

Factors Related to Liquor Consumption by Pre-Adolescents

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Background: A recent nationwide survey in Thailand estimated 40% of pre-adolescents have used alcohol; a substantially higher proportion than the 25% reported by the WHO. Increased liquor consumption at a young age is the result of multiple factors.

Objective: To identify factors contributing to liquor consumption among middle school-aged students

Material and Method: This cross-sectional analytic study was conducted among willing students in Grades 7 to 9 in Khon Kaen, Thailand. The study was conducted between June and August, 2016. Stratified multi-stage random sampling by school size was used to enroll secondary schools. Participants were selected by random systematic sampling in proportion to school size. Data were collected through a self-reported questionnaire. The dependent variable was liquor consumption and the associated factors were analyzed by logistic regression.

Results: 720 students (41.6% males) were in the study. Average age (\pm SD) was 13.6 \pm 0.6 years. 316 students (43.9%) had drunk or currently drink. The earliest age for starting drinking was 10-years-old. Only 6 significant factors associated with liquor consumption remained in the final stepwise model. The top 2 independent risk factors were no close friends and weak family relationships (adjusted odds ratio (95% CI) 14.94 (2.27, 98.28) and 8.18 (2.99, 22.33), respectively).

Conclusion: The 6 independent predictors for liquor consumption among students in grades 7 to 9 were tobacco use, no after class activities with friends, no close friends, inadequate knowledge regarding the dangers of drinking, poor attitude regarding drinking behaviors, and weak family relationships.

Keywords: Liquor consumption, Drinking behaviors, Predictors, Middle school-age students, Attitude

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The WHO reported that pre-adolescents who have consumed liquor were 25% worldwide. In low- and middle-income countries, the prevalence of liquor consumption was a respective 18% and 14% of boys and girls between 13-15 years of age⁽¹⁾. Worldwide, 5% of all deaths of young people between 15 and 29 are attributable to liquor consumption⁽²⁾. The US CDC reported at least 4,358 deaths in people under 21⁽³⁾ and 188,000 emergency room visits from drinking-related injuries⁽⁴⁾. In Thailand, liquor consumption is a major cause of mortality and morbidity in youth (10 to 14

years of age). In 2007, there were almost 55% of injured victims and 70% of arrested perpetrators in Thailand⁽⁵⁾. A Thai national survey of health risk behaviors demonstrated that ~40% of students had consumed liquor in the last month⁽⁶⁾.

A study in Sri Lanka among 342 secondary school students revealed that school environment is an independent predictor for liquor consumption⁽⁷⁾ (adjusted OR (95% CI) was 2.32 (1.35, 3.99)). A 2010 study on the risk factors for liquor consumption in central Thailand (n = 5,184: 3,807 under and 1,377 over 15 years) revealed that friends and educational levels were the two highest predictors (viz., 3.09 and 2.69 times, respectively)⁽⁸⁾. One study from northern Thailand revealed that students started drinking at nine-years-old⁽⁹⁾ while the Center for Alcohol Studies Thailand

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reported that young people starting to drink at 12-years-old⁽¹⁰⁾. We, therefore, aimed to evaluate the predictors for liquor consumption among middle school students.

Material and Method

Study design, research setting, and participants

This was a cross-sectional analytic study conducted at middle schools (Grades 7 to 9) in Khon Kaen, Thailand. The study ran between June and August, 2016. The study population included students willing to participate the study. Ethical permission for the study was obtained from the Ethics Committee of Mahasarakham University, Thailand (Ref. No. 028/2016).

Stratified, multi-stage, random sampling was used to enroll secondary schools. The method was based on school population (*i.e.*, small <500; medium 500 to 1,500; large >1,500 students). Participants were systematically, randomly selected in proportion to school population. The required number of participants was calculated based on a previous study⁽¹¹⁾, which reported the prevalence of liquor consumption among middle school students at 55.4%. With a confidence of 95%, for a power of 80%, the required number of participants was 720.

A formal letter to the school principal informed selected schools about the survey. The survey was scheduled a week later via phone call. Four school principals agreed to participate. We collected data using a 45- to 60-minute, self-reported questionnaire. Participants were asked not to talk while completing the questionnaire.

The questionnaire was developed under the PRECEDE Framework, the Social Marketing Theory, the Triadic Influence Theory, and the Theory of Planned Behavior. The questionnaire comprised: Part A-demographic data (14 questions), Part B-health-related behaviors (37 questions), Part C-liquor consumption knowledge (10 questions), and Part D-liquor consumption behaviors and perceptions (55 questions). Part C responses used a three-point scale (True, False, Not sure). The knowledge score was calculated from correct answers with a maximum score of 10 for each. Part D questions responses used a 5-point Likert scale: 1-strongly disagree, 2-disagree, 3-somewhat disagree, 4-agree, and 5-strongly agree. The scoring was reversed for negative questions so that positive attitudes and appropriate perceptions yielded higher scores. The total scores were categorized as poor, sufficient, and good according to a respective scoring range of 10-22, 23-36, and 37-50.

The dependent variable of this study was drinking contained in a self-reported question. Those who reported as never having consumed liquor were classified as non-drinkers, while those who had consumed any amount ever were classified as drinkers.

Data analysis

Analyses were made using Stata software version 12 (StataCorp, College Station, TX, USA). Participants were divided into 2 groups; drinkers and non-drinkers. Factors for both groups were compared using descriptive statistics. Numerical factors were compared between groups using the Student t-test or the Wilcoxon rank sum test as appropriate. The Fisher exact or Chi-square test was used to assess whether differences between two proportions were statistically significant.

The factors associated with liquor consuming behaviors were analyzed using logistic regression. Univariate logistic regression was performed to identify a *p*-value for each factor. Factors having a *p*-value <0.20 were included in the multivariate logistic regression analysis. Data were then presented as OR or adjusted OR and their respective 95% CI.

Results

There were 205 secondary schools in Khon Kaen province and 4 were randomly selected for the study. Directors of the selected school agreed to participate. The total number of eligible students was 3,223 of whom 720 were randomly selected and invited to participate. All of the invitees were willing to participate and of these, 316 (43.9%) had consumed liquor.

Demographic and personal characteristics between drinkers and non-drinkers

Nine factors were significantly different between drinkers and non-drinkers (Table 1), including sex, health status, living together with family, grade point average (GPA) in the last semester, birth order, living place, parent occupation, parent marital status, and life planning. For example, the proportion of parental divorce/widowed was higher for students in the non-drinker group and had a higher proportion of parents' marital status as divorced/widow than the drinker group (70.79% vs. 57.59%; *p*-value <0.001).

Liquor consuming behaviors in the drinkers group (Table 2)

For drinkers (316 students), the average (SD)

Table 1. Personal characters of surveyed respondents categorized by drinking behaviors

Variables	Drinkers (n = 316)	Non-drinkers (n = 404)	p-value
Male sex, n (%)	194 (61.4)	106 (26.2)	<0.001
Age, years	13.67 (0.6)	13.55 (0.6)	0.063
Healthy, n (%)	232 (73.4)	348 (86.1)	<0.001
Living together with family, n (%)	168 (53.2)	180 (44.6)	0.022
GPA in the last semester	2.93 (0.3)	3.18 (0.5)	<0.001
Money received per day, baht	48.16 (20.8)	49.65 (21.1)	0.327
First birth order, n (%)	68 (21.5)	60 (14.9)	0.020
Number of people in the family	4.22 (1.1)	4.14 (1.0)	0.477
Living place: dormitory, n (%)	88 (27.9)	60 (14.9)	<0.001
Parents' occupation: agriculture, n (%)	226 (71.5)	238 (58.9)	0.002
Parents' marital status: divorced/widowed, n (%)	182 (57.6)	286 (70.8)	<0.001
Family incomes: <20,000 baht per month, n (%)	44 (13.9)	68 (16.8)	0.285
Having the plan of life, n (%)	204 (64.6)	394 (97.5)	<0.001

Data presented as mean (SD) unless indicated otherwise

GPA = grade point average

age of starting liquor consumption was 11.4 (1.2) years; range 10 to 14. The most common reason for the first drink was for the experience (208 students; 65.8%). A total of 190 students (60.1%) and 158 students (50.0%) consumed alcohol after finishing a final examination or at a birthday party. The average (SD) expenditure on liquor per time was 67.97 baht (± 20.32); range 35 to 150 baht. Two hundred and twenty students (69.6%) drank with family members. The average (SD) number of family members who drank was 2.27 (0.67).

Risk factors associated with liquor consumption among middle school students (Table 3 and 4)

There were 38 questions regarding the risk factors for liquor consumption from which 23 significant factors were found between the drinkers and non-drinkers (data not shown). These factors were put into a multivariate logistic regression model for liquor consumption. Only 6 significant factors associated with alcohol consumption remained in the final stepwise model (Table 3 and 4). The top two independent risk factors for liquor consumption were no close friends and weak family relationships OR 14.94 (95% CI 2.27, 98.28) and 8.18 (95% CI 2.99, 22.33), respectively.

Discussion

The 6 independent predictors for liquor consumption among students in grades 7 to 9 were mainly personal factors, including tobacco use, no after class activities with friends, no close friends, inadequate

knowledge regarding the dangers of drinking, poor attitude regarding liquor consumption, and weak family relationships (Table 4).

The risk for alcohol consumption from not having close friends was 15 times higher than for those who had close friends. Tobacco use raised the risk by 5.58 times over against non-smokers. Students with few after school activities were also at a higher risk (2.68 times) than those who were more active (Table 4). Students with no close friends, no after class activities, and tobacco users may indicate either an isolation personality or poor relationships with friends^(12,13), but further study is needed to clarify the relationship with drinking^(14,15). A previous study⁽⁸⁾ reported the risk for liquor consumption increased with drug use 33%.

The strength of family relationships is a factor associated with liquor consumption: poor or weak family ties were associated with an 8.18 times greater risk of liquor consumption (Table 4), possibly making the person susceptible to peer pressure⁽¹⁶⁾. In the current study, we evaluated the perception of family relationships through five questions on activities with parents/guardians.

Knowledge regarding liquor consumption was based on 10 questions. Students with inadequate knowledge were 5.34 times more prone to drink than more knowledgeable persons. Another study confirmed that inadequate knowledge was associated with drinking with an adjusted OR of 3.68⁽¹⁷⁻¹⁹⁾. Other personal factors such as GPA, or school achievement

Table 2. Liquor consumption among the 316 drinkers

Liquor consumption behavior	n (%)
Liquor consumption in past 12 months	
Rarely	208 (65.82)
1 to 2 times per month	90 (28.48)
1 to 2 times per week	18 (5.69)
Every day	0
Age when started drinking (years)	
≤10	92 (29.11)
11	68 (21.52)
12	112 (35.44)
13	24 (7.59)
14	20 (6.33)
Reason for first drink	
Experimentation	208 (65.82)
Invited by friends	72 (22.78)
Persuaded by family	68 (21.52)
Advertising	66 (20.89)
Challenged or peer pressure	61 (19.30)
Shared a drink with someone	
Alone	178 (56.33)
Friend(s)	240 (75.95)
Family member(s)	20 (6.33)
Occasion of each drink	
Finished final examination	190 (60.13)
Birthday party	158 (50.00)
Party with friends	132 (41.77)
Annual festival	76 (24.05)
Source of beverages	
Convenience store	210 (66.46)
Village groceries	154 (48.73)
Retail shops in the village	114 (36.08)
Groceries near their village	26 (8.23)
Retail shops near their village	22 (6.96)
Expenses on alcohol beverages per time (baht)	
≤50	62 (19.62)
>50	254 (80.38)
Location of drinking event	
Restaurant/Store	192 (60.76)
Dormitory	66 (20.89)
Own house	58 (18.35)
Drinkers in family	
Yes: specify	220 (69.62)
Father	162 (73.64)
Mother	26 (11.82)
Others	94 (42.73)
Average (SD) numbers of drinkers in family	2.27 (0.67)
Amount of each alcohol consumption	
Not more than 1 standard drink	242 (76.58)
2 standard drinks	74 (23.42)
More than 3 standard drinks	0

1 standard drink equals 14 g % of alcohol

may also be weak, negatively associated with liquor consumption^(8,20). In our study, the average GPA of drinkers was significantly lower than non-drinkers (2.93 vs. 3.18/4; p -value <0.001) (Table 1). Due to the reportedly weak association between GPA and liquor consumption, it may not show in our study its small sample size (720 students in our study vs. the 1,803 students in the study by Chaveepojnkamjorn and Pichainarong⁽²⁰⁾).

Previous reports from Australia showed a positive correlation between attitude towards drinking and driving and student attitudes toward liquor consumption⁽²¹⁻²³⁾; the risk of liquor consumption increased by 24.5% with a more permissive attitude. In the current study, we also found that poor attitudes regarding liquor consumption behaviors were related to 7.26 times greater consumption.

Our study has both strengths and limitations. The study population included only middle school students, so the results may represent the early-adolescent age group. We confirmed that the average age for starting liquor consumption was as early as 10-years-old. Further campaigns or interventions should be considered among 9- to 10-year-olds⁽⁹⁻¹¹⁾. The questionnaire used in our study had a wide range of questions about socioeconomics, knowledge, attitudes, practices, perceptions, relationships, and behaviors. Even though the questionnaire had 116 questions, we did not ask about religion, culture, or school programs regarding liquor consumption. Private schools, which may have different student characteristics, were not included in our study.

Conclusion

There were 6 independent predictors of liquor consumption among middle school students in grades 7 to 9, including tobacco use, no after class activities with friends, no close friends, inadequate knowledge regarding the dangers of drinking, poor attitude regarding liquor consumption behaviors, and weak family relationships.

What is already known on this topic?

In Thailand, friends and education levels are known to be related to liquor consumption among middle school students in grades 7, 9, and 11. Students may start drinking at as young as 12 years of age.

What this study adds?

Six independent predictors for alcohol consumption among students in grades 7 to 9 including

Table 3. Significant risk factors associated with liquor consumption behaviors among middle school students

Variable	Drinkers (n = 316)	Non-drinkers (n = 404)	p-value
Tobacco use	158 (50.00)	46 (11.39)	<0.001
No after class activities with friends	258 (81.65)	274 (67.82)	<0.001
No close friends	12 (3.80)	2 (0.50)	<0.001
Knowledge about alcoholic beverages			<0.001
Poor (0 to 4)	75 (23.75)	41 (10.15)	
Sufficient (5 to 7)	222 (70.25)	340 (84.16)	
Good (8 to 10)	19 (6.02)	23 (5.69)	
Attitude about ABC behaviors*			<0.001
Poor (10 to 22 points)	245 (77.53)	193 (47.77)	
Sufficient (23 to 36 points)	38 (12.03)	118 (29.21)	
Good (37 to 50 points)	33 (10.44)	93 (23.02)	
Perception on family relation **			<0.001
Poor (5 to 11 points)	30 (9.49)	12 (2.97)	
Sufficient (12 to 18 points)	258 (81.65)	314 (77.72)	
Good (19 to 25 points)	28 (8.86)	78 (19.31)	

* Comprised of 10 questions in the part D of the questionnaire, ** Comprised of five questions in the part D of the questionnaire

Table 4. Significant risk factors associated with liquor consumption behaviors among middle school students by logistic regression

Factor	Unadjusted odds ratio (95% confidence interval)	Adjusted odds ratio (95% confidence interval)
Tobacco use	7.78 (5.33, 11.36)	5.58 (3.72, 9.14)
No after class activities with friends	2.11 (1.48, 3.00)	2.68 (1.67, 4.31)
No close friends	22.94 (5.43, 82.54)	14.94 (2.27, 98.28)
Inadequate knowledge about alcoholic beverages	2.21 (1.09, 4.51)	5.34 (1.65, 17.32)
Poor attitude about ABC behaviors	3.58 (2.31, 5.54)	7.26 (3.93, 13.39)
Weak family relationships	6.96 (3.16, 15.31)	8.18 (2.99, 22.33)

tobacco use, no after class activities with friends, no close friends, inadequate knowledge regarding the dangers of drinking, poor attitude on ABC behaviors, and weak family relationships. In addition, students started consuming liquor as early as 10 years.

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Potential conflicts of interest

None.

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male high school students in central Thailand. Southeast Asian J Trop Med Public Health 2010; 41: 735-42.

ปัจจัยที่มีความสัมพันธ์กับพฤติกรรมการดื่มเครื่องดื่มแอลกอฮอล์ในวัยรุ่นตอนต้น

เทพไทย โชติชัย, ปราโมทย์ ทองกระจาย, พิสมัย หอมจำปา, วงศา เล้าหิรีวงศ์, กิตติศักดิ์ สวรรยาวิสุทธิ์

ภูมิหลัง: จากผลการสำรวจที่ผ่านมาในประเทศไทยพบวัยรุ่นตอนต้นดื่มเครื่องดื่มแอลกอฮอล์ร้อยละ 40 ซึ่งสูงกว่ารายงานขององค์การอนามัยโลก ที่พบร้อยละ 25 ความชุกของการดื่มเครื่องดื่มแอลกอฮอล์เมื่ออายุยังน้อยที่เพิ่มขึ้นรายงานว่าเป็นผลมาจากหลาย ๆ ปัจจัย

วัตถุประสงค์: เพื่อศึกษาปัจจัยที่มีความสัมพันธ์กับพฤติกรรมการบริโภคเครื่องดื่มแอลกอฮอล์ในวัยรุ่นตอนต้น

วัสดุและวิธีการ: การศึกษาเชิงวิเคราะห์แบบภาคตัดขวาง ณ จุดเวลาใดเวลาหนึ่งในครั้งนี้ ศึกษาในนักเรียนมัธยมศึกษาตอนต้น จังหวัดขอนแก่น ประเทศไทย ที่ยินดีเข้าร่วมในการศึกษาในช่วงเดือนมิถุนายนถึงสิงหาคม พ.ศ. 2559 โดยการสุ่มแบบหลายขั้นตอน และแบ่งชั้นภูมิ ตามขนาดโรงเรียนและสุ่มตัวอย่าง ผู้เข้าร่วมวิจัยแบบมีระบบ ตามสัดส่วนของจำนวนนักเรียนในแต่ละโรงเรียน เก็บรวบรวมข้อมูลโดยใช้แบบสอบถาม ตัวแปรตามที่ใช้ในการศึกษา คือพฤติกรรมการดื่มเครื่องดื่มแอลกอฮอล์ วิเคราะห์ปัจจัยที่มีความสัมพันธ์กับพฤติกรรมการดื่มเครื่องดื่มแอลกอฮอล์โดยใช้ การถดถอยพหุแบบโลจิสติก

ผลการศึกษา: กลุ่มตัวอย่าง 720 คนอายุเฉลี่ย 13.60 ปี (ส่วนเบี่ยงเบนมาตรฐาน 0.59) เป็นเพศชาย ร้อยละ 41.67 เคยดื่มและยังดื่มน้ำ เครื่องดื่มแอลกอฮอล์ 316 คน (ร้อยละ 43.89) อายุยังน้อยที่สุดที่เริ่มดื่มเครื่องดื่มแอลกอฮอล์ 10 ปี ในโมเดลสุดท้ายของการวิเคราะห์มีเพียง 6 ปัจจัย ที่มีความสัมพันธ์กับพฤติกรรมการดื่มเครื่องดื่มแอลกอฮอล์ โดยสองปัจจัยแรก ได้แก่ การไม่มีเพื่อนสนิทและความสัมพันธ์ในครอบครัวต่ำ (Adjusted OR, 95% CI) 14.94 (2.27, 98.28) และ 8.18 (2.99, 22.33) ตามลำดับ

สรุป: มี 6 ปัจจัยที่มีความสัมพันธ์กับพฤติกรรมการดื่มเครื่องดื่มแอลกอฮอล์ในวัยรุ่นตอนต้น ได้แก่ การสูบบุหรี่ การไม่มีกิจกรรมต่างๆ กับเพื่อน หลังเลิกเรียน การไม่มีเพื่อนสนิท ความรู้เกี่ยวกับเครื่องดื่มแอลกอฮอล์ต่ำ ทักษะคิดเกี่ยวกับการดื่มเครื่องดื่มแอลกอฮอล์ต่ำ และความสัมพันธ์ในครอบครัวต่ำ
