

# PREVALENCE AND RELATED FACTORS OF ALCOHOL CONSUMPTION AMONG ETHNIC MINORITY BOARDING HIGH SCHOOLERS IN SOUTHERN VIETNAM

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*Hazardous levels of alcohol use have caused many diseases, posing a great economic and social burden to the community. Alcohol use in some provinces of Vietnam shows that alcohol consumers are getting younger and younger. This study aimed to determine the proportion of alcohol consumption among students at Binh Phuoc Ethnic Minority High School in 2020 and a number of factors leading to the alcohol consumption. The result showed that the alcohol use proportion in the past 12 months was 62% and the risky drinkers rate was 11.2%. Some factors concerning the use of alcohol among students such as gender, age, grade level, behavior, smoking, alcohol use family members, alcoholic friends, and friends influence were also revealed in the study.*

**Keywords:** alcohol, consumption, high school, ethnic minority.

## I. INTRODUCTION

Hazardous levels of alcohol consumption have had significant negative impact on physical and mental health to every society. According to a new report by the World Health Organization (WHO) in 2018, more than 3 million people died because of harmful use of alcohol. The harmful use of alcohol causes more than 5% of the global disease burden. While alcohol consumption is going down in developed countries, it is rising in developing countries.<sup>1</sup>

Vietnam becomes a country with the highest alcohol consumption in Southeast Asia, ranked third in Asia after Japan and China. The proportion of Vietnam residents, who consumed 8.9 liters of pure alcohol per person in 2017, also surpassed Japan, China, and India.<sup>2</sup> In fact,

adolescence, which is the important transitional phase between childhood and adulthood, brings about major changes in psychological and physical health. In this stage of life, Vietnamese youngsters tend to experience new things and enjoy spending time with their friends, especially high schoolers, which refers to individuals between ages 16 and 18. Binh Phuoc Ethnic Minority boarding high school has been engaged in an experiment in multicultural education, in a region with high poverty rates. Because of living far away from their families with less parental controls and poor attendance of teachers, ethnic minority students alcohol abuse is highly prevalent among adolescents on weekend and birthday party. According to Ba Ria - Vung Tau province research reports, 49.1 percent of people aged 16 and older reported that they drank alcohol, about 36.5 percent have used in the past 12 months, the average age of the first use was 14 years.<sup>3</sup>

In this research, we attempt to explore the

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alcohol consumption prevalence among ethnic high school students in Binh Phuoc province, Viet Nam in 2020 and identify the factors associated with alcohol consumption.

## II. METHODS

### 1. Research subjects

The study subjects were 10th, 11th, 12th grade high school students at the ethnic high school in Binh Phuoc province, Vietnam. The inclusion criteria were: (1) agreeing to participate in the study; (2) able to read and respond to the questionnaire in Vietnamese.

### 2. Method

**Study time:** The study was done during from January to July 2020.

**Research design:** This research was a cross-sectional study.

Sample size:

$$n = Z_{1-\alpha/2}^2 \times \frac{p(1-p)}{d^2}$$

$n$  = the desired sample size from a large population size.

$\alpha$ : Level of significance, choose  $\alpha = 0.05$ .

$Z_{1-\alpha/2}$  = two-tailed Z-score confidence level (1.96).

$p$  = Population proportion (0.328).<sup>4</sup>

$d$  = Absolute error (0.05).

Sample size was calculated according to a study done at Ben Luc private high school, Long An province by Bui Thi Hy Han.<sup>4</sup> The prevalence of ever use of alcohol among the students was found to be 32.8%. So, setting the prevalence at 32.8% and the allowable error 5% of prevalence the sample size was calculated as 339. We recruited 361 students for the survey.

**Sampling selection:** The participants were recruited by using convenience sampling method.

**Data collection techniques:** The study applied indirect interview techniques with an anonymous self-administered questionnaire.

The respondents were allowed enough time to respond to the questions to minimize recall bias while recollecting past events. The process was facilitated by full-time senior medical students with years of experience in field surveys.

### **Research tools and measurement**

**methods:** The risk level of drinking was assessed by the Alcohol Use Disorder Identification Test (AUDIT) consisted of 10 items divided into three sections.<sup>5</sup> A score of 1 to 7 suggests low-risk consumption according to WHO guidelines. Risky drinkers is generally indicated when the AUDIT score is between 8 and 15. Notably, men with an AUDIT score greater than 7 and women with an AUDIT score greater than 5 were classified as people with alcohol problems (risky drinkers) adapted for Vietnamese populations.<sup>6</sup> A score of 16 or more indicates the likelihood of alcohol dependence. Alcohol use is a binary variable (Yes/No). Yes: Drank  $\geq 1$  standard drink and  $\geq 1$  time in the last month/past 12 month/lifetime. A standard drink equivalent is 10 grams of alcohol.

**Variables:** Independent variables include gender, age, ethnic group, grade, conduct, smoking status, age of first drink, parents' marital status and alcohol use status (parent, sibling, friend, etc.). Dependent variables include alcohol use (last month, last year, lifetime) and alcohol problems.

### 3. Statistical analysis

The data were analyzed using STATA, version 16.0. Categorical variables were presented as frequencies and percentages using descriptive statistics. As a measure of the magnitude of the association between the independent variables and dependent variable, Progressive ratio (PR) and 95% confidence intervals (95% CIs) were produced using binary logistic regression (BLR). The significant level was set to be 0.05.

### 4. Ethical considerations

All participants were informed that their

participation was completely voluntary and were assured that their responses would remain anonymously. All personal identifications of the participants were protected.

### III. RESULTS

**Table 1. Characteristics of the study subjects (n = 361 students)**

Characteristics		Frequency	Proportion (%)
Sex	Male	85	23.6
	Female	276	76.4
Ethnic group	Stieng	138	38.2
	Nung	55	15.4
	Tay	45	12.4
	Khmer	41	11.3
	Bunong	30	8.3
	Kinh	14	3.9
	Others	38	10.5
Age (year)	16	121	33.5
	17	119	33.0
	18	106	29.4
	≥18	15	4.1
Grade	10 <sup>th</sup>	132	36.6
	11 <sup>th</sup>	120	33.2
	12 <sup>th</sup>	109	30.2
Conduct grade	Very good	341	94.5
	Good	17	4.7
	Average	3	0.8
Smoking status	Yes	9	2.5
	No	352	97.5
Anyone in household using alcohol products	Yes	293	81.2
	No	68	18.8
Friendship group use of alcohol products	Yes	266	73.7
	No	95	26.3
Friendship group to seduce to use alcohol products	Yes	173	47.9
	No	188	52.1
Age of first drink (Mean ± SD)		15.9 ± 1.1	

Demographic characteristics of the study participants are summarized in **Table 1**. A total of 361 students were enrolled in this study, 76.4% were female and 23.6% were male. The Stiang, Nung, Tay, Khmer, Bunong, Kinh and the others constituted 38.2%, 15.4%, 12.4%, 11.3%, 8.3%, 3.9% and 10.5% of the participants, respectively. Most participants (94.5%) had very good conduct grade. 2.5% of students reported having smoked of cigarettes. More than 4 in 5 (81.2%) had at least one drinker in the family. Approximately 73.7% of students have peer alcohol use. The average age of the first alcohol use was 15.9 years old.

**Table 2. Prevalence and levels of alcohol use**

Characteristic		Frequency	Proportion(%)	
Alcohol consumption	Lifetime use	Yes	242	67.1
		No	119	32.9
	Last year use	Yes	224	62.0
		No	137	38.0
	Last month use	Yes	79	32.6
		No	163	67.4
Drinking risk level according to AUDIT	Low-risk drinkers	199	88.8	
	Risky drinkers	25	11.2	

**Table 2** displays the prevalence of alcohol using among high school students during the senior year was 62% and 11.2% reported indicating of risky behaviors. By self-report, 67.1% of all students reported use of alcohol in their lifetime. Overall, 79 (32.6%) of 242 ever drinkers reported alcohol use in the previous month. According to AUDIT, 88.8% of students have been classified into low-risk drinker's groups.

**Table 3. Reasons for first drink (n = 242)**

Item	Frequency	Proportion (%)
Peer pressure	147	60.7
Psychological factors (stress, anxious...)	52	21.5
Forced alcohol drinking	21	8.7
Proved itself	13	5.4
Another reasons	9	3.7

The results of analysis (**Table 3**) revealed that more than 60% of student consume alcohol because of peer pressure and 21.5% of alcoholics experience psychological factors. Approximately 8.7% of students have been forced to drink by their friends.

**Table 4. Prevalence Ratio (PR) and 95% Confidence Intervals (95% CI) of factors associated with alcohol use in the past 12 months**

Characteristics	Alcohol use				p value	PR (CI 95%)	
	Yes		No				
	Frequency	Proportion (%)	Frequency	Proportion (%)			
Sex	Female	156	56.5	120	43.5	0.001	1.42 (1.22 - 1.64)
	Male	68	80.0	17	20.0		
Age, y	16	58	47.9	63	52.1	0.001*	1
	17	73	61.3	46	38.7		
	18	81	76.4	25	23.6		
	≥18	12	80.0	3	20.0		
	10 <sup>th</sup>	61	46.2	71	53.8		
Grade	11 <sup>th</sup>	78	65.0	42	35.0	0.001*	1.29 (1.17 - 1.43)
	12 <sup>th</sup>	85	78.0	24	22.0		
	Very good	207	60.7	134	39.3		
Conduct grade	Good	14	82.4	3	17.6	0.001*	1.32 (1.16 - 1.51)
	Average	3	100.0	0	0.0		
	No	215	62.1	137	37.9		
Smoking status	Yes	9	100.0	0	0.0	0.015*	1.64 (1.51 - 1.78)
	No	26	38.2	42	61.8		
Anyone in household using alcohol products	Yes	198	67.6	95	34.4	0.001	1.77 (1.29 - 2.41)
	No	23	71.9	9	28.1		
Father use alcohol products	Yes	175	67.1	86	32.9	0.582	0.93 (0.74 - 1.18)
	No	86	67.1	28	28.1		

Characteristics	Alcohol use						p value	PR (CI 95%)
	Yes			No				
	Frequency	Proportion (%)	Frequency	Proportion (%)	Frequency	Proportion (%)		
Mother use alcohol products	No	163	94.9	88	35.1	0.018	1	
	Yes	35	83.3	7	16.7		1.28 (1.09 - 1.51)	
Brother/young brother use alcohol products	No	147	64.2	82	35.8	0.019	1	
	Yes	51	79.7	13	20.3		1.24 (1.06 - 1.45)	
Sister/young sister use alcohol products	No	186	66.4	94	33.6	0.067*	1	
	Yes	12	92.3	1	7.7		1.39 (1.16 - 1.66)	
Anyone in friendship group use of alcohol products	No	12	12.6	83	87.4	0.001	1	
	Yes	212	79.7	54	20.3		6.31 (3.71 - 10.74)	
Friendship group seduce to use with alcohol products	No	79	42.0	109	58.0	0.001	1	
	Yes	145	83.8	28	16.2		1.99 (1.67 - 2.39)	
Parents' marital status	Married	197	62.9	116	37.1			
	Separated/divorced	14	43.8	18	56.2	0.077	0.69 (0.46 - 1.04)	
	Widow/single/others	13	81.2	3	18.8	0.046	1.29 (1.00 - 1.66)	

**Table 4** shows that gender, age, school level, conduct grade, smoking status and other factors were associated with alcohol use in past 12 months.

Boys' alcohol use is 1.42 times higher than girls ( $p$ -value  $< 0.001$ ). In these studies, conformity to peers is found to peak in senior year and 18 years old or above. The students who used neither tobacco nor alcohol is 1.64 times higher than those who used alcohol only ( $p$ -value = 0.015). The over 18 years old age group had the highest prevalence among drinkers in the past 12 months (80%) compared with all four age groups. Compared to students in grade 10, students in grade 11 are more likely 1.29 times to drink alcohol. ( $p$ -value = 0.001). Similarly, students in average conduct are 1.74 times more likely to drink alcohol compared to students with very good conduct ( $p$ -value = 0.001).

In the present study, many family level factors are associated with drinking. These factors include presence of alcoholic family member, or mother/brother/younger brother alcoholic, or parents' marital status. This implies that having someone in household who drink alcohol is strongly associated with the risk of alcohol drinking (PR = 1.7 (1.22 - 5.19),  $p$ -value = 0.001). Adolescents whose peers are reported to drink were at nearly 6-fold risk of alcohol consumption than those whose peers were non-drinkers ( $p$ -value = 0.001). Additionally, students who have been seduced to use alcohol products by their peers were at increased risk of alcohol consumption (PR = 1.99 (1.67 - 2.39),  $p$ -value = 0.001). Mother (or brother/young brother) use of alcohol products was significantly associated with alcohol consumption use by students ( $p$  = 0.018 and  $p$  = 0.019).

## IV. DISCUSSION

Overall 67.1% of senior high school students consumed alcohol in their lifetime, 62.0% drank within last year, and 32.6% drank last month. This prevalence trends among students at Binh Phuoc ethnic minority high school is higher compared to the Phayao province, Thailand estimates where the alcohol consumption prevalence in this group were 64.9 % ever drank in their lifetime, 58.8% ever drank in the last year and 35.0% ever drank in the past month.<sup>7</sup> In the past 12 months, the overall rate of alcohol use of minority students in boarding schools has been 62.0%; meanwhile, in the study conducted by Bui Thi Hy Han and Phan Van Hien, the rate of alcohol use of typical students is 32.8 and 47.3%, respectively.<sup>4,8</sup> In the study, the age of the first use of alcohol is also younger than high school students in Bac Giang and Binh Thuan provinces ( $15.9 \pm 1.1$  and  $16.9 \pm 0.90$ ), respectively.<sup>9</sup> Students live far away from their parents at a young age and are heavily influenced by their peers which greatly affects the self-control and alcohol use consciousness of students in boarding schools. This study is similar with other studies who reported alcohol consumption among boys was greater than among girls according to AUDIT ( $p$ -value  $< 0.001$ ). It might be due to cultural norms and this is a common finding in another studies where males use alcohol consumption more and show higher trend than females. With 88.8% of low-risk drinkers, this is similar to a cut-off point at Limpopop's high school students. In this article, the percentage of low-risk drinkers is 52.5%, lower than our results and there are 2 additional types-high-risk and almost dependent drinkers- (11.2% and 17.5%), which was not recorded in our study. The between-study variance may be age ranges (11 - 25 and 16 - 18\*), 53.8% were 17 and 4.1% were



18+ according to our research and longer time exposure to alcohol. This study revealed that most are learners alcohol drinkers and they were low-risk drinkers.<sup>10</sup> Early intervention can reduce the rate of student alcohol consumption and efficiency.

Older high school students tend to drink more frequently. One of the reasons for this is because drinking among older student populations is thought to be intimately tied to activities (or behaviours) related to the closer friendships. A recent systematic review indicates that later adolescence drinking could continue into late adulthood drinking habits, and it was also associated with traffic accidents and mental and social problems.<sup>11</sup> This is a really remarkable because the use of alcoholic beverages is the primary reason triggering traffic accidents in Vietnam.

Furthermore, the study found that high school students whose have an alcoholic mother were more likely to use alcohol. A recent study evidence suggesting that children born to alcoholic parents are at increased risk of alcohol use, addiction in the future, and it has also been reported among other hill tribes.<sup>12,13</sup> One of the different reasons for this is because of ethnic group. Most of the students are Stieng and Nung people, whose families or groups are governed by matriarchies, and children tend to feel more affectionate towards their mothers than their fathers. This may be connected to the fact that children see their parents as authority figures and mimic their behavior. In a study conducted by Assanangkornchai et al. in Thailand, family members' alcohol use was a significant associated factor for alcohol use in their high school-aged children.<sup>14</sup> The majority of the students travel a long distance for school and, usually stay for weeks; or because their parents working on fields in the mountains,

the children are home alone taking care of each other. This could lead to poor parental connectedness and guidance, which has been reported to increase the risk of alcohol use among ethnic adolescents. In addition, alcoholics can greatly be affected by sibling relationships. The finding of this study identified high school students and alcohol habit of their siblings is strongly associated with an elevated risk of developing an initiation of drinking.<sup>15</sup> In a study conducted by Ryan S. Trimet al. in Arizona, there was also evidence of peer like sibling effects among sibling pairs who were similar in age, such that older and younger siblings mutually influenced each other's alcohol use.<sup>16</sup> Siblings have been shown to resemble each other in terms of alcohol use, expectancies about alcohol use, and endorsement of drinking motives.

This study had some limitations. Data were self-reported, and some respondents may have inadvertently misreported one or more of the questions asked. A cross-sectional study cannot determine causality for any of the study's associated factors.

#### IV. CONCLUSION

Schools and families should keep a close relationship to educate children about the harmful effects of excessive alcohol use. Besides, family members need to avoid alcohol consumption in front of their children and teach them how to say no to alcoholic drinks. Additionally, boarding school management should implement alcohol policies. Socially inappropriate behaviour such as drinking on school grounds can be prevented by suspension or expulsion. Drinking pattern is changing in Vietnam with increased social unacceptability and accessibility of alcohol by underage drinkers especially in high school students. Furthermore, appropriate alcohol-awareness programs in school is necessary to



prevent underage drinking.

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