, such as television, can only be broadcasted between 10 PM and 5 AM. However, this legislation does not cover indirect advertising of brand names and logos. Regulators have been ineffective in monitoring and enforcing these regulations (Thamarangsi *et al*, 2011).

No associations were found between

Table 4
Factors associated with attitude about alcohol consumption among study subjects.

Factors	Positive attitude about alcohol consumption (n = 1,127)		Current drinker (n = 1,252)		Binge drinker (n = 1,167)	
	Adjusted OR (95%CI)	p-value	Adjusted OR (95%CI)	p-value	Adjusted OR (95%CI)	p-value
Male	0.84 (0.44-1.62)	0.600	1.70 (1.22-2.40)	0.002	1.86 (1.29-2.70)	0.001
Age						
<20 years	1	-	1	-	1	-
≥20 years	1.78 (0.97-3.24)	0.064	1.90 (1.36-2.65)	0.001	1.41 (0.96-2.09)	0.081
GPA score						
≤ 2.00	1.57 (0.38-6.30)	0.536	0.87 (0.36-2.05)	0.743	1.01 (0.40-2.58)	0.986
2.01-2.99	1.04 (0.28-3.88)	0.948	1.08 (0.46-2.52)	0.863	1.42 (0.57-3.53)	0.448
≥ 3.00	1	-	1	-	1	-
Province						
Nakhon Pathom	1	-	1	-	1	-
Ubon Ratchatani	0.79 (0.32-1.95)	0.613	0.99 (0.67-1.47)	0.969	1.26 (0.81-1.96)	0.315
Chiang Rai	0.25 (0.12-0.55)	0.001	1.63 (1.08-2.65)	0.021	1.03 (0.64-1.67)	0.893
Nakhon Si Thammarat	1.58 (0.48-5.19)	0.448	0.65 (0.42-1.02)	0.062	0.59 (0.34-1.00)	0.051
Preferences for sport	1.19 (0.51-2.77)	0.690	1.01 (0.68-1.51)	0.968	1.14 (0.70-1.85)	0.612
Participation in sport	1.23 (0.66-2.30)	0.515	1.68 (1.24-2.28)	0.001	1.58 (1.10-2.25)	0.012
Number of times exposed to alcohol advertising						
< 1/month	1	-	1	-	1	-
1-3/month	0.51 (0.22-1.19)	0.119	1.22 (0.83-1.80)	0.692	1.24 (0.78-1.96)	0.370
1-2/week	0.68 (0.27-1.70)	0.408	1.10 (0.74-1.65)	0.645	1.22 (0.76-1.95)	0.415
≥ 3/week	0.43 (0.17-1.14)	0.091	1.11 (0.67-1.83)	0.316	1.55 (0.89-2.68)	0.120
Positive attitude about alcohol	-	-	0.90 [0.49-1.69]	0.751	0.54 [0.25-1.16]	0.113

CI, confidence interval; OR = odds ratio.

exposure to alcohol advertising during sport, preference for and participation in sport and the subjects' attitude about alcohol consumption. However, self-exposure processes, where one infers one's attitude from one's actions, are important in the formation of attitudes (Olson and Stone, 2005). Frequent exposure to alcohol advertising in sport may cause adolescents to perceive they like the product portrayed, having a positive attitude toward it, which may lead them to be more likely to try that product. This may especially be true among youth who see sport as reflecting their identity.

This study found an association between participation in sport and alcohol use. Alcohol use by students is a reason why the alcohol industry sponsors sporting events; the alcohol industry wants to present a positive image of health-demoting commodities (Watcharapranee, 2016). Sponsoring sporting events is a technique to expose young people to alcohol advertising (European Centre for Monitoring Alcohol Marketing, 2014). Adolescents and young adults are frequently exposed to alcohol advertising when viewing sports on television in Australia (Carr *et al*, 2016). Our study findings show alcohol advertising at sporting events occurs and is seen by Thai university students. This is a reason why the alcohol industry sponsor sporting events (Sornpaisan, 2008).

A limitation of this study was because of its cross-sectional design, causality cannot be determined. There are unobservable characteristics, such as personality traits, that may have an impact on both exposure to sport and alcohol consumption. Additionally, exposure to alcohol advertising, preference for and participation in sport and attitude about alcohol consumption were assessed only at the

time of the interview, whereas alcohol consumption was assessed over a lifetime. Therefore, it is unclear whether onset of drinking preceded or followed exposure, preference and participation in sport. Longitudinal studies where exposure to advertising during sport is determined at baseline are warranted to further examine the direction of the relationship between exposure, preference, participation in sports and attitude about alcohol use.

Although all the regions of Thailand were included in this study, only four provinces were sampled, making it more difficult to generalize to all Thai university students. Larger studies need to be conducted to confirm these findings.

There was no information given about how much exposure to other alcohol advertising our subjects may have experienced, such as billboards and magazines. Future study need to consider this type of exposure.

Future studies need to take into consideration the social environment, such as the role of peer groups regarding alcohol consumption. Other studies have found peer groups can influence initiation of alcohol consumption (Hoffmann and Bahr, 2014; Jones and Magee, 2014; Trucco *et al*, 2014). It is also possible a young person's preference for participation in sport may be interpreted by his or her peers as an endorsement of alcohol drinking behavior.

In summary, subjects in our study were frequently exposed to alcohol advertising associated with sports. Current drinkers had greater exposure to alcohol advertising, a higher preference for sport and a higher participation rate in sport than non-drinkers. Students participate in sport are more likely to be current drinkers and binge drinkers, even though Thai law prohibits advertising of alcohol

products. However, this regulation has not seemed to protect students from exposure, particularly in prominent televised sports. Therefore, regulation of indirect alcohol advertising at sporting events or on television is needed to be reviewed, effective control measures developed and tested and national policy adjust to control this public health problem.

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CONFLICTS OF INTEREST

None declares.

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