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Original Research

Alcohol Consumption and Current Situation of Drinking Risk Level Among University Students in Mandalay Region

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ABSTRACT

Background: In Myanmar, alcohol consumption among university students had been recognized as a major public health concern. A cross-sectional study was done to investigate drinking alcohol and risk level assessment using the Alcohol Use Disorder Identification Test (AUDIT) and examined the reasons of alcohol uses and types of beverage preference consumed.

Methods: The two universities from three districts in Mandalay region were randomly selected, from which 976 students (stratified by academic year and sex) were contributed in self-administered questionnaire.

Results: The mean age at first drinking alcohol among the participants was 16.36±0.15 years with range of 16 to 19 years. The drinking risk level assessment using the AUDIT test, nearly half of the participants 48.7% were abstainers and 86 (8.8%) were high risk drinkers while 28 (2.9%) had alcohol dependency. Among those, 57.8% had experiences of alcohol drinking and the favorite beverage of the university students who drink alcohol was beer. Binary logistic regression analysis indicated that gender, smoking habit and living situation for drinking were significant predictors of alcohol consumption among university students. The results found out that living separately with parents and smoking habits were important factors for drinking alcohol with statistically significant at 95% confidence level.

Conclusion: It provided evidence-based findings for knowing the alcohol consumption risk level among university students to prevent social deprivation and health risk behaviors. Findings from this study indicate a need for law governing, strictly prohibits the sale of alcohol directly or indirectly to those under the age of eighteen years. The alcohol intervention program can be helpful in modifying behaviors change communication in health promotion of university students.

Keywords: Alcohol consumption, AUDIT test, drinking risk level, university students and binary logistic regression

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1. Introduction

Worldwide, drinking alcohol was the seventh-leading risk factor for early death and among the aged group of 15 to 49 years old, alcohol consumption was tied to 4 percent of female deaths and 12 percent of male deaths in 2016 (World Health Organization, 2018). According to an ongoing, large-scale Ontario survey conducted by the Toronto-based Centre for Addiction and Mental Health in 2015, 39 per cent of high-school students reported drinking in the previous year (Giesbrecht et al., 2004). The rate of drinking, unsurprisingly, goes up as students' age. Most of the teenagers insisted that the peer pressure to drink has largely evaporated. The World Health Organization (WHO) reported in 2014 that worldwide alcohol consumptions was 6.2 liters of pure alcohol consumed per person aged 15 years or older and 16.0% drinkers aged 15 years or older engage in heavy episodic drinking (World Health Organization, 2014).

At the same time, alcohol per capita of Myanmar nations (above 15 years of age) consumption (in liter of pure alcohol) was 0.7 compared to 3.5 in South East Asia Region (World Health Organization, 2004). In recent years there had been widespread public concern with the alcohol consumption of teenagers. Interesting in this issue, there was a still lack of evidence and it had been brought about mainly to concerns the problems of alcohol drinking among adolescents' university students and their social and health risks. In Myanmar, the prevalence of current alcohol used among students (i.e., drinking at least one drink containing alcohol on one or more of the past 30 days) was 1.4% in year 2007 according to Global School-based Student Health Survey-GSHS reported current alcohol use in grade 8,9,10 and 11 students (Page and Danielson, 2011).

A variety of medical problems, including cardiovascular diseases, liver cirrhosis was highly related to alcohol drinking. Alcohol use and abuse also contributed to injuries, and violence in the United State was high by historical standards and high relative to other developing countries except Myanmar (Thakker, 1998). When compared to older adults, teenagers and young adults were particularly at risk for diminishing school performances. The prevalence of harmful use of alcohol was increased in young adults and notably high 66.4% in university students at Ireland (Davoren et al., 2015). The consequences of alcohol consumption in earlier life deteriorated the emotional, physical and psychological development, then higher chanced to occur the alcohol-related health problems.

The consumption of alcohol could be expected to have a negative impact on class activities both directly through its potential impact on cognitive ability and indirectly through its impact on study habits. The average number of drinks consumed per drinking occasion significantly increased the probability of skipping a class and the level of alcohol consumption was varied by religion, living situation and parental drinking behavior (Powell et al., 2004). Therefore, controlling for the potential harmful behaviors of alcohol consumption and drinking risk level assessment among university students was a key importance finding to build up the brighter future of young populations. Additionally, the government could not regulate the evidence-based policy to reduce the impact of hazardous alcohol consumption among university students in Myanmar.

Thus, the aim of this study was an attempt to examine the risk level of alcohol consumption by using the Alcohol Use Disorder Identification Test (AUDIT) and assess the reasons for drinking among university students in Myanmar, with particular living situation and gender differences. Though there were a few studies that had assessed the association between alcohol consumptions and social consequences among university students that could apply alcohol prevention program, to our knowledge this type of research had not yet been undertaken in Universities.

2. Method

Study Design and participants: A cross-sectional analytical study was conducted using an anonymized, self-administered questionnaire to obtain information from students in six universities located in Mandalay, Meikhtila and Kyaukse districts which had the highest number of university students from

different areas of Upper Myanmar. The two universities were randomly selected from each district. Students were sampled at the age range of 16-19 years using a proportional probability to size (PPS) sampling. Individual student was recruited from the chosen universities using stratified simple random sampling (stratified by academic year and sex). As the prevalence of university students regarding alcohol consumption was unknown, assumed the proportion of students who drink alcohol to be 50%; delta as 0.05 and 95% confidence interval. Then, was attempted to obtain the required number of samples was 792 and accounted 20% for non-response rate and dropped out rate, 158. Thus, the estimated total sample for this study was 950 then proportionately divided by six universities from three districts, the respondents from one university were 160 students. The descriptive analysis was firstly done in 976 after excluding the missing values.

Variables and measurements: Current situation of drinking alcohol was dependent variable while the independent variables composed three sections in questionnaires (1) the respondents' background characteristics section, (2) risk level assessment: The Alcohol Use Disorders Identification Test, AUDIT (section 2), and (3) alcohol consumption practices and the reasons of alcohol drinking (section 3). AUDIT test developed by the WHO (Babor et al., 2001) was assessed using scoring system based on 10 questions with 40 points which were coded as a total of 40 scores and then calculated to define the drinking risk levels such as abstainers (0 score), low risk drinkers (1-7 scores), high risk drinkers (8-15 scores) and dependence (16-40 scores) according to AUDIT classification. Tobacco use, current betel chewing practices, previous experiences related alcohol drinking and living situation (with parents/guardians or without) were measured using a yes/no question. The other covariates included sociodemographic characteristics of the participants.

Procedure: After co-ordination meeting with Rectors of Universities, lecturers, Assistant Director (Adolescent Health Program Manager) and Township Medical Officer (TMO-Adolescent Health Team), the data was collected in the classrooms at university campus. Getting voluntary consents to participate through a self-administered questionnaire, was completed individually by each student. Each participant was informed of the purpose of the study by four trained data collectors and that the data was kept in a completely confidential and anonymous manner. The time necessary for completion of the questionnaire was approximately 30 minutes.

Ethics: This study was approved by the Ethics Review Committee of Department of Medical Research, Ministry of Health and Sports, Myanmar (ERC number: 016917) Ethics/DMR/2018/021

Data Analysis: After an initial descriptive analysis, a classification of risk level assessment in scoring AUDIT test was carried out by calculating the scores. In the case of correlation in categorial variables, chi-square tests were used along with the calculation of coefficients. Finally, a logistic regression analysis was performed to estimate the associated odds ratios for different variables on the binary outcomes of drinking (yes/no). Data entry was done using EpiData 3.02 software and descriptive analysis was performed by STATA version 15.1 for Mac software.

3. Results

3.1 Background characteristics

A total of 976 university students participated in the study. The mean age at first drinking alcohol among the participants was 16.36 ± 0.15 years with range of 16 to 19 years (Table 1). Table 2 showed the background characteristics of the participants as five hundred and thirty (54.3%) students were males, 45.3% were females and only 0.4% were not responded their gender or LGBT. Only a very small number of participants 0.4% were not declared their gender status or lesbians, gays, bisexuals and transgenders (LGBT). About 95.3% of respondents were Buddhist and 2.5%, 1.2, 0.6% and 0.4% of respondents were Christian, Islam, Hindu and others respectively. Notably, two-third of the participants 89.4% were Burma and minority (<1%) were Shan, Chinese, Kachin, Chin, Rakhine and Kayin. The vast majority of the participants (898 out of 976) were fresher students and the rests 78 students were repeater. Most of them were involved in physical and social activities at school (or) school per-

formances and only 7.2% were not attended the classes regularly. Over half of the participants 60.8% were not lived with parents or guardians and the rests lived in their parents' home. Among those participants, 13.8% were current smokers and 6.7% were betel chewers. A considerable proportion of their parent's history of drinking 40.7% had father only. Nearly 60% of their parents did not drink any kind of alcohol beverage on previous history.

Table 1. Mean Age of participants and mean age at first drinking alcohol (N = 976)

Name of the variables	Mean ± SD
Age in years of participants	18.46±0.05
Age at first drinking alcohol	16.36±0.15

Table 2. Background characteristics of University Students (N = 976)

Characteristics	Name of variables	N	%
Gender	Male	530	54.3
	Female	442	45.3
	LGBT or No response	4	0.4
Religion	Buddhist	930	95.3
	Hindu	6	0.6
	Christian	24	2.5
	Islam	12	1.2
	Others	4	0.4
Education status	Fresher	898	92.1
	Repeater	78	7.9
Performed physical/social activities	Yes	680	69.7
	No	296	30.3
Class attendances	Absent one time per week	332	34.0
	Absent one time per month	150	15.4
	More than one time per month	289	29.6
	Not more than 10 times per year	135	13.8
	Never / Regularly attend the classes	70	7.2
Living situation	Not with parents/guardians	593	60.8
	With parents/guardians	383	39.2
Level of life satisfaction	Low (Sad)	50	5.1
	Medium (Normal)	532	54.5
	High (Enjoy/Happy)	394	40.4
Tobacco use/Current smoking	Yes	135	13.8
	No	841	86.2
Current Betel chewing	Yes	65	6.7
	No	911	93.3
Parents history of drinking	Both of them	23	2.3
	Father only	397	40.7
	Mother only	1	0.1
	None of them	555	56.9

Total	976	100.0

3.2 Drinking risk level assessment using the Alcohol Use Disorder Identification Test (AUDIT)

Table 3 showed the alcohol consumption and risk level of drinking was expressed according to the AUDIT test in scoring system. There was total score of 40 in AUDIT test, it contained ten questions with 40 multiple answers that every answer marked one score. Nearly half of the participants 48.7% were abstainers and 86 (8.8%) were high risk drinkers while 28 (2.9%) had alcohol dependency.

Table 3. Drinking risk levels assessment according to AUDIT test (N = 976)

Types of drinkers	N	(%)
Abstainers (0 score)	475	48.7
Low risk drinkers (1-7 score)	387	39.6
High risk drinkers (8-15 score)	86	8.8
Dependence (16-40 score)	28	2.9
Total	976	100.0

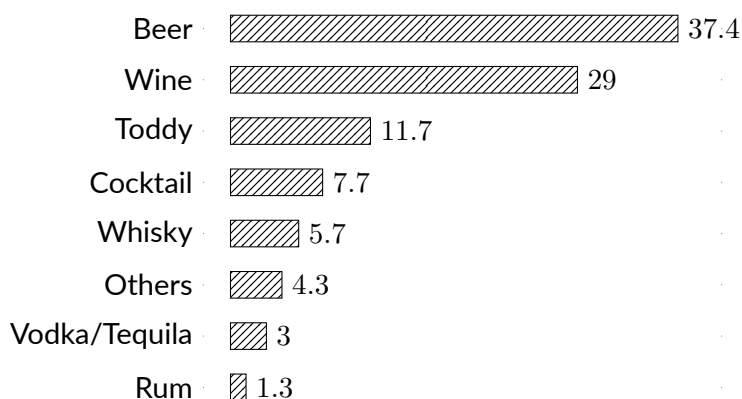## 3.3 Alcohol consumption situation and favorites types of beverages

The total of 976 university students were participated in responding the drinking habit. Among those, 564 students (male = 375, female = 185, LGBT =4) had experiences of alcohol drinking and/or drank at least one time in the past and 412 students (male = 155, female = 257) had never tried to drink alcohol in Figure 1. (Pearson Chi2(2) = 85.4496, Pr = 0.000)
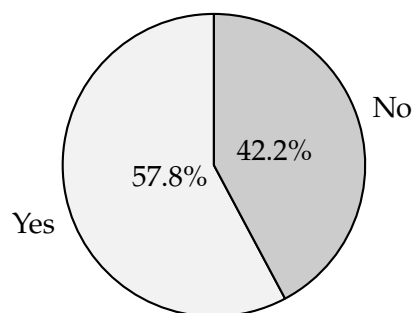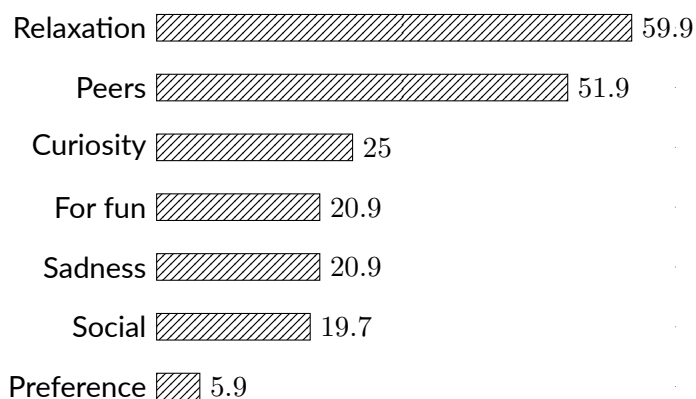

Figure 1. Drinking habit of the participants (n = 976)

The favorite beverage of the university students who drink alcohol was beer followed by wine, toddy, cocktail, whisky and the least percentage of beverages was rum shown in (Figure 2). Most of them (338) students drank for the reason of relaxation and (293) drank because of peer pressure. The emotional reasons "sadness" and happy "for fun" were the same numbers of percentage for the drinkers. The group "social reasons" included heart broken, family problems, relationships status, fresher welcome parties and drinking as regard of social life events. And then, curiosity mean that test the taste of alcohol was the third common reason and 33 students drank because they like the alcohol and drank without having any reason (Figure 3).

The Table 4 showed the experiences and feelings of the university students who drink alcohol. Among those having experiences of drinking alcohol, only 95 students drank a reason of breaking up with their boyfriends or girlfriends. After drinking, 19.7% of students who drank alcohol had ever happened memory loss (blackout). While drinking, 6.7% of those had ever flighted and 18.3% had ever ignored the classes because of drinking. At the same time, the percentage of the students

Beer   37.4
Wine   29
Toddy   11.7
Cocktail   7.7
Whisky   5.7
Others   4.3
Vodka/Tequila   3
Rum   1.3

Figure 2. Types of beverages favorited by participants (n = 564)

Relaxation   59.9
Peers   51.9
Curiosity   25
For fun   20.9
Sadness   20.9
Social   19.7
Preference   5.9

Figure 3. Reasons for drinking among students who drank alcohol

who felt guilty was 30.5% and 25% were always able to stop drinking when they would like to quit drinking. The total 141 students who decided to stop drinking but 119 (84.4%) were achieved to follow their decision (Table 4).

Table 4. Experiences and Feelings of University students who drink alcohol (N = 564)

Feelings and Practices	N	Yes/No	(%)
Was your drinking ever a reason to lose a relationship?	95	Yes	16.8
	469	No	83.2
Do you ever drink to get drunk?	167	Yes	29.6
	397	No	70.4
Have you ever happened memory loss after drinking? (Blackout)	111	Yes	19.7
	453	No	80.3
Have you ever skipped or missed classes because of drinking?	103	Yes	18.3
	461	No	81.7
Do you ever feel guilty about your drinking?	172	Yes	30.5
	392	No	69.5
Are you always able to stop drinking when you want to?	141	Yes	25.0
	423	No	75.0
Total	594		100.0

Among those who decided to stop drinking (N=141)			
If you decided to quit, still availabel to avoid alcohol	Yes	84.4	119
	No	15.6	22

3.4   Logistic Regression Analysis

In the logistic regression analysis, gender, religion and parents' history of drinking as the frequency distribution was less than five in numbers of some categories in those three independent variables. So, drop off those variables but recoded gender as two categories (male and female) to analyze a binary logistics regression model.

In the model of logistic regression (Table 5), gender, living situation of the university student and smoking habit had a statistically significant effect on drinking practice. All the predictors variables were negatively associated with the dependent variable except only one independent variable (education status) had positive association with drinking. If the university students were repeater, holding other variables constant, there would be 1.2 times more likely to drink alcohol compared to fresher students. The female students were 63% less likely to drink than male and if the students lived with their parents at home, holding other variables constant, 55% decreased the chance of drinking alcohol than those who did not live with their parents. In the factor of school activities (participation/involved =1), the students did not involve in school activities were 23% lower chance of drinking alcohol at the significant level of 0.112. The students feeling happy had 32% lower odds (OR = 0.68) while feeling normal in life satisfaction had 36% lower odds (OR = 0.64) of drinking habit compared with those who were felt sad (p = > 0.05). When a student did not smoke, the probability of drinking would be decreased 88% than who smoked (p = < 0.001) while not used of smokeless tobacco, not chewing betel had 52% lower odds (OR = 0.48) at the significant level of 0.147. When a father of the students had a history of alcohol drinking, the student drinking habit chance also 1 time increased.

**Table 5.** Logistic Regression Coefficient and Odds Ratios (N=966)

Characteristics	Variables	Coefficient	OR (95%)	P value
Gender	Male (ref)	1.00		
	Female	-0.98	0.37 (0.28-0.51)	0.000
Religion	Buddhist (ref)	1.00		
	Hindu	-0.27	0.77 (0.13-4.64)	0.772
	Christian	0.35	1.42 (0.55-3.67)	0.474
	Islam	-2.20	0.11 (0.01-0.91)	0.041
Education status	Fresher (ref)	1.00		
	Repeater	0.18	1.20 (0.68-2.12)	0.539
School activities	Yes (ref)	1.00		
	No	-0.26	0.77 (0.56-1.06)	0.112
Attendances	Absent 1 class/week (ref)	1.00		
	Absent 1 class/month	-0.07	0.93 (0.60-1.44)	0.748
	> 1 class/month	0.21	1.24 (0.85-1.79)	0.262
	Not > 10 classes/month	-0.46	0.63 (0.40-1.00)	0.046
	Regularly attend classes	-0.86	0.42 (0.23-0.77)	0.005
Living situation	Without guardians (ref)	1.00		
	With parents	-0.80	0.45 (0.33-0.61)	0.000
Life satisfaction	Low/Sad (ref)	1.00		

	Medium/Normal	-0.44	0.64 (0.30-1.37)	0.254
	High/Happy	-0.39	0.68 (0.31-1.46)	0.322
Smoking	Yes (ref)	1.00		
	No	-2.14	0.12 (0.05-0.26)	0.000
Betel chewing	Yes (ref)	1.00		
	No	-0.74	0.48 (0.18-1.30)	0.147
	Both of them (ref)	1.00		
Parents history	Father only	0.01	1.01 (0.36-2.83)	0.989
	None of them	-0.43	0.65 (0.23-1.81)	0.406
Constant		4.58	97.21 (18.78-503.15)	0.000

Log likelihood = -544.98859; LR chi^2 (17) = 226.42; Prob > chi^2 = 0.0000; Pseudo R^2 = 0.172

3.5   Calculation of probability of drinking alcohol among university students when concentrate on gender, smoking and living situation

In the following Figures 4, the graphs that could be seen adjusted proportional probability when comparing probability to drink alcohol between smoking habit and living situations of the students when concentrating on their gender. When the statistically significant independent variables (gender, smoking and living situation) were set up with margins command in Stata Version 15.1 and figured out with the graphs.
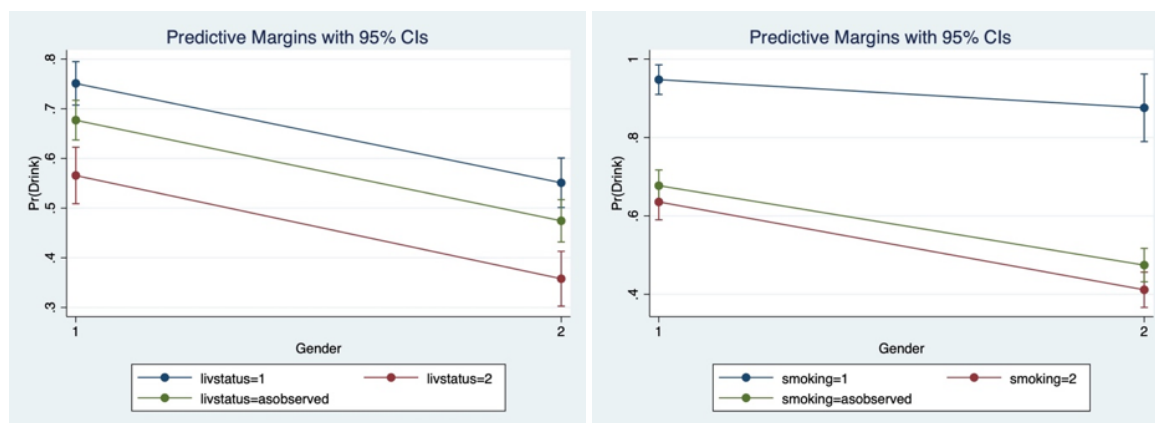
Figure 4. Probability of drinking alcohol when concentrate on gender, smoking and living situations of the university students

The probabilities of getting chance of drinking alcohol among university students was higher chance in male when compare to female. At the same time, if the male students who did not live with their parents or without guardians and have a habit of smoking, the probability of drinking alcohol was more chance than those of female students. Thus, the results found out that living separately with parents and smoking habits were important factors for drinking alcohol with statistically significant at 95% confidence level.

4.   Discussion

This descriptive study had been crucial in understanding the alcohol consumption risk levels assessments on adolescents University students. Ideally, alcohol consumption, reasons for drinking, types of beverages preference, socio-economic and environmental conditions would be the factors association with current situation of drinking risk level. The teenagers and adolescent university students

often engaged in health risk behaviors, resulting in unintended social deprivation, negative impacts on class activities and school performances. This research mainly focused on assessment of risk level of drinking alcohol applied AUDIT test.

The university students who reported drinking alcohol as a means of enjoying with students' lives and relaxation. As a nature of teenagers, they had peers' pressure to practice the habit of drinking alcohol (Abbey et al., 1993; MacArthur et al., 2017). This was tended to be sociable drinkers more alcohol when their friends drank any types of alcohol beverages at the social gatherings (Supski et al., 2017). These results clarified the importance of concurrently reflecting personal drives for drinking alcohol and the extent to which individuals' life perceptions related to these motives for drinking. The hazardous alcohol consumption (HAC) among university students in Ireland shown that 65.2% in male and 67.3% in female that was assessed AUDIT test and more likely to account smoking and drug use (Davoren et al., 2015) that was higher percentage of drinking risk level relative to this study. In that Ireland study, self-reported information in classrooms were conducted with the undergraduates. The current situation of drinking risk level assessments among university students in England shown that 61% were high risk drinkers on the AUDIT and 10% with apparent dependence (Heather et al., 2011).

The results obtained in this present study shown, firstly that expanding the sampling frame to first year students age ranged between 16-19 years of age leads to a downward adjustment in the mean age at first drinking alcohol to significantly earlier ages than those found in Twantay Township among Youths. Those participants were recruited from community and only 9.2% of the youths were university level education and this study can be seen consistent finding in father drinking practices of participants had positive association with their drinking habit (Phyo, 2016). The university students in this study who had experiences of alcohol drinking and/or drank at least one time in the past was 57.8% that was higher percentage of the 15-24 years old medical students consumed alcohol 34.5% and compared with community youths 47.1% in Myanmar (SAKAMOTO, 2010).

Regarding the associations of drinking habit, it has been observed that the percentage of adolescents who did not smoke and did not have a practice of betal-chewing was less likely to drink alcohol beverages than those who smoked and chewed the betals. The practices of bad habits could be explained by a generic fact and that related with individual way of perceptions on awareness of health-related consequences of smoking, betel chewing and drinking alcohol beverages. The same associations was found out in the study of alcohol consumption among adults males in urban area of Thanlyin Township, Yangon Region (Oo et al., 2015). And also the smoking habit was significantly related to the adolescents' decision to drink alcohol (Goldberg et al., 2002) while Indian students in grades 5-12 smokers were three times more likely to drink alcohol (Torabi et al., 1993). The early the age of using tobacco, drugs and alcohol drinking, the more problematic consumption of alcohol among Madrid 15-24 years old young people (Hernández López et al., 2009). Contrarily, this study had been proven that the majority of university students did not miss the classes and involve in numerous risky practices (fights). One third of the participants felt guilty because of their drinking habit.

The study found that mean age of alcohol drinking among university students was 16.4 years even though the legal age for consumption of alcohol in Myanmar was 18 years. More than half of the students had an experience of drinking alcohol and nearly forty percent were low risk drinkers. Easier accessibility to beer stations, bars and restaurants with peers and social events could lead to higher exposure to drinking practices through reasons among those university educated adolescents. On the other hand, this fact could be prevented as a law enforcement for the policy makers to raise taxes or action plan to tackle adolescent's health program. As many of them reported that they favored beers (37.4%), wine (29%) and the last was rum (1.3%), it could be seen that the types of beverages among university students were not heavy drinkers. Further, these drinkers were more likely to report an informative reason that they drank because of relaxation and peers' effect. It could be prevented by providing the other recreations activities focus on physical activity like dancing clubs, Yoga sections and fun fairs.

Finally, living situation of students who did not live together with parents or guardians were more likely to drink alcohol. Then, the relationship between alcohol drinking and smoking habit reflected the significant association. This finding highlighted the possible solution to consider within universal school-based alcohol prevention programs by raising awareness of the potential dangers of alcohol use and peers resistance skills related to health promotion intervention. Although the results obtained with respect to personal variables, such as alcohol consumption practices and reasons of drinking co-incide with the literature reviewed (Abbey et al., 1993), their drinking risk level was rather regulated. Beyond such observations of an individual nature, the results obtained show the importance of the participant's environmental factor, especially the peer group. Nevertheless, it was important to point out that the explanatory capacity of these findings remained without statistically significant. But the regression analysis results were possible to determine whether university students who drinking alcohol did so because their smoking habit and living situations with parents or, conversely, whether they did not live with parents and any guardians.

The results presented here were based on cross-sectional data. A limitation is that all the variables had been self-reported, making it impossible to know with certainty to what extent university students might have under- or overestimated their alcohol used disorders identification tests and risk levels of use. However, as various experts in the field of mental health, researchers with experiences of conducting alcohol studies and National Drug Abuse Control Program had investigated, self-report measures had proven to be reliable and even better than other methods when evaluating levels of alcohol (Winters et al., 1990). The strengths of this study included the large sample size recruited from 6 universities in Mandalay Region. This work could be readily replicated in other universities across the country and used a standard, internationally recognized AUDIT test for assessing risk level of drinking alcohol. However, self-reported measures were an important source of information, the extent to which these results may be generalized to students in other districts or other parts of Myanmar remains unknown. Replication of this study is also needed in others universities and it would be of great interest if future work could provide new variables to improve the prevention of health risk behaviors among university students' alcohol prevention program.

Recommendations: Findings from this study indicate a need for law governing the age at which adolescents start drinking alcohol and strictly prohibits the sale of alcohol directly or indirectly to those under the age of 18 years old. The health policy makers should be aware on implementation of effective alcohol control strategies by nudging the university students who under 18 years of age into raising awareness alcohol issues. The alcohol intervention program can be helpful in modifying behaviors change communication in health promotion of university students.

5. Conclusion

It provided evidence-based findings for knowing the alcohol consumption risk level among university students to prevent social deprivation and health risk behaviors. Findings from this study indicate a need for law governing, strictly prohibits the sale of alcohol directly or indirectly to those under the age of eighteen years. The alcohol intervention program can be helpful in modifying behaviors change communication in health promotion of university students.

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Conflict of Interest

There is no conflict of interest.

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