Effects of the Knowledge and Refusing Skill Promoting Program on Alcohol Drinking Consumption among Undergraduate Students in the Semi-Urban Area of Thailand: A Quasi-Experimental Study

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Abstract—*In many parts of the world, drinking alcoholic beverages is a common feature of social gatherings, but the consumption of alcohol carries a risk of adverse health and social consequences related to its intoxicating, toxic and dependence-producing properties. The aim of this study was to compare the knowledge and the refusing skill of alcohol drinking consumption, and the AUDIT score before and after the 1-month intervention program of undergraduate students in the semi-urban area of Thailand. They were divided into 2 groups, intervention group, and control group by using the purposive sampling. The undergraduate 70 students who were participated in this study. Both groups were assessed by structural interview consisted of 4 parts as follows: 1.) the socio-demographic questionnaire, 2.) the knowledge of alcohol consumption assessment, 3.) the refusing skill evaluating form, 4.) the alcohol consumption behavior form and 5.) the Alcohol Use Disorders Identification Test (AUDIT). The Shapiro–Wilk test was used to test of normality in all of variables and the Independent t-test and paired sample t-test were used for comparison before and after a 1-month intervention program between and within the group, respectively. The results showed that the knowledge, the refusing skill and the behavior of alcohol drinking consumption were increased significantly in the intervention group more than the control group after a 1-month intervention program (p<0.05). Beyond, there was no significant difference in the Alcohol Use Disorders Identification Test (AUDIT) scores between the intervention group and the control group after a 1-month intervention program (p>0.05). The finding suggests that the Alcohol Use Disorders Identification Test (AUDIT) may not be able to reflect the alcohol consumption behaviors, and alcohol-related problems. Moreover, the university administrators could integrate the program to reduce the alcohol consumption among undergraduate students in the future.*

Keywords— *Alcohol, Undergraduate, Intervention, Behavioral.*

I. INTRODUCTION

Alcohol Drinking is a toxic and psychoactive substance with dependence producing properties. In the today's societies, alcohol drinking consumption is a routine part of the social landscape for many population [1]. This is particularly true for those in social environments with high visibility and societal influence, nationally and internationally, where alcohol frequently accompanies socializing [2]. In this context, it is easy to overlook or discount the health and social damage caused or contributed to by drinking alcoholic [3]. Alcoholic may be affected the people in different ways. The Centers for Disease Control and Prevention mentioned that having one or fewer drinks per day for women and two or fewer drinks per day for men is considered moderate drinking [4].

Alcohol Drinking behaviors are the behaviors a person engages in as a result of alcohol changing brain function [5]. According to the CDC, there were four general drinking patterns that can cause drinking behaviors: 1.) binge drinking was drank alcohol of 4 or more standard drinks on an occasion for women and 5 or more for men, 2.) heavy drinking was drank alcohol of 8 or more drinks per week for women and 15 or more for men, 3.) alcohol abuse was routinely binged drinking or heavy drinking, and 4.) alcoholism was considered one of the brain diseases of addiction [6]. Alcohol consumption is a causal factor in more than 200 diseases and injury conditions. Drinking alcohol is associated with a risk to developing health problems such as mental and behavioral disorders, including alcohol dependence, major NCDs such as liver cirrhosis, some cancers and cardiovascular diseases, as well as injuries resulting from violence and road clashes and collisions.

Globally, alcohol consumption in 2016 was estimated to be 6.4 liters of pure alcohol per person aged 15 years old and older. South-East area was estimated to be 4.5 liter of pure alcohol per person [6]. The worldwide in 2016, more than half (57%, or 3.1 billion people) of the global population aged 15 years and over were drank alcohol in the previous 12 months and some 2.3 billion people are current drinkers. The finding of the alcohol beverage consumption from WHO by regions [7] showed that in the African, Americas, Eastern Mediterranean and European regions were declined of the percentage of drinkers since 2000 However, it was increased in the Western Pacific Region from 51.5% in the years 2000 to

be 53.8% in the years 2018 and has remained stable in the South East Asia Region. Worldwide, 44.8% of total recorded alcohol is consumed in the form of spirits. The second most consumed type of beverage is beer (34.3%) followed by wine (11.7%). The prevalence of heavy episodic drinking has decreased globally from 22.6% in 2000 to 18.2% in 2016 among the total population. Moreover, the results from WHO reported that more than a quarter (26.5%) of all 15-19 years old were currented drinking alcohol, amounting to 155 million adolescents. Moreover, the results reported that until 2025, total alcohol per capita consumption in persons aged 15 years and older is projected to increase in the Americas, South-East Asia and the Western Pacific.

In Thailand, drinking is more prevalent among men than women. However, National Statistical Office reported that [8] this study is consistent with the results from a national household survey of substance and alcohol use, which found that among Thai population, 3.2 million are drinking during the past year, 2.0 million are drinking during the past month and 1.3 million are drinking during the past week. The survey also found that Thai population aged range 25-44 years old were the most drinkers during the past year, followed by aged range 12-24 years old [9].

Alcohol consumption in the adolescents is associated with alterations in verbal learning, visual–spatial processing, memory and attention. These was neurocognitive alternated by adolescent's alcohol use seem to be related to behavior, emotional, social and academic problems in later life [10]. Alcohol is known to be harmful to health in general, and is well understood to increase the risk of injury and violence, including intimate partner violence, and can cause alcohol poisoning. At the times of lockdown during the COVID-19 pandemic, alcohol consumption can exacerbate health vulnerability, risk-taking behaviors. WHO was reminded people that drinking alcohol does not protect them from COVID-19, and encourages governments to enforce measures which limited to the alcohol consumption behavior? Alcohol consumption is associated with a range of communicable and noncommunicable diseases and mental health disorders, which can make a person more vulnerable to COVID-19. In particular, alcohol compromises the body's immune system and increases the risk of adverse health outcomes. Therefore, people should minimize their alcohol consumption at any time, and particularly during the COVID-19 pandemic.

For reducing and prevention the alcohol use should be complemented by communicating with the undergraduate students about the risks of alcohol consumption, the knowledge and the refusing skill to avoid from drinking. The longitudinal studies repeatedly find that young people who are exposed to alcohol marketing are more likely to start drinking or, if already drinking, to drink more [11]. The program was based on the Information-Motivation-Behavioral Skill (IMB Model) by Fisher [12] and the Transtheoretical Model or the Stages of Change Model [13] to develop the intervention program. In this study, the research has realized the problem of alcohol drinking among undergraduate students in the semi-urban area of Thailand. The experiment was conducted in the university from the semi-urban area of Thailand. This program

was evaluated the knowledge, the refusing skill of alcohol drinking, alcohol consumption behavior and AUDIT scores in the participants who were lived in Semi-Urban area and they had the various of characteristics of undergraduate students which related to health behavior especially alcohol consumption. The study was compared the knowledge, the refusing skill, the behavior of alcohol drinking, and the AUDIT scores at the baseline and a 1-month intervention program.

II. METHOD

The program was a Quasi-experimental study to compare the knowledge, refusing skill, alcohol consumption behavior, and the AUDIT score before and after a 1-month intervention program and did not blind. This program was recruited the participants from the university at semi-urban area of Thailand. The Semi-urban area had the several characteristics of socio-demographic and economic status of the participants. It was separated into 2 groups; the intervention group who were received the knowledge and refusing skill promoting program and the control group who were received the health education booklets on effects and self-skill on avoiding alcohol use. The data collection was conducted between June 2019 to March 2020. through an interview and assessment forms. This program was designed to 6-weeks intervention program and used a 1-month to follow-up.

A. Participants

The participants were recruited from the undergraduate students from the Valaya Alongkorn Rajabhat University under the Royal Patronage with the high prevalence of alcohol consumption [14] who were aged range from 18-24 years old. Moreover, the participants were registered in the 1st semester of 2019 academic years and assessed the Alcohol Use Disorders Identification Test (AUDIT). The score of the Alcohol Use Disorders Identification Test (AUDIT) can be distributed into 4 levels, in this study was selected the score of the Alcohol Use Disorders Identification Test (AUDIT) between 1 to 7 scores suggests that low-risk consumption [15]. The participants were participated in this study with the consent from and singed the name. The purposive random sampling was used to recruit the respondents as per the inclusion and separated into 2 groups. The exclusion criteria consisted of 1.) the participants had been diagnosed as having physical disability including deafness, blindness, weak limbs and etc. 2.) the participants who were received other programs in as the same time with study or the previous 1-month 3.) the undergraduate students who gave consent to participate in the study, but were founded later to have worsen symptom from alcohol addiction.

The purposive random sampling was used to separate the participants into 2 groups. At beginning, the total 45 of participants from the intervention group and 45 participants from the control group were recruited to this study by voluntary. After the baseline measurement, total 80 participants who met the criteria were selected to this study (intervention group; n=40 and control group; n=40). After a 1-month interventions, 35 participants from the intervention

group who were finished the program. Thus, the total 70 participants were performed post-test measurement. (intervention group; n=35 and control group; n=35).

As the sample size of this study was calculated by the G-power program which using the confidence interval was 95% study, allowable error was 5% and effect size was 0.8 [16]. After calculation the sample size by the G-POWER program, the total sample size was used 80 participants to select with the study.

B. Material and Procedure

The undergraduate students from Valaya Rajabhat University which was located at the semi-urban area of Thailand with the high prevalence of alcohol use in the adolescent population. At the beginning, Total 80 participants were checked the Alcohol Use Disorders Identification Test (AUDIT) and recruited 1 to 7 scores of The Alcohol Use Disorders Identification Test (AUDIT) to cooperate with the study. The knowledge and the refusing skill promoting program was developed from the IMB Model [12] and the Stages of Change Model [13]. It was specified program that focused on improve the knowledge, refusing skill of alcohol consumption, and the alcohol consumption and designed to suit with the teenagers learning.

This program was architected to 6-weeks and scheduled to perform the knowledge and refusing skill of alcohol drinking consumption on Wednesday between 1 p.m. to 4 p.m. by the researcher and co-researcher. The program was considered by social distancing to protect COVID-19 infection. The trained co-researchers were measured, recorded and collected all tool and all parameters at the baseline and a 1-month intervention program.

The knowledge and refusing skill of alcohol drinking consumption promoting program consisted of 6 session as follows; 1.) The book of alcohol drinking and its effects activity. This activity was aimed to improve the knowledge of alcohol drinking consumption including direct and indirect of alcohol effects, self-assessing of alcohol dependence, the situation of alcohol use, alcohol mechanism and etc. 2.) Hint game of alcohol drinking activity. This activity was conducted to raise the knowledge about harm or effects of alcohol and tavern and awareness of alcohol drinking. 3.) Do you know? Activity. This part was established to increase the refusing skill of alcohol drinking based on the FREAMES approach. There was the activity for motivating the participants to avoid from alcohol drinking by using the video from the health promotion foundation office. Moreover, this step was encouraged them to find ideas for quitting drinking, factors that can stop drinking successfully, term of termination, factors that cause to come back to drink again and given them to analyze their "Pro" and "Con". 4.) Smart New Gen Avoiding Alcohol. The goal of this activity was encouraged the participant to reject the risk situation with alcohol drinking and was used the negotiation in the situations that should be avoided without losing a good relationship with friends or group. This part was conducted the role play to rejection from alcohol drinking rejection when they had persuaded to drink alcohol. 5.) Hit the problem of activity. This activity was

integrated the VDO media about alcohol advertising by dividing into 3-4 groups to analyze the aim of alcohol advertising on media. The main objective of this activity is to analyze youth media propaganda purposes without the victim advertising. 6.) Knowledge Ball and Kahoot GAME of alcohol. The objective of this activity is to gain knowledge of alcohol and to have a good question-answering process skill. This part was designed to use the singing along with sending paper balls and answer the questions from paper balls. The participants should acquire knowledge of alcohol, get the good skill to refusing alcohol drinking and able to reduce alcohol drinking behavior.

C. Instruments

This program was used the measurement tool for assessing the outcomes. The instrument was used the structural interview form by face to face interview with the social distancing for preventing the Coronavirus-19 infection. The program was measured the validity by peer from 3 experts on health behavior and reported the IOC value. The IOC value was ranged between 0.8-1.0. The reliability was tested in 30 undergraduate students in the same area as the study area whose characteristics were similar to those of the participants. The reliability of Cronbach's alpha coefficients was more than 0.85, it was acceptable of tool. The detail of tool can describe as follows:

Part I: The baseline characteristics questionnaire: The total of this part was 7 questions. This part was to record the general characteristics data such as gender, age, monthly income, family status, GPA, living arrangement and health problem.

Part II: The knowledge of alcohol drinking assessment form; The total of this part was 10 questions. Each question has 2 choices; "Yes" or "No". The scores were rated in 3 level as follows; the scores 0-5 points represented low level of alcohol consumption knowledge, scores 6-8 points represented moderate level of alcohol consumption knowledge, and 9-10 points represented high level of alcohol consumption knowledge.

Part III: The refusing skill of alcohol consumption assessment form; The total of this part was 10 questions. consumption. The score ranged from 0-10 points. The high total scores indicated high level of refusing skill about alcohol consumption.

Part IV: The alcohol drinking behavior evaluating form; The total of this part was to 10 question. Each question has 5 answers choices: "Most", "More", "Low", "Very Low", and "Never". This part was used to access the alcohol drinking behavior before and after whose joined the program by face-to-face interview. The score ranged from 10-50 points. The high total scores indicated high level of alcohol drinking behavior.

Part V: The Alcohol Use Disorders Identification Test (AUDIT) by WHO [15]. The AUDIT is a simple and effective method of screening for unhealthy alcohol use, defined as risky or hazardous consumption or any alcohol use disorder. The AUDIT has 10 questions and the possible responses to each question are scored 0, 1, 2, 3 or 4, with the exception of

questions 9 and 10 which have possible responses of 0, 2 and 4. The range of possible scores is from 0-40 scores where 0 indicates that an abstainer who has never had any problems from alcohol. A score of 1 to 7 scores suggests low-risk consumption. Scores from 8 to 14 suggest hazardous or harmful alcohol consumption and a score of 15 or more indicates the likelihood of alcohol dependence (moderate-severe alcohol use disorder).

D. Ethical Consideration

This study was approved by the Ethics Review Committee for Research Involving Human Research Subjects. The researcher and co-research were informed the participants about the study protocol and the risk of the intervention program before they singed a written consent form.

E. Statistical analysis

The baseline characteristic data were analyzed by descriptive statistics. The Chi-square test and Pearson's correlation coefficients were used to estimate baseline characteristics between groups. The Shapiro–Wilk test was used to measure the normality test. The results showed that there was the normal distribution in all variables. This study was to compare the knowledge, the refusing skill and the behavior of alcohol drinking consumption, and the Alcohol Use Disorders Identification Test (AUDIT) before and after a 1-month intervention program. So, the Independent t-test and paired sample t-test was used to compare before and after 1-month intervention program between the group and within the group, respectively. All results were considered statistically significant at 0.05.

III. RESULT

A total of 90 undergraduate students had 5 dropouts from the intervention group and 5 dropouts from the control group during the a 1-month intervention program. During the program, some participants could not join with the program because they have to run some errands in the afternoon. So, there were 70 participants (intervention group; n=35 and control group; n=35) in the total who were joined in this study.

The baseline characteristics were similar between both groups showed in table I. The results showed a total of 70 participants were 18.1±1.1 years old with an average of monthly income was 4,433.2±1,899.2 Bath and the average of GPA was 2.95±0.3. The participants were female more than male (87.1%). The majority of the samples were lived at the dormitory (58.6%). They mostly had no diseases (75.7%). (see TABLE I)

At the baseline, the mean change of all parameters (Mean± SD.) between the intervention group and control group were not difference significantly (p>0.05). The mean change of all the parameters (Mean± SD.) within group and between groups after a 1-month intervention program were compared. The results showed that the knowledge and refusing skill about alcohol drinking between the intervention group and the control group were increased significantly (p=0.002, p<0.001, respectively) and decreased significantly on the alcohol drinking behavior (p=0.001). In addition, the AUDIT scores were not different between the intervention group and the control group (p=0.144).

TABLE I. The baseline characteristics and outcome variable at the baseline between intervention and control, p-value=0.05.

Variables	Total	Intervention group	Control group	p
Age (Years)				
Mean± SD.	18.5±1.1	18.9±1.3	18.3±0.9	0.831
Gender				
Male	9 (12.9%)	7 (20.0%)	2 (5.7%)	0.074
Female	61 (87.1%)	28 (80.0%)	33 (94.3%)	
Monthly Income				
Mean± SD.	4,433.2±1,899.2	4,574.3±1,992.9	4,300.0±1,563.4	0.524
GPA				
Mean± SD.	2.95±0.3	2.90±0.4	2.99±0.4	0.383
Living Arrangement				
Dormitory	31 (44.3%)	17 (48.6%)	14 (40.0%)	0.067
Condo/Apartment	24 (34.3%)	15 (42.9%)	9 (54.3%)	
House	15 (21.4%)	3 (8.5%)	12 (40.0%)	
Family Status				
Parents living together	41 (58.6%)	22 (62.8%)	19 (54.3%)	0.208
Parents divorced	22 (31.4%)	8 (22.8%)	14 (40.0%)	
Parents died	7 (10.0%)	5 (14.2%)	2 (5.7%)	
Health problem				
Yes	17 (24.3%)	11 (31.4%)	6 (17.1%)	0.265
No	53 (75.7%)	24 (68.6%)	29 (82.9%)	

REMARK: Data were analyzed with Chi-square test and independent t-test.
*Statistically significant level at the 0.05 level (p<0.05).

TABLE II. Mean difference of all parameters between the intervention group and the control group.

Variable	Baseline (Mean± SD.)	1-month Intervention (Mean± SD.)	p-value (a)
Knowledge of alcohol			
Intervention group	8.23± 1.50	9.20± 1.32	**0.003***
Control group	8.74± 1.24	7.60± 1.50	**0.002***
p-value (b)	0.123	**0.002***	
Refusing skill of alcohol			
Intervention group	4.57± 0.08	9.11± 0.90	**<0.001***
Control group	5.69± 1.02	7.51± 1.34	**0.001***
p-value (b)	0.284	**<0.001***	
Alcohol drinking behavior			
Intervention group	40.66± 4.17	34.11± 7.97	**<0.001***
Control group	37.74± 4.72	35.46± 8.26	**0.006***
p-value (b)	0.080	**0.001***	
AUDIT scores			
Intervention group	4.33± 1.18	3.10± 0.05	0.321
Control group	3.32± 1.32	3.20± 0.08	0.443
p-value (b)	0.110	0.144	

REMARK: Data were analyzed with paired sample t-test within group (p-value (a)) and independent t-test between group (p-value (b))
*Statistically significant at the 0.05 level p-value<0.05.

The comparison of all parameters within the intervention group at the baseline and a 1-month intervention program found that the knowledge about alcohol drinking was at 8.23±1.50 and increased significantly to 9.20±1.32 (p=0.003). The refusing skill of alcohol was at 4.57±0.08 and increased significantly to 9.11±0.90 (p<0.001). The alcohol drinking behavior was at 40.66±4.17 and decreased significantly to 34.11±7.97 (p<0.001). The AUDIT score was at 4.33±11.8 and decreased to 3.10±0.05 but not different scientifically (p=0.321).

IV. DISCUSSION

The study design was experimental and controlled, which appropriated for measuring the of intervention program [17]. The baseline value of all variables was no different between 2 groups. The intervention groups showed the knowledge and the refusing skill on alcohol drinking were increased significantly between 2 groups after the a 1-month

intervention program (p<0.05) and the alcohol drinking behavior was decreased significantly between 2 groups after a 1-month intervention program (p<0.05). The result is consistent with the study of P., Pattanathaburt and N., Noosorn [18] whose study the effectiveness of alcohol drinking behavior reduction program by applying self-efficacy. The study found that the experimental group had different mean scores of self-efficacies, outcome expectancy and alcohol. Similarly, P., Chowchalard [19] whose effects of an alcohol use prevention program applying self-efficacy theory among 7th grade students in NakhonPathom Province. The results revealed that after the experiment and the follow-up period, the experimental group had a significant increase in knowledge, self-efficacy, outcome expectation, and behavior to alcohol use prevention than before the experiment and control groups.

Moreover, E., Kantawong [20] whose study the effect of multicomponent interventions on reducing alcohol drinking behavior among adolescents, the study found that the school-based education in multiple life skills training with parental involvement were effective in delaying the onset of drinking and reducing adolescents' alcohol consumption. Similarly, S., Rungsuwan [21] whose study the effects of a life-skills training program for reducing alcohol use among the adolescents in NakornNayok Province, Thailand. The finding showed that the results of the study revealed that, immediately after the experiment completion, and 6-week after the experiment completion, resilience factors' mean scores of the experimental group were significantly higher than that before, and higher than that of the control group (p<.05). The program was effectively promoting resilience factors and can reduce alcohol use in the sample.

The results may be explained that the knowledge was correlated with alcohol drinking behavior. When the participants had the knowledge of alcohol consumption, this may be caused that the participants have the good behavior of alcohol consumption. Moreover, the alcohol refusing is the skill that lies within the person which each people had different of refusing skill from alcohol drinking. When they had the skill, this may cause them had to reduce the alcohol drinking consumption behavior. And, the alcohol drinking behavior were associated with several factors including the knowledge, lack of refusing skill. This program was designed to improve the knowledge and refusing skill, this may cause the participants were reduced the alcohol consumption behavior. Thus, the knowledge and refusing skill on alcohol drinking promoting program of undergraduate students in the semi-urban area of Thailand had three dimensions as follows; the knowledge, the refusing skill and the behavior, the effects of this program can reduce alcohol consumption behavior. In addition, when the students were transited to the higher education level, choosing friends is important to stay at the university. If the participants were chosen to students choose to associate with friends who were usually drank alcohol and cause to addict along with the changing of the environmental, easily to assess the alcohol drinking. This may cause the participants had the heavy of alcohol consumption and lead to occur the effects with health and social interaction. The result

from this study can develop the policy to reduce alcohol consumption among undergraduate in the university. Moreover, the finding consisted of the behavior theory of Bandura [22] said that the individual behavior is not caused by only reinforcement and punishment by external factor, but the person can do to control their thinking, feeling and acting by using 3-step of self-regular process includes;1.) Self-observation; the experimental group was given information and refusing skill to reduce their risk with alcohol consumption 2.) Judgment process; from the evaluation of the behavior that was successfully compared to their goal. This may be caused the participants to realize the value of reduction on alcohol consumption. Thus, they can decide to plan and remind themselves by stop to drink alcohol and 3.) Self-reaction; it is an incentive or reinforcement process in the experimental group to achieve continually of the program when they were able to achieve the fitness goals.

V. LIMITATION AND RECOMMENDATIONS

There were 2 limitation in this study. Firstly, the participants were conducted 6-weeks of the program and used 1-month follow-up. The study had short duration of the program. The future study should apply this program to longer follow-up time (3-months or 6-months) after finishing the program to determine sustain ability of the alcohol reduction program. Secondly, the study area is the semi-urban area. Thus, the results of this study cannot generalize to the urban area or the rural area duo to differences in lifestyles, socio-demographic, economic status and other characteristics. Moreover, the future study should focus on the motivation and enhance positive attitude with alcohol drinking. The Alcohol Use Disorders Identification Test (AUDIT) is not appreciating to measure the alcohol drinking behavior in the low risk of alcohol consumption.

VI. CONCLUSION

This research was to measure the effects of knowledge and refusing skill on alcohol drinking consumption among undergraduate students in the semi-rural area of Thailand. The result showed that after the experiment program, the participants in the experimental group had higher knowledge, and refusing skill on alcohol drinking more than the control group and decreased the alcohol drinking behavior (p<0.05). In respect of the AUDIT score as not different significantly between 2 groups (p<0.05). This study shows that the IMB model and the stages of change model by using the FREAMES approach are suitable in developing a program for reducing alcohol consumption behavior in undergraduate students. For future study, regularly motivations after the program are suggested to ensure the sustainability of the results. The results from this study could be applied to other population groups or used by related authorities in order to reduce alcohol consumption in every aspect of the society.

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