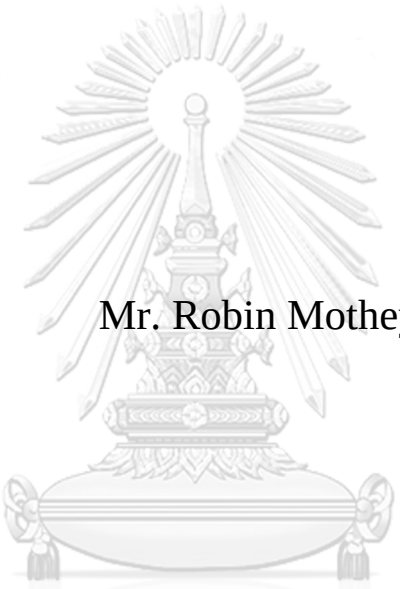
Pattern of alcohol consumption among government employees in Thimphu Bhutan

Mr. Robin Mothey



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วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรมหาบัณฑิต
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Thesis Title	Pattern of alcohol consumption among government employees in Thimphu Bhutan
By	Mr. Robin Mothey
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โรบิน โมเดย์ :
แบบแผนการดื่มเครื่องดื่มแอลกอฮอล์ในกลุ่มลูกจ้างรัฐบาลในเมืองทิมพู
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การดื่มแอลกอฮอล์เป็นหนึ่งในพฤติกรรมเสี่ยงต่อสุขภาพที่พบบ่อยที่สุดทั่วโลก ซึ่งเป็นต้นเหตุของปัญหาสุขภาพต่างๆ จนถึงขั้นเสียชีวิต การดื่มแอลกอฮอล์มากเกินไป ส่งผลให้มีผู้เสียชีวิตปีละ 2.5 ล้านคน คนหนุ่มสาวประมาณ 320,000 คน ในช่วงอายุระหว่าง 15 ถึง 29 ปี เสียชีวิตจากสาเหตุที่เกี่ยวข้องกับแอลกอฮอล์ ซึ่งมีรายงานว่า 9 เปอร์เซ็นต์ของผู้เสียชีวิตอยู่ในกลุ่มอายุดังกล่าวและคิดเป็นสัดส่วน 0.5 ถึง 5 เปอร์เซ็นต์ของประชากรทั้งประเทศ การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อประเมินรูปแบบการบริโภคเครื่องดื่มแอลกอฮอล์ของพนักงานรัฐบาลในเมืองทิมพู ประเทศภูฏาน โดยได้ออกแบบการศึกษาเป็นแบบภาคตัดขวาง ใช้วิธีการสุ่มตัวอย่างแบบเจาะจงเพื่อเลือกพื้นที่ศึกษา รวบรวมข้อมูลโดยการสัมภาษณ์ผู้เข้าร่วมทั้งหมด 385 คนแบบตัวต่อตัว ผู้ตอบแบบสอบถามถูกคัดกรองด้วยกระบวนการคัดกรองมาตรฐานของ AUDIT ที่จัดทำโดย WHO หลังจากนั้นผู้ตอบแบบสอบถามที่มีคุณสมบัติเหมาะสมในการสัมภาษณ์แบบตัวต่อตัว จะถูกสัมภาษณ์โดยให้ความยินยอมเป็นลายลักษณ์อักษรอย่างเหมาะสม และใช้ซอฟต์แวร์ SPSS เวอร์ชัน 22 เพื่อการทดสอบสถิติเชิงพรรณนา การทดสอบไคสแควร์ และการทดสอบที่แม่นยำของฟิชเชอร์ ในบรรดาผู้ตอบแบบสอบถาม 385 คนที่ดื่มแอลกอฮอล์ พบว่าเพศชายส่วนใหญ่ 54.3 เปอร์เซ็นต์ นิยมบริโภคเบียร์ ในขณะที่ผู้หญิง 59.9 เปอร์เซ็นต์ นิยมบริโภคไวน์ พวกเขาได้รับการจัดอันดับเป็นสามประเภทตามการให้คะแนนของ AUDIT (อิงตามหลักเกณฑ์ของ WHO) ได้แก่ ผู้ดื่มแบบความเสี่ยงต่ำ (คะแนน 0-7) ผู้ดื่มแบบมีความเสี่ยง (คะแนน 8-15) และผู้ดื่มแบบติด (คะแนน 16-19) พบว่าจำนวนผู้หญิงสูงถึง 90.9 เปอร์เซ็นต์และเพศชาย 71.8 เปอร์เซ็นต์ ไม่เข้าเกณฑ์ของประเภทผู้ดื่มแบบความเสี่ยงต่ำ ในขณะที่เพศชาย 27.7 เปอร์เซ็นต์และเพศหญิง 9.1 เปอร์เซ็นต์ ถูกจัดเป็นประเภทผู้ดื่มแบบมีความเสี่ยง และพบเพศชายเพียงคนเดียวหรือคิดเป็น 0.5 เปอร์เซ็นต์ ที่ไม่เข้าเกณฑ์ของประเภทผู้ดื่มแบบติด ในบรรดาเครื่องดื่มแอลกอฮอล์ห้าชนิดที่ดื่มกันทั่วไปในภูฏาน เบียร์จัดเป็นเครื่องดื่มแอลกอฮอล์ที่นิยมมากที่สุดของเพศชาย

สาขาวิชา	สาธารณสุขศาสตร์	ลายมือชื่อนิสิต .....
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Alcohol consumption is one of the most common health risk behaviors which is a leading cause of various health problems and even to death globally. Excess alcohol use results in 2.5 million deaths every year. Around 320,000 young people aged between 15 and 29 years die from alcohol-related causes, resulting in 9% of all deaths in that age group. At the country level, this ranges from 0.5 to 5% of the population. This study was carried out to identify the pattern of alcohol consumption among government employees in Thimphu, Bhutan. The study design was a cross-sectional study. Purposive sampling method was used for sampling to choose the study area. Data collection was carried out by face to face interview of the total of 385 participants. The respondents were screened using the standard AUDIT screening procedure formulated by WHO. After that the respondents who were eligible for the face to face interview were interviewed with proper written informed consent. SPSS software version 22 was used for descriptive statistics, chi-square test and Fisher's exact test. Among 385 respondents who consumed alcohol, the highest number of males (54.3%) consumed beer while maximum number of females (59.9%) consumed wine. They were ranked into three categories based on their AUDIT (according to WHO guideline) scores namely Low risk drinkers (Score 0-7), Hazardous drinkers (Score 8-15) and Dependence (Score 16-19). The highest number of females (90.9%) fell under the category of low risk drinkers than males (71.8%). Maximum number of males (27.7%) were hazardous drinkers than females (9.1%). Only one male (0.5%) fell under the category of dependence. Five types of alcoholic beverages are commonly used in Bhutan. Among them beer was the most preferred alcohol by males and wine was mostly consumed by females. Age, gender, marital status, annual income, work experience, age at first drink, expenses on alcohol, health problems, type and amount of alcohol consumed in lifetime, type, amount and frequency of alcohol consumed in last year and type of alcohol consumed in last 30 days by respondents were significantly associated with pattern of alcohol consumption with p value<0.001.Alcohol consumption is one of the most common health risk behaviors which is a leading cause of various health

Field of Study:	Public Health	Student's Signature .....
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ACRONYMS

APJ-	Asia Pacific Journal
AUD-	Alcohol Use Disorders
AUDIT-	Alcohol Use Disorders Identification Test
AWP-	Army Welfare Project
BBC-	British Broadcasting Centre
BLSS-	Bhutan Living Standard Survey
CSS-	Civil Service Statistics
ICD-	International Classification of Disease
MOH-	Ministry of Health
NSB-	National Statistics Bureau
Nu-	Ngultrum
RCSC-	Royal Civil Service Commission
SAH-	South Australian Health
UNODC-	United Nations Office of Drugs and Crime
WHO-	World Health Organization
SD-	Standard Drink

1 INTRODUCTION

1.1 Background and Rationale

Alcohol plays a significant role into the contribution of deaths, injury and disease globally(1). Three quarters of the world's population display a definitive five-year trend in recorded consumption. Regional estimates suggest a steady consumption trend in most of the regions, while an increase can be noted in the African Region and the South-East Asia which is a comprehensive information system that includes data on more than 200 alcohol-related indicators, it consists of data and information which are arranged under a huge seven category which contain a number of indicators chosen to assess the alcohol situation in WHO Member States in relation to public health. These seven categories are: alcohol production and availability; levels of consumption; patterns of consumption; harms and consequences; economic aspects; alcohol control policies; and resources for prevention and treatment(2). More than 3 million people died as a result of harmful consumption of alcohol in 2016. This represents 1 in 20 deaths worldwide. Majority of the deaths comprised of men, which represented more than three quarters of the total number of deaths. An overall of more than 5% of the global disease burden were due to the harmful consumption of alcohol(3). Around 2.5 million people die each year due to alcohol-related causes all over the globe (4).

In the year 2016, the total per capita consumption of alcohol beverages worldwide equaled 6.13 liters of pure alcohol consumed by every person aged 15 years or older. Maximum number of this percentage of consumption, which is 28.6% or 1.76 liters per person – was homemade and illegally produced alcohol or unrecorded variety of alcohol(5). The consumption of homemade or illegally produced alcohol is always linked with several harmful consequences because of various impure or crude chemicals used while brewing the alcohol causing significant harm. There is an existence of a large variation in adult per capita consumption of alcohol .There is a huge number of alcohol consumption levels worldwide, mostly in the Northern Hemisphere, but also in Argentina, Australia and New Zealand.

Moderately less consumption levels can be found in southern Africa, with Namibia and South Africa having the highest levels, and in North and South America. Low consumption levels can be found in the countries of North Africa and sub-Saharan Africa, the Eastern Mediterranean region, and southern Asia and the Indian Ocean. The reason for this is because of the maximum number of population practicing Islam religion which bars them not to practice the habit of alcohol consumption (6).

Bhutan also has alcohol consumption strongly linked to the culture and norms; the per capita alcohol consumption seems lower when compared to other Asian countries. The most abstinent countries are the Muslim countries, where the consumption and sale of alcohol is restricted.(7). Ara and bangchang (Local Bhutanese homebrewed alcohol) are the most salient drinks in Bhutanese society typically in the urban areas where they have little excess to other alcoholic beverages. These beverages are customary and are offered as a form of gesture when we visit a typical Bhutanese family but are not available for sale on a legal basis. The same dataset contains measures of alcohol consumption over different lengths of the reference period. The aggregate home-made alcoholic beverages consumed in 2007 were about 10.33 million liters. It represented a total of about 86% of alcohol consumed in 2007. Around 1.71 million liters of commercial alcoholic beverages (around 14%) were consumed in 2007. However, the overall consumption level, according to two BLLSs, did not differ much between 2003 and 2007. The total alcohol consumption (ara, bangchang, rum, whisky and wine) was 11.95 million liters in 2003 and about 12.03 million liters in 2007. There was an increase in the total alcohol consumption in 2007 when compared to that of 2003 which was around 0.08 million liters more(8).

According to the estimate of the Ministry of Health, the total alcohol consumption in 2007 was 12.5 million liters. It’s a fun fact that the commercial alcoholic beverages sold in the Bhutanese markets as per by the sales records of AWP, and Trade Statistics do not tally with the total quantity consumed, reported in the BLSS. Meanwhile the total domestic sales of AWP in 2003 and 2007 were about 3.7 and 7.1 million liters respectively (excluding imported alcoholic drinks), the total

commercially produced alcohol consumed as reported in the BLSSs was far less (1.82 and 1.71 million liters). The question which came into concern is, who consumed about 5.4 million liters (7.1-1.71=5.4 Million liters) of AWP's alcoholic beverages recorded as sold in Bhutan in 2007. The Bhutanese culture is engraved with the use of alcohol and it is a form of social norm to offer alcohol to visitors as a form of gesture, therefore making the rate of binge drinking go higher in the upcoming year(8).

The ban on alcohol in Bhutan could not be initiated because firstly the use of alcohol is strongly engrained in the Bhutanese culture, secondly it was beyond measures to have a society where no one would drink and thirdly there has been various benefits from moderate use of alcohol based on 'social lubricants effects theory'(9). Bhutan's health care system could face a huge financial burden in the longrun owing to the cost of treatment of alcohol-dependent cases. For an alcohol dependent case, the average cost for health and medical facilities was estimated to be as high as Nu. 120,000, while the cost for alcohol-dependent rehabilitation was Nu. 48,000 per case(10).

It is a major challenge for the government in controlling alcohol consumption. Alcoholic liver disease has been the leading cause of death in Bhutan(11). Alcohol was the top killer in Bhutan marking an average of more than 100 deaths each year. In Bhutan, alcohol is cheap and readily available throughout the country while there are certain rules including age limit on alcohol consumption, dry days and zero tolerance days. From September 2016 to 2017 around 6,529 traffic violations were reported due to drunk driving. The number of traffic violations brought about by drunk driving has not dropped despite enforcement of "zero tolerance" on every Fridays (12).

The capital city of Bhutan, Thimphu has a population of 114,551 which is the highest of all other districts. The maximum number of offices are in Thimphu, with headquarters distributed all over the city. The total employment rate is 94% with males 95.5% and females 90.5 %. There are a total number of ten Government Ministries in Thimphu Bhutan(13). There are 8,134(28.99%) government employees in Thimphu out of a total number of 28,070 government employees in Bhutan(14).

Alcohol consumption has been a trend among office go-ers and has been quite common among them. Meeting up friends and relatives after work and having a social gathering is a usual scenario in Bhutan. The total per capita alcohol consumption of pure alcoholic beverages in 2010 was 8.0 liters in males and 2.2 liters in females. The percentage prevalence of alcohol consumption in 2010 was 8.0% in males and 0.5% in females(15). The consumption rate has greatly increased lately, and crime rates and traffic violations have increased to a much greater extent. There are issues in the family and so many disputes among friends, families and colleagues arising from the use of alcohol. Children are greatly affected because they get neglected when both the parents are alcoholics which hampers their personal lives as well as their academic performances. This is a common scenario in Bhutan. In order to overcome these there are various campaigns and advertisements which encourage people to live healthy lives and remain alcohol free. Moreover, alcohol consumption among Government employees in Thimphu, Bhutan is reported as a common phenomenon(16).

Out of the 5500 bars within the country, 700 of them are in the capital alone(17). Government employees are seen to be indulged in alcohol consumption activities like directly going to pubs and bars after work and consuming alcohol with their colleagues and seniors. This tends to affect their work life as well as their personal lives(16). The documentation, data collection and reporting system on pattern of alcohol consumption is very limited. Hence, very few scientific studies are available on the subject matter. Thus, to fill this research gap, the present study is undertaken with the objective to assess the pattern of alcohol consumption among Government employees in Thimphu, Bhutan by gathering information on the extent and the reasons of alcohol consumption in order to formulate effective public health policies on prevention of alcohol consumption.

1.2 Research Question

What is the pattern of alcohol consumption among government employees in Thimphu, Bhutan?

1.3 General Objective

To determine the pattern of alcohol consumption among government employees in Thimphu, Bhutan.

1.4 Specific Objectives

To determine the relationship between alcohol consumption by family members and close friends and the pattern of alcohol consumption among government employees in Thimphu, Bhutan.

1.5 Conceptual Framework

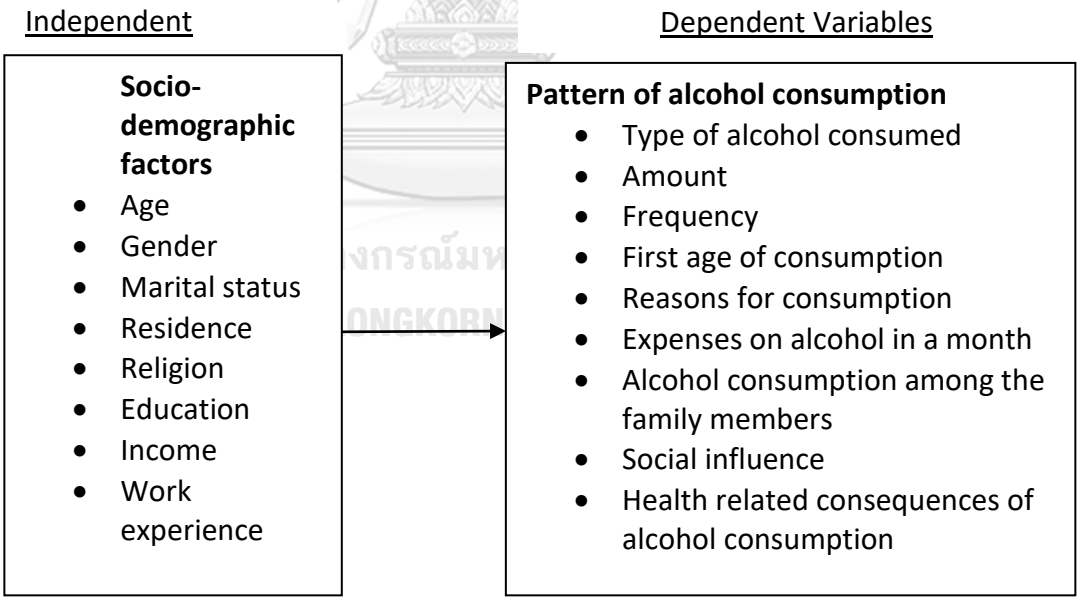


Figure 1: Conceptual framework

1.6 Operational Definitions

Government Employee:

The designation given to government employment for which a person qualifies on the basis of merit rather than political patronage or personal favor.

Nu:

Ngultrum. Bhutanese currency which is equivalent to 71 US dollars per Nu.

Alcohol:

Any beverage drink which contains ethyl alcohol or ethanol.

Alcohol consumption:

The consumption of alcoholic beverages that consists of frequency, volume and type of alcohol consumed.

Standard drink:

The volume of 1 standard drink equals to 10 grams of pure alcohol (absolute ethanol).

Binge drinking:

Drinking beverages that contain alcohol of 5 or more standard drinks in males and 4 or more standard drinks in females in a single occasion in the last one month.

Amount of alcohol

The standard drink which contains 10 grams per one standard drink.

Frequency:

The number of days the respondents drink alcohol measured in terms of weekly and monthly.

Type:

Kinds of either home-made beverages, i.e. palm tree juice, fermented rice wine, spirits or industrial products, i.e. spirits, rum, wine.

Pattern:

The drinking practice of the respondents and it will be determined by the number of standard drinks of alcohol they drink per day or week, the frequency of drink in terms of days of drinking per week or month and duration of drinking in one single occasion.

Current drinker:

The respondents who consumed alcohol one month before the interview.

Heavy or high-risk drinker:

The respondents who drink more than 4 drinks for men and 3 drinks for women in a single day and 14 drinks for men and 7 drinks for women in a week.

Dependence:

Previous psychiatric diagnosis in which an individual is physically and psychologically dependent upon alcohol.

Duration:

The time from the period of onset of first alcohol consumption until the time the person consumed alcohol.

AUDIT:

The WHO standard Alcohol Use Disorders Identification Test which can help identify excessive drinking as the cause of the presenting illness. It provides a framework for intervention to help risky drinkers reduce or cease alcohol consumption and thereby avoid the harmful consequences of their drinking.

Social Influence:

The change in behavior that one person causes in another, intentionally or unintentionally, as a result of the way the changed person perceives themselves in relationship to the influencer, other people and society in general such as from friends, families, relatives, etc.

Reasons for consumption:

The reasons why that ever made the individual consume alcohol for the first time.

Work experience:

Any experience that a person gains while working in a specific field or occupation.

Alcohol consumption among the family members:

Drinking habits among the family members which influenced the individual to consume alcohol.

Type of alcohol consumed:

The varieties of alcohol consumed (spirits, beer, wine, home-brewed alcohol).

First age of consumption:

The age of the individual when he/she consumed alcohol for the first time.

Expenses on alcohol in a month:

The amount of money spent in Nu. on alcohol in a month.

Health related consequences of alcohol consumption:

Any effects of alcohol consumption on the health of the individual which either hampers the person or makes them prone to other susceptible infections.

2 REVIEW OF LITERATURE

The literature reviews related to patterns of alcohol consumption among Government employees in Thimphu, Bhutan consists of the following topics.

Overview of Topics

2.1 Alcohol Consumption

Alcohol consumption is defined as consumption of alcoholic beverage that consists of quantity, frequency and type of alcohol consumption. Whereas the pattern of alcohol consumption is defined as the drinking practice of the respondents and it

will be determined by the number of standard drinks of alcohol they drink per day or week, the frequency of drink in terms of days of drinking per week or month and duration of drinking in one single occasion. “All children and adolescents have the right to grow up in an environment protected from the negative consequences of alcohol consumption and, to the extent possible, from the promotion of alcoholic beverages to Promote Health” by controlling the availability of alcohol, especially for young and underage people and increasing the price and limiting the sale of alcohol in certain public areas(18). The social learning theory supports the idea that alcoholism is a result of both cognitive thinking and the influence of environmental factors. It suggests that people who exhibit patterns of abusive drinking behavior often have difficulty coping with the stress of daily living (19).

There are several predisposing factors which lead to the habit of alcohol consumption such as growing up in an environment where the members of the family and relatives tend to consume alcoholic beverages, sorrow or grief, relationship problems, peer pressure. Unhealthy drinking patterns were seen commonly among male drinkers in Goa and were highly associated with lower socio-economic class. A variety of negative health and social consequences were seen to be linked with risky drinking among all socio-economic classes. Policies relating to alcohol consumption should focus on risky drinking patterns, particularly among men who belonged to low socio-economic class, to reduce health and social consequences of alcohol use in India(20). Spanish University alumni were assessed for pattern of alcohol consumption. The response rate of this study during the 9-year follow up was 30.3% (n=415, females = 325, males = 90). The results revealed that the clusters varied for females and males. This study also concluded revealing the women drank less when compared to males (21).

When the two studies are compared, we can see that both the studies reveal that men were the ones who consumed alcohol in a higher level than females. This according to the social learning theory could be because men are more likely to get adapted to the environment than females which influences their cognitive thinking and hence to cope up with the stress and daily living, they get more into the habit of

massive alcohol consumption. There are three major approaches for alcohol consumption namely: Quality frequency measures, Graduated frequency measures, Short term recall measures

All of three measuring approaches mentioned above were tested in a project named as Standardized Measurement of Alcohol Related Troubles (SMART): Beverage Specific Quantity Frequency method (BSQF), Generic Quantity Frequency method (QF), Graduated Frequency method (GF) and Last Occasion method (LO). Based on the recommendations of SMART study, the BSQF approach is the most appropriate method because it gives the highest estimation of the annual consumption, offers very reliable predictions of alcohol consumption problems and is considerably easy to conduct the test among the respondents.

The literature review in the SMART project recommended that the BSQF method worked well in many international comparative surveys which ask about the frequency of alcohol consumption of certain types of alcoholic beverages in a certain period and also about the quantity on one occasion or one day(22). Therefore, the calculation of alcohol consumption is an important measurement for assessment of the pattern of alcohol consumption and for indication for international comparisons.

2.2 Prevalence of alcohol consumption

Excess alcohol use results in 2.5 million deaths every year. Around 320,000 young people aged between 15 and 29 years die from alcohol-related causes, resulting in 9% of all deaths in that age group. Excess and uncontrolled alcohol use is one of the major global contributing factors to death, disease and injury(5). An estimated of 2.5 million deaths resulted due to harmful alcohol abuse(23). In the year 2005, the total per capita consumption of alcohol beverages worldwide equaled 6.13 liters of pure alcohol consumed by every person aged 15 years or older. Maximum number of this percentage of consumption, which is-28.6% or 1.76 liters per person-was homemade and illegally produced alcohol or unrecorded variety of alcohol. The consumption of homemade or illegally produced alcohol is always linked with several

harmful consequences because of various impure or crude chemicals used while brewing the alcohol causing significant harm. There is an existence of a large variation in adult per capita consumption of alcohol. There is a huge number of alcohol consumption levels worldwide, mostly in the Northern Hemisphere, but also in Argentina, Australia and New Zealand. Moderately less consumption levels can be found in southern Africa, with Namibia and South Africa having the highest levels, and in North and South America. Low consumption levels can be found in the countries of North Africa and sub-Saharan Africa, the Eastern Mediterranean region, and southern Asia and the Indian Ocean. The reason for this is because of the maximum number of population practicing Islam religion which bars them not to practice the habit of alcohol consumption((24).

People in South Korea are the most prominent drinkers in Asia. On an average, South Koreans who are above the age of 15 on average drink 10.9 litres of alcohol a year. When compared to other counties, South Koreans drink copious amounts of alcohol and they come nowhere near closer to their per capita consumption. The reason behind for this tremendous drinking habit could be due to their uncontrollable desire and affinity for Soju- a fermented rice drink. Vietnam comes second to South Korea in per capita alcohol consumption all over Asia. There is seen a remarkable increase in the amount of alcohol consumption over the past years in this country. After Vietnam, comes Thailand which secures a third place in Asia. Next comes Mongolia and then China in the fourth and fifth position in Asia respectively. The increased consumption of alcohol in China is due to their practice and culture of drinking, where drinking with colleagues and fellow mates is seen as form of getting along and a step towards building up their careers. In Japan, which once used to be known as the drinkers' paradise, has seen a remarkable reduction in the consumption of alcohol. In the sixth place comes Laos and Japan with similar per capita consumption of alcohol. Cambodia comes lower in rank when compared to other countries but there is seen an increasing trend in the per capita alcohol consumption there. The Philippines also has seen marked increase in the per-capita alcohol consumption over the past years due to increased globalization. In Singapore, they have stringent laws for alcohol consumption, hence has a low rate. On the tenth

and eleventh position, falls India and Sri Lanka respectively. In Nepal, there is a high number of alcohol consumption, but it still secures the position of one of Asia's least drinking countries. Bhutan also has alcohol consumption strongly linked to the culture and norm; the per capita alcohol consumption seems lower when compared to other Asian countries. The most abstinent countries are the Muslim countries, where the consumption and sale of alcohol is restricted and on an average a citizen hardly drinks a bottle of wine in a year. The least of all comes Pakistan, where the level of alcohol consumption is near to almost zero(25). Bhutan was also among those countries which had begun to face alcohol problems. There has been a drastic transformation in the socioeconomic structure of Bhutan which has greatly influenced the increased pattern of alcohol consumption among the citizens leading to some ill consequences to the society as well as to the health of the consumers(26).

The prevalence and determinants of harmful or negative consequences of alcohol consumption and it's possible dependency, which is defined as a "likely alcohol use disorder" (AUD) in an area in Ibadam, Nigeria with a sample size of 1119 participants of outdoor drinking areas, using the AUDIT was carried out. Scores measuring 8 and above denoted a likely AUD. The links among a likely AUD and demographic characteristics were calculated using Chi square tests and binary regression analysis was used to analyze the effects of multiple confounding variables on a likely AUD using the SPSS version 20.0 software. Out of the total respondents, the prevalence of likely AUD was 39.5%, and 44.4% out of the drinking population. Outdoor-open space drinkers are likely to have AUD compared with the general population. The study concluded with reasoning that outdoor drinking had a massive public health implication because of the health consequences and risks linked with it(27).

In another study, the mean Audit-C score was quite low (1.7), and a very few respondents self-reported negative behavior related to alcohol consumption (only 5.5% of men and 7.1% of women). This result was lower than those highlighted in other studies c with the Audit-C scale, but with different cut-off values for harmful alcohol consumption consequences and different techniques(28). The above two

studies focused on prevalence of alcohol consumption among different people and the results varied based on the mentioned results. When linked upon the social learning theory we can see that the prevalence of outdoor alcohol consumers was high, which shows the environment plays an important role into individual's habit of alcohol consumption. Also, the second study showed that women showed more negative behavior under the influence of alcohol than males, this could be due to the inability of women to cope with stress and daily living which hampered their cognitive abilities.

2.3 Consequences of alcohol consumption

It is a huge public health issue concerning the rapid increase in alcohol abuse all over the world and in many communities. This has come into limelight because of its harmful consequences. The death and disability due to alcohol abuse is significantly high(29). Sexually transmitted diseases like HIV AIDS, syphilis, gonorrhea and many more are common while practicing unsafe sex under the influence of alcohol. Another huge drawback of alcohol which is a major concern worldwide is the tendency of women getting raped and physically abused when they are intoxicated under the use of alcohol(30).

Alcohol consumption has also been associated with criminal and violent behavior and increases aggressiveness and the occurrence of fights. In addition to all these, alcohol consumption is implicated in domestic violence (31). Alcohol consumption leads to a number of adverse consequences like crime, violence and social mishaps(32). There is a direct association between alcohol consumption and crime rates, violence, assault, theft, road accidents and intra-family violence including child abuse in Sri Lanka(33). Alcohol-related negative consequences are widespread. In this study, as a result three groups of consequences of alcohol consumption were reported by 44%, 12% and 7% of men and by 31%, 6% and 3% of women, respectively. There were more men than women who reported consequences of alcohol consumption. The highest of the consequences of alcohol consumption was seen in Uganda and the lowest was in Uruguay. While assessing the consequences of

alcohol consumption, both the country and gender played an important role. For experiencing such consequences, country and individual level of alcohol consumption were directly proportional. In addition to that, country level variable greatly influences the relationship between the quantity of alcohol consumed by an individual and the negative consequences (34).

There are several risks associated with alcohol consumption among adolescents. The aim for this study was to summarize the results of a recent research on adolescent alcohol use and its consequences, in order to focus on the adverse effects of alcohol consumption in adolescents in order to set up goals into various preventive and treatment measures. This study resulted in determining various adverse behaviors associated with alcohol consumption among adolescents such as smoking, substance abuse and indulgence in risky sexual activities. Massive alcohol consumption during late adolescence tends to persist into adulthood and is highly associated with alcohol consequences like dependency, decreased work capacities and even death. Therefore an early detection of these risk factors would be beneficial in prevention and decreasing the consequences related to alcohol consumption(35). When the two studies are investigated, the first one concluded saying that most of the males showed a higher rate in negative consequences due to alcohol consumption when compared to females all over the world. The second study focused on the risks and consequences of alcohol consumption among adolescents in order to determine modalities to safeguard the consequences and develop treatment protocols. When these studies are put into the social learning theory, males exhibited more negative consequences due to alcohol consumption than females which could be due to the fact that men are more subjected to adverse environment and hence they tend to catch hold of the situation surrounding them than females. Adolescents are more prone to the risks and consequences of alcohol consumption because their inability to cope up with stress and daily living activities.

2.4 Medical and psychiatric consequences of alcohol consumption

There are harmful effects of alcohol to almost all the organs and parts in the body. Severe medical complications arise from alcohol consumption ranging from erosion of the gastric mucosa and lining epithelium of the stomach to severe alcoholic diseases which ultimately would lead to carcinoma and loss of intellectual functions. Some of the complications are acute which occur due to short-term use and some are chronic which occurs in a prolonged time. If the consequences are taken care of earlier, it would prevent many hazardous complications which could be even life-threatening. Alcohol has many ill consequences which could hamper a person's medical and psychiatric state in a number of above mentioned ways (36).

Consumption of alcohol leads to many negatives health consequences such as many chronic diseases and conditions. The amount of alcohol consumed, the patterns of alcohol consumption, and the most important of all, the quality of the alcoholic beverages consumed seems to have a direct link on the mortality and morbidity related to various chronic diseases and conditions. In the International Classification of Disease (ICD)-10, there are about twenty-five chronic diseases and conditions coded which are solely attributable to consumption of alcohol, and alcohol plays a major risk factor in various cancers, tumors, malignancies, psychiatric conditions, certain cardiovascular and gastrointestinal diseases. Whereas, alcohol has both beneficial and harmful consequences on diabetes, ischemic stroke, and ischemic heart disease, but depends upon the total volume of alcohol consumed and in cases of ischemic conditions, the consumption patterns is associated. There are certain, limitations for the techniques used to determine the potential risks. To add onto this, various new researches figured out additional diseases associated to alcohol consumption, and some tend to disprove the link between alcohol consumption and various medical conditions which are considered to be associated. Hence, these limitations do not hamper the association between alcohol consumption and global burden of chronic diseases and conditions. One of the most common neuropsychiatric conditions linked with alcohol consumption is epilepsy, which is defined as an enduring predisposition for epileptic seizures and requires the occurrence of at least

one seizure for a diagnosis. Alcohol consumption is linked with epilepsy, whereas alcohol withdrawal can lead to seizures but not epilepsy (36). Another common neuropsychiatric condition disorder linked to alcohol consumption is unipolar depressive disorder. This link is supported by the temporal order of the two conditions, consistency of the findings, reversibility with abstinence, biological plausibility, and the identification of a dose-response relationship. One of the studies found out the association of unipolar depressive disorders to be increased two- to threefold in alcohol-dependent people (36).

Mental health problems due to alcohol consumption have been found to be very high among young university students when compared to the general population in Australia. The aim of this mentioned study was to determine the association between levels of alcohol consumption and mental health issues and academic performance among university students aged 18 to 24 years in Australia. Around (44%) of the respondents reported consuming alcohol at hazardous levels. Multiple logistic regression analysis determined that students who were consuming alcohol at hazardous levels were 1.2 times more likely to show signs of psychological problems than those with lower levels of alcohol consumption.

To add onto it, being late for class, missing classes, inability to concentrate in class, and inability to complete assignments was independently linked to moderate alcohol consumption. This study shows quite many undergraduate students at university consume alcohol at a hazardous or risky level. In addition to this, increased levels of alcohol consumption are linked with poor or diminished academic performance and psychiatric problems among students. The results of the study triggers numerous interventions focusing on policy, organizational, educational, environmental and economic strategies that will help reduce the consequences related to harmful alcohol consumption among university students(37). When the above two studies are focused on, the first study showed various chronic diseases and conditions related to alcohol consumption including medical as well as psychiatric conditions and from this there could be interventions developed in order the above-mentioned problems. The second study showed the association between levels of alcohol

consumption and mental health problems and academic performance among university students in Australia. The result showed that increased levels of alcohol consumption greatly hampered the performance of the students and lead to poor academic achievement. In addition, it showed mental health problems as well due to increased levels of alcohol consumption. The social learning theory reveals that alcohol consumption hampers cognitive thinking abilities which leads to the above-mentioned psychiatric problems.

2.5 The effects of alcohol consumption on family relations

The effects of alcohol on family relations is directly associated. This study focused on the effects of alcohol on family relations and accessed and established various methods to recover these relationships. The results of this study shows that the consequences of alcohol consumption caused a strong negative impact to the family members and hampered them in various ways, which causes so many problems within the family like high levels of conflicts, domestic violence, parental inadequacy, child abuse and negligence, financial and legal difficulties, in addition to various medical and psychological problems linked with it(38).

Social interaction within the family and friends greatly influence a person's habit of alcohol consumption in a positive as well as in a negative way. This study focused on the impact of general and specific support for alcohol consumption from family and friends on alcohol consumption among 897 U.S. residents of abstinent communal-living settings (Oxford Houses). The results showed that general support from friends and family and length of stay in Oxford House resulted in less alcohol consumption. The overall results showed that out of the different social support variables, general social support which were provided by friends had the greatest impact on drinking behaviors in this study setting. To add onto this, the length of stay in Oxford House was a associated with diminished alcohol consumption levels. It is suggested that relationships which consists of close friends, should not be overlooked during alcohol recovery. Friends who would help provide general support could be beneficial as for recovery, especially in the Oxford House setting(39). When

investigated the two articles discussed earlier, the first one focused on how alcohol affected relations with the family and the consequences that would occur as result of harmful alcohol consumption. The second article discussed about how the influence of friends and family benefitted a person into recovering from chronic alcoholic problems which indicates that social support is a key factor into helping an individual get over the habit of alcohol consumption. When the articles are looked into through the social learning theory, we can see that the environment a person is surrounded by really helps influence the behavioral pattern and their ability to cope up with the consequences of alcohol consumption.

2.6 Social and legal aspects

There are about 3.3 million deaths every year due to causes related to alcohol consumption which accounts to 6 percent of overall deaths worldwide. The negative consequences due to alcohol misuse are tremendous and may vary from individual health risks, morbidity, and mortality to consequences for family, friends, and the larger society. This article is based upon some of those few cultural and social influences on alcohol consumption and puts individual alcohol use within the contexts and environments where people live and interact. It also focuses on macro level factors, which are advertising and marketing, immigration, and discrimination factors, and how neighborhoods, families, and peers influence alcohol consumption. Overall, the article emphasizes on how social and cultural factors predict alcohol consumption and then paves a way for future directions for alcohol research(40).

Injury is the most common health consequence of a single incidence of increased alcohol consumption. The types of injuries occurred, and the level of injury depends on the circumstances (for example falls, road trauma and assault). Also, alcohol poisoning, or alcohol overdose are common hazards. Alcohol consumption leads to criminal behavior which is not socially accepted. Alcohol consumption can make an individual commit many offences which include physical assault, sexual assault, battery, damage of property, hindering police, resisting arrest and drink-driving, etc(41). The first article focuses on social and cultural contexts of alcohol use

and states that alcohol is one of the most common of death worldwide, with also a wide range of consequences related to it. The second articles talk about health, legal and social consequences of alcohol consumption. Alcohol could cause so many mishaps to the society and can cause legal implications as well and the most common are the health hazards related to excessive alcohol consumption. Based on social learning theory, the daily living activities, cognitive thinking and the environment the individual is subjected to influences the social and legal consequences of alcohol consumption.

2.7 Financial implications

Based on evidence, it states that job loss on an individual level can cause increased alcohol consumption and consequences. Many other aspects of economic loss were common during the recent recession at the U.S, which are sparsely investigated in studies related to it. Among the respondents it was seen that economic loss (job or housing loss) was strongly linked with negative drinking consequences, alcohol dependence and (marginally) drunkenness, while moderate loss (loss of retirement savings, reduced work hours/wages, trouble paying the rent/mortgage) was unassociated with alcohol outcomes(42).

The effects of alcohol consumption on the economic status are very much as damaging to the nation as the health hazards, which affects the family, the community, and the nation. Alcohol consumption among younger children interferes with children's brain development, which affects the nation's ability to respond to economic challenge in the future. The expenses for Health care for families with an alcoholic member are twice for those families without one. Fetal alcohol syndrome is one of the top three known causes of birth defects and is totally preventable. These ultimately lead to financial burden to the family and hence decrease the nation’s economic progress(43). The above two articles focus on the financial implications rendered due to the consequences of alcohol consumption which not only affects the individual but also to their families and ultimately to the nation’s economic wellbeing.

The social learning theory reveals that an individual's alcohol consumption pattern is a result of coping with stress and daily living arising from financial implications.

2.8 Other psychosocial complications

It is a well-known fact that exposure to stress is often related to psychological distress. The impact of stress on alcohol consumption and the risk of alcohol use disorders (AUDs) is based on the type, timing during the life course, duration, and severity of the stress experienced by a individual. There are four important categories of stressors that can influence alcohol consumption which are general life stress, catastrophic/fateful stress, childhood maltreatment, and minority stress. General life stressors include divorce and job loss, which increase the risk for AUDs. Any kind of exposure to terrorism or any other forms of disasters causes population-level increase in overall alcohol consumption levels but little increase in the incidence of AUDs. Individuals who have a history of AUDs have higher chances to consume alcohol in order to cope with these traumatic events in their lives. Early onset of alcohol consumption in adolescence, as well as adult AUDs, are commonly seen among people who experience childhood maltreatment(44). The period of adolescence and young adulthood are the times of continued biological and psychosocial maturation. Hence, there may be deleterious effects of alcohol consumption in excessive amounts on neural development and associated cognition during this time. Binge and heavy drinking among adolescents and young adults show systematically thinner and lower volume in prefrontal cortex and cerebellar regions, and attenuated white matter development.

The findings in this study reveal that's altered neural structure and activity in binge and heavy-drinking youth may be related to the neurotoxic effects of alcohol consumption in massive amount during a highly delicate neurodevelopmental period, which could later lead to neural reorganization, and increases the risk for developing an alcohol use disorder (AUD)(45). The above two articles show that alcohol has psychosocial complications depending upon the level of alcohol consumption. This affects the brain development and hamper neurologic activities especially in

adolescents .Also causes stress of various types mentioned above which ultimately affects the overall health of the individual. Alcohol consumption in excessive amounts can result in psychological complications as it destroys a person's brain cells due to cognitive disruption and stress as suggested by the social learning theory.

2.9 Government employees and alcohol consumption

Alcohol consumption among Government employees is a major public health issue all over the world. Not everyone of the office go-errs drink and among those who drink, it is argued that not all of them do so in a way which is harmful, but their excess and regular drinking patterns may have a negative impact on themselves as well as to the society. As of now there are no significant consensus regarding the age threshold when it comes to the consumption of alcohol, especially at which an individual cease to be a "young person" and becomes an adult. Many countries have set up a legal legitimate threshold limit for a person to be able to consume and buy liquor, for instance, age of the person(46).

Alcohol consumption among young people is a common phenomenon all over the world. Government employees may be introduced to alcohol at an early age in some section of the societies, especially within the family and during celebrations. Some reports show that males are more likely to consume higher quantities than females. Unlikely, recent evidences show that in some countries the gender gap among young people is narrowing periodically(47).

Alcohol consumption in massive amounts among office go-errs have significant negatives health outcomes (48). However, for adolescents who start drinking at an early age have a greater sensitivity to the effects of alcohol due to developmental changes that occur during childhood, potentially resulting in greater risk of physiological damage. Studies have however clearly shown that the developing brain appears to be more sensitive to disruption by chronic drinking than the mature adult brain(49). As a result, heavy consumption during adolescence may affect the development of certain brain regions(50).

Alcohol consumption among government employees have been greatly associated with injuries such as traffic crashes, or assault as a result of acute intoxication and also lack of focus in their work environment(51). Unsafe sexual activities, unwanted pregnancy, sexually transmitted diseases, and sexual assault and rape have all been reported. More than half of the high school seniors surveyed reported drinking before the tenth grade(52). Around 93% of 16,000 high school seniors surveyed had tried alcohol at least once in their lives, with 72% reporting use within the past month. The same study also found that 6% of the students use alcohol on a daily basis(53). These lead to chronic alcohol drinking habits among them which result in many alcoholics later in-service life.

Alcohol consumption pattern and the socioeconomic profile of workers at a Public Service was assessed using a Cross-sectional study, with 322 respondents who answered the Alcohol Use Disorders Identification Test (AUDIT) and questions which were related to the socio-demographic variables. The data was analyzed using the Epi-Info software. As a result, it came into notice that alcohol consumption of 12.7% was denoted as hazardous, harmful and suggestive of dependence. The average percentage of binge alcohol consumers was 32.5% and 5.3% had been reported to have had caused problems to themselves as well as to others. The maximum number of respondents had not consumed alcohol in the last 12 months, but for those who consumed very significant amounts and the frequency was high too. When the results were summarized, it showed a high rate of hazardous, harmful consumption and probable dependence, and was associated mostly with male workers and those who had low education levels(54).

The prevalence of hazardous drinking among staff in a UK university and its association with key socio-demographic features was assessed. All the employees at the university were eligible to participate. Those who completed the questionnaire were included in the sample. The total number of respondents were 131 out of the total number of the University employees. When the results were analyzed, around one third (35%) of respondents were classified as hazardous drinkers. About 23% of

the respondents reported having blackouts after drinking and 14% said to have suffered injuries or had injured someone else. The result of this study determined that there was a high prevalence of hazardous drinking among university employees(55).

The above two mentioned studies depict the pattern of alcohol consumption and its misuse among the government workers. The results show there was high prevalence of alcohol consumers among them which resulted proving harmful both for them others and to their daily activities in a professional as well as on a personal level. According to the social learning theory, environmental factors and cognitive thinking are a precursor of pattern of alcohol consumption. The government employees are subjected to many environmental factors like their colleagues, friends, bosses who influence them for alcohol consumption.

2.10 Alcohol use in Bhutan (Survey based)

Ara and bangchang (Local Bhutanese homebrewed alcohol) are the most salient drinks in Bhutanese society typically in the urban areas where they have little excess to other alcoholic beverages. These beverages are customary and are offered as a form of gesture when we visit a typical Bhutanese family but are not available for sale on a legal basis. The same dataset contains measures of alcohol consumption over different lengths of the reference period.

The aggregate home-made alcoholic beverages consumed in 2007 were about 10.33 million liters. It represented a total of about 86% of alcohol consumed in 2007. Around 1.71 million liters of commercial alcoholic beverages (around 14%) were consumed in 2007. However, the overall consumption level, according to two BLLSs, did not differ much between 2003 and 2007. The total alcohol consumption (ara, bangchang, rum, whisky and wine) was 11.95 million liters in 2003 and about 12.03 million liters in 2007. There was an increase in the total alcohol consumption in 2007 when compared to that of 2003 which was around 0.08 million liters more.

According to the estimate of the ministry Of Health, the total alcohol consumption in 2007 was 12.5 million liters. It's a fun fact that the commercial alcoholic beverages sold in the Bhutanese markets as per by the sales records of AWP, and Trade Statistics do not tally with the total quantity consumed, reported in the BLSS. Meanwhile the total domestic sales of AWP in 2003 and 2007 were about 3.7 and 7.1 million liters respectively (excluding imported alcoholic drinks), the total commercially produced alcohol consumed as reported in the BLSSs was far less (1.82 and 1.71 million liters). The question which came into concern is, who consumed about 5.4 million liters (7.1-1.71=5.4 Million liters) of AWP's alcoholic beverages recorded as sold in Bhutan in 2007. The Bhutanese culture is engraved with the use of alcohol and it is a form of social norm to offer alcohol to visitors as a form of gesture, therefore making the rate of binge drinking go higher in the upcoming year(8). Bhutan as we see has been deeply rooted culturally into the practice of alcohol consumption, which according to the social learning theory is the environmental factor which influences the pattern of alcohol consumption.

Different types of alcoholic beverages produced, imported and sold in Bhutan and their strengths

Brand	% (v/v)	Source	Brand	% (v/v)	Source
1907 Whisky (750 ml)	42.8	AWP	Jachung Brandy (750, 375 & 180 ml)	42.8	AWP
K5 Whisky (750 ml)	42.8	AWP	Bhutan Deluxe Rum (750, 375 & 180 ml)	42.8	AWP
CSJ Whisky (750 ml)	42.8	AWP	Bhutan xxx Rum (750, 375 & 180 ml)	42.8	AWP
CSJ Rum (750 ml)	42.8	AWP	Royal xxx Rum (750, 375 & 180 ml)	42.8	AWP
Special Courier Whisky (750ml)	42.8	AWP	Bhutan Whisky (750, 375 & 180 ml)	42.8	AWP
Royal Supreme Whisky (750 ml)	42.8	AWP	Bhutan Brandy(750, 375 & 180 ml)	42.8	AWP
Bhutan Highland Whisky (750, 375 & 180 ml)	42.8	AWP	Tashi Delek Rum (750 ml)	42.8	AWP
Dragon Deluxe Rum (750, 375 & 180 ml)	42.8	AWP	Orange Liquor(750, 375 & 180 ml)	6.4	Thailand
HIT Beer (650 ml)	8	India	Chang beer (500 & 330 ml)	5	India
Haywards Beer (650 ml)	5-7	India	San Miguel beer (500 & 330 ml)	5	Singapore
Royal challenge (650 ml)	5-7	India	Tiger Beer (330 ml)		

Brand	% (v/v)	Source	Brand	% (v/v)	Source
Golden Eagle (650 ml)	5-6	India	Foster (650 500 & 330 ml)	5	Australia
Dansberg (650 ml)	5.7	Denmark	Ochim (650 ml)	5-7	India
Budweiser (500 ml)	5-7	Imported	Carlsberg	5-7	Imported
Heineken	5-7	Imported	Singha Beer	5-7	Thailand
Druk 11, 000 Beer	8	Bhutan Brewery	Apple and Khambu brandy & wine		Bumthang
Wine general	13-15	Imported	Bumthang beer		Bumthang
Port wine	18-20	Imported	Breezers	4.8	Imported
Fortified wine	20-22	Imported	Sparkling wine and coolers	7-12	Imported
Table wine	12-14	Imported	Spy	7	Thailand
Liquor and spirits	35- 40	Local	*Ara*	25-30	Local
Bangchang	15-20	Local	*Singchang*	20-25	Local
Tongba	15-20	Local	*Changkyod*	10-15	Local

(Source-BLLS, 2007)

2.11 Factors for alcohol consumption

Peer pressure is seen by office go-ers as an important part of their life due to which they get into the habit of alcohol use in trace amounts initially and later lead to addiction. “There is not just one factor which predisposes an individual to drug or alcohol use. Rather it is a multiplicity of factors that act together for that individual and contribute to his/her decision to use drugs and alcohol”(56). “An individual attribute, individual characteristic, situational condition, or environmental context that increases the probability of alcohol use or abuse or a transition in level of involvement in alcohol”. It is known that the risk factors help provide a very important measure and tool to understand the multiple causes and predictors of alcohol use and abuse”. Out-of-control aggressive behavior of a young child can be a risk factor(57).

“Alcohol use is also said to be the outcome of a complex interaction of individual, family, peer, community and societal factors”(58). The three basic categories of risk factors: demographic, social and behavioral. These factors include “parental discipline, family cohesion, parental monitoring, peer alcohol use, alcohol

availability, genetic profile, self-esteem and reasons for alcohol use"(59). One thing leads to another whereby people liking to experience different new types of alcohol(60). The above-mentioned articles and theories suggest that there are several different factors which act as precursors into making a person become dependent into alcohol consumption. Everyone has various reasons and explanations which make them get used to the habit. Many factors like stress, daily living and environmental factors influence the pattern of alcohol consumption as revealed by the social learning theory.

2.12 Factors related to host

Males have a higher ratio of alcohol consumption than females(61). The major and crucial risk period for initiation into alcohol ranges between the ages of 16 and 18 years, and it comes to completion by the age 20 (62). It is a known fact that age at first drink has a direct link between the drinking patterns in adult life. The linkage between age at first drink and adult alcohol consumption has not been studied in clinical population. The purpose of this study was to determine the age at first drink and its association with adult life drinking patterns in alcohol-dependent patients. This study could help imply its findings to generate alcohol control policies determining the age for legal consumption (63). The respondents were adult patients with alcohol dependence from the inpatient and outpatient wards of a tertiary care de-addiction facility in India. The questionnaires administered were based on National Institute on Alcohol Abuse and Alcoholism-Quantity Frequency for alcohol and the Fagerstrom Test for Nicotine Dependence for tobacco were used. The results of this study revealed that earlier age of first drink was associated with chronic heavy drinking patterns in later adult life in alcohol-dependent patients.

The policies implemented for legal age of alcohol consumption all over the world tend to delay the initiation of drinking. This study focuses on the age of first drinking and adult alcohol problems. Systematic review of prospective cohort studies in which adolescent measurement of age of first drink in general population studies was separated by at least 3 years from adult alcohol outcomes. The relationship of

age of first drink on adult drinking and related problems were supported, but not at all strongly. There is no strong evidence that earlier age of first drinking leads to adult alcohol problems, hence more studies are required is to address this important question. The two articles discussed above shows the relation between age of first alcohol consumption and alcohol drinking patters in adulthood(64). The first study suggests that earlier age of onset of alcohol consumption has a strong influence on an individual to become a chronic consumer in adult life. Whereas the second study is contrary to the first one which suggests that there is no strong evidence that earlier age of first drinking leads to alcohol drinking problems. According to the social learning theory, alcoholism is a result of cognitive thinking, and early age of onset is a cognitive factor as individuals at a young age don't know the consequences of alcohol consumption clearly. Hence this leads to addiction in later life.

2.13 Gender/Sex

Differences in alcohol consumption for gender have been reported. Males had higher alcohol consumption levels and binge drinking when compared to females(65). When evaluating multinational patterns of gender- and age-specific alcohol consumption, the results revealed that alcohol consumption on large quantities were more prevalent among men than among women, whereas lifetime abstention from alcohol was seen to be more prevalent among women. From the respondents who had never been frequent alcohol consumers, women in all age groups were more likely to have stopped drinking than men. Among the regular alcohol consumers, the prevalence of large quantity drinking was seen more in the oldest age group, particularly among men. Beyond expectation, the prevalence of drinking did not seem to decrease with increasing age, and reduction from heavy alcohol consumption and heavy episodic drinking with increasing age were seen more prevalent among Europe and English-speaking countries(66).

Gender-specific relationship between alcohol consumption and injury is common. Data was obtained from the Korea National Health and Nutrition Examination Survey from 2010 to 2012. A total of 15,249 Korean adults (7128 men

and 8112 women) aged 19 years or older were chosen as the respondents. Injury in this study setting was defined as the incidence of an injury or intoxication within the year before completing the survey questionnaire. AUDIT questionnaires were used for the respondents to answer the questions. The results of the AUDIT scores showed that women who were subjected to injuries reported significantly more high-risk alcohol consumption behaviors in a month when compared with those who were not injured. There was evidence of gender-based disparities in the relationship between alcohol and the prevalence of injury. This study revealed a possible relation between alcohol consumption and the prevalence of injury as a function of gender in a large sample.(67). When the above two articles are compared, it is seen that first study suggested that gender played an important role in the pattern of alcohol consumption, denoting that males were more likely to become chronic alcohol consumers than females. The second study showed the relationship between gender, alcohol consumption and injuries. The result revealed that women were more prone to injuries suffered as a result of alcohol consumption than females. Social learning theory suggests that cognitive thinking and environmental factors are linked to the pattern of alcohol consumption, males exhibit more of these because of the living conditions and factors surrounding them whereas women are more subjected to stress and hence result in getting injuries more than males.

2.14 Family background

Socio-demographic factors for alcohol consumption have been identified in many studies conducted previously which comprises of investigations on family composition and income. People who abused alcohol on more occasions were more likely to have come from socially disadvantaged family backgrounds and practiced the habit to overcome their problems(68). This habit carried out during adolescence can later hamper the person in service life and can lead to poor work success. There are high chances of children getting used to alcohol abuse who live in with their step-parents(69). Family background plays an important role into someone’s habit of alcohol consumption(70). The purpose of this study was to determine the possible association between positive family background of alcohol consumption (having a

parent or grandparent who sometimes or often drank too much) and the amount of alcohol consumed per week among college students. Also, it focused on determining the possible differences between students with positive, compared to students with negative, family backgrounds of alcohol consumption in relation to drinking patterns, by using a survey tool that indirectly measured the family background for alcohol consumption. The results showed no significant linkage between family history and the mean amount of alcohol consumed per week for the total sample (r = .007), or for men (r = .04) or women (r = .02). A curve analysis demonstrated a slightly positive skewed curve for the total group and for male and female students. T test and chi-square tests revealed no difference between positive and negative family backgrounds and mean amount of alcohol consumed or drinking patterns. For those with positive family backgrounds, there was no clustering on a scatter plot for either heavy or light amounts of alcohol consumed. The overall results revealed a considerable similarity in alcohol consumption and drinking patterns between students who were denoted as having a positive, as opposed to negative, family background. The study finally revealed that having a positive family background for heavy alcohol consumption was not associated with either light or heavy alcohol consumption among the respondents(71). In another study, the results showed that a family history of alcohol consumption was reported by 35.0% of the total respondents, and FH+ participants were more likely to have consumed alcohol in the past year than their FH− groups (81% vs. 74%; $\chi 2 = 9.63$, $p < .001$).In males, FH+ respondents showed relatively higher than their FH− counterparts on amount of alcohol consumed per week, negative consequences, overall positive expectancies, positive expectancies concerned with tension reduction and liquid courage, as well as positive evaluations concerned with tension reduction. In females, FH+ respondents showed much higher results in alcohol consumption per week, negative consequences, overall positive expectancies, as well as positive expectancies concerned with sociability, tension reduction, and sexuality in comparison to the FH− respondents. Whereas, FH+ females reported negative evaluations (risk and aggression, and self-perception) to be worse than did FH− females(72). The two studies when looked onto, the first one relieved an unexpected finding showing that there was relation between heavy alcohol consumption and family background. Whereas the second study showed that the

drinking pattern was associated with a family background with positive in alcohol consumption both in males and females. This is the environmental factor which leads to the habit of alcohol consumption as revealed by the social learning theory.

2.15 Curiosity and experiment

"Experimentation is considered problematic only when alcohol or substance abuse occurs at a very young age, with increasing frequency, while the child is alone, or in the context of behavioral or emotional difficulties that the child goes through". "If alcohol abuse tends to become more frequent and if the frequency of intake increases, negative consequences can develop such as impairment at school, office, legal problems, accidents, and personal problems". Hence it is noted that curiosity and experiment plays a key role into shaping someone get into the habit of alcohol consumption(73). Curiosity is composed of two important components: exploration and absorption, has been previously associated with life satisfaction, life meaningfulness, and enhanced positive affect. It also has some relation with seeking of sensation, which has seen to be associated to alcohol consumption and other habits which lead to dependency. This study revealed the linkage between curiosity and college women's problematic drinking in the context of sensation seeking. There was a total of 79 women respondents who completed questionnaires measuring curiosity, sensation seeking, alcohol consumption, and consequences related to alcohol consumption. A zero-inflated negative binomial model revealed that curiosity and sensation seeking resulted in significant reduction in alcohol-related problems after the individual controlled the alcohol consumption pattern. The curiosity factors had opposite linkage to alcohol-related problems: higher scores on absorption were seen to be linked with more alcohol related problems whereas higher scores on exploration were associated with fewer alcohol related problems.(74).

The consumption of alcohol amongst university students, particularly female undergraduates, has been seen to be drastically increasing. Consumption of alcohol by these students use by these students results in several alcohol-related problems such as damage to property, poor academic achievement, problematic peer relationships, high

dropout rates, unprotected sexual activity, physical injuries, date rape and suicide. Consumption of alcohol is related to curiosity and experimentation, peer pressure, low self-esteem, enjoyment, parental modelling, socio-cultural influences, stress and life events, self-medication and concerns about weight and appearance. The results revealed that the majority of respondents showed responsible drinking behavioral patterns, but some of the female students' alcohol consumption patterns drinking were the cause for social problems in terms of hazardous impact at both social and academic performances.(75). When we focus on the above-mentioned studies, we see that curiosity and sensation-seeking plays an important role in alcohol related problems. Whereas the second study revealed that only a few numbers of female students showed that alcohol consumption out of curiosity lead to poor academic progress and social problems. Curiosity plays an important role and males are more prone to it than females because of the environment they live in and the cognitive thinking related to it, hence making them more subjected into the habit of alcohol consumption, as proved by the social learning theory.

2.16 Peer pressure

Peer pressure is directly linked into an individual's initiation on of alcohol consumption. This study assessed the bivariate and more fully controlled (with socio-demographic measures) linkage between self-reported drinking behavior and peer pressure susceptibility, desire for peer popularity and general conformity in respondents between the age of 11–16-year-old school children in Northern Ireland. Self-reported alcohol consumption pattern was measured using a composite measure of alcohol consumption behavior, (76). Bivariate and more fully controlled regression analysis showed that problematic alcohol consumption was shown by higher peer pressure susceptibility, lower desire for popularity and lower general conformity. More problematic drinking was also seen in Middle than junior school, and by being female. Besides knowing that alcohol consumption among adolescents is normative behavior, the results signify that increasing levels of alcohol consumption, analyzed by a composite measure were seen to be linked with the social risk factors assessed, which are greater susceptibility to peer pressure, less conformity and lower levels of

desire for peer popularity(77). The aim of this study was to identify if drinking with peers predicted later alcohol consumption and if this relationship would be mediated by a change in the descriptive norms of peer alcohol consumption. Descriptive norms significantly mediated the relationship between drinking with peers and alcohol consumption for both males and females with a little larger effect for males when compared to females. The results of this study help build a continued focus on the development and evaluation of interventions to alter descriptive norms of alcohol consumption(78). When the above two articles are compared, we see that there is a strong relationship between the level or alcohol consumption and dependency and pressure from peers. The significance is seen more in males when compared to females. These two studies reveal that peer pressure is a key factor for an individual to consume alcohol and is seen more in males than females. This is since they are likely to be subjected to environmental factors and get easily influenced by their peers.

2.17 Standard Drink

To measure the amount of alcohol consumption, it needs to standardize the amount of alcohol, which is defined as standard drink. Different countries have many demarcations of standard drinks. In the United States of America, it is defined as a drink containing 14 grams of pure alcohol, i.e. 6 ounces (177ml) of fluid or 1.2 teaspoons. In Australia, New Zealand and Thailand, standard drink is defined as a drink containing 10 grams of pure ethanol. For each ml of ethanol, there are 0.79 grams of pure ethanol. The amount of pure alcohol containing in certain quantity is different between the type and brand of the beverages. The table below shows the approximate amount of pure alcohol in different types of alcohol(79)

Types and standard drink of alcohol

Type of alcohol and approximate amount of pure alcohol	Quantity = Standard drink
Beer or cooler (5 %)	355 ml = 1.4 SD (14 g pure ethanol)
	473 ml = 1.9 SD (19 g pure ethanol)
	650 ml = 2.5 SD (25 g pure ethanol)
	1182 ml = 4.6 SD (46 g pure ethanol)
Malt liquor (7 %)	355ml =1.9 SD (19 g pure ethanol)
	473ml = 2.6 SD (26 g pure ethanol)
	650 ml = 3.6 SD (36 g pure ethanol)
	1182 ml= 6.5 SD (6 g pure ethanol)
Table wine (12 %)	a 750 ml bottle (25 ozs) = 7.1 SD (71pure ethanol)
Spirit (Hard Liquor) (40 %)	a mixed drink = 1 SD or more *
	473 ml = 14.9 SD (149 g pure ethanol)
	739 ml = 23.3 SD (233 g pure ethanol)
	1.75 L = 53.3 SD (533 g pure ethanol)
	*Note depending on the type of liquor and mixer, one mixed drink may contain one to three standard drinks.
	SD = standard drink

In this study, the standard drink of Australia, New Zealand and Thailand was used. One standard drink is equivalent to 10 grams pure ethanol. Based on the social theory, the social and surrounding environment are important elements in the development of pattern of alcohol consumption problems. The amount of standard drink an individual consumes depends upon the social association and environment to which he/she is subjected to. They tend to behave in ways which makes them blend into the society and the environment they live in.

2.18 Screening Test

Measuring instruments for alcohol dependence and abuse were created mainly in psychiatric, epidemiologic and public health researches. Among them, the AUDIT screening test will be used in this this. The AUDIT screening test is as follows:

AUDIT:

The AUDIT is a set of questionnaires which contains 10 sets of questions created by the WHO to determine whether a person's alcohol consumption may be harmful or not. This test can be used internationally and was validated in a study conducted in six countries. Q 1 to 3 are for alcohol consumption; Q 4-6 are for alcohol dependence and Q 7-10 are for alcohol related problems. A score of 8 or more in males and 7 in females shows a strong likelihood of hazardous or harmful alcohol consumption. A score of more than 20 is more suggestive of alcohol dependence(80).

AUDIT-C

The AUDIT C is scored from 0-12. There are 5 answers for each question. A is zero-point, b is 1 point, c is 2 points, d is 3 points and 3 is 4 points. In men, a score of 4 or more is considered positive, optimal for identifying harmful drinking or active alcohol use disorders. In women, a score of 3 or more is considered (add refer. Bush.1998). In this study, AUDIT will be used for assessment of alcohol consumption, alcohol dependency and alcohol related problems. AUDIT is a test used worldwide for screening, validated by WHO. There are several studies conducted to test the reliability of AUDIT test too. In one study done in Stockholm University, Sweden, it is mentioned that the overall reliability of total AUDIT score was 0.84 and when stratified by gender, age and consumer status, the total score reliability was 0.80. The researcher concluded that the reliability of the AUDIT was high(81). The social theory when linked to the AUDIT screening test can show the relationship of the social and environmental factors to the pattern of alcohol consumption. These factors are closely related to an individual's habit of alcohol consumption, as they behave in ways which tend to make them social in the environment, they live in.

2.19 Theories

Bio-logical Theory

According to researchers, it is stated that alcohol consumption is related to genetic and biological factors and are also involved in the development of an individual. There is a certain kind of brain chemistry involved in pleasure of alcohol consumption as alcohol can temporarily increase dopamine, which makes an individual feel the pleasure aroused by it(46). An individual's body is effected by alcohol in different ways such as getting physical problems depending on volumes of body, age, and sex.

Social Theory

This theory states that social and the surrounding environment are important elements in the development of pattern of alcohol consumption problems. People behave in ways which tend to make them social in the environment they live in.

Social Bond theory

According to this theory, it states that for an individual to integrate into a society, there are four components which are as follows:

- **Attachment:** which refers to an individual's sensitivity and interest in others. Commitment involves time, effort and action.
- **Involvement**: denotes to activities like spending time for illegal behavior.
- **Belief:** people staying in the same social setting share common moral belief and adhere values as sharing.

Some studies have revealed the relationship between social bond and alcohol consumption. The study of people and social bond has proved to have a direct effect on drinking patterns of an individual. People consume heavy alcohol when they get positive feedback from friends and hence they are more likely to continue the pattern(82).

Other Theory

The concept of binge drinking behavior in relation to health in various studies is based on the theory by Green and Kreuter (83), which states that there are 3 factors: Predisposing factors: Individual knowledge and experiences including social and economic conditions, values, beliefs and attitudes, which change the behavior of individuals.

- **Reinforcing factors:** Reinforcement in the form of support from others or the media that can cause behavioral changes.
- **Enabling factors:** The factors that support or weaken the behavior.

When all the above-mentioned theories are looked upon, the biological theory states that alcohol consumption is related to genetic and biological factors and are also involved in the development of an individual. The social theory depicts that social and the surrounding environment are important elements in the development of pattern of alcohol consumption problems. Social bond theory states that for an individual to integrate into a society, there are four main components which are attachment, commitment, involvement and belief. Other theories suggest that the concept of binge drinking behavior in relation to health in various studies is based on the theory by Green and Kreuter, which has three factors namely predisposing factors, reinforcing factors and enabling factors.

2.20 Review of articles

On a study on Patterns of alcohol use, their correlates, and impact in male drinkers, a population-based survey from Goa, India, the results showed that unhealthy drinking patterns were seen commonly among male drinkers in Goa and were highly associated with lower socio-economic class. (20). Another study on patterns of alcohol consumption in Spanish University alumni: Nine years and follow up revealed that the clusters varied for females and males, hence concluded revealing the women drank less when compared to males(21).

A study on prevalence of alcohol consumption and alcohol use disorders among outdoor drinkers in public open places in Nigeria showed that the prevalence

of likely AUD was 39.5%, and 44.4% out of the drinking population. Outdoor-open space drinkers were likely to have AUD compared with the general population (27). In another study, on prevalence of alcohol use disorders among under and post-graduate healthcare students, the results showed that the mean Audit-C score was quite low (1.7), and also a very few respondents self-reported negative behavior related to alcohol consumption (only 5.5% of men and 7.1% of women). (28).

Alcohol-related negative consequences among drinkers around the world, which was another study and the results revealed that there were three groups of consequences of alcohol consumption which were reported by 44%, 12% and 7% of men and by 31%, 6% and 3% of women, respectively. There were more men than women who reported consequences of alcohol consumption (34). Another study on Adolescent alcohol use-Risks and consequences, showed that there were various adverse behaviors associated with alcohol consumption among adolescents such as smoking, substance abuse and indulgence in risky sexual activities. (35).

A study on Chronic diseases and conditions related to alcohol use showed that there were about twenty five chronic diseases and conditions coded which were solely attributable to consumption of alcohol, and alcohol plays a major risk factor in various cancers, tumors, malignancies, psychiatric conditions, certain cardiovascular and gastrointestinal diseases. One of the most common neuropsychiatric conditions linked with alcohol consumption is epilepsy, which is defined as an enduring predisposition for epileptic seizures and requires the occurrence of at least one seizure for a diagnosis. Alcohol consumption is linked with epilepsy, whereas alcohol withdrawal can lead to seizures but not epilepsy (36). Another study on Association between levels of alcohol consumption and mental health problems and academic performance among University students, showed that around (44%) of the respondents reported consuming alcohol at hazardous levels and were 1.2 times more likely to show signs of psychological problems than those with lower levels of alcohol consumption (37).

On another study on Alcohol effects on family relations: A case study, the results revealed that the consequences of alcohol consumption caused a strong negative impact to the family members and hampered them in various ways, which causes so many problems within the family like high levels of conflicts, domestic violence, parental inadequacy, child abuse and negligence, financial and legal difficulties, in addition to various medical and psychological problems linked with it(38). A study on Friends, family and alcohol abuse-An examination of general and alcohol-specific social support, showed that general support from friends and family and length of stay in Oxford House resulted in less alcohol consumption. It is suggested that relationships which consists of close friends, should not be overlooked during alcohol recovery. Friends who would help provide general support could be beneficial as for recovery, especially in the Oxford House setting(39).

On a study on Social and cultural contexts of alcohol use, the results showed that macro level factors, which are advertising and marketing, immigration, and discrimination factors, and how neighborhoods, families, and peers influence alcohol consumption(40). Another study on Health/Safety, legal and social consequences of drinking too much revealed that injury was the most common health consequence of a single incidence of increased alcohol consumption. Alcohol consumption could make an individual commit many offences which include physical assault, sexual assault, battery, damage of property, hindering police, resisting arrest and drink-driving, etc. (41).

A study on Economic loss and alcohol consumption and problems drying the 2008-2009 U.S Recession, showed that economic loss (job or housing loss) was strongly linked with negative drinking consequences, alcohol dependence and (marginally) drunkenness, while moderate loss (loss of retirement savings, reduced work hours/wages, trouble paying the rent/mortgage) was unassociated with alcohol outcomes(42). Another study on The Economic impact of alcohol abuse and alcoholism, revealed that the expenses for Health care for families with an alcoholic member were twice for those families without one. Fetal alcohol syndrome was one of the top three known causes of birth defects and was totally preventable. These

ultimately lead to financial burden to the family and hence decreased the nation's economic progress(43).

A study on Stress and alcohol(Epidemiologic evidence) showed that an early onset of alcohol consumption in adolescence, as well as adult AUDs, are commonly seen among people who experience childhood maltreatment(44). Another study on The burden of binge and heavy drinking on the brain, revealed that altered neural structure and activity in binge and heavy-drinking youth may be related to the neurotoxic effects of alcohol consumption in massive amount during a highly delicate neurodevelopmental period, which could later lead to neural reorganization, and increases the risk for developing an alcohol use disorder (AUD)(45).

A study on Alcohol consumption pattern among workers and socio-economic profile, showed a high rate of hazardous, harmful consumption and probable dependence, and was associated mostly with male workers and those who had low education levels(54). Another study on Alcohol misuse among University staff-A cross-sectional study, revealed that one third (35%) of respondents were classified as hazardous drinkers. About 23% of the respondents reported having blackouts after drinking and 14% said to have suffered injuries or had injured someone else. The result of this study determined that there was a high prevalence of hazardous drinking among university employees(55).

On a study of Relation between age of first alcohol drink and adult life drinking patterns in alcohol-dependence patients, the results revealed that earlier age of first drink was associated with chronic heavy drinking patterns in later adult life in alcohol-dependent patients(63). Another study on Age of first drinking and adult alcohol problems, showed that there was no strong evidence that earlier age of first drinking lead to adult alcohol problems, hence more studies are required is to address this important question(64).

A study on Gender and alcohol consumption- Patterns from the multination genesis project showed that alcohol consumption on large quantities were more

prevalent among men than among women, whereas lifetime abstention from alcohol was seen to be more prevalent among women(66). On another study on Gender-specific relationship between alcohol consumption and injury in the South Korean adults, the results of the AUDIT scores showed that women who were subjected to injuries reported significantly more high-risk alcohol consumption behaviors in a month when compared with those who were not injured(67).

A study on Family background of alcohol abuse and its relationship to alcohol consumption among college students- An unexpected finding showed that there was a considerable similarity in alcohol consumption and drinking patterns between students who were denoted as having a positive, as opposed to negative, family background. The study finally revealed that having a positive family background for heavy alcohol consumption was not associated with either light or heavy alcohol consumption among the respondents(71). In another study on Family history of alcohol abuse associated with problematic drinking among college students, the results showed that a family history of alcohol consumption was reported by 35.0% of the total respondents, and FH+ participants were more likely to have consumed alcohol in the past year than their FH− groups(84).

A study on Curiosity killed the cocktail. Curiosity, sensation seeking and alcohol-related problems in college women, showed that curiosity factors had opposite linkage to alcohol-related problems: higher scores on absorption were seen to be linked with more alcohol related problems whereas higher scores on exploration were associated with fewer alcohol related problems.(74). Another study on An exploration of alcohol use amongst undergraduate female psychology students in South African University, showed that the majority of respondents showed responsible drinking behavioral patterns, but some of the female students' alcohol consumption patterns drinking were the cause for social problems in terms of hazardous impact at both social and academic performances(75). A study on The relationship between alcohol use and peer pressure susceptibility, peer popularity and general conformity in Northern Irish school children, revealed that increasing levels of alcohol consumption, analyzed by a composite measure were seen to be linked with

the social risk factors assessed, which are greater susceptibility to peer pressure, less conformity and lower levels of desire for peer popularity(77). On another study on Longitudinal relationship between drinking with peer, descriptive norms, and adolescent alcohol use, the results mediated the relationship between drinking with peers and alcohol consumption for both males and females with a little larger effect for males when compared to females(78).

A study on Drinking risk level and alcohol consumption, showed that out of all the alcoholic beverages consumed by the participants, beer was the most common alcohol preferred(85). In another study on Alcohol consumption in 0.5 million people from 10 diverse regions of China, among the total number of participants in the study the results showed higher number of males which was76% than females which was 34%(86). On a study on alcohol consumption pattern among workers and socio-economic profile, the results according to AUDIT scores showed most females fell under the category of low risk drinkers which was 66.9% and males were 33.1% whereas under high risk and dependence category males were more which was 65.9% and females were 34.1%(87). A study done on Drinking patterns among Korean adults, the results showed highest alcohol consumption between the age of 45-64 years out of all the age group (88).

A study done in India titled Prevalence and pattern of alcohol consumption using Alcohol Use Disorders Identification Test(AUDIT), showed results where gender showed association with pattern of alcohol consumption(89). A study on associations between marital status and alcohol consumption in a longitudinal study of female twins, showed that marital status was associated with a large proportion of the decline in consumption prior to age 30. Women who later divorced drank more than women who stayed married and divorced women who remarried drank less than divorced women who did not remarry(90). A study on the relationship between alcohol use and earnings, showed that the more people earned, the more money they spent on alcohol consumption(91). A study on relation between age at first drink and adult life drinking patterns in alcohol-dependent patients revealed that age at first drink had its influence on later life drinking patterns(92).

3 RESEARCH METHODOLOGY

3.1 Research design:

The study design was a cross sectional study.

3.2 Study area

The study was conducted in Thimphu, the capital city of Bhutan. The study was confined to the Government Ministries in Thimphu, Bhutan. There are a total of ten Ministries in the capital(93). All the offices are scattered within the city. All the head offices of the ministries are in the capital, Thimphu.

Figure 2: Map of Bhutan

Source: Google map, retrieved on 11/3/2019

3.3 Study population

There are total number of 28,070 government employees in Bhutan(93). The number of female employees are 10,225(36.42%). In the capital Thimphu, the total number of government employees are 8,134(28.99%)(93). The study population was from the 10 government ministries located in Thimphu.

3.4 Research Duration

The data was collected during the month of August and September 2019.

3.5 Sampling Technique

Purposive sampling method was used for sampling to choose the study area. There are 10 ministries under His Majesty's Government of Bhutan. The total number of Government employees in Thimphu, Bhutan is 8134(93). Out of the 10 ministries, 38 samples each were chosen for 5 ministries and 39 samples from another 5 ministries.

3.6 Sample and sample size

Krejcie Morgan formula was used to calculate the sample size

$$n = \frac{X^2 NP(1-P)}{d^2(N-1)+X^2 P(1-P)}$$

$$= \frac{(1.96)2 * 8134 * 0.5 * (1-0.5)}{(0.05)2 * (8134-1)+(1.96)2 * 0.5(1-0.5)}$$

$$= 367$$

Assuming nonresponse rate will be 5% as considered

The total sample size (n) will be 385.

Where,

n = Sample Size

N= Population size

P = Population Proportion (Assumed to be 0.5)

d = Degree of accuracy (Expressed as a proportion)

3.7 Measurement Tools

The structured questionnaires were used to collect data which included the following parts:

Part I- Socio-demographic

Part II- Assessment of pattern of alcohol consumption

Part III (Screening) - Alcohol Use Disorders Identification Test (AUDIT)

For the personal information in the questionnaires, the code number for each answer paper was used to keep the confidentiality of the respondents.

Part I- Socio-demographic:

Part 1 contained questions for socio-demographic factors like age, gender, residence, marital status, religion, ethnicity, education, occupation, income and the number of alcohol consumers among the family members.

Part II- Pattern of alcohol consumption

Part 2 contained the questions to assess the pattern of alcohol consumption of the respondents which are amount, type and frequency of alcohol consumption.

Part III (Screening) - Alcohol Use Disorder Identification Test (AUDIT)

The AUDIT questionnaire was used to assess the alcohol related disorders of the respondents. It contains 10 questions to assess alcohol consumption, dependence and alcohol use disorders. Q 1 to 3 are for alcohol consumption; Q 4 to 6 are for alcohol dependence and Q 7 to 10 are for alcohol-related problems. A score of 8 or more in males and 7 in females show a strong likelihood of hazardous or harmful alcohol consumption. A score of more than 20 is suggestive of alcohol dependence(80) The AUDIT is a standard questionnaire commonly used in so many studies earlier. The AUDIT is a screening test created and validated by WHO in several countries and translated to many languages and tested for validity and reliability. Some of the researches shows that even the translated versions have high reliability and validity(94). A study tested for reliability and validity of AUDIT

showed that the reliability measured by intraclass correlation coefficients in item level are arranged between 0.39 and 0.98. The total score of intraclass correlation coefficient was 0.95. For the cut off values of 8 points and 5 points, 87.5% and 88.9% of the AUDIT showed positive results and 98.9% and 95.1% showed negative results respectively which were identified at a retest with kappa=0.86 and kappa=0.81. At the cut off value of 5 points, the researchers determined a very good combination of sensitivity and specificity for the following diagnosis, alcohol dependence (sensitivity 0.97 and specificity 0.88), AUD (0.97 and 0.92) and AUD and/or risk consumption (0.97 and 0.91)(95).

3.8 Inclusion and Exclusion Criteria

Inclusion Criteria

- Both male and female employees.
- Those employees who were on a basis of permanent employment.
- Those employees who were on a regular pay basis.

Exclusion Criteria

- Those who could not speak English.
- Those who were not willing to participate in the interview.
- Those who had alcohol-related disorders.
- Those who were on a contract pay basis.

3.9 Validity and Reliability

The questionnaires were checked after the interview before data entry. The instruments were scrutinized by university lecturers including the supervisor of the study and one official from the Health Ministry of Bhutan to judge the items on their appropriateness of content, and to determine all the possible areas that needed modification so as to achieve the objectives of the study. The experts determined whether the items in the questionnaires adequately represented all the areas that needed to be investigated. In addition, the researcher also ensured validity of the

collected data by administering the questionnaire personally. The content validity was reviewed by three experts in the field of alcohol abuse and dependence and index of Item Objective Congruence (IOC) was 0.87. The reliability of the instrument was then tested via pilot test among 30 respondents. The Cronbach's alpha coefficient for the instrument was 0.82. The feedback and the responses were then used to make changes and were incorporated into the final instrument.

3.10 Outcome

The main outcome of this study was:
The pattern of alcohol consumption among Government employees in Thimphu, Bhutan.

3.11 Data Collection

For data collection, the first step was taking approval from the Ethical Committee. After approval from the Committee, the respondents were screened using the standard AUDIT screening procedure formulated by WHO. After that the respondents who were eligible for the face to face interview were interviewed with proper written informed consent. All documents were checked for completeness by the principal researcher to prevent losing of the documents. Data was collected 5 times a week. There period of data collection was be 45 days. After completion of the above-mentioned processes, data was interpreted by using statistical analysis.

3.12 Data Analysis

The questionnaire was checked and coded before entering data in spss. Data analysis were processed by using SPSS software version 22 (licensed from Chulalongkorn University) for windows. Descriptive statistics such as frequency, percentage, mean and standard deviation was used to describe the socio-demographic factors, characteristics and the pattern of alcohol consumption of the study population. For the relationship between the variables, Chi-square tests and Fisher's exact tests were used to determine the statistical significance of the association between variables

of dependent (pattern of alcohol consumption) and independent (socio-demographic) factors.

3.13 Ethical Consideration

The thesis proposal was submitted to the Research Ethical Board of Health (REBH), Ministry of Health in Thimphu, Bhutan (Ref. No. REBH/Approval/2019/053), for prior approval to conduct the proposed study. To maintain confidentiality, name of the participants was not written in the questionnaire. Participants were not forced to participate in the study if they didn't wish to. They were informed that they could drop if they didn't feel comfortable with the questionnaire during data collection. The researcher therefore ensured that the participants knew their involvement would always be voluntary. A thorough explanation was given in advance in relation to benefits, rights and dangers involved with their participation.

4 RESULTS

Results

This was a cross-sectional study which was conducted in Thimphu, Bhutan from August to September 2019. The main objective of this study was to determine the pattern of alcohol consumption among Government employees in Thimphu, Bhutan. The total number of respondents in this study was 385.The data was collected from the 10 Government Ministries under His Majesty's Government in Thimphu, Bhutan. The results of this study are presented as follows:

4.1: Part I – Descriptive findings

- Socio - demographic characteristics
- Alcohol consumption by respondents
- Alcohol consumption by family members
- Relationship with respondents who consumed alcohol
- Alcohol consumption by close friends of respondents

4.2: Part II- Bivariate Analysis

- Association between socio-demographic characteristics and pattern of alcohol consumption.
- Association between characteristics of alcohol consumption and pattern of alcohol consumption.
- Association between alcohol consumption by respondents and pattern of alcohol consumption.
- Association between alcohol consumption by family members and pattern of alcohol consumption.
- Association between alcohol consumption by close friends and pattern of alcohol consumption.

4.1 Descriptive findings

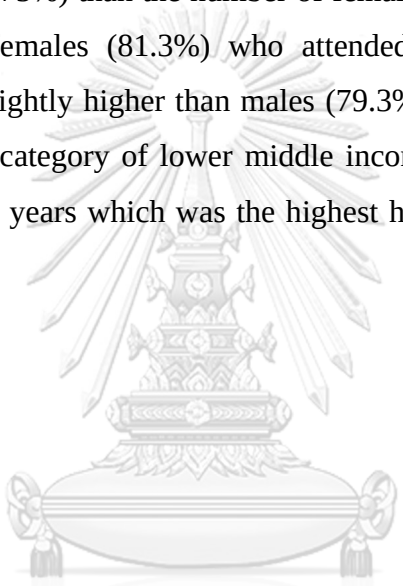
4.1.1 Sociodemographic Characteristics

Table 1: Age, gender, marital status, residence, religion, education, income in USD and work experience in years of respondents (n=385)

Variables	Male n=188 (n (%)	Female n=197 n (%)
Age		
<25 years	17(9)	18(9.1)
25-45 years	149(79.3)	169(85.8)
>45 years	22(11.7)	10(5.1)
Marital status		
Single	86(45.7)	96(48.7)
Married	68(36.2)	68(34.5)
Divorced	25(13.3)	27(13.7)
Widowed	9(4.8)	6(3)
Residence		
Babesa	74(39.4)	71(36)
Changedephu	21(11.2)	27(13.7)
Decheling	11(5.9)	8(4.1)
Motithang	72(38.3)	82(41.6)
Upper market	10(5.3)	9(4.6)
Religion		
Buddhism	141(75)	118(59.9)
Hinduism	30(16)	55(27.9)
Christianity	17(9)	24(12.2)
Education		
Primary school	4(2.1)	5(2.5)
Middle school	9(4.8)	11(5.6)
High school	26(13.8)	21(10.7)
Degree and higher	149(79.3)	160(81.2)
Annual income in USD		
Lower middle income	121(64.4)	149(75.6)
Upper middle income	67(35.6)	48(24.4)
Job experience in years		
<10 years	126(67)	147(74.6)
10-20 years	47(25)	46(23.4)
>20 years	15(8)	4(2)

1 USD=71.6 Ngultrums

Table 1 shows that among the 385 respondents, there were 197 females and 188 males. Those who were < 25 years were quite similar for both males (9%) and females (9.1%). The maximum number of respondents were females (85.8%) in between the age of 25-45 years than males (79.3%). Those who were > 45 years had twice as higher males (11.7%) than females (5.1%). The number of females (48.7%) who were single was the highest which was slightly higher than males (45.7%). The highest number of females (41.6%) resided in Motithang, while the highest number of males (39.4%) resided in Babesa. The highest number of respondents who followed Buddhism were males (75%) than the number of females (59.9%). Maximum number of respondents were females (81.3%) who attended degree and higher level of education which was slightly higher than males (79.3%). Highest number of females (75.6%) fell under the category of lower middle income than males (64.4%). Work experience less than 10 years which was the highest had more females (74.6%) than males (67%).



4.1.2 Alcohol Consumption by Respondents

Table 2: Alcohol Consumption by Respondents (n=385)

Variables	Category	Male n=188 n(%)	Female n=197 n(%)
AUDIT Score of Respondents	Low risk drinkers	135(71.8)	179(90.9)
	Hazardous drinkers	52(27.7)	18(9.1)
	Dependence	1(0.5)	0
Age at first drink	18 - 25 years	114(60.6)	101(51.3)
	26 - 45 years	74(39.4)	96(48.7)
Reasons for consumption for first time	Friends	8(4.3)	11(5.6)
	Socialization	50(26.6)	64(32.5)
	Festival	20(10.6)	17(8.6)
	Family problems	52(27.7)	53(26.9)
	Financial problems	10(5.3)	11(5.6)
	No specific reason	48(25.5)	41(20.8)
Expenses on alcohol in a month	<100 USD	181(96.3)	197(100)
	100 - 200 USD	7(3.7)	0
Health Problems	No	173(92)	186(94.4)
	Yes	15(8)	11(5.6)

Table 2 shows that among 385 respondents who consumed alcohol, they were ranked into three categories based on their AUDIT(according to WHO guideline) scores namely Low risk drinkers(Score 0-7), Hazardous drinkers(Score 8-15) and Dependence(Score 16-19). The highest number of females (90.9%) fell under the category of low risk drinkers than males (71.8%). Maximum number of males (27.7%) were hazardous drinkers than females (19.1%). Only one male (0.5%) fell under the category of dependence. The age at first drink between 18-25 years showed more males (60.6%) than females (51.3%). Highest number of females (32.5%)

showed socialization as the reason for first alcohol consumption than males (26.6%). All of the females (100%) fell under the category of spending less than 100 USD per month on alcohol than males (96.3%). The males (8%) who had health problems was slightly higher than females (5.6%).

Table 3: Alcohol consumption by Respondents with respect to type, amount and frequency

Pattern	Category	Lifetime(n=385)		Last year(n=335)		Last30 Days(n=187)	
		Male n=188 n (%)	Female n=197 n (%)	Male n=179 n (%)	Female n=156 n (%)	Male n=104 n (%)	Female n=83 n (%)
Type	Beer	102 (54.3)	54(27.4)	99(52.7)	39(19.8)	58 (55.7)	25 (30.1)
	Spirit	61(32.4)	17(8.6)	57(30.3)	15(7.6)	32 (30.7)	7(8.4)
	Rum	16(8.5)	0	15(8)	0	7(6.9)	0
	Wine	3(1.6)	118 (59.8)	2(1.1)	94(68.5)	3(2.8)	48 (57.8)
	Local Beverages	6(3.2)	8(4.1)	6(7.9)	8(4.1)	4(3.8)	3(3.6)
Amount	<10 SD	102(54.3)	117(59.4)	0	0	102 (98)	82 (98.7)
	10 - 20 SD	86(45.7)	79(40.1)	119 (63.3)	117(59.4)	2(2)	1(1.3)
	>20 SD	0	1(0.5)	60(36.7)	39(40.6)	0	0
Frequency	1 - 2 times/month	4(2.1)	6(3)	5(2.7)	3(1.5)	58 (55.7)	55 (66.2)
	5 - 6 times/month	140(74.5)	159(80.7)	15(8)	17(8.6)	42 (40.3)	26 (31.3)
	≥ 7 times/month	44(23.4)	32(16.2)	159 (89.4)	136 (89.8)	4(3.9)	2(2.4)

SD=Standard Drink

Table 3 shows that among 385 respondents who consumed alcohol within lifetime, the highest number of males (54.3%) consumed beer while maximum

number of females (59.9%) consumed wine. The amount of alcohol consumed within lifetime of <10 SD was slightly higher by females (59.4%) than by males (54.3%). The frequency of alcohol consumed within lifetime of 5-6 times per month was higher by females (80.7%) than by males (74.5%). Among 335 respondents out of 385 respondents who consumed alcohol in last year, the highest number of males (52.7%) consumed beer than females (19.8%). Wine was consumed the most by females (68.5%) than by males (1.1%). The amount of alcohol consumed in last year between 10-20 SD by males (63.3%) and by females (59.4%) was quite similar. The frequency of alcohol consumed in last year of ≥ 7 times per month by females (89.8%) and by males (89.4%) were almost the same. Among 187 respondents out of the 385 respondents who consumed alcohol within last 30 days, the highest number of males (55.7%) consumed beer than females (30.1%). The amount of alcohol consumed within last 30 days of <10 SD was the highest by males (98%). The frequency of alcohol consumed within last 30 days of 1-2 times was the highest by females (66.2%).

4.1.3 Alcohol consumption by family members

Table 4: Alcohol consumption by family members

Variables Consumption of alcohol by family members	Male n(%)	Female n(%)
No	145(77.1)	135(68.5)
Yes	43(22.9)	62(31.5)

Table 4 shows that among 385 respondents, the number of respondents who had family members who didn't consume alcohol were the highest which was 280, among which males were 77.1% and females were 68.5%, followed by having family members who consumed alcohol which was 105, among which males (22.9%) were lesser than females (31.5%).

4.1.4 Relationship with Respondents who consumed alcohol

Table 5: Relationship with respondents who consumed alcohol

Variables	n=105 n(%)
Relationship	
Brother	38(34.9)
Husband	8(7.3)
Mother	24(22)
Sister	3(2.8)
Wife	3(2.8)
Father	33(30.3)

Table 5 shows that from the total 105 family members of the respondents who consumed alcohol, the number of brothers (34.9%) were highest followed by fathers (30.3%), mothers (22%), husbands (7.3%), and sisters (2.8%) and wives (2.8%) were the least.

Table 6: Alcohol Consumption by Brothers of respondents (n=38)

Variables	Category	N n(%)
Age at first drink	18 - 25 years	34(89.5)
	26 - 45 years	4(10.5)

Pattern	Lifetime n=38 n(%)	Last Year n=36 n(%)	Last 30 days n=23 n(%)
Type			
Beer	23(60.5)	22(61.1)	12(52.2)
Spirit	10(26.3)	10(27.8)	6(26.1)
Local Beverages	5(13.2)	4(11.1)	5(21.7)
Amount			
<10 SD	20(52.6)	0	22(95.7)
10-20 SD	18(47.4)	23(63.9)	1(4.3)
>20 SD	0	13(36.1)	0
Frequency			
1-2 times/month	0	0	15(65.2)
3-4 times/month	10(26.3)	0	7(30.4)
5-6 times/month	22(57.9)	1(2.8)	1(4.3)
≥ 7 times/month	6(15.8)	35(97.2)	0

SD=Standard Drink

Table 6 shows that out of 38 brothers of the 385 respondents who consumed alcohol, the age at first drink between 18-25 years was the highest which was 89.5%, followed by 26-45 years which was 10.5%. Among 38 brothers of the 385 respondents who consumed alcohol within lifetime, the highest number consumed beer (60.5%), followed by spirit (26.3%) and the least was local beverages (13.2%). The amount of alcohol consumed within lifetime of < 10 SD was by 52.6%, followed by 10-20 SD which was by 47.4%. The frequency of alcohol consumed within lifetime of 3-4 times per month was by 26.3%, 5-6 times per month was by 57.9% which was the highest and ≥ 7 times per month was by 15.8% which was the least. From 36 brothers of the 385 respondents who consumed alcohol in last year, the highest number consumed beer (61.1%), followed by spirit (27.8%) and local beverages (11.1%). The amount of alcohol consumed in last year of 10-20 SD was by 63.9% which was the highest, followed by >20 SD was by 36.1% which was the lowest. The frequency of alcohol consumed in last year of 5-6 times per month was by 2.8% which was the least and ≥7 times per month was by 97.2% which was the highest. Among 23 brothers of the 385 respondents who consumed alcohol within last 30 days, the maximum number consumed beer (52.2%), followed by spirit (26.1%) and local beverages (21.7%). The amount of alcohol consumed within last 30 days of <10 SD was the highest which was by 95.7%, followed by 10-20 SD which was by 4.3%. The frequency of alcohol consumed within last 30 days of 1-2 times per month was the highest which was by 65.2% followed by 3-4 times per month which was by 30.4% and 5-6 times per month was by 4.3% which was the least.

Table 7: Alcohol Consumption by Husbands of respondents (n=8)

Variables	Category	n n(%)
Age at first drink	18 - 25 years	7(87.5)
	26 - 45 years	1(12.5)

Pattern	Lifetime n=8 n(%)	Last Year n=8 n(%)	Last 30 days n=6 n(%)
Type			
Beer	2(25)	2(25)	2(33.3)
Spirit	1(12.5)	1(12.5)	0
Rum	2(25)	2(25)	2(33.3)
Local Beverages	3(37.5)	3(37.5)	2(33.3)
Amount			
<10 SD	0	4(50)	6(100)
10-20 SD	4(50)	4(50)	0
>20 SD	4(50)	0	0
Frequency			
1-2 times/month	1(12.5)	1(12.5)	6(100)
3-4 times/month	0	1(12.5)	0
5-6 times/month	0	1(12.5)	0
≥ 7 times/month	7(87.5)	5(62.5)	0

SD=Standard Drink

Table 7 shows that out of 8 husbands of the 385 respondents who consumed alcohol, the age at first drink between 18-25 years was the highest which was 87.5%, followed by 26-45 years which was 12.5%. Among 8 husbands of the 385 respondents who consumed alcohol in lifetime, the highest number consumed local beverages (37.5%), followed by beer (25%) and rum (25%) which was similar and spirit(12.5%). The amount of alcohol consumed in lifetime between 10-20 SD was the

same with >20 SD which was by 50%. The frequency of alcohol consumed in lifetime of 1-2 times per month was by 12.5% which was the lowest, highest was ≥ 7 times per month which was by 87.5%. Among 8 husbands of the 385 respondents who consumed alcohol within last year, the highest number consumed local beverages (37.5%), followed by beer (25%) and rum (25%) which were same and spirit (12.5%). The amount of alcohol consumed within last year of <10 SD and 10-20 SD was the same which was by 50%. The frequency of alcohol consumed within last year of 1-2 times per month, 3-4 times per month and 5-6 times per month were similar which was by 12.5% and ≥ 7 times per month was by 62.5% which was the highest. Among 6 husbands of the 385 respondents who consumed alcohol within last 30 days, the number who consumed beer, rum and local beverages was similar which was by 33.3%. The amount of alcohol consumed within last 30 days of > 10 SD was by 100%. The frequency of alcohol consumed within last 30 days of 1-2 times per month was by 100%.

Table 8: Alcohol Consumption by Mothers of respondents (n=24)

Variables	Category	n n(%)
Age at first drink	<18 Years	1(4.2)
	18 - 25 Years	23(95.8)

Pattern	Lifetime n=24 n(%)	Last year n=24 n(%)	Last 30 days n=17 n(%)
Type			
Beer	4(16.7)	4(16.7))	4(23.5)
Spirit	9(37.5)	9(37.5)	6(35.3)
Local Beverages	11(45.8)	11(45.8)	7(41.2)
Amount			
<10 SD	5(20.8)	4(16.7)	17(100)
10-20 SD	19(79.2)	20(83.3)	0
Frequency			
1-2 times/month	0	0	12(70.6%)
3-4 times/month	0	0	5(29.4%)
5-6 times/month	0	13(54.2)	0
≥ 7 times/month	24(100)	11(45.8)	0

SD=Standard Drink

Table 8 shows that out of 24 mothers of the 385 respondents who consumed alcohol, the age at first drink of <18 years was lowest which was 4.2%, whereas 18-25 years was the highest which was 95.8%. Among 24 mothers of the 385 respondents who consumed alcohol in lifetime, the highest number consumed local beverages (45.8%), followed by spirit (37.5%), and beer (16.7%). The amount of alcohol consumed in lifetime of <10 SD was the lowest which was by 20.8% and highest was 10-20 SD which was by 79.2%. The frequency of alcohol consumed in lifetime of ≥7 times per month was by 100%. Among 24 mothers of the 385 respondents who consumed

alcohol within last year, the highest number consumed local beverages (45.8%), followed by spirit (37.5%), and beer (16.7%). The amount of alcohol consumed within last year of <10 SD was lowest which was by 16.7%, followed by highest of 10-20 SD which was by 83.3%. The frequency of alcohol consumed within last year of 5-6 times per month was by 54,2%, followed by ≥ 7 times per month which was by 45.8%. Among 17 mothers of the 385 respondents who consumed alcohol within last 30 days, the highest number consumed local beverages (41.2%), followed by spirit (35.3%) and beer (23.5%). The amount of alcohol consumed within last 30 days of <10 SD was by 100%. The frequency of alcohol consumed within last 30 days of 1-2 times was highest which was by 70.6%, followed by 3-4 times which was by 29.4%.

Table 9: Alcohol Consumption by Sisters of respondents (n=3)

Variables	Category	n n(%)
Age at first drink	18 - 25 years	3(100)

Pattern	Lifetime n=3 n(%)	Last year n=3 n(%)
Type		
Wine	3(100)	3(100)
Amount		
<10 SD	3(100)	3(100)
Frequency		
1-2 times/month	0	1(33.3)
3-4 times/month	0	1(33.3)
5-6 times/month	0	1(33.3)
≥ 7 times/month	3(100)	0

SD=Standard Drink

Table 9 shows that out of 3 sisters of the 385 respondents who consumed alcohol, the age at first drink between 18-25 years was by 100%. Among 3 sisters of the 385 respondents who consumed alcohol in lifetime, all of them consumed wine which was by 100%. The amount of alcohol consumed in lifetime of <10 SD was also by 100%. Similarly, the frequency of alcohol consumed in lifetime of ≥7 times per month was by 100%. Among 3 sisters of the 385 respondents who consumed alcohol within last year, all of them consumed wine which was by 100%. The amount of alcohol consumed within last year of <10 SD was also by 100%. The frequency of alcohol consumed in lifetime of 1-2 times per month, 3-4 times in a month and 5-6 times per month was by 33.3%. None of the sisters of the respondents consumed alcohol in the last 30 days.

Table 10: Alcohol Consumption by wives of respondents (n=3)

Variables	Category	n n(%)
Age at first drink	26 - 45 Years	3(100)

Pattern	Lifetime n=3 n(%)	Last year n=3 n(%)
Type		
Wine	2(66.7)	2(66.7)
Local Beverages	1(33.3)	1(33.3)
Amount		
<10 SD	0	2(66.7)
10-20 SD	3(100)	1(33.3)
>20 SD	0	0
Frequency		
1-2 times/month	0	0
3-4 times/month	0	2(66.7)
5-6 times/month	0	0
≥ 7 times/month	3(100)	1(33.3)

Table 10 shows that out of 3 wives of the 385 respondents who consumed alcohol, the age at first drink of 26-45 years was by 100%. Among 3 wives of the 385 respondents who consumed alcohol in lifetime, highest number consumed wine (66.7%), followed by local beverages (33.3%). The amount of alcohol consumed in lifetime of 10-20 SD was by 100%. The frequency of alcohol consumed in lifetime of ≥ 7 times per month was also by 100%. Among 3 wives of the 385 respondents who consumed alcohol within last year, the highest number consumed wine (66.7%) followed by local beverages (33.3%).The amount of alcohol consumed within last year of < 10 SD which was the highest was by 66.7% followed by 10-20 SD was by 33.3%. The frequency of alcohol consumed within last year of 3-4 times per month which was the highest was by 66.7 % followed by ≥ 7 times per month was by 33.3%. None of the wives of the respondents consumed alcohol in the last 30 days.

Table 11: Alcohol Consumption by Fathers of respondents (n=33)

Variables	Category	n n(%)
Age at first drink	18 - 25 Years	32(97)
	26 - 45 Years	1(3)

Pattern	Lifetime n=33 n(%)	Last Year n=33 n(%)	Last 30 days n=23 n(%)
Type			
Beer	10(30.3)	10(30.3)	8(34.8)
Spirit	11(33.3)	11(33.3)	8(34.8)
Rum	3(9.1)	3(9.1)	2(8.7)
Local Beverages	9(27.3)	9(27.3)	5(21.7)
Amount			
<10 SD	0	3(9.1)	23(100)
10-20 SD	3(9.1)	30(90.9)	0
>20 SD	30(90.9)	0	0
Frequency			
1-2 times/month	0	0	11(47.8)
3-4 times/month	0	1(3)	12(52.2)
5-6 times/month	0	14(42.4)	0
≥ 7 times/month	33(100)	18(54.5)	0

SD=Standard Drink

Table 11 shows that out of 33 fathers of the 385 respondents who consumed alcohol, the age at first drink between 18-25 years was the highest which was 97% and 26-45 years was 3%. Among 33 fathers of the 385 respondents who consumed alcohol in lifetime, the highest number consumed spirit (33.3%), followed by beer (30.3%), local beverages (27.3%) and rum (9.1%). The amount of alcohol consumed in lifetime of 10-20 SD was the lowest which was by 9.1% and > 20 SD was highest which was by 90.9%. The frequency of alcohol consumed in lifetime of ≥ 7 times per month was by 100%. Among 33 fathers of the 385 respondents who consumed alcohol within last year, the highest number consumed spirit (33.3%), followed by beer (30.3%), local beverages (27.3%) and rum (9.1%). The amount of alcohol consumed within last year of <10 SD was lowest which was by 9.1% and 10-20 SD was highest which was by 90.9%. The frequency of alcohol consumed within last year of 3-4 times per month was by 3% which was the least , 5-6 times per month was by 42.4% and ≥ 7 times per month was by 54.5% which was the highest. Among 23 fathers of the 385 respondents who consumed alcohol within last 30 days, the highest number consumed beer (34.8%) and spirit (34.8%) followed by local beverages (21.7%) and rum (8.7%).The amount of alcohol consumed within last 30 days of <10 SD was by 100%. The frequency of alcohol consumed within last 30 days of 1-2 times per month was by 47.8% and 3-4 times per month was by 52.2% which was similar.

4.1.5 Alcohol Consumption by close friends of respondents

Table 12: Alcohol consumption by close friends of respondents

Variables	Male	Female
Consumption of alcohol by close friends	n(%)	n(%)
No	163(86.7)	157(79.9)
Yes	26(13.3)	40(20.3)

Table 12 shows that among 385 respondents, the number of respondents who had close friends who didn't consume alcohol were the highest which was 320, among which males were 86.7% and females were 79.9%, followed by having close friends who consumed alcohol which was 66 among which males were 13.3% and females were 2.3%.

Table 13: Alcohol Consumption by first close friends of respondents (n=66)

Variables	Category	n n(%)
Age at first drink	< 18 Years	1(1.5)
	18 - 25 Years	57(86.4)
	26 - 45 Years	8(12.1)

Pattern	Lifetime n=66 n(%)	Last Year n=63 n(%)	Last 30 days n=26 n(%)
Type			
Beer	38(57.1)	36(67.7)	16(61.5)
Spirit	16(23.8)	15(13.2)	9(34.6)
Rum	3((4.8)	3(4.8)	1(3.8)
Wine	6(9.5)	6(9.5)	0
Local Beverages	3(4.8)	3(4.8)	0
Amount			
<10 SD	45(76.2)	0	26(100)
10-20 SD	21(23.8))	48(86.8))	0
>20 SD	0	15(13.2)	0
Frequency			
1-2 times/month	2(3.2)	2(3.8)	16(61.5)
3-4 times/month	3(4.8)	0	8(30.8)
5-6 times/month	61(92.1)	3(4.8)	2(7.7)
≥ 7 times/month	0	58(91.4)	0

SD=Standard Drink

Table 13 shows that out of 66 first close friends of the 385 respondents who consumed alcohol, the age at first drink <18 years was the least which was 1.5%,18-25 year was the highest which was 86.4% and 26-45 years was 12.1%. Among 66 close friends of the 385 respondents who consumed alcohol within lifetime, the highest number consumed beer (57.1%), followed by spirit (23.8%), wine (9.5%), local beverages (4.8%) and rum (9.5%). The amount of alcohol consumed within lifetime of <10 SD was by 76.2% which was the highest and 10-20 SD was by 23.8%. The frequency of alcohol consumed within lifetime of 1-2 times per month was by 3.2% which was the least, 3-4 times per month was by 4.8% and 5-6 times per month was by 92.1% which was the highest. Among 63 first close friends of the 385 respondents who consumed alcohol in last year, the highest number consumed beer (67.7%), followed by spirit (13.2%),wine (9.5%), local beverages (4.8%) and rum (4.8%). The amount of alcohol consumed in last year of 10-20 SD was the highest which was by 86.8% followed by > 20 SD was by 13.2%. The frequency of alcohol consumed in last year of 1-2 times per month was by 3.8% which was the least, 5-6 times a month was by 4.8% and ≥ 7 times per month was by 91.4% which was the highest. Among 26 first close friends of the 385 respondents who consumed alcohol in last 30 days, the highest number consumed beer (61.5%), followed by spirit (34.6%) and rum (3.8%). The amount of alcohol consumed within last 30 days of <10 SD was by 100%. The frequency of alcohol consumed within last 30 days of 1-2 times per month was by 61.5% which was the highest followed by 3-4 times per month was by 30.8% and 5-6 times per month was by 7.7%.

Table 14: Alcohol consumption by second close friends of respondents (n=9)

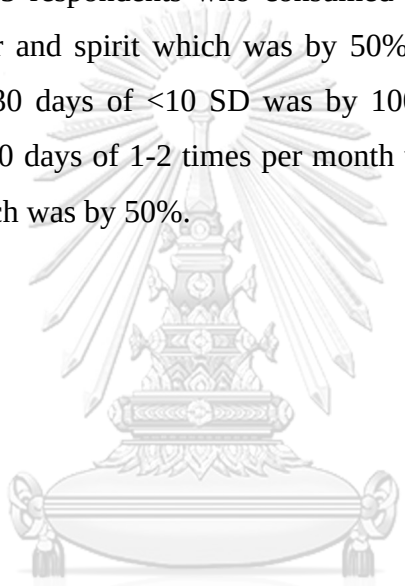
Variables	Category	n n(%)
Age at first drink	< 18 Years	8(88.9)
	18 - 25 Years	1(11.1)

Pattern	Lifetime n=9 n(%)	Last Year n=9 n(%)	Last 30 days n=4 n(%)
Type			
Beer	5(55.6)	5(55.6)	2(50)
Spirit	3(33.3)	3(33.3)	2(50)
Wine	1(11.1)	1(11.1)	0
Amount			
<10 SD	0	7(77.8)	4(100)
10-20 SD	7(77.8)	2(22.2)	0
>20 SD	2(22.2)	0	0
Frequency			
1-2 times/month	0	0	2(50)
3-4 times/month	0	4(44.4)	2(50)
5-6 times/month	0	3(33.3)	0
≥ 7 times/month	9(100)	2(22.2)	0

SD=Standard Drink

Table 14 shows that out of 9 second close friends of the 385 respondents who consumed alcohol, the age at first drink of <18 years was 88.9% which was the highest followed by 18-25 years which was 11.1%. Among 9 second close friends of the 385 respondents who consumed alcohol in lifetime, the highest number consumed beer (55.6%), followed by spirit (33.3%) and wine (11.1%). The amount of alcohol consumed in lifetime of 10-20 SD was by 77.8% which was the highest followed by

>20 SD which was by 22.2%. The frequency of alcohol consumed in lifetime of ≥ 7 times per month was by 100%. Among 9 second close friends of the 385 respondents who consumed alcohol within last year, the highest number consumed beer (55.6%) ,followed by spirit (33.3%) and wine (11.1%). The amount of alcohol consumed within last year of <10 SD was by 77.8% which was the highest followed by 10-20 SD which was by 22.2%. The frequency of alcohol consumed within last year of 3-4 times per month was by 44.4% which was the highest, followed by 5-6 times per month which was by 33.3% and ≥ 7 times per month was by 22.2%. Among 4 second close friends of the 385 respondents who consumed alcohol in last 30 days, equal number consumed beer and spirit which was by 50% each. The amount of alcohol consumed within last 30 days of <10 SD was by 100%. The frequency of alcohol consumed within last 30 days of 1-2 times per month was by 50% and 3-4 times per month was similar which was by 50%.



4.2 Part II- Bivariate Analysis

4.2.1 Association between sociodemographic characteristics of the respondents and pattern of alcohol consumption

Variables	Category	Male n=188 n (%)	Female n=197 n (%)
AUDIT Score of Respondents	Low risk drinkers	135(71.8%)	179(90.9%)
	Hazardous drinkers	52(27.7%)	18(9.1%)
	Dependence	1(0.5%)	0

According to the AUDIT scores, the respondents were categorized as low risk drinkers, hazardous drinkers and dependence. Since there was only one respondent who fell under the category of dependence, hazardous drinkers and dependence have been merged in under the same category.

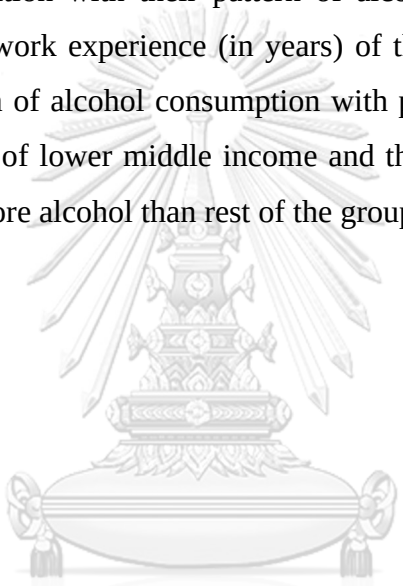
Table 15: Association between age, gender, marital status, address, religion, educational status, annual income and work experience of respondents

Variables	Low risk drinkers n=314 n(%)	Hazardous drinkers and Dependence n=71 n(%)	p-value
Age			
<25 years	33(10.5)	2(2.9)	<0.001*
25-45 years	271(86.3)	47(67.1)	
>45 years	10(3.2)	22(30)	
Gender			
Male	135(43)	53(74.3)	<0.001*
Female	179(57)	18(25.7)	
Marital status			
Single	166(52.9)	16(22.9)	<0.001*
Married	102(32.5)	34(47.1)	
Divorced	38(12.1)	14(20)	
Widowed	8(2.5)	7(10)	
Address			
Babesa	118(37.6)	27(38.6)	0.265
Changedephu	39(12.4)	9(12.9)	
Decheling	12(3.8)	7(10)	
Motithang	127(40.4)	27(37.1)	
Upper market	18(5.7)	1(1.4)	
Religion			
Buddhism	203(64.6)	56(78.6)	0.142
Hinduism	76(24.2)	9(12.9)	
Christianity	35(11.1)	6(8.6)	
Educational status			
Primary school	8(2.5)	1(1.4)	0.991
Middle school	17(5.4)	3(4.3)	
High school	39(12.4)	8(11.4)	
Degree and higher level	250(79.6)	59(82.9)	
Annual income			
Lower middle	239(76.1)	31(44.3)	<0.001*
Upper middle	75(23.9)	40(55.7)	
Work experience			
<10 years	243(77.4)	30(42.9)	<0.001*
10-20 years	66(21)	27(37.1)	
>20 years	5(1.6)	14(20)	

* Fisher's exact test

Table 15 shows that there was significant association between age, gender and marital status of the respondents and pattern of alcohol consumption with p-value of <

0.001. The age group between 25-45 years consumed more alcohol than the other age groups. Highest alcohol consumption was by females than by males. Those whose were single consumed maximum alcohol than those who were married, divorced and widowed. The address and religion of the respondent had no significant association between the patterns of alcohol consumption which means that the place where they resided and the religion, they followed had no relation with their alcohol consumption patterns. Similarly, educational status of the respondents had no significant association with the pattern of alcohol consumption which means their level of knowledge had no relation with their pattern of alcohol consumption. The annual income (in USD) and work experience (in years) of the respondents had significant association with pattern of alcohol consumption with p-value of <0.001. Those were fell under the category of lower middle income and those who had work experience <10 years consumed more alcohol than rest of the groups.



4.2.2 Association between characteristics of alcohol consumption and pattern of alcohol consumption of respondents

Table 16: Association between characteristics of alcohol consumption and pattern of alcohol consumption of respondents

Variables	Low risk drinkers n=314 n(%)	Hazardous drinkers and Dependence n=71 n(%)	p-value
Age at first drink			
18-25 years	186(59.2)	29(41.4)	<0.001*
26-45 years	128(40.8)	42(58.6)	
Reason for alcohol consumption			
Friends	16(5.1)	3(4.3)	0.682
Socialization	95(30.3)	19(25.7)	
Festival	28(8.9)	9(12.9)	
Family problems	81(25.8)	24(34.3)	
Financial problems	18(5.7)	3(4.3)	
No specific reason	76(24.2)	13(18.6)	
Expenses on alcohol			
<100 USD	314(100)	64(90)	<0.001*
100-200 USD	0	7(10)	
Health problems diagnosed by doctor			
No	303(96.5)	56(78.6)	<0.001*
Yes	11(3.5)	15(21.4)	

* Fisher's exact test

Table 16 shows that age at first drink of the respondents had significant association with pattern of alcohol consumption with p-value <0.001. Maximum respondents consumed alcohol for the first time at the age between 18-25 years. The reason for alcohol consumption had no significant association which means the reason for initiation of alcohol consumption for the first time by the respondents had no relation with alcohol consumption patterns. The expenses for alcohol in a month (in USD) and health problems diagnosed by doctor of the respondents had significant association with pattern of alcohol consumption with p-value < 0.001. Maximum respondents spent <100 USD per month on alcohol consumption and health problems diagnosed by doctor had relation with the pattern of alcohol consumption by the respondents.

4.2.3 Association between Type, amount and frequency of alcohol consumption by respondents in lifetime and pattern of alcohol consumption

Table 17: Association between Type, amount and frequency of alcohol consumption by respondents in lifetime and pattern of alcohol consumption

Variables	Low risk drinkers	Hazardous drinkers and Dependence	p-value
	n=314	n=71	
	n(%)	n(%)	
Type			
Beer	109(34.7)	29(41.4)	<0.001*
Spirit	51(16.2)	21(28.6)	
Rum	9(2.9)	6(8.6)	
Wine	87(27.7)	9(12.9)	
Local Beverages	58(18.5)	6(8.6)	
Amount			
10-20 SD	205(65.3)	31(44.3)	<0.001*
>20 SD	109(34.7)	40(55.7)	
Frequency			
1-2 times/month	6(1.9)	2(2.9)	0.418
5-6 times/month	29(9.2)	3(4.3)	
≥7 times/month	279(88.9)	66(92.7)	

SD=Standard Drink

* Fisher's exact test

Table 17 shows that type and amount of alcohol in SD consumed by respondents in lifetime had significant association with pattern of alcohol consumption with p-value <0.001. Maximum number of respondents consumed beer and highest number consumed 10-20 SD of alcohol which had relation with their alcohol consumption patterns. Frequency of alcohol consumption in times per month had no association with pattern of alcohol consumption which means the number of

times of alcohol consumed by respondents had no relation with their alcohol consumption patterns.

Table 18: Association between Type, amount and frequency of alcohol consumption by respondents in last year and pattern of alcohol consumption

Variables	Low risk drinkers n=314 n(%)	Hazardous drinkers and Dependence n=71 n(%)	p-value
Type			
Beer	124(39.5)	32(45.7)	<0.001*
Spirit	57(18.2)	21(28.6)	
Rum	10(3.2)	6(8.6)	
Wine	111(35.4)	10(14.3)	
Local Beverages	12(3.8)	2(2.9)	
Amount			
<10 SD	199(63.4)	20(28.6)	<0.001*
10-20 SD	115(36.6)	51(71.4)	
Frequency			
1-2 times/month	8(2.5)	2(2.9)	<0.001*
5-6 times/month	265(84.4)	34(48.6)	
≥7 times/month	41(13.1)	35(48.6)	

SD=Standard Drink

*Fisher's exact test

Table 18 shows that type, amount in SD and frequency in times per month of alcohol consumption by respondents in last year had significant association with pattern of alcohol consumption with p-values <0.001.Type of alcohol consumed most was beer, amount consumed <10 SD was the highest and frequency of 5-6 times/month was

most consumed by respondents, which had relation with their alcohol consumption patterns.

Table 19: Association between Type, amount and frequency of alcohol consumption by respondents in last 30 days and pattern of alcohol consumption

Variables	Low risk drinkers n=127 n(%)	Hazardous drinkers and Dependence n=60 n(%)	p-value
Type			
Beer	54(42.5)	29(49.2)	<0.001*
Spirit	22(17.3)	17(27.1)	
Rum	3(2.4)	4(6.8)	
Wine	43(33.9)	8(13.6)	
Local Beverages	5(3.9)	2(3.4)	
Amount			
<10 SD	111(87.4)	42(70)	0.249
10-20 SD	16(12.5)	18(30)	
Frequency			
1-2 times/month	82(64.5)	31(50.8)	0.223
5-6 times/month	42(33.1)	26(44.1)	
≥7 times/month	3(2.4)	3(5.1)	

SD=Standard Drink

*Fisher's exact test

Table 19 shows that type of alcohol consumed by respondents in last 30 days had significant association with pattern of alcohol consumption with p-value <0.001.The type of alcohol consumed most by the respondents was beer which had relation with their alcohol consumption patterns. Amount in SD and frequency in times per month of alcohol consumed by respondents in last 30 days had no

significant association with pattern of alcohol consumption which means the quantity and number of times of alcohol consumption by respondents had no relation with their alcohol consumption patterns.

4.2.4 Association between alcohol consumption by family members and pattern of alcohol consumption

Table 20: Association between alcohol consumption by family members and pattern of alcohol consumption

Variables	Low risk drinkers n=92 n(%)	Hazardous drinkers and Dependence n=17 n(%)	p-value
Brother	30(32.6)	8(47.1)	
Husband	6(6.5)	2(11.8)	
Mother	22(23.9)	2(11.8)	0.559
Father	29(31.5)	4(23.5)	
Sister	3(3.3)	0	
Wife	2(2.2)	1(5.9)	

Table 20 shows that there was no association between the alcohol consumption by family members of the respondents and the pattern of alcohol consumption which means that having family members who consumed alcohol had no relation with the alcohol consumption patterns of the respondents. The number of sisters (3) and wives (3) were very few, hence test for association for them was not done.

4.2.5 Association between type, amount and frequency of alcohol consumption by close friends and pattern of alcohol consumption

Table 21: Association between type, amount and frequency of alcohol consumption by close friends of respondents in lifetime and pattern of alcohol consumption

Variables	Low risk drinkers n=53 n(%)	Hazardous drinkers and Dependence n=13 n(%)	p-value
Age at first drink			
18-25 years	47(88.7)	10(76.9)	0.351
26-45 years	6(11.3)	3(23.1)	
Type			
Beer	35(64)	4(30.8)	<0.001*
Spirit, Rum, Wine and Local beverages	18(36)	9(69.2)	
Amount			
10-20 SD	46(86)	5(38.5)	<0.001*
>20 SD	7(14)	8(61.6)	
Frequency			
1-2 times/month	37(69.8))	7(53.8)	0.273
5-6 times/month	16(30.1)	6(46.1)	

SD=Standard Drink

*Fisher's exact test

Table 21 shows that age at first drink and frequency in times per month of alcohol consumed by close friends of respondents in lifetime had no significant association with pattern of alcohol consumption which means the first time alcohol

consumption and number of times of alcohol consumed by close friends had no association with the alcohol consumption patterns of the respondents. Type and amount in SD of alcohol consumed had significant association with pattern of alcohol consumption with p-values <0.001. The type of alcohol consumed most by close friends was beer and amount consumed most was 10-20 SD which both had relation with the alcohol consumption patterns of the respondents.

Table 22: Association between type, amount and frequency of alcohol consumption by close friends of respondents in last year and pattern of alcohol consumption

Variables	Low risk drinkers n=53 n(%)	Hazardous drinkers and Dependence n=13 n(%)	p-value
Type			
Beer	35(66)	3(23.1)	<0.001*
Spirit, Rum, Wine and Local Beverages	18(34)	10(76.9)	
Amount			
<10 SD	40(75.5)	5(38.5)	<0.001*
10-20 SD	13(24.5)	8(61.5)	
Frequency			
1-2 times/month	19(35.9)	4(30.8)	<0.001*
3-4 times/month	34(64.1)	9(69.2)	

SD=Standard Drink

*Fisher's exact test

Table 22 shows that type, amount in SD and frequency in times per month of alcohol consumed by close friends of respondents in last year had significant

association with pattern of alcohol consumption with p-values <0.001. The type of alcohol consumed most was beer, amount consumed most was <10 SD and highest frequency consumed by close friends was 3-4 times a month, all of which had relation with alcohol consumption patterns of the respondents.

Table 23: Association between type, amount and frequency of alcohol consumption by close friends of respondents in last 30 days and pattern of alcohol consumption

Variables	Low risk drinkers n=13 n(%)	Hazardous drinkers and Dependence n=13	p-value n(%)
Type			
Beer	7(53.8)	4(30.8)	<0.001*
Spirit and Rum	6(46.1)	9(69.2)	
Amount			
<10 SD	7(53.8)	4(30.7)	0.244
10-20 SD	6(46.1)	9(69.2)	
Frequency			
1-2 times/month	8(61.5)	7(53.8)	0.426
3-4 times/month	5(38.5)	6(46.1)	

SD=Standard Drink

*Fisher's exact test

Table 23 shows that type of alcohol consumed by close friends of respondents in last 30 days had significant association with pattern of alcohol consumption with p value<0.001. The type of alcohol consumed most by close friends was beer which had a relation with alcohol consumption patterns of the respondents. The amount in SD and frequency of alcohol consumed in times per month in last 30 days had no significant association with pattern of alcohol consumption which means that the quantity and number of times of alcohol consumed by close friends had no relation with alcohol consumption patterns of the respondents.

5 DISCUSSION, CONCLUSION AND RECOMMENDATION

The objective of this study was to assess the pattern of alcohol consumption among Government employees in Thimphu, Bhutan. Structured questionnaires including Alcohol Use Disorder Identification Test (AUDIT) was used for face to face interview with 385 respondents.

5.1 Summaries and Discussion

In this study, a total of 385 respondents were enrolled which had 188 males (48.8%) and 197 females (51.1%). Most males (79.3%) and females (85.8%) were between the age of 25-45 years. Females (48.7%) who were single were slightly more than males (45.7%) while the least number of males (4.8%) and females (3%) were widowed. Highest number of females (41.6%) resided in Motithang while most males (39.4%) resided in Babesa. The least number of males (5.3%) and females (4.6%) resided in Upper market. Males (75%) who followed Buddhism was higher than females (59.9%) while females (12.2%) who followed Christianity was slightly more than males (9%). Females (81.2%) who attended degree and higher education was slightly more than males (79.3%). Least of the males (2.1%) and females (2.5%) attended education only till primary level. Higher number of females (75.6%) fell under the category of lower middle income than males (64.4%) while a greater number of males (35.6%) fell under the category of upper middle income than females (24.4%). More females (74.6%) had job experience less than 10 years than males (67%) while similar number of both males (25%) and females (23.4%) had job experience between 10-20 years.

In terms of age at first drink, more males (60.6%) than females (51.3%) were between the age of 18-25 years while there were more females (48.7%) than males (39.4%) who had their age at first drink between 26-45 years. Maximum males (27.7%) showed family problems while highest females (32.5%) showed socialization as the reason for alcohol consumption for first time while least number of males (5.3%) and females (5.6%) showed financial problems as the reason for alcohol

consumption for first time. All of the females (100%) spent less than 100 USD in a month on alcohol consumption than males (96.3%). Only a few males (3.7%) spent 100-200 USD per month on alcohol consumption. Slightly higher number of males (8%) had health problems than females (5.6%). Maximum males (54.3%) consumed beer while highest females (59.9%) consumed wine, slightly higher females (59.4%) than males (54.3%) consumed <10 SD of alcohol and more females (80.7%) than males (74.5%) consumed alcohol for 5-6 times/month in lifetime. In last year highest males (52.7%) consumed beer and maximum females (68.5%) consumed wine, slightly more females (40.6%) than males (36.7%) consumed >20 SD of alcohol and similar number of males (89.4%) and females (89.8%) consumed alcohol for > 7 times a month. In last 30 days, maximum males (55.7%) consumed beer while highest females (57.8%) consumed wine, similar number of females (98.7%) and males (98%) consumed <10 SD of alcohol and more females (66.2%) than males (55.7%) consumed alcohol for 1-2 times/month. The respondents who had family members who consumed alcohol had more females (31.5%) than males (22.9%).

In lifetime, the type of alcohol consumed most by brothers (60.5%) was beer, highest brothers (52.6%) consumed <10 SD of alcohol and maximum brothers (57.9%) consumed alcohol for 5-6 times/month. In last year, maximum brothers (61.1%) consumed beer, highest brothers (63.9%) consumed 10-20 SD of alcohol and most brothers (97.2%) consumed alcohol for >7 times/month. In last 30 days, the type of alcohol consumed most by brothers (52.2%) was beer, highest brothers (95.7%) consumed <10 SD of alcohol and maximum brothers (65.2%) consumed alcohol for 1-2 times/month. In lifetime, the type of alcohol consumed most by husbands (37.5%) was beer, highest husbands (50%) consumed 10-20 SD and > 20 SD of alcohol and maximum husbands (87.5%) consumed alcohol for >7 times/month. In last year, maximum husbands (37.5%) consumed local beverages, highest husbands (50%) consumed <10 SD and 10-20 SD of alcohol and most husbands (62.5%) consumed alcohol for >7 times/month. In the last 30 days, the type of alcohol consumed most by husbands (33.3%) was local beverages, highest husbands (50%) consumed <10 SD and 10-20 SD of alcohol and maximum husbands (62.5%) consumed alcohol for >7 times/month.

In lifetime, the type of alcohol consumed most by mothers (45.8%) was local beverages, highest mothers (79.2%) consumed 10-20 SD of alcohol and all mothers (100%) consumed alcohol for >7 times/month. In last year, maximum mothers (45.8%) consumed local beverages, highest mothers (83.3%) consumed 10-20 SD of alcohol and most mothers (54.2%) consumed alcohol for 5-6 times/month. In last 30 days, the type of alcohol consumed most by mothers (41.2%) was local beverages, all mothers (100%) consumed <10 SD of alcohol and maximum mothers (70.6%) consumed alcohol for 1-2 times/month. In lifetime, all sisters (100%) consumed wine, all sisters (100%) consumed <10 SD of alcohol and all sisters (100%) consumed alcohol for >7 times/month. In last year, all sisters (100%) consumed wine, all sisters (100%) consumed <10 SD of alcohol and each sister (33.3%) consumed alcohol for 1-2 times/month, 3-4 times/month and 5-6 times/month. None of the sisters consumed alcohol in the last 30 days. In lifetime, the type of alcohol consumed most by wives (66.7%) was wine, all wives (100%) consumed 10-20 SD of alcohol and all wives (100%) consumed alcohol for >7 times/month. In last year maximum wives (66.7%) consumed wine, highest wives (66.7%) consumed <10 SD of alcohol and most wives (66.7%) consumed alcohol for 3-4 times/month. None of the wives consumed alcohol in the last 30 days.

In lifetime, the type of alcohol consumed most by fathers (33.3%) was spirit, highest fathers (90.0%) consumed >20 SD of alcohol and all fathers (100%) consumed alcohol for >7 times/month. In last year, maximum fathers (33.3%) consumed spirits, highest fathers (90.9%) consumed 10-20 SD of alcohol and most fathers (54.5%) consumed alcohol for >7 times/month. In last 30 days, the type of alcohol consumed most by fathers (34.8%) was spirit, all fathers (100%) consumed <10 SD of alcohol and maximum fathers (52.2%) consumed alcohol for 3-4 times/month. The respondents who had close friends who consumed alcohol had more females (20.3%) than males (13.3%). In lifetime, the type of alcohol consumed most by first close friends (57.1%) was beer, highest first close friends (76.2%) consumed <10 SD of alcohol and maximum first close friends (92.1%) consumed alcohol for >7 times/month. In last year, maximum first close friends (67.7%) consumed beer, highest first close friends (86.8%) consumed 10-20 SD of alcohol and most first close

friends (91.4%) consumed alcohol for >7 times/month. In last 30 days, the type of alcohol consumed most by first close friends (61.5%) was beer, all first close friends (100%) consumed <10 SD of alcohol and maximum first close friends (61.5%) consumed alcohol for 1-2 times/month.

In lifetime, the type of alcohol consumed most by second close friends (55.6%) was beer, highest second close friends (77.8%) consumed 10-20 SD of alcohol all second close friends (100%) consumed alcohol for >7 times/month. In last year, maximum second close friends (55.6%) consumed beer, highest second close friends (77.8%) consumed <10 SD of alcohol and most second close friends (44.4%) consumed alcohol for 3-4 times/month. In last 30 days, the type of alcohol consumed most by second close friends (50%) was beer, all second close friends (100%) consumed <10 SD of alcohol and highest second close friends (50%) consumed alcohol for 1-2 times/month.

From 385 respondents who consumed alcohol within lifetime, the type of alcohol consumed most by males (54.3%) was beer and by females (59.9%) was wine. There are varieties of beer and wine produced in Bhutan which are cheaper when compared to other varieties of alcohol and these are the type of alcohol which are ready to drink which makes it easy and convenient for the consumers. Another study on drinking risk level and alcohol consumption showed similar results in which beer was the most common alcohol preferred by males(85). A report published by MCM Research Limited, revealed that males mostly consumed beer and wine was preferred mostly by females(96). Hence it can be concluded that the results in this study are consistent when compared to previous studies.

The amount of alcohol consumed within lifetime was slightly higher by females (59.4%) than by males (54.4%). The frequency of alcohol consumed within lifetime of was also slightly higher by females (80.7%) than by males (74.5%). However, the results in the male and female drinking patterns weren't too far from each other because the gender gap between male and females are getting close in the recent years. A study on introduction to special issue gender, culture and problem: a

multinational study, showed that drinking behaviors of both males and females were similar as the rates for females have risen up in the recent years(97). Among 385 respondents who consumed alcohol, they were ranked into three categories based on their AUDIT (according to WHO guideline) scores namely Low risk drinkers (Score 0-7), Hazardous drinkers (Score 8-15) and Dependence (Score 16-19). The highest number of females (90.9%) fell under the category of low risk drinkers. Maximum number of males (27.7%) were hazardous drinkers. Only one male (0.5%) fell under the category of dependence. A study on alcohol consumption pattern among workers and socio-economic profile showed similar results where most females (66.9%) fell under low risk drinkers whereas under high risk and dependence males (65.9%) were more(87). Therefore, the results in this study were consistent when compared to previous study.

Socio-demographic characteristics are the most influential factors which plays an important role to the pattern of alcohol consumption. In this study, the socio-demographic factors of government employees in Thimphu, Bhutan included age, gender, marital status, residence, religion, education, income and work experience. Age had significant association with pattern of alcohol consumption. This study showed that the highest number of alcohol consumption was between the age of 25-45 years. A study on drinking patterns among Korean adults, showed similar results in which maximum number of alcohol consumption was between the age of 25-45 years(88). Gender had significant association with pattern of alcohol consumption. A study in India on prevalence and pattern of alcohol consumption using Alcohol Use Disorders Identification Test(AUDIT) showed similar results where gender showed association with pattern of alcohol consumption(89). Hence these findings in this study are consistent with the findings in previous study.

Marital status also showed significant association. Maximum alcohol consumption was seen in males who were single and females who were divorced. A study on associations between marital status and alcohol consumption in a longitudinal study of female twins, showed that marital status was associated with a large proportion of the decline in consumption prior to age 30. Women who later

divorced drank more than women who stayed married and divorced women who remarried drank less than divorced women who did not remarry(90). The annual income (in USD) and work experience (in years) of the respondents had significant association with pattern of alcohol consumption. It is clear that those who work for longer period of time tend to consume more alcohol as they seem to have more savings than those who have been working for a shorter period of time. Also, the annual income plays a significant role in alcohol consumption patterns. Those who earn more are likely to spend more money on alcohol consumption. A study on the relationship between alcohol use and earnings, showed that the more people earned, the more money they spent on alcohol consumption(91). Most of the males and females who consumed highest alcohol attended degree and higher education. A study on binge drinking among youth and young adults in the United States proved that those who had higher education consumed more alcohol than those who had lower education(98).

Age at first drink had significant association with pattern of alcohol consumption. In this study, the initiation of alcohol consumption was the highest between the age of 18-25 years while another study revealed that age at first drink was highest in other age groups. Hence the findings of this study is not consistent with the findings of that study(99). A study on relation between age at first drink and adult life drinking patterns in alcohol-dependent patients revealed that age at first drink had its influence on later life drinking patterns(92). Highest number of females showed socialization (32.5%) and highest males (27.7%) showed family problems as the reason for first alcohol consumption. According to social theory, the environment where a person is surrounded by greatly influences their alcohol consumption behaviors such as by their close friends and family members. A study on alcohol use behaviors among pharmacy students at Auburn University revealed socialization had significant association with alcohol consumption behaviors of a person(100). People who abused alcohol on more occasions were more likely to have come from socially disadvantaged family backgrounds and practiced the habit to overcome their problems(68).The findings in this study were consistent with the other studies which had similar results. Expenses on alcohol in a month had significant association with

pattern of alcohol consumption. A study on the relationship between alcohol use and earnings, showed that the more people earned, the more money they spent on alcohol consumption(91). Similarly, health problems diagnosed by doctor had significant association with the pattern of alcohol consumption. In this study, males who had health problems was slightly higher than females. An article on Adolescent alcohol use: Risks and consequences showed that massive alcohol consumption during late adolescence tends to persist into adulthood and is highly associated with alcohol consequences like dependency, decreased work capacities and even death. Therefore an early detection of these risk factors would be beneficial in prevention and decreasing the consequences related to alcohol consumption(35).

5.2 Conclusion

This study assessed the pattern of alcohol consumption among government employees in Thimphu, Bhutan. Five types of alcoholic beverages are commonly used in Bhutan. Among them beer was the most preferred alcohol by males and wine was mostly consumed by females. It showed that females (80.7%) consumed more alcohol than males (74.5%) in lifetime. Maximum number of males fell under the category of hazardous drinkers (27.7%), majority of females (90.9%) were low risk drinkers, while only one male (0.5%) was categorized under dependence. From the family members of the respondents who consumed alcohol, highest number was consumed by brothers (34.9%) and the least was consumed by sisters (2.8%) and wives (2.8%). Among close friends of the respondents, 33.6% consumed alcohol.

There was significant association between age, gender, marital status, annual income (in USD) and work experience (in years) of the respondents with pattern of alcohol consumption. Similarly, age at first drink, the expenses for alcohol in a month (in USD) and health problems diagnosed by doctor of the respondents had significant association with pattern of alcohol consumption. Type and amount of alcohol in SD consumed by respondent in lifetime had significant association with pattern of alcohol consumption. Type, amount in SD and frequency in times per month of alcohol consumption by respondents in last year had significant association with pattern of

alcohol consumption. Type of alcohol consumed by respondent in last 30 days had significant association with pattern of alcohol consumption. Type and amount in SD of alcohol consumed in lifetime by close friends of the respondents had significant association with pattern of alcohol consumption. Type, amount in SD and frequency in times per month of alcohol consumed by close friends of respondents in last year had significant association with pattern of alcohol consumption. Type of alcohol consumed by close friends of respondents in last 30 days had significant association with pattern of alcohol consumption.

5.3 Limitation of the Study

The government employees who were on leave or who were not present at work due to various reasons were not included in the study. The study process was done in a single setting. The result could not be generalized to all the employees in Thimphu, Bhutan because the study sample represented only government employees in Thimphu, Bhutan. The population characteristics could perhaps be different from other areas, in terms of income, monthly expenses and lifestyle depending upon the socio-economy in different areas. Also, there are other districts in Bhutan which were not included in this study, hence the results could vary in different areas based of climatic, economic and geographical factors.

5.4 Expected Benefit & Application

- The expected benefit and application of this study are mentioned as follows:
- This study helped the researcher to determine the pattern of alcohol consumption among government employees in Thimphu, Bhutan.
- It will also help for policy making and implementing rules and regulations regarding sale and consumption of alcohol.
- It can also be used for further research based on similar topic.
- It can provide an information base for future intervention for prevention of alcohol and alcohol-related consequences in order to have future benefits for related organizations.

- The related organizations can have future concerns and can imply stronger policies on alcohol consumption in different fields in order to prevent alcohol-related consequences which could occur by harmful consumption of alcohol.

5.5 Recommendation

Based on the results of this study the following recommendation could be considered:

- The policy makers can take necessary action to reduce the situation of alcohol consumption among government employees in Thimphu, Bhutan.
- There can be reduction of sales of alcohol impicated by the Government.
- Also various campaigns and banners regarding the ill-consequences of alcohol consumption can be put up through media and various other resourses.
- Taxes on alcohol can be increased and sales of alcohol could be restricted at certain hours of they day.
- Drunk driving could be monitored more strictly, by imposing huge penalties and making rules which are very strict.
- Regular monitoring of bars could be done ensuring they keep up with the rules and regulations set up by the governement.
- Further research on the pattern of alcohol consumption in various other sectors like private, corporate and non-government instituions can also be initiated.

QUESTIONNAIRES

Thesis Title:

Pattern of Alcohol Consumption among Government Employees in Thimphu, Bhutan

Identification of Number: | | | | |

Name of Interviewer.....

Date of Interview:.....

Start Time .....Finish Time .....

Study Setting

This study will take place in Thimphu, Bhutan to assess the pattern of alcohol consumption among Government employees in Thimphu, Bhutan. There are a total of 10 ministries under His Majesty's Government in Thimphu, Bhutan. The legal age for recruitment of Government employees is 18 years and the age of retirement is 60 years. Only regular employees on a fixed pay scale basis will be recruited. Both the genders will be included. Screening test using the WHO standard AUDIT questionnaire will be used. Only those respondents who pass the screening test will be eligible for the main interview.

Part I : Socio-demographic Information

1. **How old are you? …..… years**

2. **Gender**

- ☐ Male
- ☐ Female

3. **What is your religion?**

- ☐ Buddhism
- ☐ Hinduism
- ☐ Christianity
- ☐ Others. Please specify.....

4. Where do you reside?.....Please specify the location

5. What is your marital status?

- ☐ Single
- ☐ Married
- ☐ Divorced
- ☐ Widowed

6. What is the highest level of education you attained?

- ☐ Primary school
- ☐ Middle school
- ☐ High school
- ☐ Degree and higher level

7. What is your present occupation? Please specify.....

8. What is your monthly income in Bhutanese currency? Nu.....

9. What is your work experience? Please specify.....

Part II : Assessment of pattern of alcohol consumption

10. Do you have any family members who consume alcohol?

☐ No ☐ Yes

If yes, describe the relationship

(a).....

Age at first drink.....Years

☐ Lifetime

Type of alcohol consumption.....

Average amount of alcohol consumption.....

Average frequency of alcohol consumption.....

☐ Within last year

Type of alcohol consumption .....

Average amount of alcohol consumption.....

Average frequency of alcohol consumption.....

☐ Within last month

(a) Type of alcohol consumption .....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alohol consumption.....

(b).....

Age at first drink.....Years

☐ Lifetime

Type of alcohol consumption.....

Average amount of alcohol consumption.....

Average frequency of alcohol consumption.....

☐ Within last year

Type of alcohol consumption.....

Average amount of alcohol consumption.....

Average frequency of alcohol consumption.....

☐ Within last month

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption .....

(c).....

Age at first drink.....Years

☐ Lifetime

Type of alcohol consumption.....

Average amount of alcohol consumption.....

Average frequency of alcohol consumption.....

☐ Within last year

Type of alcohol consumption.....

Average amount of alcohol consumption.....

Average frequency of alcohol consumption.....

☐ Within last month

Type of alcohol consumption.....

Average amount of alcohol consumption.....

Average frequency of alcohol consumption.....

(d).....

Age at first drink.....Years

☐ Lifetime

Type of alcohol consumption.....

Average amount of alcohol consumption.....

Average frequency of alcohol consumption.....

☐ Within last year

Type of alcohol consumption.....

Average amount of alcohol consumption.....

Average frequency of alcohol consumption.....

☐ Within last month

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

11. Do anyone of your close friends consume alcohol?

☐ No ☐ Yes (How many close friends?)----------

(a)Age at first drink..... Years

☐ Lifetime

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

☐ Within last year

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

☐ Within last month

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

(b)Age at first drink..... Years

☐ Lifetime

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

☐ Within last year

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

☐ Within last month

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

(c)Age at first drink..... Years

☐ Lifetime

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

☐ Within last year

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

☐ Within last month

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

(d)Age at first drink..... Years

☐ Lifetime

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

☐ Within last year

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

☐ Within last month

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

12. Alcohol consumption

Types of alcohol	Lifetime		Last 1 year		Last 30 days	
	No	Yes	No	Yes	No	Yes
Beer						
Spirit						
Rum						
Wine						
Local Beverages						

13. Lifetime

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

14. Last 1 year

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

15. Last 30 days

(a) Type of alcohol consumption.....

(b) Average amount of alcohol consumption.....

(c) Average frequency of alcohol consumption.....

16. In the last 1 year how many days have you been binge drinking?

Approx..... days

17. In the days that you have been binge drinking, can you please tell:

(a) Type of binge drinking.....

(b) Amount of binge drinking.....

(c) Frequency of binge drinking.....

18. When did you start alcohol consumption?

……. Years of age

19. What was the reason for you to consume alcohol for the first time(Multiple answers allowed, please rank in order)?

☐ Friends

☐ Socialization

☐ Festival

☐ Family problems

☐ Financial problems

☐ No specific reason

☐ Others. Please specify.....

20. How much money do you spend each month for alcohol consumption?

Spend about .....Nu per month

21. Have you had any accidents due to alcohol consumption?

☐ No ☐ Yes

If yes, please specify.....

22. Do you have any beliefs in consuming alcohol?

☐ No ☐ Yes

If yes, please specify.....

23. Do you have any health problems diagnosed by a doctor or have any medical records?

☐ No ☐ Yes

If yes, please specify.....

24. Do you take any medicines regarding this health problem?

☐ No ☐ Yes

If yes, please specify.....

Part III(Screening) :Alcohol Use Disorder Identification Test(AUDIT)

25. Assessment of Alcohol Use Disorder within last one year

Questions	0	1	2	3	4	
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	
3. How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year	
					Total	

REFERENCES

REFERENCES

1. Rehm, Jürgen;, Shield, D; K, Rehm, X; M, et al. Alcohol consumption, alcohol dependence, and attributable burden of disease in Europe: Potential gains from effective interventions for alcohol dependence. 2012.
2. WHO. Per capita consumption of alcoholic beverages. 2005.
3. WHO. Global status report on alcohol and health 2018 2018 [Available from: https://www.who.int/substance_abuse/publications/global_alcohol_report/en/.
4. WHO. Global Status Report On Alcohol And Health 2011. 2011.
5. WHO. Global Status Report on Alcohol and Health 2011.
6. WHO. Global Status Report On Alcohol And Health 2011 2011 [Available from: https://www.who.int/substance_abuse/publications/global_alcohol_report/msbgsruprofiles.pdf.
7. WHO. Report. 2012.
8. BLLS. Alcohol consumption in Bhutan. 2007.
9. Monahan JL, Lannutti PJ. Alcohol as Social Lubricant: Alcohol Myopia Theory, Social Self-Esteem, and Social Interaction. Human Communication Research. 2006;26(2):175-202.
10. Dorji L. Alcohol use and abuse in Bhutan. 2009.
11. NCB. National Policy and Strategic Framework To Reduce Harmful Use of Alcohol. 2015.
12. MOH. Annual Health report. 2017.
13. NSB. Dzongkhag statistics bureau 2010 2010. Available from: http://www.nsb.gov.bt/publication/publications.php?id=9.
14. RCSC. Civil Service Statistics 2017. 2017.
15. WHO. Recorded per capita alcohol consumption. 2010.
16. Bureau NS. The use and abuse of alcohol in Bhutan. 2012.
17. Dendup T. Alcohol consumption and academic performance among higher secondary students in Thimphu, Bhutan. Nov 2016.
18. WHO. European Charter on Alcohol 2012.
19. Peele. The social learning theory1984.

20. Pillai A, Nayak MB, Greenfield TK, Bond JC, Nadkarni A, Patel V. Patterns of alcohol use, their correlates, and impact in male drinkers: a population-based survey from Goa, India. Social psychiatry and psychiatric epidemiology. 2013;48(2):275-82.
21. Gómez P, Moure-Rodríguez L, López-Caneda E, Rial A, Cadaveira F, Caamaño-Isorna F. Patterns of Alcohol Consumption in Spanish University Alumni: Nine Years of Follow-Up. Frontiers in psychology. 2017;8:756.
22. Moskalewicz J. Alcohol consumption measures. 2010.
23. UNODC. World Drug Report. 2010.
24. WHO. Global status report on alcohol and health. 2011.
25. WHO. World Health Report. 2015.
26. BBC. BBC Report. 2005.
27. Lasebikan VO, Ayinde O, Odunleye M, Adeyefa B, Adepoju S, Fakunle S. Prevalence of alcohol consumption and alcohol use disorders among outdoor drinkers in public open places in Nigeria. BMC public health. 2018;18(1):400.
28. M L. prevalance of Alcohol use disorders among under and post-graduate healthcare students in Italy. . April 24,2017.
29. WHO. Key Fact of Alcohol 2018 [Available from: https://www.who.int/news-room/fact-sheets/detail/alcohol.
30. Mohler-Kuo DKW. Risks of alcohol use. 2004.
31. Corrao. Alcohol and violence. 2004.
32. Journal AP. Alcohol and it's consequences. March,2015.
33. WHO. Alcohol and associated problems in low and middle income countries. 2016.
34. Graham K, Bernards S, Knibbe R, Kairouz S, Kuntsche S, Wilsnack SC, et al. Alcohol-related negative consequences among drinkers around the world. Addiction (Abingdon, England). 2011;106(8):1391-405.
35. Marshall EJ. Adoloescent alcohol use:Risks and Consequences. Jan 8,2014.
36. Shield KD, Parry C, Rehm J. Chronic diseases and conditions related to alcohol use. Alcohol research : current reviews. 2014;35(2):155-73.

37. Tembo C BS, Kalembo F. The association between levels of alcohol consumption and mental health problems and academic performance among young university students. June 28,2017.
38. Reinaldo AMdS, Pillon SC. Alcohol effects on family relations: a case study. Aug,2008.
39. Groh DR, Jason LA, Davis MI, Olson BD, Ferrari JR. Friends, family, and alcohol abuse: an examination of general and alcohol-specific social support. The American journal on addictions. 2007;16(1):49-55.
40. Sudhinaraset M, Wigglesworth C, Takeuchi DT. Social and Cultural Contexts of Alcohol Use: Influences in a Social-Ecological Framework. Alcohol research : current reviews. 2016;38(1):35-45.
41. SAH. Health/safety ,legal and social consequences of drinking too much(SA Health,Government of South Australia). 2015.
42. Mulia N, Zemore SE, Murphy R, Liu H, Catalano R. Economic loss and alcohol consumption and problems during the 2008 to 2009 U.S. recession. Alcoholism, clinical and experimental research. 2014;38(4):1026-34.
43. Burke TR. The economic impact of alcohol abuse and alcoholism. Public health reports (Washington, DC : 1974). 1988;103(6):564-8.
44. Keyes KM HM, Grant BF, Hasin DS. Stress and alcohol(Epidemiologic evidence). 2012.
45. Cservenka A B. The burden of binge and heavy drinking on the brain:effetcs on adolescene and young adult neural structure and function. 30 June,2017.
46. WHO. Global report on alcohol consumption. 2004.
47. Hibell. Gender gap for alcohol consumption. 2004.
48. Jennison. Alcohol consumption and health outcomes. 2004.
49. Spear. Early age of alcohol onset and it's effects. 2004.
50. Tapert. Adolescence and alcohol consumption. 2001.
51. Shu T. Alcohol consumption and it's risks. 2004.
52. Lang. High school students and alcohol use. 1985.
53. Johnston B, & O'Malley. Alcohol-based survey among high school students. 1980.

54. Abreu RMRBÂMMd. Alcohol consumption pattern among workers and socioeconomic profile. April,2014.
55. Susanna Awoliyi DB, Norman Parkinson, Victor R. Preedy. Alcohol misuse among university staff:a cross-sectional study. July 29,2014.
56. Dillon. Factors contributing to use alcohol and drug. 2007.
57. Clayton. Risk factors for alcohol consumption. 1992.
58. UNODC. The factors related to alcohol use. 2000.
59. Johnson. The basic risk factors for alcohol consumption. 1990.
60. Kandel L. The gateway theories. 1984.
61. Bachman. Age and gender can help predict the course of alcohol consumption as suggested by factors related to host. 1991.
62. Callen. The crutial risk period for alcohol consumption. 1985.
63. Soundararajan S, Narayanan G, Agrawal A, Prabhakaran D, Murthy P. Relation between age at first alcohol drink & adult life drinking patterns in alcohol-dependent patients. The Indian journal of medical research. 2017;146(5):606-11.
64. Maimaris W1 MJ. Age of first drinking and adult alcohol problems:Systemic review of prospective studies. Nov 18,2013.
65. Barnes W, Hoffman. the relationship of alcohol consumption and deliquency by examining gende. 2002.
66. Richard W. Wilsnack SCW, 1 Arlinda F. Kristjanson,1 Nancy D. Vogeltanz-Holm,1 and Gerhard Gmel2. Gender and alcohol consumption-pattern from the multination genacis project. 2009.
67. Rha EY1 KH, Han K, Park Y, Yoo G. Gender-specific relationship between alcohol consumption and injury in the South Korean adults-A nationwide cross sectional study. April,2017.
68. Horwood F. People who abused alcohol on more occasions were more likely to have scome from socially disadvantaged family backgrounds. 1997.
69. McLoyd G. The achievemnet of academics greatly depends upon the family income and also reduces the chances of getting involved in alcohol abuse and other ill behaviourial practices,which is followed by parental occupation and education 2004.

70. Barnes. children belonging to nuclear families had significantly very low levels of delinquency than those living with single parents. 2002.
71. Engs RC. Family background of alcohol abuse and its relationship to alcohol consumption among college students: an unexpected finding. Journal of studies on alcohol. 1990;51(6):542-7.
72. Labrie JW, Migliuri S, Kenney SR, Lac A. Family history of alcohol abuse associated with problematic drinking among college students. Addictive behaviors. 2010;35(7):721-5.
73. Dillon L, et. al. Factors contributing to alcohol use and drug. 2007.
74. Kristen P. Lindgren a, b Peter M. Mullins,b Clayton Neighbors,b and Jessica A. Blayneyb. Curiosity killed the cocktail?Curiosity,sensation seeking and alcohol related problems in college women. 2011.
75. Indiran Govender caKN, 2 and Xolile M. Sibuyi3. An exploration of alcohol use amongst undergraduate female psychology students at a South African University. 2017.
76. Mayer JF, W.J. The Adolescent Alcohol Involvement Scale. 1979.
77. C.Cole MTMJ. The relationship between alcohol use and peer pressure susceptibility, peer popularity and general conformity in Northern Irish school children. 2012.
78. Ashley Brooks-Russell BS-M, Denise Haynie, Tilda Farhat, and Jing Wang. Longitudinal Relationship Between Drinking with Peers, Descriptive Norms, and Adolescent Alcohol Use. 2014.
79. NIAAA N-b. Standard drink. 2012.
80. F.Babor T. Screening tests for alcohol consumption. 2011.
81. Selin. AUDIT-C. 2003.
82. Wechsler. The social theory on alcohol. 1995.
83. Green K. The concept of binge drinking. 1999.
84. W J. Family History of Alcohol Abuse Associated With Problematic Drinking Among College Students. July,2011.
85. Hongthong D. Drinking risk level and alcohol consumption. 2012.
86. al Me. Alcohol consumption in 0.5 million people from 10 diverse regions of China. 2013.

87. Brites RMR. Alcohol consumption pattern among worker and socio-economic profile. 2014.
88. Maxwell CM. Drinking pattern among Korean adults. 2009.
89. Kumar Va. Prevalance and pattern of alcohol consumption using Alcohol Use Disorders Identification Test(AUDIT). 2013.
90. Journal PM. Associations between marital status and alcohol consumption in a longitudinal study of female twins. 2001.
91. Syvänen H. The Relationship between Alcohol Use and Earnings. 2011.
92. Research IJoM. Relation between age at first alcohol drink & adult life drinking patterns in alcohol-dependent patients. Nov,2017.
93. CSS. Civil Servive Statistics. 2017.
94. Gache. AUDIT-Validity and Reliability. 2005.
95. Dybek. AUDIT cut off values. 2006.
96. Research M. Report of research and consultation conducted by MCM Research Ltd. for wine intelligence. 2004.
97. Bloomfield. Introduction to special issue gender, culture and alcohol problem: a multi-national study. Alcohol and Alcoholism. 2006.
98. A G. Binge drinking among youth and young adults in the United States. Journal of the American Academy of Child and Adoloscent Psychiatry. 2009.
99. RW H. Age of drinking onset and injuries, motor vehicle crashes, and physical fights after drinking and when not drinking. Alcoholism, clinical and experimental research. 2009.
100. al Oe. Alcohol use behaviours among pharmacy students at Auburn University. 2014.

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