ASSESSMENT OF ALCOHOL CONSUMPTION AND QUALITY OF LIFE AMONG CHRONIC LIVER DISEASE PATIENTS IN MANDALAY, MYANMAR

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การประเมินการดื่มเครื่องดื่มแอลกอฮอล์และ คุณภาพชีวิตในกลุ่มผู้ป่วยโรคตับเรื้อรัง ในมัณฑะเลย์ ประเทศเมียนมา

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วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรมหาบัณฑิต
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Field of Study	Public Health
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ชาน เหียน ตุน : การประเมินการดื่มเครื่องดื่มแอลกอฮอล์และ คุณภาพชีวิตในกลุ่มผู้ป่วยโรคตับเรื้อรัง ในมัณฑะเลย์ ประเทศเมียนมา (ASSESSMENT OF ALCOHOL CONSUMPTION AND QUALITY OF LIFE AMONGCHRONIC LIVER DISEASE PATIENTS IN MANDALAY, MYANMAR) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: จิตรลดา อารีย์สันติชัย, 209 หน้า.

ปัจจุบันการดื่มแอลกอฮอล์ถือเป็นหนึ่งในพฤติกรรมเสี่ยงที่ก่อให้เกิดการเสพติดได้ ซึ่งจะส่งผลให้ระบบสุขภาพร่างกายเสื่อมโทรม โดยเฉพาะระบบตับและระบบทางเดินปัสสาวะ โรคตับเรื้อรัง การศึกษาครั้งนี้เพื่อหารูปแบบการบริโภคเครื่องดื่มแอลกอฮอล์ การตรวจคัดกรองแอลกอฮอล์ คุณภาพชีวิตตามเพศและกลุ่มอายุ และความสัมพันธ์ระหว่างตัวแปรกับผู้ป่วยโรคตับเรื้อรังในเมืองมัณฑะเลย์ประเทศพม่า

การศึกษาในครั้งนี้เป็นการวิจัยภาคตัดขวาง รวบรวมข้อมูลโดยการสัมภาษณ์แบบตัวต่อตัว และใช้ข้อมูลทุติยภูมิจากเวชระเบียนผู้ป่วยโรคตับเรื้อรังทั้งหมด 280 ราย แบบสอบถามประกอบด้วย แบบประเมินปัญหาการดื่มสุรา (AUDIT) และแบบสอบถามโรคตับเรื้อรัง (CLDQ) วิเคราะห์ข้อมูลด้วยสถิติเชิงพรรณนาและสถิติเชิงอนุมาน ใช้การทดสอบไคสแควร์ (Chi-square)

ผลการวิจัยพบว่า มากกว่าร้อยละ 90 ของผู้ป่วยชาย และร้อยละ 8 ของผู้ป่วยหญิงดื่มแอลกอฮอล์ในชีวิต เครื่องดื่มแอลกอฮอล์ที่ดื่มส่วนใหญ่ในผู้ป่วยชาย ได้แก่ เบียร์ (ร้อยละ 69.2) และ สุรากลั่น (ร้อยละ 57.9) ในเดือนที่ผ่านมา กลุ่มผู้ป่วยชาย ร้อยละ 66.7 ดื่มฯ 21 วัน ถึง 30 วัน และร้อยละ 22.4 ดื่มฯปริมาณ 51-100 กรัมเอทานอล และร้อยละ 26.9 รายงานการดื่มฯเฉลี่ยต่อเดือน มากกว่า 100 กรัมเอทานอล และร้อยละ 31.3 ดื่มฯปริมาณ 51-100 กรัมเอทานอล และร้อยละ 28.4 มีรายงานปริมาณการดื่มฯต่อจำนวนวันที่ดื่มฯต่อเดือน มากกว่า 100 กรัมเอทานอล กลุ่มผู้ป่วยชายที่เป็นโรคตับอักเสบเอ มากกว่าร้อยละ 30 มากกว่าร้อยละ 50 เป็นโรคตับอักเสบบี หรือ โรคตับอักเสบซี ผู้ป่วยโรคตับอักเสบบีหรือผู้ป่วยไวรัสตับอักเสบซี มากกว่าร้อยละ 20 เป็นผู้ติดสุรา ในผู้ป่วยหญิงอายุ 55-64 ปีและมีโรคตับอักเสบซี มีคุณภาพชีวิตต่ำที่สุด

สรุปผลการศึกษาชี้ให้เห็นว่า แม้ในช่วงที่มีอาการรุนแรง แต่ยังคงมีสัดส่วนผู้รายงานการดื่มฯในปัจจุบันจำนวนมาก เบียร์ และ สุรากลั่น เป็นประเภทเครื่องดื่มที่ผู้ป่วยนิยมดื่มมากที่สุด ข้อเสนอแนะจากการศึกษาในครั้งนี้ คือ การนำนโยบายด้านสาธารณสุข การให้คำปรึกษาเกี่ยวกับการดื่มเครื่องดื่มแอลกอฮอล์ การลดอันตรายจากการดื่มฯ รวมทั้งการสนับสนุนทางสภาวะจิตใจ ควบคู่กับการดำเนินการในการควบคุมการดื่มเครื่องดื่มแอลกอฮอล์ในผู้ป่วยโรคตับเรื้อรังซึ่งเป็นกลุ่มที่มีความเสี่ยงสูง

สาขาวิชา สาธารณสุขศาสตร์ ลายมือชื่อนิสิต .....

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KEYWORDS: ALCOHOL DRINKING / PATTERNS / CHRONIC LIVER DISEASES PATIENTS / HEALTH RELATED QUALITY OF LIFE

CHAN HEIN TUN: ASSESSMENT OF ALCOHOL CONSUMPTION AND QUALITY OF LIFE AMONGCHRONIC LIVER DISEASE PATIENTS IN MANDALAY, MYANMAR. ADVISOR: ASSOC. PROF. CHITLADA AREESANTICHAI, Ph.D., 209 pp.

Background: Alcohol drinking is one of the common addictive hazardous behaviours nowadays that would definitely cause consequent health system deteriorations, especially the hepatobiliary system - chronic liver diseases. This study was to find out the patterns of alcohol consumption, levels of alcohol screening, quality of life according to gender and age groups and associations between variables among the chronic liver disease patients in Mandalay, Myanmar.

Methodology: A cross-sectional study, data collection was completed by face to face interviews and secondary data from medical records from total 280 chronic liver disease patients. The questionnaires consisted of structured parts, Alcohol Use Disorder Identification Test (AUDIT) and Chronic Liver Disease Questionnaire (CLDQ). The collected data were analysed by descriptive and inferential statistics using Chi-square test.

Results: More than 90% of male and 7.6% of female patients had drinking alcohol in their lifetime. The commonest types of alcohol consumed in the male patients were beer (69.2%) and spirit (57.9%). Among the male drinker patients in the last month, about 66.7% drank 21 to 30 days and 22.4% drank 51-100 grams and 26.9% drank more than 100-gram for average intake and 31.3% had 51-100 gram and 28.4% had more than 100-gram for intensity. Among the lifetime drinker patients, more than 30% of the cirrhosis Child A patients, more than 50% of cirrhosis Child B or cirrhosis Child C patients, 20 % and above of the hepatitis B or hepatitis C patients were still found to be alcohol dependents. Quality of life was lowest in females, age group 55-64 year, cirrhosis Child C grading.

Conclusion and Recommendation: The study indicated that even in severe disease stage, there are still a considerably proportion of current drinkers. Beer and spirit are the most available types for the drinker patients. It is strongly recommended that public health policy, alcohol counselling, harms reduction programs, mental health support should be taken actions to control the drinking practices in chronic liver disease patients because of being high risks groups – the diseased population.

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

Academic Year: 2017 Advisor's Signature .....

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List of Abbreviations

- CLD Chronic liver disease
- ALD Alcoholic liver disease
- NAFLD Nonalcoholic liver diseases
- NASH Nonalcoholic steatohepatitis
- HBV Hepatitis B virus
- HCV Hepatitis C virus
- HCC Hepatocellular carcinoma

- AUD Alcohol use disorder
- AUDIT Alcohol use disorder identification test
- CLDQ Chronic liver disease questionnaire
- QOL Quality of life
- HRQOL Health related quality of life

- ALT Alanine aminotransferase
- AST Aspartate aminotransferase
- ALP Alkaline phosphatase
- LDH Lactate dehydrogenase
- ADH Alcohol dehydrogenase
- ANF Tumor necrosis factor
- c-AMP Cyclic adenosine monophosphate
- INR International normalized ratio
- VLDL Very low density lipoproteins
- RNA Ribonucleic acid
- PCS Physical component scores
- MCS Mental component scores

- HE Hepatic encephalopathy
- MELD Model for end stage liver disease
- DM Diabetes mellitus
- DALY Disability adjusted life year
- WHO World health organization
- HIV Human Immunodeficiency Virus

CHAPTER I

INTRODUCTION

1.1 Background

Globally, cancer is the second leading cause of death and was responsible for 8.8 million deaths in 2015. Globally, nearly 1 in 6 deaths is due to cancer. Approximately 70% of deaths from cancer occur in low- and middle-income countries. Around one third of deaths from cancer are due to the 5 leading behavioural and dietary risks: high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use, and alcohol use (1). Cancer is a leading cause of death worldwide, accounting for 8.8 million deaths in 2015. Among, the most common causes of cancer death, Liver related indicated (788 000 deaths in 2015). In the worldwide in 2008, the liver cancer ranks the 5th most common cancer in men and 7th in women (2).

There are several risks factors for developing hepatocellular carcinoma. Among them, the common causes are hepatitis B, C, non-alcoholic liver diseases, alcoholic liver diseases. HBV and HCV indicate more than 70% of liver cancer cases in the world (3) or more severely nearly 90% in WHO's prospect (4). In the WHO 2017 world hepatitis report, number deaths from hepatitis B infection in worldwide account for 900,000 in 2015 including acute hepatitis, cirrhosis and hepatocellular carcinoma caused by this viral infection. In this report, number deaths from hepatitis C infection in worldwide account for 400,000 in 2015 including cirrhosis and hepatocellular carcinoma caused by this viral infection. In 2000-2015, annual mortality for hepatitis is still increasing up to 1,500,000 which is more than deaths from malaria and HIV (5). There are more than five million people who are currently having hepatitis B or C, and millions of citizens are threatened from numerous types of other chronic hepatocellular and cholestasis liver diseases in the America. The 9th top cause of death in the United

States is the liver diseases related cases and is charged for millions to billions of dollars including medical expenditures, making a huge workload to a certain extent. (6) The geographical changing pattern in the incidence of liver cancer depends on the natural history and distribution of HBV and HCV infections. In Asian and African regions, HBV is the main cause of HCC except Japan where HCV is the leading cause. In developed countries as United States and Europe, HCV takes an important role in cancer causes. In United States and some North European countries, heavy alcohol consumption, obesity and diabetes mellitus may be attributed to the hepatocellular carcinoma. In WHO 2017 report for hepatitis, the prevalence of hepatitis B infection in Southeast Asia is 2.0 %, nearly 40 million people in general population. The prevalence of hepatitis C infection in Southeast Asia is 0.5%, nearly 10 million people in general population.

Alcohol consumption is one of the most frequent causes of liver diseases in western countries (7). Mortality due to liver cirrhosis in those countries was in direct proportion to absolute alcohol consumption per capita and there was the highest rate in France and Spain (over 30 deaths per a population of 100000 per year), the lowest in the northern European countries (up to 5 deaths per 100000 inhabitants per year). In Central Europe, the pattern was 15 deaths caused by cirrhosis per 100000. The highest mortality was found in men aged 35-64 years, lower in women (8). The past 2-3 decades had found to be stable if there was not a dramatic drop in the intake of alcohol consumption in western countries, while a very hazardous trend was reported from Eastern Europe and developing countries (9).

In South China and sub-Saharan Africa, risk factors are region-specific, dietary containing of aflatoxin are of special contributions to the risk of HCC. On the other hand, among most European regions, hepatitis C and alcohol consumption are the principal leading causes.

From Myanmar annual hospital statics report 2013 data, the percent of all inpatients deaths in 2013 was 2.0% for males and 0.4% for females for the specific causes of fibrosis and cirrhosis of liver. In proportion of leading causes among all cases of mortality at the private hospitals in 2013, for fibrosis and cirrhosis of liver, males occupy 2.9% and female occupy 0.3% among all cases. In single leading causes of mortality by sex in private hospitals in 2013, fibrosis and cirrhosis of liver stands 5.2%

for males and 0.7% for females (3.2% for both genders) with average duration of hospital stay for 6.3 days while malignant neoplasm of liver and intrahepatic bile ducts stand 3.6% for males and 1.3% for females (2.6% for both genders) with average duration of hospital stay for 18.9 days (10).

In WHO cancer country profile report 2014 for Myanmar, the cancer mortality rate for liver specific for male is 12.5% in 25,700 deaths and for female is 6.0% in 23,600 deaths (11). The cancer incidence of liver for male is 3,421. For the total alcohol per capita consumption in 2010 is 0.7 liters for both genders (11). In Myanmar, among disease of digestive system, in the percent distribution of the digestive system in 2013, disease of liver occupy 17.9% and in proportion of top ten disease of all disease of the digestive system, the fibrosis and cirrhosis of liver account for 5.7% for male and 1.8% for females and alcoholic liver disease account for 2.8% in males and 0.1% in females (10). In Myanmar, among disease of the digestive system, in proportional mortality of diseases of digestive system in 2013, disease of liver account for 58.5%. In proportional of top 10 causes among all mortality cases due to diseases of the digestive system for both sex in 2013, the fibrosis and cirrhosis of liver stand 1st with nearly 26%, liver failure stand 2nd with nearly 15%, alcoholic liver disease stand 4th with nearly 7%, other inflammatory causes of liver stand 7th with nearly 3% (10). In single leading causes of mortality by sex in 2013 for the whole Myanmar, fibrosis and cirrhosis of liver stands 10th place describing 3.2% for males and 0.9% for females (2.3% for both genders) with average duration of hospital stay for 6.6 days (10). In the proportion of top 10 causes among all cases of mortality due to malignant tumors in 2013, the cancer of liver and intrahepatic bile duct stand 1st place and account for 16.8% in males and 3.8% for females (10). In proportion of top 10 cases among all malignant neoplasms in 2013, cancer of liver and intrahepatic bile duct stand 4th place with 8.7% (10). For Myanmar, the total alcohol use disorders DALY is 120.4, % of total DALY is 0.6, DALY per 100,000 is 0.2 (12). The total alcohol per capita (>15 years of age) consumption for Myanmar is 2.0% in 2016 (12). In Myanmar, Among behavioral disorders, percent distribution of mental and behavioral disorders in 2013, alcohol constitutes for 46.4% in 2013 (10).

In Mandalay region, the single leading causes of mortality by sex in 2013 for fibrosis and cirrhosis of liver stands 11th place describing 2.4% for males and 1.0% for

females (1.9% for both genders) with average duration of hospital stay for 6.1 days. In single leading causes of morbidity by sex in 2013 for the Mandalay region, mental and behavioral disorders due to use of alcohol stands 13th place describing 2.4% for males and 0.0% for females (1.2% for both genders) with average duration of hospital stay for 6.4 days (10).

Nowadays, curative medical treatments and management guidelines are upgrading more and more. Thus, on the one hand, many formerly untreatable, complicated, hazardous diseases have become chronic cases in most of both developed and developing countries. The liver disease burden is rising, mainly due to the synergistic effects of alcohol related liver disease, non-alcoholic fatty liver disease (13) and viral hepatitis (14, 15).

Hepatic diseases are more often undiagnosed until more severe disease is detected, leading to a rising incidence of cirrhosis in many areas. (16) Management to cirrhosis, such as early testing for malignant liver disease and oesophageal varices detection, usually target upon potential reduction of risks. When those guidelines, focused to clinical settings, are obviously crucial, not counting patient site such as life quality factors. Analysing health related quality of life (HRQOL) can improve the outcome of a disease and its curative measures individually and is more and more accepted as a significant outcome in long lasting complicated cases namely cirrhosis. Patients can be presented with lethargy, loss of self-confidence, cannot concentrate at employments, agitation, anxiety neurosis, depressed moods, and other psychological and emotional disturbances that mainly lower their quality of life and wellness. (17) Moreover, in the 3rd and 4th decades of life, there are commonest reports of hepatitis C cases, alcohol related liver disease, and other liver abnormalities, a time interval thought to be the most occupied portion for a great amount of people. (6, 17, 18)

Studying quality of life can provide the mental, physical and lifestyle contributions of both clinical and therapeutic conditions, which are actually more essential to patients than conservative ones. (19) Realization of the relating causes which could lead to poor health related quality of life in severe liver disease should be combination of goals for best guidelines, too. In detail considering of HRQOL should be allowed service delivery with a standard balance between both service providing (medical, therapeutic) and customers (patients). Majority of guidelines and

managements concerning with complicated liver disease target to cure specified chief complaints rather than further long term complications; such curative measures are thus, better evaluated with a detail measures of HRQOL. Due to subclinical feature of chronic HBV, HCV, most infected people are not concerning and knowing about their conditions until they develop signs and symptoms of liver cirrhosis, and a few to many years later, they might suffer liver carcinoma. (20)

Although HRQOL is crucial in chronic disease patients, lesser researchers have studied HRQOL in liver disease patients in Myanmar. Moreover, alcohol consumption and its related hazardous effects on the liver disease are so obvious and little studies on alcohol consumption and its related health consequences among patients with underlying liver pathologies. Moreover, there are less in detail descriptions about alcohol consumption patterns in medical records and books. Therefore, this study will describe about the effect of liver disease on HRQOL, search for differences in alcohol consumption patterns, HRQOL by aetiology and disease severity, and attempt to clarify clinical and sociodemographic factors with associated effects on alcohol consumption and HRQOL.

1.2 Research questions

1. What are the levels of alcohol consumption and health related quality of life (Abdominal symptoms, Fatigue, Systemic symptoms, Activity, Emotional functions, Worry) levels among chronic liver diseases patients in Mandalay, Myanmar?

2. Are there associations between social demographics factors, disease etiology, severity and alcohol consumption patterns?

3. Are there associations between social demographics factors, disease etiology, severity and health related quality of life?

4. What are the patterns of alcohol drinking, levels of alcohol consumption, harms and injury, quality of life in chronic liver disease patients according to genders?

5. What are the patterns of alcohol drinking, levels of alcohol consumption, harms and injury, quality of life in chronic liver disease patients according to age groups?

1.3 Research objectives

1. To access the alcohol consumption patterns and health related quality of life levels (Abdominal symptoms, Fatigue, Systemic symptoms, Activity, Emotional functions, Worry) among chronic liver diseases patients in Mandalay, Myanmar.

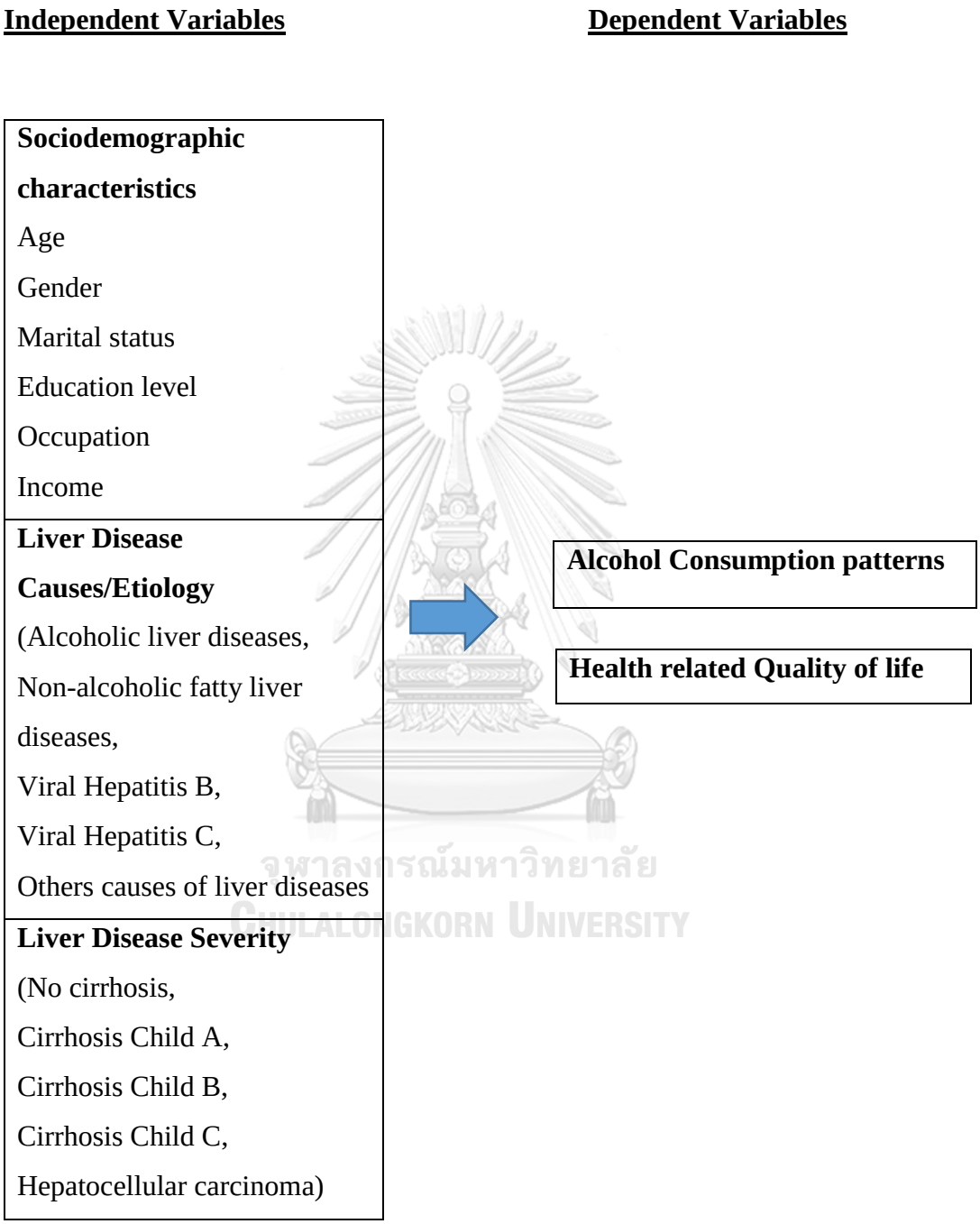
2. To determine the associations between social demographics factors, disease etiology, severity and alcohol consumption patterns.

3. To determine the associations between social demographics factors, disease etiology, severity and health related quality of life.

4. To compare the patterns of alcohol drinking, levels of alcohol consumption, harms and injury, quality of life in chronic liver disease patients according to genders?

5. To compare the patterns of alcohol drinking, levels of alcohol consumption, harms and injury, quality of life in chronic liver disease patients according to age groups?

1.4 Conceptual framework



1.5 Operational definitions

Chronic liver diseases mean progressive destruction of the liver parenchyma over a period greater than 6 months leading to fibrosis and cirrhosis.

Patients refers to people who are receiving or registered to obtain medical treatment in medical clinics, centres, hospitals.

Liver disease etiology or underlying causes in chronic liver disease mean the kinds of medical science related to the causations and origins main roots of diseases.

Liver disease severity means stages assessing the effects that a disease provides morbidities, mortality comorbid conditions, prognosis, survival rates on the patients.

Alcoholic cause is a term that comprises the clinical (hepatic) presentations related to alcohol overconsumption.

Non-alcoholic fatty liver disease cause means a statement for a variety of liver conditions affecting people who drink little to no alcohol.

Viral cause means patients infected with hepatitis B and/or hepatitis C and resulting chronic hepatitis as that lasts longer than 6 months.

No cirrhosis means fatty liver, steatohepatitis, hepatitis, steatosis, hepatomegaly (enlargement of liver)

Cirrhosis is a long term resulting condition of liver parenchymal scares caused by various kinds of hepatic abnormal conditions, including inflammation of liver and chronic alcoholism.

Child–Pugh score is a scoring system applied to evaluate the prognosis of chronic liver disease, especially cirrhotic patients.

Alcohol mean any beverage or drinks which consists of ethyl alcohol or ethanol.

Quantity of alcohol will be measured by the standard drink which contains ten grams per one standard drink.

Frequency means number of days the patients drink alcohol measured in terms of days per weekly or monthly

Types mean kinds of either homemade beverage (palm juice, fermented rice wine) or spirit or industrial products (beer, rum, wine)

Alcohol screening means the application of a standard test to members of a definite population (patients) to screen their probability of having a specific disorder, such as level of alcohol consumption, alcohol use disorder (AUD) (alcohol abuse or alcohol dependence).

Pattern of alcohol consumption means the drinking practice of the participants including age of first time drinking, types of first time drinking, reasons for first time drinking, assessed by types, quantity - number of standard drinks of alcohol they drink per day or week, the frequency of drinking in terms of number of days of drinking per week or month, places, time, drinkers' friends in lifetimes, last 12 months, 6 months, 3 months, last month and last week

AUDIT is a simple method of screening developed by WHO for excessive drinking and to assist in brief assessment which describe a comprehensive approach to screening and brief intervention for alcohol-related problems in primary health care.

Abstainer means a person who refrains from drinking intoxicating alcohol containing beverages.

Low risk drinking means for women - no more than 3 drinks on any single day and no more than 7 drinks per week, for men - no more than 4 drinks on any single day and no more than 14 drinks per week.

Hazardous drinking is defined as a quantity or pattern of alcohol consumption that places patients at risk for adverse health events.

Harmful drinking is defined as alcohol consumption that results in adverse events (e.g., physical or psychological harm).

Alcohol dependent drinking means a previous psychiatric diagnosis in which an individual is physically or psychologically dependent upon alcohol.

Quality of life (QOL) is defined as ways of regarding, understanding or interpreting of human beings to their situations in everyday life in the circumstances of the cultural, moral, attitudes and social value societies where they dwell and according to their aims, needs, beliefs, attainment and interests

Health related quality of life (HRQOL) means the term appointed to length of life time as amplified by the defects, practical actual situations, realization and social circumstances which are affected by illness.

CLDQ is chronic liver disease questionnaire which is a disease specific tool for measuring health related quality of life developed for various causes of chronic liver diseases.

CHAPTER II

LITERATURE REVIEW

In this chapter, the related literatures about health related quality of life, alcohol consumption and chronic liver diseases were described briefly as followings topics.

2.1 Chronic liver diseases

2.2 Presentations and Complications of CLD

2.3 Diagnosis and Treatment of CLD

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2.1 Chronic Liver diseases (CLD)

2.1.1 Definition of Chronic live disease

Continuous destructive progression of the liver parenchymal cellular structure over a period greater than 6 months finally causing fibrosis and cirrhosis (21).

2.1.2 Causes (Aetiology) of CLD

Chronic liver diseases can be caused by the following factors, Non-alcoholic fatty liver disease (NAFLD)/ Non-alcoholic steatohepatitis (NASH) (22) , viral, alcohol, genetic, autoimmune, drugs, vascular and idiopathic (cryptogenic)(23).

NAFLD/NASH is mainly due to diabetes (DM type II) (24) , hypertension (25) , obesity (26) (27) , hyperlipidaemia (28) , metabolic syndrome (29). Investigation results show AST: ALT usually <1 (i.e. low), biopsy results show micro-vesicular steatosis. Viral causes include viral hepatitis B, C and D. Alcohol is the most prevalent cause of CLD in the UK. (30). Cystic fibrosis (31) , hereditary hemochromatosis (32) , Wilson's disease (33) , glycogen storage diseases are consisted under genetic causes. (34)

In hereditary hemochromatosis, abnormal iron taking up mechanism in guts walls resulting to iron accumulation in the liver and other organs. We can observe HFE gene on chromosome 6 (35) carrier prevalence rate is 1 in 10 in northern Europe which can cause liver cirrhosis, diabetes, skin discolouration, arrhythmias, heart failure, hypogonadism, (36) . It can be treated with regular venesection or desferrioxamine. (35)

Wilson's disease is autosomal recessive disease that leads to copper deposition in many parts of organs, for examples: in liver causing cirrhosis, in brain causing neuropsychiatric symptoms including parkinsonism, in heart causing cardiomyopathy, arrhythmias. It can be investigated as low serum caeruloplasmin in blood and high urinary copper level. It can be treated with copper chelating agents such as penicillamine.

Autoimmune cases are more common in females than males, especially, it has 2 peaks, namely, peri- and post- menopausal (types I and III) and teenage/early twenties (mainly type II). Most possible reason is that genetic predisposition expected to synergic with unknown environmental factors. It is usually related with other autoimmune diseases namely, pernicious anaemia, thyroiditis and autoimmune haemolytic anaemia. It has three types: type I: anti-nuclear and/or anti-smooth muscle antibodies, type II: anti-liver/kidney microsomal (anti-LMK1), type III: with soluble liver antigen (course same as type I). Investigations include anti-smooth muscle antibodies, IgG. It can be treatment with prednisolone 60mg and/or azathioprine. Autoimmune cases are primary biliary cholangitis (37) , primary sclerosing cholangitis, autoimmune hepatitis.

Drugs can cause liver toxicity which contain isoniazid, methotrexate, amiodarone, phenytoin, sodium valproate, nitrofurantoin. (38). Vascular causes are very rare which include Budd-Chiari disease. (39)

2.2 Presentations and Complications of CLD

Chronic liver disease patients can present with fatigue, malaise, anorexia, encephalopathy, on hands showing Dupuytren's contracture, palmar erythema, leukonychia, Asterixis, flapping tremor, on the face showing jaundiced sclera, fetor hepaticas, on the chest showing spider naevi, gynaecomastia, on the abdomen showing hepatomegaly, splenomegaly (due to portal hypertension), ascites, caput medusa and polyneuropathy especially on the limbs.

Complications of CLD include hematemesis, bleeding varices, ascites, subacute bacterial peritonitis, encephalopathy, hepato-pulomonary syndrome, hepato-renal syndrome and finally hepatocellular carcinoma.

2.3 Diagnosis and Treatment of CLD

First of all, initial management of chronic liver disease (CLD) include bloods tests showing full blood count: normocytic normochromic anaemia with leukopenia and thrombocytopenia. Liver function tests will show derangement in cell lines and can also be normal in very advanced disease. Coagulation tests with prolong time can be present.

We can do the tests of synthetic liver function which contain albumin, prothrombin test and platelets, if these are abnormal, we should consider severe disease. Urine routine and microscopic examination can be deranged in hepatorenal syndrome or excessive diuretic treatment in compensate to ascites and generalized oedema. Another one is viral screening for HBC, HCV and delta virus, also for HIV 1&2. Autoantibodies tests for primary biliary cholangitis, sclerosing cholangitis. Serum immunoglobulins tests can be applied. Iron studies and ferritin level assessment in hereditary haemochromatosis, copper and ceruloplasmin measurements in Wilson's diseases, alpha-1 antitrypsin level can also be applied.

Imaging techniques including ultrasound, computed tomography scan can demonstrate fatty liver, nodular pattern of cirrhosis, distorted structure of liver parenchymal architecture, and can detect hepatocellular carcinoma. In hepatosplenomegaly; triple-phase scan will show hepatocellular carcinoma by contrast-enhancing media.

In endoscopic examination, all patients should have a screening gastroenteroscopy to check for oesophageal varices. If varices are seen, patient should be registered on a scope banding treatment or advised to take a non-selective beta-blocker (e.g. propranolol).

Another advice is alcohol abstinence which is very important issue for other causes of cirrhosis, not just only alcohol-related CLD. On the other hand, patients can

be undergone treating underlying specific causes such as, antiviral treatment; steroids, ursodeoxycholic acid etc.

Further management about CLD includes treating complications and physiological decompensated stages. 6-monthly ultrasound (3-monthly if haemochromatosis) and alkaline phosphatase, hepatocellular carcinoma (ALP screening). Liver biopsy, which is not typically done in all patients, but can demonstrate type and severity of disease, can be applied for staging prior to deciding of liver transplantation. Finally, as a last management for continuously worsening of disease progression, liver transplantation surgery should be considered.

2.4 Prevention and Prognosis of CLD

Patients have to reduce risks behaviors (alcohol, smoking, fatty meals, and so on), immunization (HBV immune globulin, HBV vaccine).

Prognosis about chronic liver disease patients depend on underlying cause and severity. Poor prognostic factors include grade III or IV encephalopathy, age >40, drug-induced hepatic failure, high INR.

2.5 Alcoholic liver disease (ALD)

2.5.1 Diagnosis of alcohol dependence and alcohol abuse

Alcohol dependence: 3 items needed

1. Taking large quantity of alcoholic containing beverages.
2. Persistent desire for alcohol or one or more unsuccessful attempts to cut down or control use.
3. A large amount of time used in getting, drinking it, or recovering from its effects
4. Recurrent use of alcohol.
5. Social, occupational, or recreational activities disturbances.
6. Continued alcohol use in spite of having knowledge.
7. Marked tolerance.

8. Withdrawal symptoms.
9. Alcohol drinking to relieve or avoid withdrawal symptoms.

Alcohol abuse: 1 item needed

1. Continued use in spite of having knowledge
2. Recurrent use

2.5.2 Risk Factors for Alcoholic Liver Disease

- Average per capita consumption of alcohol.
- Amount ingested and the duration of drinking.
- Above a threshold level of daily alcohol consumption (estimated to be 60 to 80 g/day for men and 20 g/day for women)
- Consuming more than two 6-packs of beer per day
- More than two drinks per day for healthy men and no more than 1 drink per day for healthy non pregnant women.

2.5.3 Specific risk factors

Specific risk factors include gender, genetic variability, nutrition, presence of an infection (viral), concurrent exposure to drugs or toxins, immunologic derangements, alterations in intestinal microbiota, continued alcohol ingestion

2.5.4 Clinical Features

1. History of patients

This includes history of habitual alcohol consumption, type of alcoholic beverage, AUDIT questionnaire, history about viral hepatitis, acetaminophen intake, obesity, exposure to solvents, a family history of ALD, hemochromatosis, Wilson disease, or alpha-1 antitrypsin deficiency.

2. Signs and symptoms

Patients may present with features of advanced liver failure, complications of portal hypertension, fever, anorexia weakness, vomiting, nausea, confusion, malaise, sleep-wake cycle alterations, splenomegaly, hepatomegaly, jaundice, cachexia, Dupuytren contractures, spider telangiectasia's, testicular atrophy, gynecomastia, parotid/lacrimal gland enlargement, Muercke lines, asterixis, decreased libido, white nails, and alcoholic cardiomyopathy, pancreatic insufficiency, pancreatitis and neurotoxicity.

3. Laboratory Diagnosis

Imaging is not generally done and not helpful in ALD. Liver biopsy is not required for the diagnosis of ALD.

4. Histological results and of Disease Spectrum

(A) Fatty liver

It is formed as a result of alcohol oxidation. There can be accumulation of intracellular lipid. It is typically accepted a benign, reversible condition among chronic liver diseases.

(B) Alcoholic hepatitis

Histological examination will show hepatocellular necrosis, steatosis and acute inflammation. There will be inflammatory cellular infiltrates in liver parenchyma.

(C) Cirrhosis

Without protracted and excessive consumption of alcohol, majority of patients with ALD never progress to cirrhosis. There will be the deposition of collagen around the terminal hepatic vein: peri-venular fibrosis. The regenerative response will be disturbed by long-term consumption of alcohol. Results will show in actively drinking

patients – micro-nodular pattern and in abstinence patients – macro-nodular pattern.

5. Indices of Liver Dysfunction in ALD

There are formula and scoring systems to expect the mortality of ALD. They are

- Maddrey discriminant function
- Composite Clinical Laboratory Index
- Lille score and Early change in bilirubin level
- Model for End-stage Liver Disease (MELD) score

6. Treatment

(A) General measures

Patients must stop using of alcohol and be supported a nutritious planned diet. They should be participated in a specific detoxification program. They may be required to be hospitalized in some case where surveillance with be evaluated using ultrasonography which could provide the detection of hepatocellular carcinoma at a potentially early treatable level. Screening of hepatitis viruses should be done in all cases, too.

(B) Specific management for alcoholic hepatitis

This includes treating with glucocorticoids (prednisolones), using of nonselective phosphodiesterase inhibitors, correction of malnutrition by a balanced well planned diet, supplementation with micronutrients, vitamins, minerals. One important basic measure for ALD is thiamine treatment. Measures about microbiome consist of providing symbiotic, prebiotics, probiotics, antibiotics, genetically modified bacteria flora as well as faecal microbiota replacing. Other treatments may include anti-TNF (tumour necrosis factor) alpha antibodies, propylthiouracil and cyanidanol, anabolic steroids, or prevent fibrosis (D-penicillamine and colchicine). Liver transplantation is for the improvement of survival in patients with severe ALD.

(C) Specific management for alcoholic cirrhosis

It consists of drug therapy, antioxidant therapy (Vitamin E, S-Adenosylmethionine, Polyenylphosphatidylcholine, Silymarin,). Liver transplantation should be considered for decompensated stages and patients are fit for transplant surgery if they avoid from drinking for longer than 6 months.

2.6 Non-alcoholic fatty liver diseases (NAFLD)

2.6.1 Introduction

It is the excessive collection of hepatic triglyceride when alcohol drinking is minimal (fewer than 2-4 drinks per day). The terms can be varied namely: benign steatosis, fatty liver, non-alcoholic fatty liver (NAFL) and simple steatosis are generally applied. Non-alcoholic steatohepatitis is not excluded from the diagnosis and it can usually be present together with other chronic liver diseases (hepatitis C infection).

2.6.2 Pathophysiology

It is mainly as a result of lipotoxic destruction to liver cells which is caused by non-triglyceride metabolites of free fatty acids. Fatty acids are stored in an inert form by triglyceride in the lipid droplets as a protective response. Ceramides, fatty acid metabolite, lyso-phosphatidylcholine species, diacylglycerols, phosphatidic acid species, omega-oxidized fatty acids are all taking parts in that pathways.

1. Fatty acids mobilization - Adipose tissue releases free fatty acids in response to cyclic adenosine monophosphate (c AMP)–mediated signalling from glucagon, epinephrine, and adrenocorticotropic hormone; released fatty acids are transported to the liver bound to albumin in the circulation. Insulin play an important role in inhibitory mechanism as a signal in lipolysis. There is association between prolonged starvation and NAFLD.

2. Increase fatty acid synthesis by the liver - The process of converting excess carbohydrate to fatty acids by de novo lipogenesis occur in the liver, it could lead to lipotoxicity in the liver.

3. Disturbances in fatty acid catabolism by liver - In alcoholic steatosis, as a major factor, impaired mitochondrial beta-oxidation of fatty acids include in this process. Microvesicular steatosis is caused by alcohol, valproic acid, acute fatty liver of pregnancy. There are also other oxidative pathways (cytochrome P-450 omega-oxidation, peroxisomal beta-oxidation) which facilitate the disposal of fatty acids.

4. Disturbances in triglyceride synthesis of very low density lipoprotein secretion by liver - There are many mechanisms explaining this including delivery of fatty acids to the liver but not metabolized are re-esterified to form triglycerides, esterification of fatty acid to triglyceride ensures that the level of fatty acids within hepatocytes remains low, thus averting cellular injury from fatty acid metabolites, impairment of monounsaturated fatty acids. Once triglyceride is formed, various components are needed to form and secrete intact VLDL. Any deficiency or metabolic abnormality, cellular autophagy can cause and potentiate.

2.6.3 Clinical Features and Risk Factors

Patients can be asymptomatic; they may have right upper quadrant pain or fullness. By patient's examination, hepatomegaly and other signs of chronic liver disease can be found. There are many risk factors proven and some are on trial including insulin resistance, obesity, type 2 diabetes mellitus, lipid abnormalities, hypertriglyceridemia, hypercholesterolemia, current medications, tamoxifen, glucocorticoids, sedentary lifestyle behaviour.

2.6.4 Diagnosis

History taking - This section should include patient's alcohol consumption, exercise habits and barriers to regular exercise, consumption of sugar-sweetened beverage, frequency of consumption of fast food, history of gestational diabetes mellitus, family history of type 2 diabetes mellitus.

Laboratory data - There are no blood tests point unequivocally to steatosis or NASH. There may be elevated aminotransferase (aspartate aminotransferase [AST],

alanine aminotransferase [ALT]) which are commonly the only biochemical indicators of steatosis and NASH. Aminotransferase levels can be normal in both steatosis and NASH. AST is typically greater than ALT in NASH with cirrhosis. Serum alkaline phosphatase may be elevated. Viral, autoimmune, and metabolic causes of liver disease should be screened.

Imaging results - Patients should be done ultrasonography, computed tomography, magnetic resonance imaging.

Liver biopsy - Liver biopsy is often needed to evaluate unexplained elevation of aminotransferase levels. Liver biopsy is usually not indicated when imaging suggests steatosis and aminotransferase levels are normal.

Histologic findings - There can be presence of steatosis: fat droplets (triglyceride), inflammation: mixed neutrophilic and mononuclear cell infiltrates, Mallory-Denk bodies: eosinophilic cytoplasmic aggregates, glycogen nuclei, fibrosis: similar to that seen in alcoholic liver disease.

2.6.5 Prognosis and Treatment

Steatosis alone is a generally benign condition. Risk of developing fibrosis and cirrhosis is 10% to 50% in patients with NASH. Patients should be advised to do exercise and weight loss programs. Patients can be provided with pioglitazone, vitamin E which may be helpful in some patients. Many drugs are currently under evaluation for the treatment of NASH. Lipid lowering agents: statin use is not contraindicated in patients with NASH.

2.7 Chronic Viral Hepatitis B

It is a hepatotropic DNA-containing virus. Chronic infection is linked to chronic hepatitis, cirrhosis, HCC, and premature mortality. Modes of transmission are blood-borne, sexual, tissue penetration, maternal-neonatal and maternal-infant. Clinical Features includes asymptomatic, constitutional and gastrointestinal symptoms. Other

signs and symptoms of chronic liver insufficiency can be seen in chronic infection. Laboratory data will show elevated serum ALT and AST. Serologic detection of HBs Ag, HBe-Ag and anti HBe and additionally, other liver functions must be done. Treatment includes bed rest, caloric and fluid intake, stop drinking alcohol, antiviral therapy including entecavir and tenofovir, peginterferon alfa.

2.8 Chronic Viral Hepatitis C

It is a single-stranded RNA virus. Persistent infection is linked etiologically to chronic hepatitis, cirrhosis, HCC, and premature death. Modes of transmission are mainly blood and others methods are similar with HBV infection. Clinical features include asymptomatic, flu like symptoms and in long term will have chronic liver disease features. The risk of developing HCC is 1% to 4% per year once cirrhosis is established. Diagnosis include detection of anti-HCV, HCV RNA. Specific treatment includes peg-interferons, ribavirin, direct acting antivirals. Cirrhosis due to HCV is the most common indication for liver transplantation in the Western world. All patients should be advised to avoid completely from drinking, too.

2.9 Types of Alcohol

Common types of alcohol

Wines - They are produced from various kinds of fruits namely, peaches, grapes. Grape wines are the majority among them. It contains approximately 10 to 22% % of alcohol.

Beer - It is produced from fermented mixing liquid which is obtained from various cereals, corns, wheat. There is 4 to 8% of alcohol in beer.

Distilled Spirit (also called distilled liquor) - It is alcoholic beverage (such as brandy, whisky, rum or arrack) that is obtained by distillation from wine or other fermented fruit or plant juice or from a starchy material (such as various grains) that has first been brewed. The alcoholic content of distilled spirit is higher than that of beer or wine.

Whisky - It is obtained from distilled and fermented process of cereals. It contains 40 to 50% of alcohol.

Rum - It is obtained by distilling and fermentation of liquids from sugarcanes, molasses. It contains 40 to 50% of alcohol.

Brandy - It is produced form fermentation of fruit liquids, too. It contains 40 to 50% of alcohol.

Gin - It is got as a result of distilling of water, alcohol and preservatives flavours.

Liqueurs - It is produced from herbal plants products and mixed sugar.

Commonly used alcohol types in Southeast Asia

Arrack - It is produced from distilling process of wheat, paddy. Alcohol in this is 50 to 60%.

Toddy (palm tree juice) - It is produced from fermentation of liquids especially from white juice of male flowers of palm tree in tropical zones. It contains 5 to 10% of alcohol.

Equivalence of different beverages

One unit of alcohol is nearly 10 grams of absolute alcohol.
It is equal to 1 standard bottle of regular beer (285 ml), 1 single measure of spirit (30 ml), 1 glass of wine (120 ml), 1 measure of aperitif (60 ml).

Total estimation of alcohol consumption

In a given year of a country

$$\frac{\text{(total alcohol produced by the country + total alcohol importation) – total alcohol exportation}}{\text{total population of >= 15 year of age}}$$

2.10 Conceptual Models and Theories for Alcohol Consumption

Alcoholism is accepted as applying psychoactive substance in a legally covered way in many different countries in the world. Many theories and concepts are explaining about the changing behavioural of human including the utilization of drugs and alcohol. Many said that it is not an illness or disease but a disorder caused by personal changing behaviours. On the other hand, some describe that it is untreatable. There will be some theories described in the following about the concepts of human behaviours and their adaptation. (40) (41) (42) (43)

Personality theories

Allport (1961)

"Personality is the dynamic organization within the individual of those psychophysical systems that determine his characteristics behaviour and though". Additional to development of personality, the interacting and influencing factors of nature (genetically, biologically) and nurture (surrounding environment, upbringing community) should be taken into account.

Trait theories of personality

It stated that personality is based on biological factors.

Social learning theory, Bandura (1977)

It focused on nurturing and surrounding environmental factors. (44)

Freud (1905)

It stated that people sought pleasure by the forces of libido (life-force). Throughout different stages of life, people desires changed.

Sigmund Freud's psychodynamic theory of personality (1920)

It stated that there are interacting factors between nature (innate instincts: aggression, sex, food), unconsciousness process and nurture (parental influences: early childhood influences in psychosexual stages). First 5 years of age experiences and parental influences are important for personality development and adult mental problems could be related to these past practices. For example, during the first two years of life, the infant who is neglected (insufficiently fed) or who is over-protected (over-fed) might become an orally-fixated person (Freud, 1905). (45)

Tripartite Theory of Personality, Freud (1923)

It stated that personality depends on three components: the ID, ego, superego (also known as the psyche), all occurring at various stages in our lives. The id is the primitive and instinctive component of personality. It consists of all the inherited (i.e., biological) components of personality, including the sex (life) instinct – Eros (which contains the libido), and aggressive (death) instinct - Thanatos. It operates on the pleasure principle (Freud, 1920) which is the idea that every wishful impulse should be satisfied immediately, regardless of the consequences. (46)

Trait Approach to Personality

It stated that personal behaviour is caused by relatively stable traits which are the basic units of one's personality. Traits differ from individuals, it remains consistent, it depends on genetic determinants of personal characteristics. Its scoring system consists of continuous (quantitative) variables.

Eysenck's Personality Theory (1952, 1967, 1982)

It stated that human inherited a kind of nervous system that influence capability and adaptation to specific situation. First-order personality traits mean that in a similar group of people, their behavioural factors are link naturally to each other. Second-order

personality traits mean that these latter facts could be explained by introversion or extroversion and neuroticism or stability. Autonomic nervous system causes excitation and inhibition process which in turn balance the personality of a human. (47)

Introversion (I) and extraversion (E)

Because of arousing nervous system, the people would like to search for stimulants to restore the optimum condition. Extraverts are changeable, exciting, sociable ones, easily boring persons, optimistic, carefree, impulsive, thrill and risk seekers. Introverts are reserving, quiet, silent, pessimistic, reliable, serious, over-triggered and avoid stimulus and sensation.

Stability and neuroticism

Stability means less reactive of individual sympathetic nervous system to stress, keep calm and cool. Neuroticism is assessing the nervous system reactivity. Reduce in neuroticism is quick to fear, worry, anger, unstable, over emotional, and easy to overreact to stimulus.

Normality and psychoticism (P) Eysenck (1966)

Psychoticism mean aggressive, cruel, troublesome, lacking in empathy, loner. It is directly related to the level of testosterone hormone which in turn lead to unbalanced and abnormal behaviour.

Sequences from stable to unstable stages

Stable – calm – even – tempered – reliable – controlled – peaceful – thoughtful – careful – passive – Introverted – quiet – unsociable – reserved – pessimistic – sober – rigid – anxious – moody – Unstable – touchy – restless – aggressive – excitable – changeable – impulsive – optimistic – active – Extroverted – sociable – outgoing – talkative – respective – easy going – lively – carefree – leadership – Stable

Shields (1976)

It stated that monozygotic (identical) twins were significantly more similar on the IEP aspects than dizygotic (non-identical) twins.

Loehlin, Willerman, and Horn (1988)

They observed that only 50% of the alteration in total scores on personality measurements are due to inherited ones and might consider about importance of social factors. (48)

Cattell's 16PF Trait Theory (1965)

On the other hand, it was described that

- L-data – personal documented information related to life courses namely education results, unemployment rate
- Q-data – this one is about the individual personality characters which was invented as 16PF (160 questionnaires)
- T-data – created to open the constructed personality set up

Surface traits – prominent ones and generally distinguishable by common sense
Source traits – unnoticeable, related to various determinants and components of personal behaviours, more important in determination process. (49)

Allport's Trait Theory (1937)

It described the importance of the quality of individual being particularly remarkable, special cognitive thinking process and motivations such as habits, attitudes, intelligence, skills, temperament, traits (50).

Authoritarian Personality (1950)

They used F (fascism) score to measure childhood background, family, guardian environment, traditions, non-flexible beliefs, hostile or obedient character. It was observed in Adorno's finding that ethnocentrism which is the individual tend to be attracted and favoured to specific ethnical groups, obsession which is fixed idea about status or rank that grew in individual mind, respect and compliance, toughness and power, all could be predisposed to certain individuals. (51)

Sheatsley and Hyman (1954)

They described that Authoritarian has limited samples and poor educational achievement was possibly a key factor in elevated F scores. (52)

Hedonic hypothesis

Human beings generally choose pleasure and get away from pain through pain sensory receptors activation according to their conditional motivations. If they avoid, as a reward mechanism, they will achieve some emotional feelings including hate and love, fear and joy and so on. Emotional perceptions fluctuate between good and bad.

Nociception and beneception

Greek people found that pleasure which is positive hedonic motivation and suffering (negative hedonic motivation), these two factors play an important role in determining the motivations. It is crucial for adaptation and survival for the life in all living beings.

Aversive and Appetitive

Appetitive is the achievement which can be got if individual do positive motivated one namely sex, food. On the other hand, aversion is the detaching and avoiding from unwanted conditions and sufferings.

Operant conditioning theory

It is related and connected to the concept of hedonic ideas. It consists of three behavioural components namely, positive reinforcement, negative reinforcement and punishment. The first component is the reward gaining process that leads to an individual to adapt or alter one's behaviour. The second component is the individual want to avoid from undesirable suffering feelings and then one will attempt to stop or change the situation by converting present behaviour. The final component is the introduction of hurting, aching feeling that will overwhelm individual behaviour to transformed into another style. (53)

Social cognitive theory Bandura, A. (1989)

Human Nature

Majority of behavioural arrangements are assembled by own perceptions and kept in neural codes, but not totally given by inherited schedule. Neural systems and genetic components together work on behavioural possibilities and put limitations on proficiency. All factors related to normal physiology and past experiment experiential have an effect on each other reciprocally to decide one's behaviour. The standard measures that are originated throughout the life courses that actually develop to human are partly decided by the cultural influences to which their achievement is charged. Social structures that create common effectiveness, generate chances, evolving useful facilities, and permit for self-directedness that in turn upgrade the opportunities that humans will recognize what they would like to be adapted and changed. Additionally, all structures in surrounding environment including friendships, relationship, relatives, family members, foods, clothes, climates, livings buildings have related in certain ways to the behaviours of human beings.

Self-dysregulation

It is indicated that substance use disorder including alcohol is determined by behaviours based on an individual biological determinants including positive affect, negative affect and effortful control. The first part is the high positive affect which means a person will start to apply the substance use for the purpose of achieving pleasure for hedonic reasons. Low positive affect means that a person may prompt initial use because of the lack of responsiveness to natural rewards. Effortful control means the degree of control that the individuals has over impulses and emotions, which includes the ability to focus or shift attention. Temperamental effortful control can influence addiction in a number of ways.

Model of impulsivity

It means that high impulsivity is at greater risk of addiction. The model has two dimensional traits (born personality) for initiation and continuation of abuse. As a reward drive, an individual can differ in sensitivities to incentive motivation and reflects

individual differences in sensitivities to incentive motivation and engagement of addictive behaviour when reward cues are detected. Rash impulsiveness means loss of thinking abilities of a person while under addiction and reflects individual differences in the ability to modify the addictive behaviour due to negative consequences. Effortful control is the degree of control the individual has over impulses and emotions, which includes the ability to focus or shift attention. Temperamental effortful control can influence addiction in a number of ways.

2.11 Drinking Patterns

It was evident that moderate alcohol drinking is healthy and heavy drinking might bring various kinds of hazards and illnesses on human body. The alcohol effect on health are related to both the amount of drink and pattern of drinks.

The followings are 4 patterns of drinking alcohol

1. Abstainer – people who avoid and stop drinking for at least one year.
2. Moderate or low risk drinking – for men is less than four drink and for women is less than three drink on a single day. On a week, for men is less than fourteen drinks and for women is less than seven drinks
3. Heavy or high risk drinking – drinking more than once a week or highly weekly more than the above described amount.
4. Binge drinking – it is a drinking pattern of alcohol heavily within a quick interval of time. It is said by the national institute on alcohol and alcoholism that drinking five or more for men and four or more for women in two hours. On the other hand, UK defined eight or more for men and six or more for women. (54)

Standard drink

There are many definition describing about standard drink. In America, it is accepted as fourteen grams of pure alcohol (6 ounces/177 ml/1.2 teaspoon) in a drink is the one standard drink. In New Zealand, Thailand, Australia, it is accepted that 10 g of pure ethanol. The percent of pure alcohol vary with the brand and type of liquids.

Metabolism and effects of alcohol in liver diseases

The alcohol is mainly metabolized by aldehyde dehydrogenase, alcohol dehydrogenase, cytochrome P450 and enzyme catalase by the liver. Many factors including genetics, liver conditions (fatty change, hepatitis, fibrosis), viral co infection, individual weight, sex, quality of alcohol, amount ingested and other comorbid conditions of the body influence the metabolism of alcohol. The body alcohol concentration can be measured by blood alcohol concentration Long term alcohol consumption definitely has many hazardous effects on body organs and systems especially on hepatobiliary system and other system such as nervous, cardiovascular, musculoskeletal, nutrition, excretory, haematological, digestive systems disorders.

2.12 Factors Influencing Alcohol Consumption in CLD

A. Age

A study in 1139 patients in Nepal indicated that younger aged males (median age - 43 years) consumed more alcohol (55).

B. Gender

A cross-sectional study in 151 **non-alcoholic liver disease (**clinically significantly liver disease) patients demonstrated that light and moderate drinkers were found to be male (56).

C. Marital status

A study in 1398 people in France demonstrated that seven out of ten participants with chronic alcoholic consumption were found to be associated with divorced or separated (57).

D. Nationality

A study in 1139 patients in Nepal said that alcohol abuse and alcoholic liver diseases were found to be associate with low income countries (55).

E. Level of education

A study in 34,478 people in Korea described that lower level of education and service occupation were associated with hazardous alcohol use (58).

F. Income

A study in 7295 subjects, 624 with ALD in China said that low family income were found to be connected with alcoholic liver diseases than rich family (59).

G. Occupation

A study in 15,215 people in Korea described that service and sales workers were associated with high-risk alcohol drinking than higher professions (OR: 1.36, 95% CI: 1.07-1.73, P = 0.011) (60).

H. Smoking

A cross-sectional study in 151 non-alcoholic liver disease patients indicated that alcohol drinkers were associated with smoking cigarette (56).

Summary

Younger age, males, divorced, living in low income countries, poor education level, low income, manual workers, smokers were found to be associated with high risk alcohol consumption in chronic liver diseases population.

2.13 Disease Etiology and Alcohol Consumption

Alcoholic Liver Disease (ALD)

A study in 201 alcoholic liver patients said that dose-dependent relation with the amount of alcohol intake ($p < 0.05$). However, the mortality rate didn't indicate a significant relation with amount of alcohol. Moreover, the type of alcohol consumption didn't demonstrate any association with disease severity; but, the duration interval of alcohol intake was found to be a positive relation with mortality rate. (61)

The effects of long-term moderate or “social” alcohol consumption (10-80 g daily intake) on the incidence of features of alcoholic liver disease (ALD) were delineated in a consecutive autopsy series of 210 males. It was suggested that, in males, daily drinking of ethanol below 40 g for a period of 25 years does not increase the risk of alcohol-related liver disease. In contrast, similar duration of daily drinking between 40 and 80 g (mean 61.6 g) increased the risk of all but cirrhotic change of ALD significantly and may thus expressing a potential threshold level that obviously increases the risk of alcohol-related liver deterioration. Moreover, it was said that, on an individual level, the risk function for cirrhosis may not be directly dose-related. However, when an acceptable threshold level is achieved, further drinking is of no or little importance to the progression of ALD. (62)

Non-alcoholic Fatty Liver Diseases (NAFLD)

It was described in as study in people with presumed NAFLD and alcohol drinking <40 g/week, some degree of regular alcohol consumption was associated with protective effect on the histological severity of liver disease among patients with strictly defined NAFLD (63).

Hepatitis B infection

A study in Korea showed that the prevalence of monthly alcohol consumption was 53.2%, and that of high-risk alcohol consumption was 11.8% among HBV carriers. Less education was associated with both monthly and high-risk alcohol consumption (OR = 1.75 [95% CI = 1.02-3.02] for monthly alcohol consumption among those with less than a high school education; OR = 2.48 [95% CI = 1.19-5.17] for high-risk alcohol consumption among those with less than a high school education and OR = 2.02 [95% CI = 1.12-3.64] among those with a high school education). Additionally, smoking and being male increased the risk of alcohol consumption, and older age and having a normal body mass index decreased the risk. HBV carriers who were less educated, overweight, and smokers were more likely to consume alcohol or meet criteria for high-risk drinking (64).

In a study done in 966 cirrhotic patients (132 with HBV infection and alcoholism, 632 with HBV infection, and 202 patients with alcoholism) in Taiwan said that heavy alcohol drinking significantly increased the risk of cancer in patients with cirrhosis due to hepatitis B (65).

Hepatitis C infection

A study done in 8985 participants (218 hepatitis C patients) indicated that excessive alcohol drinking was associated with higher overall mortality. Moreover, moderate to little drinking among these patients was found to be associate with increased overall and disease specific mortality (66).

Overall Chronic Liver Diseases

Nevertheless, alcohol consumption actually increases risks of liver injury, especially in non-alcoholic fatty liver disease, chronic viral hepatitis, hereditary hemochromatosis, and autoimmune liver diseases. This is due to the fact that synergistic effects can provide in increase risks of inflammation of liver cells and progression rates of cirrhosis, increase the risk for hepatocellular carcinoma and overall mortality rates (67) (68).

2.14 Disease Severity and Alcohol Consumption

In this section, alcohol consumption in no cirrhosis, cirrhosis and liver cancers patients will be described.

No cirrhosis (hepatitis, steatohepatitis, fatty liver, hepatomegaly)

It was said that in patients who drink 40 and 80 g per day were significantly associated with the increasing incidence of alcoholic hepatitis and fatty liver, hepatomegaly (62).

Cirrhosis

It was described that there are dose dependent adverse effect on many severity scores, duration of drinking had effect on decreasing Child score (61).

On the one hand, a study on alcoholics who take more than 80 grams per day showed that long term excessive drinking is associated with increase fibrosis of liver (62).

Hepatocellular carcinoma

One cohort study on 333 patients in Athens showed that heavy alcohol consumption increases the hepatocellular carcinoma risks (69).

2.15 Screening Tests for Alcohol Consumption

There are many tests in alcohol dependence and abuse measurement. They are generally based on epidemiologic, psychiatric and public health field. There will be some common and internationally used questionnaires tools described in the followings.

CRAFT

It is a short, self-administered instrument for adolescent and under 21 years. It consists of series of sex questions to screen alcohol and other drug used disorder at a same time.

CAGE

It is developed by Dr. John Ewing from university of North Carolina. It can access and identify alcoholics and commonly used in primary health care. It contains four simple questions.

MAST

It is one of the oldest and precise alcohol screening tests and called Michigan Alcohol Screening Test. Its accuracy to detect the alcohol dependency is 98%. It was created in 1971 and consists of 22 questions and therefore the disadvantages are longer duration needed to complete and inconvenient for participants and administers in time

limited condition and emergency department. It is not only for alcohol drinking assessment but also can be used to estimate the drug addictions.

AUDIT

The AUDIT is a standard tool developed by WHO and also valid and reliable, widely used by researchers (Cronbach's alpha ranges between 0.39 and 0.98 and the total score was 0.95 (70). It was described about the AUDIT reliability and validity that correlation coefficient ranges between 0.39 and 0.98 and the total score was 0.95 (70). It consists of 10 questions with hazardous alcohol use for number 1 to 3, dependence symptoms for number 4 to 6, harmful alcohol use for number 7 to 10. In sequences, the questions are about: frequency of drinking, typical quantity, frequency of heavy drinking, impaired control over drinking, increased salience of drinking, morning drinking, guilt after drinking, blackouts, alcohol related injuries, others concerned about drinking. The scores will be range from 0 to 4 for each question. There is interpretation system in which a score of 8 or more (7 in female) indicates a noticeable possibility of hazardous or harmful drinking. More than 20 scores are criterion of alcohol dependence. (71)

AUDIT C

It is a modified version of AUDIT. It consists of three questions. It can help to identify person of hazardous drinkers or have alcohol use disorder.

Instrument – timeline follow back (TLFB)

It is a measurement to predict the behaviour about drinking of a person. It is a kind of calendar that could be written by researchers, self-administered by participants or via computers. The participant will be requested to answer and can estimate in a retrospective way about their alcohol drinking during past seven days or more before the survey. The aim is to assess the frequency quantity and of alcohol drinking. However, it requires ten to thirty minutes and it could give many variables and another determination of a person drinking level. (72)

Summary

In my study, AUDIT was applied for alcohol consumption assessment, alcohol related problems and alcohol dependency. Among the tests described previously, some like CAGE and AUDIT – C too short and some like MAST is too long. Thus, they consume long duration to collect survey and not acceptable for the target population the study. Additionally, AUDIT is an international applied alcohol screening test and validation was done by WHO. Many papers are conducted for testing of the reliability of AUDIT test too. In Stockholm University, Sweden, one study demonstrated that the overall reliability of AUDIT total score was 0.84 and when arranged by age, consumer status, gender, the total reliability score was 0.80. That is why, they made a decision that the reliability of the AUDIT is high. (73)

2.16 Definition of health

The World Health Organization (WHO) defines health a state of complete psychical, mental and social well-being as not merely the absence of disease or infirmity (74).

2.17 Quality of life (QOL)

The meaning of QOL is more broad. As described in WHO, it is defined as ways of regarding, understanding or interpreting of human beings to their situations in everyday life in the circumstances of the cultural, moral, attitudes and social value societies where they dwell and according to their aims, needs, beliefs, attainment and interests (75). QOL is the perception of general fulfilment of wishes related to individual life, as considered by the psychologically well-coordinated as well as values accessing a person life (76). This estimation is personally dependent, and comprise of all components of life, including basic requirements of biological, physiological religious and belief related design (77).

The applied word subjective has heterogeneous intentions of a usage to different persons and can be accepted as not trustworthy due to the fact that it is not objective.

Subjective can be similar with self-perceived definition that an individual mainly provides facts relating and concerning himself. Similar meanings of QOL advise that it is an international individualized evaluation of one aspect which may be considerably acting to a diversity of other outstanding, visible measurements: it is a uniformly straight concept with various root origins. (78)

That is why, it involves the whole dimensional aspects of human being's skills, practices, knowledges, conditions, judgements and ways of thinking encompassing the vital life of a person or a groups or systems. Objective as well as subjective QOL comprise societal, bodily, mental, individual, spiritual determinants as well as various dimensional fields including economy, politics, and philosophy. QOL indicates a verdict of standardized assessment rely on the qualifications of public citizens, socialized association covering families or personal. (79)

Lastly, it is obviously accepted that QOL can hypothetically comprise a broad diversity of spheres and elements. These take into account about functional ability including role functioning, the extent and amount of social reactions, psychological well-being, biological perceptions, joyfulness, livings conditions, life contentedness and requirements for fulfilments. (80)

It also interprets life circumstances, obvious experienced happenings and the situational stage of the well-being and the characteristics representing QOL in this admirations additionally contain gender, financial part, economic, social, stages of life, reproduction and procreation. (81). Therefore, QOL is a complicated combination of participating objective and subjective measurements and aspects: involving the personal points of view, is estimated by the inspection and life experiences of the individual, (82) and is probably to be negotiated and conciliated by involvements of cognitive processes.

2.18 Health related quality of life (HRQOL)

It can be defined as the term appointed to length of life time as amplified by the defects, practical actual situations, realization and social circumstances which are affected by illness, accidents, therapy or laws (79). An important issue in HRQOL takes

part in sick people evaluation about their present level of functioning, as well as contentment relating to these components, in contrast to parts in which their believing attitudes are concerning. A crucial part in HRQOL is how the interpretation of a disease or therapy is suffered or practiced by a person. Patients' well-being judging consists of individual conditions which are related and connected by medicals procedures and fluctuations, adaptations with a long term disease and no specific therapy or management. For instance, accessing of health related quality of life throughout the illness course like cerebrovascular accidents, for patients who have full course therapy regime and rehabilitated individuals are staying with the complications of the disease (83).

It is basically given an affirmative statement that HRQOL is a complicated framework that composed of not less than three items – physical, social and psychological – which can be caused by a person's illness and/or therapeutic process. Physical component is generally accepted as the power, energy to handle a variety of daily living life related processes, on the top of that, bodily manifestations caused by the illness, infections or medications or therapeutic related. Psychological component varies from advanced mental stress, sufferings to a better aspect of good health and can comprise of thinking, cognition, too. Social component means numerical, quantity as well as quality of social inter personal relationships, and influences and social combination, incorporations (84).

2.19 Conceptual Models of HRQOL

There is a model explaining health related quality of life which may express a more perfect description than the former findings. Wilson & Cleary (1995) explained a conception which gives a hypothetical way to represent HRQOL as a multifactorial model and combine dimensions relating well-being, biology and psychology. There are five components explained in this model: physiological influences, symptom conditions analysis, functional parts, general common health perceptions and the comprehensive overall quality of life. In various kinds of fields: communities, people, especially

carcinoma patients, joints disease (osteoarthritis), neuro-medical disease (Parkinsonism) and retroviral infections, it has been widely used. (85)

Wilson and Cleary (1995) model

In this model, the researcher explained that, firstly, in all human, the physiological determinants cause the signs and symptoms of patients and then, weakness in second part leads to the functional deficits which in turn lowering and affecting the general overall health status of individuals. By this way, finally, overall quality of life related to health is worsen by these former factors.

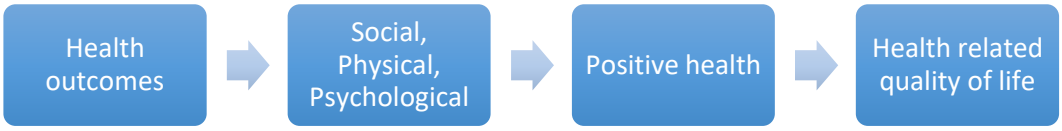
Physiological study describes about how micro organelles, nerves, impulses, ions, body homeostasis, systems, organs are working, maintaining. On the other hand, signs and symptoms study is looking and assessing the whole part of living things. The third component of the model, is the study of the human performances, adaptations to ever changing surrounding environments. General health aspect is a combination of all former heath related concepts with the consideration of psychological aspects. However, they are still in subjective field by the expressed model. In spite of being explained that health awareness are individual faiths, the QOL conceptualization has been mentioned as the inconsistency between personal assumptions or predictions and his current situations. (86)

This model was later reviewed by researchers (87). The reassessed model was created so that they could describe the connections with patient's clinical factors that correlate to QOL by mutually attaching personal features with considering of surrounding environments. (87). On the other hand, many findings conducting of HRQOL were being tested by the researchers. They stated that, many strong correlations were observed in contrasting about self-reported findings and normal standard values of well-being. However, these could not demonstrate the direction and course of causal factors (88).

Physical, mental, general good health are related to consciousness of well-being, self-confidence and QOL (89). Alternatively, another point had been stated that QOL is a model of disease dependent and well-being. This study gave attention to the cause and effect of disease and health. They estimated about bodily and psychological disorders and weakened role operation as well as function and dysfunction. Functional component is the individual performances level, related social relationships, without restrictions of mental or physical aspects of health. (90). This highlights the everyday capacity to do about life related motions, vitality, mobility, liveliness, self-management about self-illness, dealing with household works and additionally, responsibilities of social life.

Generally, the purpose of their assessment is to trace the rate of restoration to normal daily life, whenever this is obtainable. But, various limitations are obstacles for individuals for not recovering to an ordinary better daily life, distinctly with a hazardous, risky, long-term disease with a chronicity. However, with the time flow, changing conditions of individuals relating QOL could be focused and given more attentions.

More comprehensive HRQOL models are traditionally originated from WHO's (1954) statement of health, containing wider aspects, encompassing physical, social and mental health and better wellness, in coexistence with individual reported information, by preference customary standards. Their findings are constructed on the disease prevalence (e.g. overweight), specific chronic illnesses (e.g. hypertension, endocrine diseases) and death proportions (all root origins, particular causal factor).



Both the lack of illness and handicaps; fulfilment, necessity, completeness, productivity, efficiency, coherence of physical and mental parts, the capacity to manage

with pressured conditions, social, recreational support and intellectually healthy leading to self-contentment, bodily strength and well beings.

Finally, we can consider HRQOL as a multidirectional, multi-structural, multidimensional component which has been studied by many researchers. The main issue is that these studies are divergent in their philosophy but they would like to provide us the various of HRQOL dimensions and beneficial, practical, profitable ways for the world to be healthy.

Summary

It is evident that health related quality of life is a multi-aspects composed of social, physical and psychological dimensions to achieve a better health of a human being.

2.20 Health Related Quality of Life in Chronic Diseases

Recently, the prevalence of chronic disease is increasing more and more. On the other hand, living standards, preventive measures, communicable diseases management, medical technologies in therapeutic field are improving as well as extending the lives of people. As a result of this, people have to survive with long term chronic illnesses and significantly lowering their HRQOL. In common sense, these illnesses are longer in course duration, slower in time interval and additionally require further medical management. Most of chronic diseases are handling probable potentially hazardous outcomes for patients by minimizing their abilities and actually they play an important role in health related utilization costs. (91) they all encompassed by numerous kinds of neoplasms, cardiovascular diseases, endocrine disorders, retro viral infections, gastrointestinal, urinary, neurological problems.

One study claimed that chronic disease might throw a person healthy life into disorders and as a result of this, one's quality of life would be negatively affected. Mental health is formed: by lowering the strengthening outcomes of taking parts in highly regarded things in life confidently and perceptions of individual adjustment and

by bordering the capacity to achieve excellent results or keep away from worsening ones. Their suggestion is that we can use HRQOL to measures outcomes, too. (91)

In common sense, psychological philosophy typically strengthens the postulation that many ill people actually make comparison of their health states to other diseased people who would have more relatively positive health (upward comparisons) (92). In this study, if we try to lower the limited forces about better HRQOL, we have to reconsider adjustment to psychology of disease patients in the first group, different from patients who create downward comparisons. Ill people would like to compare themselves to others who have more severe disease, only when suffering from symptoms. When they are in recovery state and have a latest guideline treatment, they would like to generate upward comparisons with other healthy people. (93)

Therefore, by contextualization of HRQOL, it is evident that if we want to determine, assess the illness outcomes and the results of therapeutic procedure, an enhancement in HRQOL is thought to be a basically crucial issue and evaluation of medical outcomes (83). In most occasion, it is found to be a secondary outcome while in some aspects, it only consists of some components: physical or emotional parts. HRQOL is thus, more patient dependent and medical services should focus on both patient body and mind. (83)

2.21 Interventions in HRQOL

By studying HRQOL, we can know the associated good factors and risk factors. Thus, this knowledge could be applied for the invention of interventional programs for chronic disease. Interventions would strengthen public health actions to manage chronic disease. In daily care of chronic medical patients, these methods could be utilized routinely. Interventions depends on the aetiology and severity of specific chronic diseases. Critical evaluation and decision making in carcinoma patients are crucial components for interventional study, too. Intervention studies consist of relaxation and physical training, stress handling management, health promotion and

education, self-management skills, psychosocial counselling for the minimizing of the stigmatization and suffering related with specific causes.

Furthermore, to improve HRQOL, one common intervention is the palliative medical care. It consists of pain controllers, social, psychological, spiritual and mental support (94). It could be applied at any stages and courses of the disease together with the suitable therapeutic treatment (95). There are many methods to support and encourage patients such as employment support, vocational support, exercise and activities programs, and rehabilitation programs. Its effectiveness can be appropriate for comparing patients with the same level and severity of disease at a time. The courses might differ between causes of illness and are symbolized by a balanced condition influencing in recovery forces and deteriorating forces individually. These factors may be lifetime length, social features, basic requirement for well-being and mental health which was described by Jenkins (1992) states (96). Moreover, behavioural changing therapies are effective such as stopping of smoking, stopping of alcohol drinking, living and consuming healthy nourished foods and balancing individual body weight. These interventions could be implemented in one or more kinds of diseases, too. (80)

Summary

Interventional procedures should be based on both medical and behavioural strategies to improve the health related patient's health related quality of life.

2.22 Factors influencing HRQOL in CLD

A. Age

In total, 190 patients (53.2% male, median age 60.0 years, Quality of life was affected in 88.7% of patient. A correlation between increasing age and worsening SF-36 scores has been reported in another study of 1103 chronic liver disease patients (69% cirrhosis) (97).

Conversely, one study of 713 patients with NAFLD found that increasing age was significantly associated with poorer PCS, but not MCS, in univariate and multivariate analysis, however only 9.3% of this cohort were cirrhotic (98).

B. Gender

There are two analytical studies that said that female patients had significantly poorer mental and physical component scores (97) (98).

C. Marital status

Patients who are married or living with a partner have been shown to have better HRQOL than those who are divorced, separated or widowed (98-100).

D. Level of education

In addition, this study showed that higher education level was associated with better mental health scores, while another showed NAFLD patients who did not attain a high school diploma had significantly poorer MCS than those who were better educated (98).

E. Income

Two studies showed that liver patients with lower income have significantly impaired PCS and MCS (98, 100), while another showed an effect on two domains (Physical Functioning and Mental Health) (101).

Summary

Older age, separated, low education, low income and occupation all have found to be related to impaired HRQOL scores.

2.23 Disease Etiology and HRQOL

A large number of studies have looked at how HRQOL differs between liver diseases. A German study of non-cirrhotic patients showed interesting differences in the pattern of impairment as measured by SF-36, with biliary cirrhosis patients scoring lowest on the PCS while patients with HCV had the lowest MCS scores (102). These

findings are consistent with other work which found fatigue to be a key factor in PBC (103), while HCV has been shown to be associated with depression (103). By contrast, it was showed that in cirrhosis PCS was similar between cholestatic diseases and viral hepatitis but poorer with other hepatocellular diseases (104). Another US study compared NAFLD, chronic HBV and HCV, showing that NAFLD patients had significantly poorer CLDQ scores than patients with HBV in five of the six domains and in the overall score. HCV scores were better than NAFLD in two domains (emotional and systemic symptoms) but worse than HBV in two domains (abdominal symptoms and activity). A far greater proportion of patients with HCV had cirrhosis but in multivariate analysis the greater impairment in HRQOL seen with NAFLD persisted after correction for cirrhosis as well as other factors such as diabetes, obesity and gender (105). The same authors also showed health utility scores SF-6D and HUI-2 to be significantly poorer with HCV than HBV in multivariate analysis (106).

A study which compared patients with cirrhosis of various causes, also found that HRQOL was most impaired in HCV, with poorer scores in seven of the twelve LDQOL domains and two of the eight SF-36 domains (107). However, data for other aetiologies were not considered separately but instead combined into one “non-HCV cirrhosis” category, likely due to small numbers. A larger study, which included 761 cirrhotic patients, found that patients with NAFLD had significantly lower SF-36 PCS and PF than patients with ALD, cholestatic liver disease or viral hepatitis (97). On the other hand, two studies found no difference in HRQOL between aetiologies (108, 109). Therefore, the evidence of the impact of liver disease aetiology on HRQOL is conflicting and there is no consistent pattern which will be partly due to the heterogeneity in study design. However, there is evidence that HRQOL is impaired in all aetiologies but the pattern of impairment may vary between different aetiologies. Chronic HBV infection appears to be associated with better HRQOL than other aetiologies, while HCV and NAFLD are associated with poorer HRQOL.

Summary

Hepatitis C patients had higher scores when compared with alcoholic, non-alcoholic, chronic hepatitis B infection and other liver diseases.

2.24 Disease Severity and HRQOL

Cirrhosis

In chronic liver patients, the HRQOL is lower in either cirrhotic or non-fibrotic stages than control groups (110) or compared with normal data (111). Significantly, cirrhotic patients have lower HRQOL than non-cirrhotic patients assessed by either disease specific measurement (111) or generic one: SF-36 (112). This impairment of scores can be seen in comparison of general population and cirrhotic population (113) (114) and in another comparison of patients with their family member or paid helper who look after patients (115). That is why it is crucial to measure the clinical features, nature and extent of illness, outcomes analysis for future unique therapeutic interventions.

Child score

In a cohort study of 1130 CLD patients stated that, Child score B or C had similar scores among two levels but lower SF-36 scores than Child A grading (97). It is evident and support that study in others (114) (104) when other smaller sample size studies showed that only notable contrast in physical component scores not in mental component (108) (116). Child score is found to be one variable in correlation of physical scores in one study, too. (109). Child score is a variable not only in physical component but also in other four domains of SF-36. It is also associated to physical mobility and energy components of Nottingham profile, too (113). Uniquely, child score is found not to be an independent determinant of physical component in one study (117). It is found that ascites (distension of abdomen) is the main factor in child score to determine the lowering of physical component scores more than other three determinants in child scores namely; total albumin, bilirubin, prothrombin time (117). HRQOL in Child B and C, using CLDQ measurement, they could not differentiate the two levels but have a similar overall scores as SF-36 (104, 111). In another measurement of HRQOL: using LDQOL: there are association proved to be in sexual functioning and sexual difficulty, liver disease effects (116). On the other hand, the presentations of liver disease and stigma or visible sign of liver disease components were also obviously connected (116).

MELD score

This scoring system was not widely used until 2002 and that is why information about this score is fewer than Child score in association with HRQOL scores (118). It is found that association between overall, five components of SF-36 score and MELD score in a Polish paper (119). A study said that MELD score and physical component score is correlated but weaker than Child score (116). Another report stated that correlation between four components of SF-36 and MELD score (107). It is found in pre liver transplant patients that correlation between CLDQ scores and SF-36 with MELD score but not an independent variable of either score (120).

Ascites, abdominal distension

Research done on 544 cirrhotic people showed that abdominal distension decreases the scores on general and mental health, pain component too. In a study of 544 patients with cirrhosis including 199 patients with ascites (113). While another study of 523 patients indicated that ascites lower the physical component scores (117). This was similar with the study in which 160 cirrhotic patients had lower physical scores on SF-36 (108). Nevertheless, ascites had decrease gastrointestinal scales especially in constipation, difficulty in eating, indigestion and pain in abdomen which was found in a Swedish study (121).

On the other hand, there was another different study described that ascites also had lower mental component scores (122). Progression of ascites actually had impact on the deteriorated symptoms (113). Interventions on ascites such as insertion of intrahepatic shunting procedures indicated improvement about the patients suffering while another randomized study contradicted that this procedure might not improve the quality of life after shunt was done (123). However, many studies illustrated that this intervention actually had benefits for the patients survival (124, 125).

Hepatic encephalopathy (HE)

Many studies demonstrated that having hepatic encephalopathy in patients could provide the decrease scores in most domains including physical and physical parts on both SF 36 and disease specific tools (108, 114, 119, 122, 126, 127).

Hepatic decompensation

A Us study using a computer based measurement, showed that decompensated state give lower scores on physical, social and pain scores (115). Another study described that recovery patients with previous decompensation had similar scores with typical compensated patients (128). That is why, recovering from this conditions actually increase the quality of patients' life.

Hepatocellular carcinoma

Liver cancer definitely had lower scores on HRQOL in most domains (129). There were also poor scores using both generic and cancer specific tools in liver cancer patients, too (130). Uniquely, better scores at first diagnosis of liver cancer patients had prolong survival (131).

Summary

Higher severity scores, higher histological grading, hepatic encephalopathy, low sodium level have been related to poor HRQOL scores.

2.25 Clinical factors and HRQOL

The presence of underlying medical and surgical co morbidities can affect a person HRQOL, too (100). Many coexisting chronic illness had been associated with poor scores (132). It was described that amount of current medications had to be associated with decrease scores on SF 6 (113). Providing diuretics had to be in association with poor quality of life scores (113). On the one hand, anti-hypertensive drugs especially beta blockers had been indicated to have a poor effect but limited to decompensate cirrhotic patients (133).

Type 2 diabetes had been approved to be associated with poor mental and physical scores in non-alcoholic liver diseases (98). Additionally, in diabetes having multiple complications is clearly associated with decreased HRQOL. (134). Another study indicated that low sodium level was associated with poor physical and mental

scores (117). It was described that many risk behaviours like drinking, smoking and sedentary lifestyle are associated with poor quality of life (135). Additionally, depressed patients with chronic hepatitis C infection had impaired scores (136).

Summary

Presence of diabetes, hypertension, hypercholesterolemia, usage of many medications, loop diuretics, propranolol and having risks behaviours have been associated with impaired HRQOL scores.

2.26 Assessment of HRQOL in Chronic diseases

Chronic disease patients can be assessed by using interview or questionnaires. The first one: interviewing includes semi-structured or open-ended techniques which are beneficial for preparatory modelling of component parts which will be applied in later questionnaires methods to develop questions and to illustrate the past patients' experiences (83). The second one: questionnaires method consists of two major parts which are generic and specific one. The generic one is for different patient's population while disease specific one is for specific medical conditions. Each has own advantages and disadvantages (83). Generic measures could provide comparison between interventions and it can be used to measure the overall health status. It is also essential for policy making process as it has wider range of measurements, efficiency of treatment.

Specific tools have more precise and sensitivity for crucial clinical aspects while generic ones can be missed due to wider measurements. Moreover, they are responsive to minimal changes. However, they cannot be applied to other patients since they are designed only for some specific medical conditions. There are some common measurements for chronic diseases such as the Nottingham Health Profile (NHP), the Euro-Qol (EQ-5D), the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) (137-139). They are already translated into many languages and also applied in many different countries all over the world.

2.27 Assessment of HRQOL in Chronic Liver Diseases

HRQOL is basically based on three components namely physical, social and psychological domain (140). It is applied to evaluate clinical practices efficiency, disease burdens and associated morbidity, progression of deterioration, health care practices, epidemiological study, health economics investigations, health utilization effectiveness, treatment selection, side effects of procedures (141). Recently, measurement of HRQOL is widely used in interventional trials in clinical field especially in pre and post-transplant stages of liver patients (142).

2.28 Generic Tools for HRQOL in CLD

The pros of generic questionnaires are that their overall scores of patients can be applied for comparison with other patients of different underlying diseases or with people in a healthy community. The cons of generic questionnaires are that they cannot be measured in disease-specific symptoms and specific clinical variables. There are three commonly used generic tools in chronic liver disease (143-145):

- the Sickness Impact Profile (SIP)
- the Nottingham Health Profile (NHP),
- the Medical Outcomes Study Short Form-36 (SF-36)

SIP

The SIP has 136 dichotomous items. It is composed of twelve domains in three dimensions. They are: independent part including eating, sleep and rest, home management, work, pastimes and recreation; physical part including mobility, ambulation, movement and body care; psychological part including alertness behaviour, social interaction, communication and emotional behaviours. Its scoring system is described that all overall scores on domains indicated that 0 to 100 scales. Higher scores represent poor HRQOL. Its advantages are that it is widely applied, can be used to compare with other illness. Its disadvantages are that it can be some difficulty

and long duration for patients, payable license fee, not allowed for other language translation.

NHP

The NHP is focused mainly on advance conditions of illness. It has lower sensitivity in certain lesser degree of severity. It has forty-five dichotomous items. It is composed of six domains including pain, energy level, sleep, emotional reaction, physical abilities, social interaction. It is concerned seven life areas: with jobs in the home, occupation, social life, home life, hobbies, sex life and holidays. Its scoring is described as that domain scores provided as 0 to 100 scales. Higher scores represent poor HRQOL. There is only yes/no answer in life areas part. Its advantages are that no fee for license, short time to answer, validated in many other countries. Its disadvantages are that it is less widely applied in chronic liver disease than other generic measurements.

SF-36

The SF-36 is the most widely used international tools in CLD and other chronic disease (146). It has 36 Likert items. In detail, it is composed of two summary scores (physical component summary and mental component summary), eight domain scores (physical functioning, role limitation, bodily pain, general health, vitality, social functioning, role emotional, mental health). Its scoring system is described that all domains and summary scores expressed as T scores where 50 equal to mean US normative scores and 10 equal to one standard deviation. The higher scores represent better HRQOL. Its advantages are that it is most widely used tool, has many foreign language versions, its provides comparison with other diseases, its utility scores can be obtained SF 6D, is based on norm related scoring, also has shorter forms (SF 12, SF 8). Its disadvantages are that its licence fee is payable to apply scoring algorithms, based on US norms which cannot be the same with other different areas.

2.29 Disease-specific Tools for HRQOL in CLD

During recent last 2 decades, there are five most commonly used tools for disease-specific measurement for CLD population. They are

- Liver Disease Quality of Life questionnaire (LDQOL),
- Short form Liver Disease Quality of Life questionnaire (SF-LDQOL)
- Liver Disease Symptom Index 2.0 (LDSI)
- Hepatitis Quality of Life Questionnaire (HQLQ)
- Chronic Liver Disease Questionnaire (CLDQ)

LDQOL

It is composed of seventy-five Likert items plus SF 36. It covers a wide range of liver diseases. It is composed of twelve liver specific domains including effects on activity of daily living, symptoms, memory, concentration, sexual problem, sexual function, loneliness, sleep, quality of social interaction, hopelessness, self-perceived stigma of liver disease and health distress. Its scoring is described as that it based on one hundred scales. Higher scores represent higher HRQOL. Its advantages are that it has greater sensitivity. Its disadvantages are that limited to publications and long duration needed to answer (140, 147, 148).

SF-LDQOL

It is composed of thirty-six Likert items plus SF 36. It covers a wide range of liver diseases. It is composed of nine liver specific domains including memory/concentration, effects of liver disease, hopelessness, sleep, loneliness, distress, sexual problems and stigma of liver disease. Its scoring is described as that it based on one hundred scales. Higher scores represent higher HRQOL. Its advantages are that it has greater sensitivity and responds well to MELD score. Its disadvantages are that limited to publications and long duration needed to answer

LDSI

In 2004, it was created (149). It is composed of eighteen Likert items. More detail, it has nine components including joint pain, itch, daytime sleepiness, abdominal pain, decreased appetite, worry about family situation, fear of complications, depression, jaundice and nine symptom hinderence items. Its scoring system is described that it has five scales on symptom severity and ten scales on symptom hinderence. Higher scores represent more advanced of disease severity and more impact on patients' daily life. Its disadvantages are that too narrow for measurement aspects and limited about published data.

HQLQ

It covers components from generic tools, too. Moreover, there are five disease-specific subscales. It is not suitable for other causes and severity of chronic liver diseases because it is invented only for hepatitis patients.

CLDQ

It was invented by Yonossi et al. in 1999 (147). It is the only validated tool for measuring different causes and various levels of severity in chronic liver diseases. It provides multi-aspects, multi-dimensional evaluation on both overall HRQOL and disease symptoms of CLD. It is validated in many countries including Germany, Thailand, Spain, Greek, Italy, Sri Lankan, Brazil, Sweden (150-157). It twenty-nine questions composed of six domains including fatigue, abdominal symptoms, activity, systemic symptoms, worry and emotional component. Its scoring system is described that domain and over all scores revealed as one to seven scales. Higher scores represent lower symptom suffering and better HRQOL. The cut-off point is 5 and mean CLDQ scores ≥5 is related to better HRQOL and <5 indicates poor HRQOL (158). The scoring system is simple, too. However, it has some limitations when it is applied in patients with advanced deteriorating disease severity.

Summary

In my study, CLDQ was used for determination of HRQOL according to different causes and different levels of severity among chronic liver disease patients because other disease specific tools are too long and limited to published data.

2.30 Related Researches

A study indicated that more than 80% of the alcohol related disease patients presented with severe complications of alcohol use including oesophageal varices, acute pancreatitis, ascites, cirrhosis and alcoholic encephalopathy. Patients with ARDs were typically young men (median age 43 years, 75% men) and they were more likely to be from specific ethnic groups: the OR for the Janajati group was 2.3 (95% CI 1.2–4.3) and the corresponding OR for the Dalit group was 2.6 (95% CI 0.9–7.3), compared to the reference group of Brahmin/Chettri. Living environment (urban or rural) was not associated with ARD in these hospitalized patients. In this study, men and women were equally represented in the adult hospitalized population (obstetric and trauma cases not included). They found no association between sex and the specific NCD categories except for a strong association between sex and ARD: the OR for ARD was 0.30 (95%CI 0,1-0,5) for women compared to men (55).

A cross-sectional study assessing 151 patients with NAFLD at risk of clinically significant liver disease. Compared with lifetime non-drinkers, light and moderate drinkers were more likely to be male and to be Caucasian and to have a history of cigarette smoking, obstructive sleep apnoea, and self-reported depression. Compared to lifetime non-drinkers, light drinkers had 1.79 (95% CI: 0.67–4.82;) and moderate drinkers had 0.91 (95% CI: 0.27–3.10;) times the odds of having liver stiffness measurements ≥8.2 kPa (adjusted for age, gender, and body mass index). Conclusions. In diabetic patients with NAFLD, light or moderate lifetime alcohol consumption was not significantly associated with liver fibrosis (56).

Another study showed that the 12-month prevalence rates of harmful or at risk alcohol consumption rose respectively to 11.1% in the adult patients and to 11.9% in the general adult population. The majority of participants with "at risk" alcohol consumption presented with significant social and medical consequences. Thus, more than seven out of ten participants with chronic at risk consumption endorsed significant negative social event potentially associated with alcohol like withdrawal of driving

licence, getting divorced or separated, and losing friends. Over 10% of these participants had liver disease and diabetes mellitus, more than 30% increased blood pressure and nearly 50% anxiety disorder or major depression (57).

A study done in a total of 34,478 people (14,544 men and 19,834 women) who reported drinking alcohol in the last month at the time of interview were included in the analysis. The proportion of harmful alcohol use in men decreased during the study period, whereas significant change was not observed in women. The prevalence of harmful alcohol use was highest in men aged 35–49 years and women aged 20–34 years. For both men and women, lower level of education and service occupation were the common risk factors of harmful alcohol use. Additionally, low income was a risk factor of harmful alcohol use in women but not in men. Marriage increased the risk of harmful alcohol use in women but decreased in men. (58).

A research done among the 7,295 subjects, 624 (8.55%) were diagnosed with ALD showed that the prevalence rate was significantly higher in males than in females (15.76% in males vs. 1.42% in females, $p < 0.05$). In this population, the risk of ALD was highest in the 40- to 49-year-old group. The incidence of ALD was highest in individuals who had a high level of occupation. Individuals who had received a low level of education had the highest incidence of ALD. Subjects with a low family income were more likely to have ALD than did those with an abundant family income. Currently, unmarried individuals had a higher incidence of ALD in the overall population. (59).

The prevalence of high-risk drinking was 15.1%, with the highest prevalence of 17.2% in middle-aged adults (45–64 years). In men, the prevalence of high-risk alcohol drinking was 23.7%, with the highest prevalence found in middle-aged adults. In women, the prevalence of high-risk alcohol drinking was 4.2%, with the highest prevalence found in younger adults. Men had higher weighted mean AUDIT scores than women and age was negatively associated with the AUDIT score ($P<0.001$). Elementary school graduates had higher mean AUDIT scores than senior high school ($P = 0.003$) or college ($P<0.001$) graduates. Regarding occupation, clerical support

workers (P = 0.002) and service and sales workers (P<0.001) had higher mean AUDIT scores than managers and professionals. Logistic regression analyses of high-risk alcohol drinking using sex, age, education level, number of family members, household income, and occupation as covariates was performed. Women had a lower risk of high-risk alcohol drinking (odds ratio (OR) 0.14, 95% CI: 0.13–0.16, P<0.001) than men. Regarding age, compared to control subjects aged 19–29 years, adults aged 60–69 and older than 70 years had 0.67- (95% CI: 0.51–0.89, P 0.005) and 0.29-fold (95% CI: 0.20–0.70, P<0.001) lower risks, respectively, of high-risk alcohol drinking, whereas adults aged 30–59 had an increased risk of high-risk alcohol drinking. Using elementary school graduates as controls, senior high school (OR: 0.70, 95% CI: 0.55–0.87, P = 0.002) and college (OR: 0.54, 95% CI: 0.42–0. 70, P<0.001) graduates had lower risks of high-risk alcohol drinking. Regarding occupation, compared to managers and professionals as controls, service and sales workers had a greater risk of high-risk alcohol drinking (OR: 1.36, 95% CI: 1.07–1.73, P = 0.011). The number of family members and household income did not influence high-risk alcohol drinking. (60).

The study comprised of 201 male alcoholic patients with mean age of 46.2±9.86 years and mean weight of 58±6 kg. Majority of them have been consuming country-made spirits (79%), other consuming branded spirits like whisky (6.5%) and variable drinkers (14%) while only 1 patient (0.5%) was consuming beer. Country-drinkers consumed more amount (499 units per month) as compared to whisky (328 units/ month) and variable consumers (381 units/month). Average duration of alcohol intake was 17 years which was not significantly different among various liquor groups (61).

A finding suggested that, in males, daily ingestion of ethanol below 40 g for a period of 25 years does not increase the risk of alcohol-related liver disease. In contrast, similar duration of daily intake between 40 and 80 g (mean 61.6 g) increased the risk of all but fibrotic liver lesions of ALD significantly and may thus represent a potential threshold level that significantly increases the risk of alcohol-related liver damage (62)

A total of 77 patients had fatty liver on biopsy showed that fifty-two patients had a history of regular alcohol consumption. The median lifetime cumulative alcohol

intake was 24 gram-years. On multivariable analysis, increasing age (OR 1.07, 95% CI 1.01–1.14) was associated with severe liver disease, whereas alcohol consumption of ≥24 gram-years was associated with less severe disease (OR 0.26, 95% CI 0.07–0.97, *P* = 0.04). Patients who continued to consume alcohol or had been abstinent for ≤1 year had less severe disease. (63).

A study in Korea showed that the prevalence of monthly alcohol consumption was 53.2%, and that of high-risk alcohol consumption was 11.8% among HBV carriers. Less education was associated with both monthly and high-risk alcohol consumption (OR = 1.75 [95% CI = 1.02-3.02] for monthly alcohol consumption among those with less than a high school education; OR = 2.48 [95% CI = 1.19-5.17] for high-risk alcohol consumption among those with less than a high school education and OR = 2.02 [95% CI = 1.12-3.64] among those with a high school education). Additionally, smoking and being male increased the risk of alcohol consumption, and older age and having a normal body mass index decreased the risk. HBV carriers who were less educated, overweight, and smokers were more likely to consume alcohol or meet criteria for high-risk drinking (64).

In a study done in 966 cirrhotic patients (132 with HBV and alcoholism, 632 with HBV infection, and 202 patients with alcoholism) in Taiwan said that heavy alcohol drinking significantly increased the risk of cancer in patients with cirrhosis due to hepatitis B (65).

A study done in 8985 participants (218 hepatitis C patients) indicated that excessive alcohol drinking was associated with higher overall mortality. Moreover, moderate to little drinking among these patients was found to be associate with increased overall and disease specific mortality (66).

Moreover, consumption of alcoholic beverages above a threshold of 40 glasses per week increased the risk of HCC (OR=1.9). We also found evidence of a strong, statistically significant and apparently super-multiplicative effect of heavy smoking and heavy drinking in the development of HCC (OR for both exposures=9.6). This

interaction was particularly evident among individuals without either HBs Ag or anti-HCV (OR for both exposures=10.9). Coffee intake was not positively associated with HCC risk, but the reverse could not be excluded for the subgroup of chronically infected individuals. In conclusion, tobacco smoking and heavy alcohol consumption are associated with increased risk of HCC (69).

A research done in 1103 CLD patients illustrated that demographic and clinical data included: age 54.2±12.0 years, 40% female, 761 (69%) with cirrhosis. Analysis revealed that age correlated significantly (P <0.05) with worsening HRQL on every scale of the SF-36. Female patients had more HRQL impairments. Furthermore, cirrhotic patients had more impairment of HRQL in every scale of SF-36 (Δ scale score: 6.6–43.0, P <0.05). In terms of diagnostic groups, non-alcoholic fatty liver disease patients showed more impairment of HRQL. (97).

A total of 713 subjects with NAFLD (male = 269, female = 444) were included. Mean age of subjects was 48.3 years; 61% had definite non-alcoholic steatohepatitis (NASH), and 28% had bridging fibrosis or cirrhosis. Diabetes was present in 27% of subjects. Subjects with NAFLD had worse physical (mean, 45.2) and mental health scores (mean, 47.6) compared with the U.S. population with (mean, 50) and without (physical, 55.8; mental, 52.5) chronic illness. Subjects with NASH reported lower physical health compared with subjects with fatty liver disease without NASH (44.5 versus 47.1, P = 0.02). Subjects with cirrhosis had significantly (P < 0.001) poorer physical health scores (98).

In general, HRQL in patients with chronic liver disease was lower than the normal population and was similar to that of patients with chronic obstructive pulmonary disease or congestive heart failure. In cirrhotic patients, some dimensions of HRQL were less impaired in patients with cholestatic disease than in those with hepatocellular diseases. More severe disease (higher Child's class) was associated with a lower Chronic Liver Disease Questionnaire score (104).

Another study showed that a substantially larger proportion of men than women engaged in high risk (21.2% vs. 3.4%) and moderate-risk alcohol use (15.5% vs. 8.2%). In both sexes, moderate- and high-risk uses were associated with younger age, higher income, being currently employed, smoking, being overweight/obese, and good self-rated health (159).

Overall, 76% of men and 36% of women reported drinking some alcohol during the past 12 months, with 33% of men and 2% of women drinking at least weekly; the prevalence of weekly drinking in men varied from 7% to 51% across the 10 study areas. Mean consumption was 286 g/week and was higher in those with less education. Most weekly drinkers habitually drank spirits, although this varied by area, and beer consumption was highest among younger drinkers; 37% of male weekly drinkers (12% of all men) reported weekly heavy drinking episodes, with the prevalence highest in younger men. Drinking alcohol was positively correlated with regular smoking, blood pressure and heart rate (160).

A study in Myanmar, Pha-An results described more than 50 % of participants have alcohol drinking in their life time and alcohol drinking is more common in male participants. The three most preferred types of alcohol consumed in this area were Palm Tree Juice (86.5% of drinkers), Beer (61.3% of drinkers) and Home-made alcohol (42.3% of drinkers) in their life time. Among the participants who drank alcohol in the last two weeks, about 60% drank alcohol 1 to 5 times and over 30% drank more than 30 standard drinks (2.14 SD per day) in the last two weeks. (161).

The prevalence of alcohol use was found to be 9.4% in a study. Prevalence was more among males (16.8%) as compared to that among females (1.3%). Mean age at initiation was 25.3 +9.0 years. Multiple logistic regression analysis revealed that middle age (15–44 years) (OR=3.56), male gender (OR=11.23), illiteracy (OR=6.16), lower education levels (OR=2.57) and smoking (OR=17.78) were independently associated with alcohol use. Among those who used alcohol, 29.2% (26) were possible hazardous drinkers, 33.7%(30) had a probable alcohol dependence and 56.2% (50) had experienced harmful effects, based on AUDIT item analysis. (162)

A survey completed by 349 pharmacy students (95.9% cooperation rate) showed that using the Alcohol Use Disorders Identification Test criteria, 23.2% of students reported hazardous or harmful use and 67.2% of students reported consuming alcohol at hazardous levels during the past year. Students who were male (37.0%), single (25.3%), and attended the main campus (26.2%) were more likely than their counterparts to report hazardous or harmful alcohol use (163).

Tobacco use following liver transplantation for alcoholic liver disease: Alcohol and tobacco use commonly co-occur, with at least 90% of those with an alcohol problem also using tobacco. Thus, 3 years ago when we discovered higher rate of late deaths due to lung and oropharyngeal cancer in patients with a transplant for alcoholic liver disease (ALD), we hypothesized that these patients were continuing to expose themselves to tobacco after liver transplantation (post-LTX) and that this behaviour was increasing their risk for cancer (164).

A study in patients who receive a liver transplant for alcoholic liver disease (ALD), investigators are focusing beyond survival to determine specific alcohol use outcomes. Studies suggest the use of alcohol ranges from 8 to 22% for the first post-transplant year with cumulative rates reaching 30 to 40% by 5 years following transplantation. Yet while investigators are interested in determining specific rates of alcohol use and predictors of use, only three studies since 1990 have been prospective. In 1998, we began a prospective study of post-transplant alcohol consumption in ALD recipients using multiple repeated measures of alcohol use. After 5 years of follow-up, we found that 22% had used any alcohol by the first year and 42% had a drink by 5 years. By 5 years, 26% drank at a heavier use (binge) pattern and 20% drank in a frequent pattern. In a univariate model, predictors of alcohol use included pre-transplant length of sobriety, a diagnosis of alcohol dependence, a history of other substance use, and prior alcohol rehabilitation (165).

A study of 255 consecutive patients (80%) with all stages of various liver diseases attending a tertiary care centre completed the following self-report questionnaires: Stepwise multiple regression showed that cause of liver disease, severity of disease (cirrhosis vs. no cirrhosis, Child-Pugh score), sex, age, and social class had no effect on HRQOL (166).

CHAPTER III

RESEARCH METHODOLOGY

In this chapter, for the aim of assessing alcohol consumption patterns including type, quantity, frequency, alcohol screening test, related health consequences and health related quality of life including Abdominal symptoms, Fatigue, Systemic symptoms, Activity, Emotional functions, Worry among chronic liver disease patients' population, the following components: the research design, study area, study population, sample size calculation, research criteria, study period, sampling technique, the validity and reliability, data collection process, data analysis methods, ethical aspects, research limitations, outcomes and benefits were described in detail.

3.1 Research design

This was a cross sectional study.

3.2 Study Area

Mandalay city has many government tertiary centre hospitals such as Mandalay General Hospital, Central Women Hospital, Children Hospital, Eye-Ear-Nose-Throat Hospital, TB Hospitals, etc. as well as many private hospitals and clinics. Among them, one medical specialty ward in a tertiary center which is only for the liver disease patients, Mandalay city, Myanmar was applied for the data collection process. The target place is the specialty center only for the liver diseases (the only one government center in upper half of Myanmar.

3.3 Study Population

Patients, aged 18 years and older, have a diagnosis of chronic liver disease (CLD) by physicians. Patients with CLD came or referred to the centre, Mandalay, Myanmar, in the period of collection of survey, were recruited for the study.

3.4 Sample Size Calculation

$$SS = \frac{Z^2 \text{ x (p) x (1–p)}}{(C)^2}$$

where

- SS = Sample Size
- Z = Z-value (e.g., 1.96 for a 95 percent confidence level)
- P = Percentage of population picking a choice, expressed as decimal
- C = Confidence interval, expressed as decimal (e.g., .04 = +/- 4 percentage points)

Z-values (Cumulative Normal Probability) represent the probability that a sample will fall within a certain distribution.

The Z-values for confidence levels are: 1.645 = 90 percent confidence level, 1.96 = 95 percent confidence level 2.576 = 99 percent confidence level

39. 1% of patients have overall low score (< mean) using CLDQ in a study based in Brazil (167)

Calculation and substituting in the formula,

$$N = \frac{Z^2 \text{ x (p) x (1–p)}}{(C)^2}$$

$$N = \frac{1.96^2 \text{x } 0.391 \text{x } (1 - 0.391)}{0.06^2}$$

$$= \frac{0.91475795}{0.0036}$$

= 254 + 26 =280

3.5 Research Criteria

Inclusion

- Any patients who were already diagnosed by doctors, physicians as having one of chronic liver diseases and come to hospital, clinics
- Males and females aged above 18 years
- Voluntary patients

Exclusion

- Patients with mental illness diagnosed by physicians in medical records
- Patients under control of some mood stabilizers described in medical records
- Patients with severe hepatic coma, confusing about time, place, person
- Patients with drainage tube or dealing with surgical procedure
- Patients who were registered in medical records as more than one time of admission or follow-up times in the targeted medical clinics or centres during survey period

Procedure

1. Questionnaires were created
2. Validity was tested by sending questions to three experts for review
3. Revision of measurement tool was made
4. Reliability was tested by piloting the questionnaire on 30 patients
5. Revision of measurement tool was made
6. A letter requesting the The Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University's approval for research was composed
7. Revision was made according to the Ethical Review Board's commentary
8. The authority persons of the medical clinics, centers were informed
9. The medical professionals including doctors, nurses, assistants of the clinics were informed
10. The research assistants were explained in detail about the research questionnaires and the process
11. The patients including inpatients and outpatients/follow-up patients were given instructions to allow to understand
12. The secondary data was obtained from medical records, books
13. Data were collected and corrected
14. Data were analyzed
15. Results were written and discussed
16. Manuscript was revised
17. The paper was sent for publication

3.6 Study Period

Study period was 2017 August to 2018 July.

3.7 Sampling Technique

Purposive sampling was used for this research. Research was applied to chronic liver disease patients, in medical clinics, Mandalay city, Myanmar. There were 2 days of follow up period per week with approximately 150 patients in one follow up period. Generally, the minimum period for next time follow up for individual patient was at least 3 months. The patients were recruited in follow up period and then available patients who were in inclusion criteria were asked by the researchers using survey questions and also secondary data obtained from medical records until reaching the required sample size – 280 patients.

3.8 Data Collection

Data were collected through face to face questionnaires and also from secondary data from medical records and clinical findings.

1. Firstly, the authority of the clinics and centres were informed about the research. After getting the permission from the authority of the centre, patients including inpatients, outpatients, follow-up patients from medical clinics, centres were first reviewed by the research assistants as they have the chronic liver diseases. To ensure that patients would not return multiple survey participations, patients with one more admission and follow-up times in targeted clinics, centres during survey period would be excluded.

2. The patient's inclusion and exclusion criteria were determined by the research assistants themselves using current clinical diagnosis and laboratory diagnosis as they had the knowledge of strong clinical backgrounds in hospitals.

3. The research assistants who were medical doctors and physicians currently working in hospital and having a strong clinical experiences in approaching and interviewing patients. They would be well explained and trained about each steps of the data

collection and also about the importance of concerning patients right and patients' consent allowance before interviewing.

4. The interview will be done at the places such as patients counselling and consultation rooms where there will be privacy for the participant with strict confidentiality.

5. The patients was provided the general information of the study including the purpose of the study, instructions and what to expect from the study. The informed consent was applied before the start of the study.

6. The questionnaires were asked by face to face interview and took times about 15-30 minutes for each survey and the secondary data were achieved from medical records including printed patients record books, bed charts and medical charts by the research assistants. If there were missing in records, the current clinical diagnosis would be given by specialist clinicians.

7. If the patients felt psychologically or physically uncomfortable or distress during interview, they would be send referrals to respective speciality and further counselling and consultation would be made by experts of the centres.

8. The research assistants had past and current experiences in interviewing the patients in medical wards and had enough backgrounds and knowledges in approaching patients. In order to ensure the quality of data collection, the principal researcher gave general orientation and training to the research assistants three days with generally 1 to 2 hours per time depend upon their availability in post office hours before the data collection. The principal researcher explained the nature of the research, the research objectives, methodology, details about questionnaires and ethical concern. The documents such as consent form, research objectives, hypothesis and questions, papers for ethic approval, and questionnaires were given to the research assistants to be clear about the research. They were trained how to conduct interview and how to build trust with the interviewee. The researcher clarified the points and questions which the assistants wanted to know more or confuse. During the data collection, the principal

researcher supported research assistances not to disturb or influences the interviewees' answers and tried to get correct and accurate data as much as possible. Data completeness was monitored on the daily basis.

9. Data from the questionnaires and medical records were saved into an excel file. Data were checked daily for completion.

3.9 Outcomes

The study outcomes were as follows:

- Alcohol consumption patterns including type, quantity, frequency, alcohol screening, among different stages of disease and different causes of chronic liver disease patients
- Health related quality of life including Abdominal symptoms, Fatigue, Systemic symptoms, Activity, Emotional functions, Worry among different chronic liver disease patients
- Prevalence of alcohol consumption and health related quality of life among chronic liver disease patients

3.10 Measurement Tools

Patients who agree to take part in the survey, needed to complete 10 parts of face to face survey. The questionnaires were addressed about their socio-demographics characteristics, alcohol consumption patterns including drinking status, first age and first reason of drinking, situation and place of drinking, type, quantity and frequency of drink, AUDIT, health consequences, other substance use, CLDQ. The survey approximately took 20 minutes to complete (for full questionnaire, see in appendix)

Primary data including

Part 1 - Socio-demographic characteristics

Part 2 – Assessment of alcohol drinking

1. Lifetime drinking status, Age of first time drinking, Reason for first time drinking, type of first time drinking
2. Drinking patterns assessment in last 12, 6, 3, 1 month and last week including Drinking status, Type, quantity, frequency, Situation, Place, Time, Days
3. Alcohol use disorder identification test (AUDIT)
4. Alcohol related harms and injury, Prescribed medicine and alcohol, Drinkers in family
5. Substance use

Part 3 – Assessment of health related quality of life - Chronic liver disease questionnaires (CLDQ)

Secondary data including

Liver disease causes, chronic viral hepatitis infection status, liver disease severity, underlying diseases.

Primary data

Part 1: Sociodemographic characteristics

There were six items, used in this portion, namely - age, gender, marital status, education level, occupation, income. Table of type of data and range/categories of variables is described below.

Type of data and range/categories for socio-demographic characteristics

	Variables	Type of data	Range/categories
1.	Age	Continuous	18 years and older
2.	Gender	Categorical – dichotomous	Male Female

3.	Marital status	Categorical – nominal	Single Married Windowed Divorced/Separated
4.	Education level	Categorical - ordinal	Never been to school (read and write) Primary level Middle level High school level Graduated and higher levels
5.	Occupation	Categorical – nominal	Un-employee/dependent Retired Government staffs Private company staffs Own business General workers Others
6.	Individual Income	Categorical – ordinal	No income 1-99 USD 100-299 USD 300 USD and above

Part 2: Assessment of alcohol drinking

Question 7.

One question was asked whether the patient had ever drunk an alcohol containing beverage in lifetimes. Choices for this part included "Yes or No" and if "No" the patients can be skipped to question 16. Those who answered "Yes" can be continued to the next part.

Variables	Type of data	Range/categories
Drinking status	Categorical – dichotomous	No Yes

Age of first time drinking

One question was asked about the age of first drinking of alcohol. The younger the start of drinking alcohol, the higher of the risk about the getting liver disease. The answer was described in years.

Variables	Type of data	Range/categories
First time drinking age	Continuous	

Reason for first time drinking

One question was asked about the first reason for drinking. Choices for this include friends/socialization, celebration/festival, depressed mood, no reason, other reasons will be specified.

Variables	Type of data	Range/categories
First reason	Categorical – nominal	Friends/socialization Celebration/festival Depressed mood No reason Others specify

Variables	Type of data	Range/categories
Type of alcohol in first time drinking	Categorical – nominal	Beer Spirit Rum Wine Whisky Palm tree juices

Question 8. (a)

One question was asked whether the patient has ever drunk an alcohol containing beverage in last 12 months. Choices for this part will include “Yes or No” and if “No” the patients can be skipped to question 16. Those who answer “Yes” can be continued to the next part.

Variables	Type of data	Range/categories
Drinking status	Categorical – dichotomous	No Yes

Question 8. (b)

One question was asked about the type of alcohol, quantity in one usual drink measured by standard drinks, frequency in one month in last 12 months.

In this part, quantity of alcohol drinking within one month was assessed and referred by a can of beer = 1.5 drinks, a glass of wine = 1.5 drinks, a glass of whisky = 2 drinks, a large bin of beer = 2.5 drinks. It will include 1-2 drink, 3-4 drink, 5-6 drink, 7-9 drink and more than 9 drinks.

In this part, frequency of drinking within one month was assessed by one question. It includes once a month, 2-4 times, 2-3 times, 4 or more times a month.

Variables	Type of data	Range/categories
Type of alcohol	Categorical – nominal	Beer Spirit Rum Wine Whisky Others specify

Variables	Type of data	Range/categories
A typical day drinking quantity within these 30 days	Categorical – ordinal	1-2 drink 3-4 drink 5-6 drink 7-9 drink more than 9 drink

Variables	Type of data	Range/categories
How often did you have a drink containing alcohol within these 30 days	Categorical – ordinal	1-30

Question 8. (C) - Situation of drinking

In this part, one question was asked about drinking with whom in last 12 months? It includes drinking alone or drinking with friends. Drinking alone might be associated with heavy drinking, suicidal tendency. Drinking with friends can be associated with quarrels.

Variables	Type of data	Range/categories
Drinking situation	Categorical – nominal	Drinking alone Drinking with friends

Question 8. (D) - Place of drinking

In this part, one question was applied for drinking places in last 12 months. Options include at home, in shop, at ceremony. At shop drinking can be associated with accidents.

Variables	Type of data	Range/categories
Drinking place	Categorical – nominal	Home Restaurants/Beer Shop Ceremony, celebration Workplaces

		Bars Others specify

Question 8. (E)

In this part, one question was applied for drinking time in last 12 months. Options include daytime, evening, night, and no specific time.

Variables	Type of data	Range/categories
Drinking time	Categorical – nominal	Daytime Evening Night No specific time

Question 9. (a)

One question was asked whether the patient has ever drunk an alcohol containing beverage in last 6 months. Choices for this part include "Yes or No" and if "No" the patients can be skipped to question 16. Those who answer "Yes" can be continued to the next part.

Variables	Type of data	Range/categories
Drinking status	Categorical – dichotomous	No Yes

Question 9. (b)

One question was asked about the type of alcohol, quantity in one usual drink measured by standard drinks, frequency in one month in last 6 months.

In this part, quantity of alcohol drinking within one month was assessed and referred by a can of beer = 1.5 drinks, a glass of wine = 1.5 drinks, a glass of whisky = 2 drinks, a large bin of beer = 2.5 drinks. It will include 1-2 drink, 3-4 drink, 5-6 drink, 7-9 drink and more than 9 drinks.

In this part, frequency of drinking within one month was assessed by one question. It includes once a month, 2-4 times, 2-3 times, 4 or more times a month.

Variables	Type of data	Range/categories
Type of alcohol	Categorical – nominal	Beer Spirit Rum Wine Whisky Others specify

Variables	Type of data	Range/categories
A typical day drinking quantity within these 30 days	Categorical – ordinal	1-2 drink 3-4 drink 5-6 drink 7-9 drink more than 9 drink

Variables	Type of data	Range/categories
How often did you have a drink containing alcohol within these 30 days	Categorical – ordinal	1-30

Question 9. (C) - Situation of drinking

In this part, one question was asked about drinking with whom in last 6 months? It includes drinking alone or drinking with friends. Drinking alone might be associated with heavy drinking, suicidal tendency. Drinking with friends can be associated with quarrels.

Variables	Type of data	Range/categories
Drinking situation	Categorical – nominal	Drinking alone Drinking with friends

Question 9. (D) - Place of drinking

In this part, one question was applied for drinking places in last 6 months. Options include at home, in shop, at ceremony. At shop drinking can be associated with accidents.

Variables	Type of data	Range/categories
Drinking place	Categorical – nominal	Home Restaurants/Beer Shop Workplaces Bars Others specify

Question 9. (E)

In this part, one question was applied for drinking time in last 6 months. Options include daytime, evening, night, and no specific time.

Variables	Type of data	Range/categories
Drinking time	Categorical – nominal	Daytime Evening Night No specific time

Question 10. (a)

One question was asked whether the patient has ever drunk an alcohol containing beverage in last 3 months. Choices for this part include “Yes or No” and if “No” the patients can be skipped to question 16. Those who answer “Yes” can be continued to the next part.

Variables	Type of data	Range/categories
Drinking status	Categorical – dichotomous	No Yes

Question 10. (b)

One question was asked about the type of alcohol, quantity in one usual drink measured by standard drinks, frequency in one month in last 3 months.

In this part, quantity of alcohol drinking within one month was assessed and referred by a can of beer = 1.5 drinks, a glass of wine = 1.5 drinks, a glass of whisky = 2 drinks, a large bin of beer = 2.5 drinks. It will include 1-2 drink, 3-4 drink, 5-6 drink, 7-9 drink and more than 9 drinks.

In this part, frequency of drinking within one month was assessed by one question. It includes once a month, 2-4 times, 2-3 times, 4 or more times a month.

Variables	Type of data	Range/categories
Type of alcohol	Categorical – nominal	Beer Spirit Rum Wine Whisky Others specify

Variables	Type of data	Range/categories
A typical day drinking quantity within these 30 days	Categorical – ordinal	1-2 drink 3-4 drink 5-6 drink 7-9 drink more than 9 drink

Variables	Type of data	Range/categories
How often did you have a drink containing alcohol within these 30 days	Categorical – ordinal	1-30

Question 10. (c) - Situation of drinking

In this part, one question was asked about drinking with whom in last 3 months? It includes drinking alone or drinking with friends. Drinking alone might be associated with heavy drinking, suicidal tendency. Drinking with friends can be associated with quarrels.

Variables	Type of data	Range/categories
Drinking situation	Categorical – nominal	Drinking alone Drinking with friends

Question 10. (d) - Place of drinking

In this part, one question was applied for drinking places in last 3 months. Options include at home, in shop, at ceremony. At shop drinking can be associated with accidents.

Variables	Type of data	Range/categories
Drinking place	Categorical – nominal	Home Restaurants/Beer Shop Ceremony, celebration Workplaces Bars Others specify

Question 10. (e)

In this part, one question was applied for drinking time in last 3 months. Options include daytime, evening, night, and no specific time.

Variables	Type of data	Range/categories
Drinking time	Categorical – nominal	Daytime Evening Night No specific time

Question 11. (a)

One question was asked whether the patient has ever drunk an alcohol containing beverage in last month. Choices for this part include “Yes or No” and if “No” the patients can be skipped to question 16. Those who answer “Yes” can be continued to the next part.

Variables	Type of data	Range/categories
Drinking status	Categorical – dichotomous	No Yes

Question 11. (b)

One question was asked about the type of alcohol, quantity in one usual drink measured by standard drinks, frequency in one month in last month.

In this part, quantity of alcohol drinking within one month was assessed and referred by a can of beer = 1.5 drinks, a glass of wine = 1.5 drinks, a glass of whisky = 2 drinks, a large bin of beer = 2.5 drinks. It will include 1-2 drink, 3-4 drink, 5-6 drink, 7-9 drink and more than 9 drinks.

In this part, frequency of drinking within one month was assessed by one question. It includes once a month, 2-4 times, 2-3 times, 4 or more times a month.

Variables	Type of data	Range/categories
Type of alcohol	Categorical – nominal	Beer Spirit Rum Wine Whisky Others specify

Variables	Type of data	Range/categories
A typical day drinking quantity within these 30 days	Categorical – ordinal	1-2 drink 3-4 drink 5-6 drink 7-9 drink more than 9 drink

Variables	Type of data	Range/categories
How often did you have a drink containing alcohol within these 30 days	Categorical – ordinal	1-30

Question 11. (c) - Situation of drinking

In this part, one question was asked about drinking with whom in last month? It includes drinking alone or drinking with friends. Drinking alone might be associated with heavy drinking, suicidal tendency. Drinking with friends can be associated with quarrels.

Variables	Type of data	Range/categories
Drinking situation	Categorical – nominal	Drinking alone Drinking with friends

Question 11. (d) - Place of drinking

In this part, one question was applied for drinking places in last month. Options include at home, in shop, at ceremony. At shop drinking can be associated with accidents.

Variables	Type of data	Range/categories
Drinking place	Categorical – nominal	Home Restaurants/Beer Shop Ceremony, celebration Workplaces Bars Others specify

Question 11. (e) – drinking time

In this part, one question was applied for drinking time in last month. Options include daytime, evening, night, and no specific time.

Variables	Type of data	Range/categories
Drinking time	Categorical – nominal	Daytime

		Evening Night No specific time

Question 12. (a)

One question was asked whether the patient has ever drunk an alcohol containing beverage in last week. Choices for this part include “Yes or No” and if “No” the patients can be skipped to question 16. Those who answer “Yes” can be continued to the next part.

Variables	Type of data	Range/categories
Drinking status	Categorical – dichotomous	No Yes

Question 12. (b)

One question was asked about the type of alcohol, quantity in one usual drink measured by standard drinks, frequency in one month in last week.

In this part, quantity of alcohol drinking within one month was assessed and referred by a can of beer = 1.5 drinks, a glass of wine = 1.5 drinks, a glass of whisky = 2 drinks, a large bin of beer = 2.5 drinks. It will include 1-2 drink, 3-4 drink, 5-6 drink, 7-9 drink and more than 9 drinks.

In this part, frequency of drinking within one month was assessed by one question. It includes once a month, 2-4 times, 2-3 times, 4 or more times a month.

Variables	Type of data	Range/categories
Type of alcohol	Categorical – nominal	Beer Spirit Rum Wine Whisky Others specify

Variables	Type of data	Range/categories
A typical day drinking quantity within last week	Categorical – ordinal	1-2 drink 3-4 drink 5-6 drink 7-9 drink more than 9 drink

Variables	Type of data	Range/categories
How often did you have a drink containing alcohol within last week?	Categorical – ordinal	1-30

Question 12. (c) - Situation of drinking

In this part, one questions was asked about drinking with whom in last week? It includes drinking alone or drinking with friends. Drinking alone might be associated with heavy drinking, suicidal tendency. Drinking with friends can be associated with quarrels.

Variables	Type of data	Range/categories
Drinking situation	Categorical – nominal	Drinking alone Drinking with friends

Question 12. (d) - Place of drinking

In this part, one question was applied for drinking places in last week. Options include at home, in shop, at ceremony. At shop drinking can be associated with accidents.

Variables	Type of data	Range/categories
Drinking place	Categorical – nominal	Home Restaurants/Beer Shop Ceremony, celebration

		Workplaces Bars Others specify

Question 12. (e)

In this part, one question was applied for drinking time in last week. Options include daytime, evening, night, and no specific time.

Variables	Type of data	Range/categories
Drinking time	Categorical – nominal	Daytime Evening Night No specific time

Question 12. (f)

In this part, one question was applied for drinking days in last week. Options include weekdays and weekends.

Variables	Type of data	Range/categories
Drinking days	Categorical – nominal	Weekdays Weekends Both weekends and weekdays

Question 13: AUDIT questionnaires

In this study, AUDIT will be used for alcohol related disorders screening. The AUDIT is a standard tool developed by WHO and also valid and reliable, widely used by researchers (Cronbach's alpha ranges between 0.39 and 0.98 and the total score was 0.95 (70). It was described about the AUDIT reliability and validity that correlation coefficient ranges between 0.39 and 0.98 and the total score was 0.95 (70). It consists of 10 questions with hazardous alcohol use for number 1 to 3, dependence symptoms for number 4 to 6, harmful alcohol use for number 7 to 10. In sequences, the questions are about: frequency of drinking, typical quantity, frequency of heavy drinking,

impaired control over drinking, increased salience of drinking, morning drinking, guilt after drinking, blackouts, alcohol related injuries, others concerned about drinking. The scores will be range from 0 to 4 for each question. There is interpretation system in which a score of 8 or more (7 in female) indicates a noticeable possibility of hazardous or harmful drinking. More than 20 scores are criterion of alcohol dependence.

Variables	Type of data	Range/categories
Alcohol consumption, Alcohol dependence, Alcohol related problems	Categorical - ordinal	Abstainer (0) Low risk drinker (1-7) Hazardous drinker (8-14) Harmful drinker (15-19) Probable alcohol dependent drinker (20-40)

Question 14. (a)

Variables	Type of data	Range/categories
Injury to others related to your drinking in last 12 months	Categorical – dichotomous	No Yes

If, YES, in this part, one question was applied for self -injury related to drinking in last year. Options include falls, accidents, fights/violence, suicidal tendency/thoughts.

Variables	Type of data	Range/categories
Self-Injury related to drinking	Categorical – nominal	Falls Accidents (vehicles) Violence/fights Suicidal tendency/thoughts Others specify

Question 14. (b)

Variables	Type of data	Range/categories
Injury to others related to your drinking in last 12 months	Categorical – dichotomous	No Yes

If YES, in this part, one question was applied for injury to others related to your drinking in last year. Options include falls, accidents, fights/violence, suicidal tendency/thoughts.

Variables	Type of data	Range/categories
Types	Categorical – nominal	Accidents (vehicles) Violence/fights Others specify

Question 15.

In this part, one question was applied for taking prescribed medicine with your drinking in last year. Options will include No and Yes.

Variables	Type of data	Range/categories
Taking medicine with alcohol	Categorical – dichotomous	No Yes

If YES,

Variables	Type of data	Range/categories
Types of medicine	Categorical – nominal	

Question 16.

In this part, one question was applied for your family members drinking alcohol. Options include No and Yes.

Variables	Type of data	Range/categories
Alcohol drinker in Family members	Categorical – dichotomous	No Yes

If YES,

Variables	Type of data	Range/categories
Who are the drinkers	Categorical – nominal	Father Uncle Brother Others

Question 17: Substance use

In this section, the patient was asked whether he or she ever used smoking or betel nut use within last 12 months. Choices include Yes or No. this part is regarding substance use, as it is relevant to health outcomes and may be associated with liver diseases.

Variables	Type of data	Range/categories
Any substance use within past 12 months	Categorical – dichotomous	No Yes

If YES,

Variables	Type of data	Range/categories
Substance use	Categorical – nominal	Smoking Betel nuts Others specify

Part 3: Assessment of health related quality of life

Question 18: Chronic liver disease questionnaires (CLDQ)

In this part, the disease specific tool for chronic liver disease, the Chronic Liver Disease Questionnaire (CLDQ) was used in the patients which was invented by Yonossi et al. in 1999 (147). It is the only validated tool for estimating various aetiology and

various levels of severity in chronic liver diseases. It provides multi-aspects, multi-dimensional evaluation on both overall HRQOL and disease symptoms of CLD. It is validated in many countries including Germany, Thailand, Spain, Greek, Italy, Sri Lankan, Brazil, Sweden (150-157). It twenty-nine questions composed of six domains including fatigue, abdominal symptoms, activity, systemic symptoms, worry and emotional component. Its scoring system is described that domain and over all scores revealed as 1 to 7 scales. Higher scores represent lower symptom suffering and better HRQOL. The cut-off point is mean CLDQ scores and is related to better HRQOL and < mean indicates poor HRQOL (158). The scoring system is simple, too. However, it has some limitations when it is applied in patients with advanced deteriorating disease severity. Cronbach's α. Values for the CLDQ for each domain ranged from 0.78 to 0.93 which was done in NASH patients in 2016. (168) Another study said that internal consistency coefficients ranged from a = 0.72 for ‘‘activity’’ to a = .92 for ‘‘fatigue,’’ attaining a = 0.95 for the final result. (169)

Variables	Type of data	Range/categories
Abdominal symptoms	Continuous	1 - 7
Fatigue	Continuous	1 - 7
Systemic symptoms	Continuous	1 - 7
Activity	Continuous	1 - 7
Emotional functions	Continuous	1 - 7
Worry	Continuous	1 - 7

Secondary data were

1. Disease causes
2. Disease severity
3. Clinical data

Secondary data

Question 1: Disease etiology

Etiology of disease in each patient was estimated by secondary data using clinical findings, pharmacy records, clinical data, blood tests results, physician-assigned

diagnoses, imaging results (Ultrasound, computed tomography, magnetic resonance imaging, etc.), past medical records.

Table of type of data and range/categories of variables is described below.

Variable	Type of data	Range/categories
Aetiology (main causes of liver disease)	Categorical – nominal	Alcoholic liver disease Non-alcoholic fatty liver disease Viral hepatitis only Others specify

Question 2: If viral infection present,

Variable	Type of data	Range/categories
Chronic viral infection status	Categorical – nominal	No viral hepatitis Hepatitis B Hepatitis C Hepatitis B and C

Question 3: Disease severity

Disease severity was estimated by secondary data using clinical findings, blood tests results, imaging results (Ultrasound, computed tomography, magnetic resonance imaging, etc.), past medical records, Childs-Pugh scores, including ascites, bilirubin, albumin, prothrombin time, encephalopathy grading. Laboratory reviewing includes serum bilirubin, serum aspartate aminotransferase, serum alanine aminotransferase, alkaline phosphatase, serum albumin, prothrombin time, blood glucose, glycosylated haemoglobin, and triglycerides.

Table of type of data and range/categories of variables is described below.

Variable	Type of data	Range/categories
Severity	Categorical - ordinal	No cirrhosis Cirrhosis, Child A

		Cirrhosis, Child B Cirrhosis, Child C Hepatocellular carcinoma

Cirrhosis will be graded into followings.

	Child A	Child B	Child C
Bilirubin (Total)	<2 mg/dL (<34.2 µmol/L)	2-3 mg/dL (34.2-51.3 µmol/L)	>3 mg/dL (>51.3 µmol/L)
Albumin	>3.5 g/dL (>35 g/L)	2.8-3.5 g/dL (28-35 g/L)	<2.8 g/dL (<28 g/L)
INR	<1.7	1.7-2.2	>2.2
Ascites	Absent	Slight	Moderate
Encephalopathy	No Encephalopathy	Grade 1-2	Grade 3-4

Encephalopathy scale is described as follows.

Encephalopathy grades	1 Hypersomnia 2 Somnolence 3 Severe somnolence or stupor 4 Severe stupor or coma

Question 4: Underlying comorbidity

Variable	Type of data	Range/categories
Disease	Categorical – nominal	Hypertension Diabetes mellitus Heart diseases Others specify

Question 5: number of blood transfusion related to liver disease

Variable	Type of data	Range/categories
Blood transfusion	Categorical – continuous	

3.11 Validity and Reliability

In this study, before conducting data collection and approving the questionnaires, the content validity was reviewed by three experts in the field of drugs and addictive substances, psychology and internal medicine. AUDIT and chronic liver disease questionnaires are international. AUDIT is already translated, so, questionnaires and CLDQ was translated from English to Myanmar by one physician from internal medicine field who has expert skills in clinical medicine with the competency of English and Myanmar language. Then, translated Myanmar version was translated back to English by another expert from clinical field currently working in hospital who did not know original English questionnaires with the competency of both languages. If there was any discrepancy between two translations, two translators would meet together to agree on a final wording and solve the problem. If they did not agree with each other in discussion and third expert person with the competency of languages would facilitate the discussion. If the agreement was still not yet achieved, the third person would decide final wording of questionnaires and choose the right ones with the agreement by at least one translator. The final index of item objective congruence was 0.9087.

Reliability was accessed by the pilot test in which the questionnaire was conducted among 30 samples, in chronic liver disease patient's different clinics and they would not be accounted into the study. The Cronbach's alpha coefficient for the instrument AUDIT was 0.937 and for CLDQ was 0.949. the feedback and responses from the pilot test were the applied to make changes and incorporate them into the final survey.

3.12 Data Entry and Data Analysis

After data collection process, questionnaires results were coded before putting into the SPSS. Data were analyzed by SPSS version 22.0. By descriptive statistics including frequency, percentage were applied for the respondents' general demographic characteristics, and QOL scores according to gender and age groupings. By inferential statistics, the relationship between the independent and dependent, categorical variables were determined by Chi-Square, and if expected frequency counted less than five, fisher's exact test was applied instead.

3.13 Ethical Consideration

The personal data obtained in this study were kept confidentially. All participants were informed about the flow of the study, study's aim, instructions as well as what can be gained from the study and voluntarily sign consent form before taking part in this study and they can withdrawal anytime during survey collection as patients' right. Outcomes and results were used only for academic field, nothing else otherwise. Ethical approval was presented to The Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University. The ethical consideration was approved and the number of approval certificate was COA No. 122/2018.

3.14 Limitation of the study

Our study had some limitations. Time limitations (some patients may have gone for medical procedure, referred to other medical units, discharged from hospital). Injection, ward round time, teaching time can disturb or prevent from data collection. The design was cross sectional, so, it did not provide us to demonstrate how disease

pathological progression related to changes in alcohol consumption and HRQOL. Some patients might not have laboratory, some secondary data due to instruction not given by consultants, some medical records could be missed in charts. Mood unstable patients could influence in wrong giving information in survey.

3.15 Expected benefits

1. By this study, brief information about evaluating individual patient's alcohol consumption, health related quality of life, among chronic liver disease according to different stages and aetiology can be obtained.

2. Health consequences and knowing patterns of drinking can be applied for policy for alcohol education, simple advice giving, brief counselling and continued monitoring, referral to specialist for diagnostic evaluation and treatment plans, prevention, intervention strategies for this population.

3. Information resulted from this study can be applied in future study for researching the cost-effectiveness of a treatment, monitoring and comparing disease burden, too.

CHAPTER IV

RESULTS

The objective of the research was to assess the alcohol consumption patterns among chronic liver disease patients in a hospital in Mandalay, Myanmar. The another objective was to determine the health related quality of life in chronic liver disease patients. Moreover, this study sought to determine the association between alcohol consumption levels and liver diseases causes and severity as well as the association between health related quality of life and liver diseases causes and severity.

Data regarding the socio-demographic characteristics of patients, the alcohol consumption patterns (type, amount, frequency, time, place, AUDIT scores, etc.), health related quality of life scores are presented in this chapter. There are total 280 valid patients' data.

4.1 Sociodemographic characteristics

Table 1. Sociodemographic characteristics according to gender (n=280)

Variables	Males (n=175) n (%)	Females (n=105) n (%)
Age (years)		
Mean age	41.943±13.45	45.629±14.58
18 - 24	19 (10.9)	8 (7.6)
25 - 34	38 (21.7)	19 (18.1)
35-44	41 (23.4)	20 (19.0)
45-54	48 (27.4)	27 (25.7)
55-64	20 (11.4)	22 (21)
65-84	9 (5.1)	9 (8.6)
Marital status		
Single	45 (25.7)	22 (21)
Married	123 (70.3)	65 (61.9)
Widowed	4 (2.3)	15 (14.3)
Divorced/separated	3 (1.7)	3 (2.9)
Educational status		
Never been to school/just read and write	6 (3.4)	13 (12.4)
Primary	38 (21.7)	32 (30.5)
Middle	50 (28.6)	27 (25.7)
High school	45 (25.7)	23 (21.9)
Graduated and above	36 (20.6)	10 (9.5)
Occupation		
No occupation/retired	16 (9.1)	37 (35.2)
Government staffs	16 (9.1)	3 (2.9)
Private company staffs	17 (9.7)	7 (6.7)
Own business	76 (43.4)	30 (28.6)

General workers	34 (19.4)	22 (21.0)
Students	3 (1.7)	2 (1.9)
Monks/Nuns	8 (4.6)	2 (1.9)
Retired people	3 (1.7)	2 (1.9)
Drivers	2 (1.1)	0 (0.0)
Monthly Individual Income		
No income	24 (13.7)	41 (39.0)
1-99 USD	9 (5.1)	7 (6.7)
100 - 299 USD	103 (58.9)	47 (44.8)
≥ 300 USD	39 (22.3)	10 (9.5)

In table 1 total mean age was 43.325±13.973, nearly one third of the males (27.4%) and females (25.7%) patients who were in age 45-54 followed by 23.4% of males in age 35-44 and 21 % of females in 55-64 age group. There were also around 10.9% for male and 7.6% for female in the youngest age range 18-24. Most the males (70.3%) or female's patients (61.9%) were currently in marriage stage followed by 25.7% males and 21 % females who were in the single group. Most of the males (28.6%) had middle school level education while most of females (30.5%) were in primary level followed by 25.7% males in high school level and 25.7 % females in middle school level. Nearly half of the males (43.4%) and one third of the female patients (28.6%) had their own business. Majority of the females (35.2%) were currently unemployed. Over half of the male's patients (58.9%) and nearly half of the female's patients (44.8%) had income 100-299 USD per month. The former group was followed by (22.3%) of males in more than 300 USD per month and (39%) of female's patients in totally no income group.

Therefore, most of the males and females were in middle age groups and more males in younger groups. Most of the patients were currently in marriage. Males were more educated than the female's patients. Females employed rate was higher than males. Males earned more incomes than females.

Table 2. Sociodemographic characteristics according to age groups (n=280)

Variables	18-24 n=27 n(%)	25-34 n=57 n (%)	35-44 n=61 n (%)	45-54 n=75 n (%)	55-64 n=42 n (%)	65-84 n=18 n (%)
Gender						
Males	19 (70.4)	38 (66.7)	41 (67.2)	48 (64.0)	20 (47.6)	9 (50.0)
Females	8 (29.6)	19 (33.3)	20 (32.8)	27 (36.0)	22 (52.4)	9 (50.0)
Marital status						
Single	23 (85.2)	18 (31.6)	8 (13.1)	9 (12.0)	7 (16.7)	2 (11.1)
Married	4 (14.8)	35 (61.4)	49 (80.3)	60 (80.0)	28 (66.7)	12 (66.7)
Widowed	0 (0.0)	2 (3.5)	3 (4.9)	4 (5.3)	6 (14.3)	4 (22.2)
Divorced/separated	0 (0.0)	2 (3.5)	1 (1.6)	2 (2.7)	1 (2.4)	0 (0.0)
Educational status						
Never been to school/just read and write	0 (0.0)	1 (1.8)	2 (3.3)	3 (40.0)	9 (21.4)	4 (22.2)
Primary	3 (11.1)	8 (14.0)	14 (23.0)	26 (34.7)	14 (33.3)	5 (27.8)
Middle	7 (25.9)	14 (24.6)	17 (27.9)	27 (36.0)	9 (21.4)	3 (16.7)
High school	10 (37.0)	19 (33.3)	17 (27.9)	11 (14.7)	7 (16.7)	4 (22.2)
Graduated and above	7 (25.9)	15 (26.3)	11 (18.0)	8 (10.7)	3 (7.1)	2 (11.1)
Occupation						
No occupation	4 (14.8)	6 (10.5)	7 (11.5)	9 (12.0)	14 (33.3)	13 (72.2)
Government staffs	1 (3.7)	8 (14.0)	6 (9.8)	3 (4.0)	1 (2.4)	0 (0.0)
Private company staffs	5 (18.5)	7 (12.3)	4 (6.6)	8 (10.7)	0 (0.0)	0 (0.0)
Own business	7 (25.9)	20 (35.1)	21 (34.4)	39 (52.0)	18 (42.9)	1 (5.6)
General workers	3 (11.1)	15 (26.3)	19 (31.1)	12 (16.0)	7 (16.7)	0 (0.0)
Students	5 (18.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Monks/Nuns	2 (7.4)	1 (1.8)	1 (1.6)	3 (4.0)	1 (2.4)	2 (11.1)
Retired people	0 (0.0)	0 (0.0)	2 (3.3)	0 (0.0)	1 (2.4)	2 (11.1)
Drivers	0 (0.0)	0 (0.0)	1 (1.6)	1 (1.3)	0 (0.0)	0 (0.0)
Monthly Individual Income						
No income	9 (33.3)	7 (12.3)	8 (13.1)	12 (16.0)	14 (33.3)	15 (83.3)
1-99 USD	1 (3.7)	1 (1.8)	3 (4.9)	6 (8.0)	3 (7.1)	2 (11.1)
100 - 299 USD	12 (44.4)	34 (59.6)	39 (63.9)	42 (56.0)	22 (52.4)	1 (5.6)
≥ 300 USD	5 (18.5)	15 (26.3)	11 (18)	15 (20.0)	3 (7.1)	0 (0.0)

In table 2, in age elderly group 55-64 (47.6% males and 52.4% females) and 65-84 (50% for each gender), males and females were nearly equal in number while in other age groups, male had almost double numbers compared to females (for instance – 35-44 group showed that 67.2 males and 32.8% females). Majority of the single (85.2%) were in age 18-24, of the married were in 45-54 (80%), of the widows were in 55-64 (14.3%) and of the divorced were almost equal in numbers in middle age groups (3.5%, 1.6%, 2.7% respectively). Most of them who had never been to school were in age group 55-64 (21.4%) and primary school level were age 45-54 (34.7%). The higher the age, the lower the education levels. Most of the unemployed patients were in the old ages (33.3% in 55-64 age group). The majority of staffs either in government or in private parts were in 25-54 years of age. Most of the own entrepreneurs were in age 45-54 (52.0%). Most of the student were in 18-24 range (18.5%). Highest number of no income group was found in the eldest group (33.3% and 72.2% respectively). Higher income patients (more than 300 USD per month) were in age range 25-54 (26.3%, 18%, 20% respectively).

4.2 Alcohol consumption

Table 3. Alcohol consumption according to gender (n=280)

Variables	Males (n= 175) n (%)	Females (n= 105) n (%)
Lifetime drinking		
No	16 (9.1)	97 (92.4)
Yes	159 (90.9)	8 (7.6)
Last twelve months drinking		
No	62 (35.4)	101 (96.2)
Yes	113 (64.6)	4 (3.8)
Last six months drinking		
No	79 (45.1)	101 (96.2)
Yes	96 (54.9)	4 (3.8)
Last three months drinking		
No	89 (50.9)	101 (96.2)
Yes	86 (49.1)	4 (3.8)
Last month drinking		
No	108 (61.7)	102 (97.1)
Yes	67 (38.3)	3 (2.9)
Last week drinking		
No	132 (75.4)	104 (99.0)
Yes	43 (24.6)	1 (1.0)

In table 3, majority of males (90.9%) had alcohol drinking in their lifetime while a few of female (7.6%) drank in their lifetimes. In last 12 months, over three fifth of the males (64.6%) and a few females (3.8%) had drinking practice. In last 6 months, over half of the males (54.9%) and a few females (3.8%) had drinking. In past 3 months, nearly half of the males (49.1%) and a few females (3.8%) had drinking. Nearly two fifth of the males (38.3%) and very few females (2.9%) had drinking in last month. In the last week, nearly one fourth of males (24.6%) and only one female patient drank in last week.

Table 4. Alcohol consumption according to age groups (n=280)

Variables	18-24 n=27 n (%)	25-34 n=57 n (%)	35-44 n=61 n (%)	45-54 n=75 n (%)	55-64 n=42 n (%)	65-84 n=18 n (%)
Lifetime drinking						
No	11 (40.7)	17 (29.8)	20 (32.8)	28 (37.3)	25 (59.5)	12 (66.7)
Yes	16 (59.3)	40 (70.2)	41 (67.2)	47 (62.7)	17 (40.5)	6 (33.3)
Last twelve months drinking						
No	13 (48.1)	27 (47.4)	32 (52.5)	38 (50.7)	38 (90.5)	15 (83.3)
Yes	14 (51.9)	30 (52.6)	29 (47.5)	37 (49.3)	4 (9.50)	3 (16.7)
Last six months drinking						
No	15 (55.6)	31 (54.4)	36 (59.0)	44 (58.7)	38 (90.5)	16 (88.9)
Yes	12 (44.4)	26 (45.6)	25 (41.0)	31 (41.3)	4 (9.5)	2 (11.1)
Last three months drinking						
No	18 (66.7)	31 (54.4)	38 (62.3)	48 (64.0)	38 (90.5)	17 (94.4)
Yes	9 (33.3)	26 (45.6)	23 (37.7)	27 (36.0)	4 (9.50)	1 (5.6)
Last month drinking						
No	20 (74.1)	33 (57.9)	43 (70.5)	55 (73.3)	41 (97.6)	18 (100.0)
Yes	7 (25.9)	24 (42.1)	18 (29.5)	20 (26.7)	1 (2.40)	0 (0.0)
Last week drinking						
No	21 (77.8)	42 (73.7)	50 (82.0)	64 (85.3)	41 (97.6)	18 (100.0)
Yes	6 (22.2)	15 (26.3)	11 (18.0)	11 (14.7)	1 (2.4)	0 (0.0)

In table 4, majority of the patients who had lifetime alcohol drinking (62.7%), last 12 months drinking (49.3%), last 6 months drinking (41.3%), last 3 months drinking (36%) were currently in the age 45-54. However, in last month drinking (42.1%) and last week drinking (26.3%), majority were in 25-34 age range.

4.3 Pattern of Alcohol consumption in lifetime (n=167)

Table 5. Pattern of Alcohol consumption in lifetime according to gender (n=167)

Variables	Males (n= 159) n (%)	Females (n= 8) n (%)
Age of first time drinking		
Mean age of onset	20.91 ± 5.63	24.89 ± 7.34
6-14 year	8 (5.0)	0 (0.0)
15-19 year	70 (44.0)	2 (25.0)
20-24 year	42 (26.4)	2 (25.0)
25-29 year	17 (10.7)	2 (25.0)
30-42 year	22 (13.8)	2 (25.0)
First reason for drinking		
Friends	99 (62.3)	1 (12.5)
Social drinking	5 (3.10)	2 (25.0)
Celebrations/festivals	19 (11.9)	2 (25.0)
Depressed mood	11 (6.9)	0 (0.0)
Just want to try	17 (10.0)	2 (25.0)
Others reasons	8 (5.0)	1 (12.5)
Type of alcohol in first time drinking		
Beer	61 (38.4)	4 (50.0)
Spirit	60 (37.7)	1 (12.5)
Rum	6 (3.8)	0 (0.0)
Wine	2 (1.3)	2 (25.0)
Whisky	12 (7.5)	0 (0.0)
Palm tree juice	18 (11.3)	1 (12.5)
Type of alcohol in lifetime drinking		
Beer	110 (69.2)	4 (50.0)
Spirit	92 (57.9)	1 (12.5)
Rum	62 (39.0)	0 (0.0)
Wine	22 (13.8)	2 (25.0)

Whisky	71 (44.7)	0 (0.0)
Palm tree juice and home-made alcohol	29 (18.2)	1 (12.5)

In table 5, total mean age of onset was 12.586±11.283, in lifetime drinking pattern, onset age of first time drinking in males, majority (44%) started from 15-19 years of their age. A few number, 5% of males started form younger age below 14 years. For females, nearly equally distributed numbers were found in all onset age groups (25% respectively). About the first reason to drink in lifetimes, majority of male (62.3%) complained that first time drinking was due to their friends.

Type of alcohol in first drinking period were found to be beer (38.4 for males and 50% for females) and spirit (37.7% for males and 12.5% for females) standing for the most proportion in both genders. In their lifetime drinking, majority of the male (69.2%) and half number of the female (50%) drank beer. For the spirit, over half of the males (57.9%) experienced drinking. For rum, nearly two fifth of the males (39%) had drunken in lifetime. Few numbers of both genders drank wine (13.8% males and 25% females). Nearly half of the male had drunken (44.7%) whisky. About the palm tree juice and home-made alcohol, nearly one fifth of males (18.2%) had practice.

Table 6. Pattern of Alcohol consumption in lifetime according to current age groups (n=167)

Variables	18-24 n=16 n (%)	25-34 n=40 n (%)	35-44 n=41 n (%)	45-54 n=47 n (%)	55-64 n=17 n (%)	65-84 n=6 n (%)
Age of first time drinking						
6-14 year	1 (6.3)	2 (5.0)	1 (2.4)	3 (6.4)	1 (5.9)	0 (0.0)
15-19 year	12 (75.0)	19 (47.5)	17 (41.5)	19 (40.4)	4 (23.5)	1 (16.7)
20-24 year	3 (18.8)	15 (37.5)	11 (26.8)	9 (19.1)	5 (29.4)	1 (16.7)
25-29 year	0 (0.0)	3 (7.5)	6 (14.6)	9 (19.1)	1 (5.9)	0 (0.0)
30-42 year	0 (0.0)	1 (2.5)	6 (14.6)	7 (14.9)	6 (35.3)	4 (66.7)
First reason for drinking						
Friends	14 (87.5)	24 (60.0)	22 (53.7)	23 (48.9)	11 (64.7)	6 (100)
Social drinking	0 (0.0)	3 (7.50)	1 (2.4)	3 (6.4)	0 (0.0)	0 (0.0)
Celebrations/festivals	1 (6.3)	3 (7.50)	8 (19.5)	7 (14.9)	2 (11.8)	0 (0.0)
Depressed mood	0 (0.0)	4 (10.0)	2 (4.9)	5 (10.6)	0 (0.0)	0 (0.0)
Just want to try	1 (6.3)	6 (15.0)	5 (12.2)	4 (8.5)	3 (17.6)	0 (0.0)
Others reasons	0 (0.0)	0 (0.0)	3 (7.3)	5 (10.6)	1 (5.9)	0 (0.0)
Type of alcohol in first time drinking						
Beer	14 (87.5)	22 (55.0)	19 (46.3)	9 (19.1)	0 (0.0)	1 (16.7)
Spirit	2 (12.5)	7 (17.5)	12 (29.3)	26 (55.3)	9 (52.9)	5 (83.3)
Rum	0 (0.0)	1 (2.5)	2 (4.9)	1 (2.10)	2 (11.8)	0 (0.0)
Wine	0 (0.0)	4 (10.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Whisky	0 (0.0)	3 (7.5)	1 (2.4)	4 (8.5)	4 (23.5)	0 (0.0)
Palm tree juice	0 (0.0)	3 (7.5)	7 (17.1)	7 (14.9)	2 (11.8)	0 (0.0)
Type of alcohol in lifetime drinking						
Beer	15 (93.8)	29 (72.5)	26 (63.4)	28 (59.6)	13 (76.5)	3 (50.0)
Spirit	3 (18.8)	15 (37.5)	23 (56.1)	32 (68.1)	15 (88.2)	5 (83.3)
Rum	3 (18.8)	11 (27.5)	16 (39.0)	18 (38.3)	11 (64.7)	3 (50.0)
Wine	3 (18.8)	5 (12.5)	4 (9.8)	6 (12.8)	4 (23.5)	2 (33.3)
Whisky	7 (43.8)	16 (40.0)	15 (36.6)	20 (42.6)	10 (58.8)	3 (50.0)
Palm tree juice and home-made alcohol	4 (25.0)	5 (12.5)	8 (19.5)	9 (19.1)	3 (17.6)	1 (16.7)

In table 6, for the onset of drinking, most of the current 45-54 age group (40.4%), started drinking 15-19 year of age. 25-34 current age group (37.5%) started from most portion in 20-24 age of onset. For the reasons to be first time drinker, about friends, most of them were in in current age 25-34 (60%), and for celebrations, most of them were in age 35-44 currently. Middle age groups complained about celebration and

festivals as well as depressed moods. Other reasons for first drinking were they tried to release abdominal discomfort, to release fatigue, tiredness, muscle pain, just for relaxation and so on. About type of alcohol in first time drinking, younger people experienced about beer (87.5% in 18-24 age, 55% in 25-34 age), while middle aged people experienced about spirit (55.3% in 45-54 age), whisky (23.5% in 55=64 age) and palm tree juice (17.1% in 35-44 age).

In lifetime drinking, regarding beer drinking, younger (93.8% in 18-24 age) and middle age groups (72.5% in age 25-34 age) had more practice. About spirit (68.1% in 45-54 age), rum (38.3% in 45-54 age) and whisky (42.6% in 45-54 age) and palm tree juice (19.1% in 45-54 age), middle aged groups had more experience.

4.4 Pattern of Alcohol consumption in last 12 months (n=117)

Table 7. Pattern of Alcohol consumption in last 12 months according to gender (n=117)

Variables	Males (n= 113) n (%)	Female (n= 4) n (%)
Type of alcohol in last 12 months drinking		
Beer	59 (52.2)	2 (50.0)
Spirit	50 (44.2)	1 (25.0)
Rum	25 (22.1)	0 (0.0)
Wine	2 (1.80)	1 (25.0)
Whisky	32 (28.3)	0 (0.0)
Palm tree juice	8 (7.10)	0 (0.0)
Total Standard drink/month in last 12 months drinking		
1-50	25 (22.1)	3 (75.0)
51-100	25 (22.1)	0 (0.0)
101-150	15 (13.3)	0 (0.0)
151-200	9 (8.0)	0 (0.0)
201-250	10 (8.8)	1 (25.0)
251-300	4 (3.5)	0 (0.0)
301-350	5 (4.4)	0 (0.0)
351-400	1 (0.9)	0 (0.0)
401-450	0 (0.0)	0 (0.0)
451-500	2 (1.8)	0 (0.0)
501-550	1 (0.9)	0 (0.0)
551-600	1 (0.9)	0 (0.0)
601-650	2 (1.8)	0 (0.0)
651-700	10 (8.8)	0 (0.0)
701 and above	3 (2.7)	0 (0.0)
Drinking days/month in last 12 months		
1-10 days	26 (23.0)	2 (50.0)
11-20 days	22 (19.5)	1 (25.0)

21-30 days	65 (57.5)	1 (25.0)
Drinking with friends		
No, drink alone	33 (29.2)	2 (50)
2 friends	9 (8.0)	0 (0.0)
3 friends	16 (14.2)	0 (0.0)
4 friends	20 (17.7)	1 (25.0)
5 friends	20 (17.7)	1 (25.0)
6-10 friends	15 (13.3)	0 (0.0)
Place of drinking in last 12 months		
Homes	38 (33.6)	2 (50.0)
Beer shops	72 (63.7)	1 (25.0)
Workplaces	3 (2.7)	0 (0.0)
Bars	0 (0.0)	1 (25.0)
Time of drinking in last 12 months		
Daytimes	1 (0.9)	0 (0.0)
Evening	47 (41.6)	1 (25.0)
Night	37 (32.7)	2 (50.0)
No specific times	28 (24.8)	1 (25.0)

In table 7, for the pattern of alcohol drinking in last 12 months, total 117 patients had experience. Nearly half of the male's patients had beer (52.2%) and spirit (44.2%) drinking. Almost one fifth of the male's patients had rum (22.1%) and nearly one third males for whisky (28.3%) drinking. Females drank less standard drinks than males, almost equal number of males (22.1%) had drinking in 1-50 or 51 -100 standard drink/month groups followed by 13.3% males in 101-150 SD per month. Over half of the males (57.5%) drank nearly the whole month. Majority of them (70.8%) drank with friends and number of friends ranges from 2 to 10 people while they were drinking. About places, majority of males drank in beer shops (63.3%) especially in evening (41.6%).

Table 8. Pattern of Alcohol consumption in last 12 months according to age groups (n=117)

Variables	18-24 n=14 n (%)	25-34 n=30 n (%)	35-44 n=29 n (%)	45-54 n=37 n (%)	55-64 n=4 n (%)	65-84 n=3 n (%)
Type of alcohol in last 12 months drinking						
Beer	12 (85.7)	16 (53.3)	11 (37.9)	18 (48.6)	3 (75)	1 (33.3)
Spirit	1 (7.1)	9 (30.0)	16 (55.2)	21 (56.8)	3 (75)	1 (33.3)
Rum	3 (21.4)	2 (6.7)	7 (24.1)	10 (27.0)	2 (50)	1 (33.3)
Wine	1 (7.1)	2 (6.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Whisky	5 (35.7)	11 (36.7)	5 (17.2)	8 (21.6)	1 (25)	2 (66.7)
Palm tree juice	2 (14.3)	0 (0.0)	2 (6.9)	3 (8.1)	1 (25)	0 (0.0)
Total Standard drink/month in last 12 months drinking						
1-50	7 (50.0)	9 (30)	3 (10.3)	7 (18.9)	0 (0.0)	2 (66.7)
51-100	0 (0.0)	6 (20.0)	8 (27.6)	11 (29.7)	0 (0.0)	0 (0.0)
101-150	1 (7.1)	3 (10.0)	3 (10.3)	6 (16.2)	2 (50.0)	0 (0.0)
151-200	2 (14.3)	1 (3.3)	4 (13.8)	2 (5.4)	0 (0.0)	0 (0.0)
201-250	1 (7.1)	2 (6.7)	3 (10.3)	5 (13.5)	0 (0.0)	0 (0.0)
251-300	0 (0.0)	1 (3.3)	1 (3.4)	1 (2.7)	0 (0.0)	1 (33.3)
301-350	0 (0.0)	0 (0.0)	2 (6.9)	2 (5.4)	1 (25.0)	0 (0.0)
351-400	0 (0.0)	1 (3.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
401-450	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
451-500	1 (7.1)	1 (3.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
501-550	1 (7.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
551-600	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)	0 (0.0)
601-650	0 (0.0)	1 (3.3)	1 (3.4)	0 (0.0)	0 (0.0)	0 (0.0)
651-700	1 (7.1)	3 (10.0)	3 (10.3)	3 (8.1)	0 (0.0)	0 (0.0)
701 and above	0 (0.0)	2 (6.7)	1 (3.4)	0 (0.0)	0 (0.0)	0 (0.0)
Drinking days/month in last 12 months						
1-10 days	6 (42.9)	9 (30.0)	6 (20.7)	7 (18.9)	0 (0.0)	0 (0.0)
11-20 days	3 (21.4)	6 (20.0)	6 (20.7)	6 (16.2)	1 (25.0)	1 (33.3)
21-30 days	5 (35.7)	15 (50.0)	17 (58.6)	24 (64.9)	3 (75.0)	2 (66.7)
Drinking with friends						
No, drink alone	1 (7.1)	9 (30.0)	8 (27.6)	16 (43.2)	1 (25.0)	0 (0.0)
2 friends	0 (0.0)	1 (3.30)	5 (17.2)	2 (5.4)	1 (25.0)	0 (0.0)
3 friends	2 (14.3)	3 (10.0)	2 (6.9)	7 (18.9)	2 (50.0)	0 (0.0)
4 friends	2 (14.3)	8 (26.7)	8 (27.6)	3 (8.1)	0 (0.0)	0 (0.0)
5 friends	4 (28.6)	6 (20.0)	4 (13.8)	5 (13.5)	0 (0.0)	2 (66.7)
6-10 friends	5 (35.7)	3 (10.0)	2 (6.9)	4 (10.8)	0 (0.0)	1 (33.3)
Place of drinking in last 12 months						

Homes	2 (14.30)	11 (36.7)	11 (37.9)	15 (40.5)	0 (0.0)	1 (33.3)
Beer shops	11 (78.6)	17 (56.7)	18 (62.1)	22 (59.5)	3 (75.0)	2 (66.7)
Workplaces	1 (7.1)	1 (3.3)	0 (0.0)	0 (0.0)	1 (25.0)	(0.0)
Bars	0 (0.0)	1 (3.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Time of drinking in last 12 months						
Daytimes	0 (0.0)	1 (3.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Evening	8 (57.1)	11 (36.7)	13 (44.8)	13 (35.1)	2 (50.0)	1 (33.3)
Night	6 (42.9)	11 (36.7)	7 (24.1)	12 (32.4)	1 (25.0)	2 (66.7)
No specific times	0 (0.0)	7 (23.3)	9 (31.0)	12 (32.4)	1 (25.0)	0 (0.0)

In table 8, young aged people drank more beer (85.7% of 18-24 age and 53.3% of 25-34 age group) and whisky (36.7% of 25-34 age), while middle aged drank more spirit (56.8% of 45-54 age). Most of patients, for the 1-50 SD group (30% of 25-34 age), 51-100 SD group (29.7% of 45-54 age) were observed. For the frequency, most of 45-54 group (64.9% of this age range) drank nearly the whole month in past 12 months. Majority of the younger people aged 18-24 (70%), aged 25-34 (72.4%), drank with friends, higher number of drinker friends was found in younger groups too. Nearly two fifth of 45-54 age range group (40.5%) drank at their homes while majority of youngest group 18-24 age (78.6%), drank in beer shops. Most of the middle aged 45-54 aged patients drank in evening (35.1%) and night (32.4%).

4.5 Pattern of Alcohol consumption in last 6 months (n=100)

Table 9. Pattern of Alcohol consumption in last 6 months according to gender (n=100)

Variables	Males (n= 96) n (%)	Female (n= 4) n (%)
Type of alcohol in last 6 months drinking		
Beer	48 (50.0)	2 (50.0)
Spirit	45 (46.9)	1 (25.0)
Rum	25 (26.0)	0 (0.0)
Wine	2 (2.10)	1 (25.0)
Whisky	24 (25.0)	0 (0.0)
Palm tree juice	7 (7.30)	0 (0.0)
Total Standard drink/month in last 6 months drinking		
1-50	21 (21.9)	3 (75.0)
51-100	21 (21.9)	0 (0.0)
101-150	13 (13.5)	0 (0.0)
151-200	9 (9.4)	0 (0.0)
201-250	7 (7.3)	1 (25.0)
251-300	2 (2.1)	0 (0.0)
301-350	4 (4.2)	0 (0.0)
351-400	0 (0.0)	0 (0.0)
401-450	0 (0.0)	0 (0.0)
451-500	2 (2.1)	0 (0.0)
501-550	1 (1.0)	0 (0.0)
551-600	2 (2.1)	0 (0.0)
601-650	2 (2.1)	0 (0.0)
651-700	9 (9.4)	0 (0.0)
701 and above	3 (3.1)	0 (0.0)
Drinking days/month in last 6 months		
1-10 days	21 (21.9)	3 (75.0)
11-20 days	19 (19.8)	0 (0.0)

21-30 days	56 (58.3)	1 (25.0)
Drinking with friends		
No, drink alone	31 (32.3)	2 (50.0)
2 friends	7 (7.30)	0 (0.0)
3 friends	15 (15.6)	0 (0.0)
4 friends	16 (16.7)	1 (25.0)
5 friends	17 (17.7)	1 (25.0)
6-10 friends	10 (10.4)	0 (0.0)
Place of drinking in last 6 months		
Homes	35 (36.5)	2 (50.0)
Beer shops	58 (60.4)	1 (25.0)
Workplaces	3 (3.10)	0 (0.0)
Bars	0 (0.0)	1 (25.0)
Time of drinking in last 6 months		
Daytimes	1 (1.0)	0 (0.0)
Evening	41 (42.7)	1 (25.0)
Night	28 (29.2)	2 (50.0)
No specific times	26 (27.1)	1 (25.0)

In table 9, about pattern of drinking in last 6 months total 100 patients experienced drinking, exactly half of the male (50%) drank beer, nearly half of the male (46.9%) drank spirit. Nearly one fourth of the male drank rum (26%) and whisky (25%) while under 10% of the male drank palm tree juice. Equal number of males (21.9%) drank 1-20 or 51-100 SD for the whole month in last 6 months. Over half of the males drank nearly the whole month with their friends (67.7%) in beer shops (60.4%) especially in the evening times (42.7%).

Table 10. Pattern of Alcohol consumption in last 6 months according to age groups (n=100)

Variables	18-24 n=12 n (%)	25-34 n=26 n (%)	35-44 n=25 n (%)	45-54 n=31 n (%)	55-64 n=4 n (%)	65-84 n=2 n (%)
Type of alcohol in last 6 months drinking						
Beer	10 (83.3)	13 (50.0)	10 (40.0)	13 (41.9)	3 (75.0)	1 (50.0)
Spirit	1 (8.3)	7 (26.9)	15 (60.0)	20 (64.5)	3 (75.0)	0 (0.0)
Rum	2 (16.7)	3 (11.5)	7 (28.0)	10 (32.3)	2 (50.0)	1 (50.0)
Wine	1 (8.3)	2 (7.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Whisky	5 (41.7)	8 (30.8)	2 (8.0)	6 (19.4)	1 (25.0)	2 (100)
Palm	1 (8.3)	0 (0.0)	2 (8.0)	3 (9.7)	1 (25.0)	0 (0.0)
Total Standard drink/month in last 6 months drinking						
1-50	5 (41.7)	8 (30.8)	3 (12.0)	7 (22.6)	0 (0.0)	1 (50.0)
51-100	0 (0.0)	6 (23.1)	6 (24.0)	9 (29.0)	0 (0.0)	0 (0.0)
101-150	1 (8.3)	2 (7.7)	2 (8.0)	6 (19.4)	2 (50.0)	0 (0.0)
151-200	2 (16.7)	1 (3.8)	4 (16.0)	2 (6.5)	0 (0.0)	0 (0.0)
201-250	1 (8.3)	1 (3.8)	3 (12.0)	3 (9.7)	0 (0.0)	0 (0.0)
251-300	0 (0.0)	1 (3.8)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)
301-350	0 (0.0)	0 (0.0)	2 (8.0)	1 (3.2)	1 (25.0)	0 (0.0)
351-400	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
401-450	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
451-500	1 (8.3)	1 (3.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
501-550	1 (8.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
551-600	0 (0.0)	1 (3.8)	0 (0.0)	0 (0.0)	1 (25.0)	0 (0.0)
601-650	0 (0.0)	1 (3.8)	1 (4.0)	0 (0.0)	0 (0.0)	0 (0.0)
651-700	1 (8.3)	2 (7.7)	3 (12.0)	3 (9.7)	0 (0.0)	0 (0.0)
701 and above	0 (0.0)	2 (7.7)	1 (4.0)	0 (0.0)	0 (0.0)	0 (0.0)
Drinking days /month in last 6 months						
1-10 days	4 (33.3)	8 (30.8)	6 (24.0)	6 (19.4)	0 (0.0)	0 (0.0)
11-20 days	3 (25.0)	5 (19.2)	4 (16.0)	5 (16.1)	1 (25.0)	1 (50.0)
21-30 days	5 (41.7)	13 (50.0)	15 (60.0)	20 (64.5)	3 (75.0)	1 (50.0)
Drinking with friends						
No, drink alone	1 (8.3)	9 (34.6)	8 (32.0)	14 (45.2)	1 (25.0)	0 (0.0)
2 friends	0 (0.0)	1 (3.8)	3 (12.0)	2 (6.5)	1 (25.0)	0 (0.0)
3 friends	3 (25.0)	3 (11.5)	2 (8.0)	5 (16.1)	2 (50.0)	0 (0.0)
4 friends	1 (8.3)	7 (26.9)	7 (28.0)	2 (6.5)	0 (0.0)	0 (0.0)
5 friends	4 (33.3)	4 (15.4)	4 (16.0)	5 (16.1)	0 (0.0)	1 (50.0)
6-10 friends	3 (25.0)	2 (7.7)	1 (4.0)	3 (9.70)	0 (0.0)	1 (50.0)
Place of drinking in last 6 months						

Homes	2 (16.7)	11 (42.3)	10 (40.0)	13 (41.9)	0 (0.0)	1 (50.0)
Beer shops	9 (75.0)	13 (50.0)	15 (60.0)	18 (58.1)	3 (75.0)	1 (50.0)
Workplaces	1 (8.3)	1 (3.8)	0 (0.0)	0 (0.0)	1 (25.0)	0 (0.0)
Bars	0 (0.0)	1 (3.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Time of drinking in last 6 months						
Daytimes	0 (0.0)	1 (3.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Evening	7 (58.3)	8 (30.8)	12 (48.0)	12 (38.7)	2 (50.0)	1 (50.0)
Night	5 (41.7)	10 (38.5)	4 (16.0)	9 (29.0)	1 (25.0)	1 (50.0)
No specific times	0 (0.0)	7 (26.9)	9 (36.0)	10 (32.3)	1 (25.0)	0 (0.00)

In table 10, about the last 6 months, majority of the younger 18-24 (83.3%) and 55-64 age group (75%) had more beer drinking. Regarding types, 45-54 age group had more spirit (64.5%), rum drinking (32.3%). For whisky drinker, most of them were 25-34 age groups (30.8%). For the highest quantity drinker (above 700 SD per month), most of them were in age group 25-34 (7.7%). For nearly the whole month drinker, most of them were 45-54 group (64.5%) and they drank mostly with friends (54.8%) especially in beer shops (58.1%) during evening times (38.7%). Younger group was tending to drink more at night times (38.5% of 25-34 age range).

4.6 Pattern of Alcohol consumption in last 3 months (n=90)

Table 11. Pattern of Alcohol consumption in last 3 months according to gender (n-90)

Variables	Males (n= 86) n (%)	Female (n= 4) n (%)
Type of alcohol in last 3 months drinking		
Beer	41 (47.7)	2 (50.0)
Spirit	42 (48.8)	1 (25.0)
Rum	22 (25.6)	0 (0.00)
Wine	2 (2.3)	1 (25.0)
Whisky	19 (22.1)	0 (0.0)
Palm tree juice	7 (8.1)	0 (0.0)
Total Standard drink/month in last 3 months drinking		
1-50	16 (18.6)	3 (75.0)
51-100	20 (23.3)	0 (0.0)
101-150	11 (12.8)	0 (0.0)
151-200	8 (9.3)	0 (0.0)
201-250	7 (8.1)	1 (25.0)
251-300	1 (1.2)	0 (0.0)
301-350	4 (4.7)	0 (0.0)
351-400	0 (0.0)	0 (0.0)
401-450	0 (0.0)	0 (0.0)
451-500	2 (2.3)	0 (0.0)
501-550	1 (1.2)	0 (0.0)
551-600	2 (2.3)	0 (0.0)
601-650	2 (2.3)	0 (0.0)
651-700	9 (10.5)	0 (0.0)
701 and above	3 (3.5)	0 (0.0)
Drinking days/month in last 3 months		
1-10 days	17 (19.8)	3 (75.0)
11-20 days	18 (20.9)	0 (0.0)

21-30 days	51 (59.3)	1 (25.0)
Drinking with friends		
Drink alone	28 (32.6)	2 (50.0)
2 friends	6 (7.0)	0 (0.0)
3 friends	13 (15.1)	0 (0.0)
4 friends	16 (18.6)	1 (25.0)
5 friends	12 (14.0)	1 (25.0)
6-10 friends	11 (12.8)	0 (0.0)
Place of drinking in last 3 months		
Homes	34 (39.5)	2 (50.0)
Beer shops	49 (57.0)	1 (25.0)
Workplaces	3 (3.5)	0 (0.0)
Bars	0 (0.0)	1 (25.0)
Time of drinking in last 3 months		
Daytimes	1 (1.2)	0 (0.0)
Evening	35 (40.7)	1 (25.0)
Night	26 (30.2)	2 (50.0)
No specific times	24 (27.9)	1 (25.0)

In table 11. for the last three months drinking, nearly equal number of male drank beer (47.7%) and spirit (48.8%). Nearly equal number of male drank rum (25.6%) and whisky (22.1%). Nearly one fifth of the males drank largest amount more than 400 SD for the whole month with average numbers of days 21-30 (59.3%). They drank with friends (67.4%) mostly in beer shops (57%), especially in the evening times (40.7%).

Table 12. Pattern of Alcohol consumption in last 3 months according to age groups (n=90)

Variables	18-24 n=9 n (%)	25-34 n=26 n (%)	35-44 n=23 n (%)	45-54 n=27 n (%)	55-64 n=4 n (%)	65-84 n=1 n (%)
Type of alcohol in last 3 months drinking						
Beer	8 (88.9)	13 (50.0)	10 (45.5)	9 (33.3)	3 (75.0)	0 (0.0)
Spirit	0 (0.0)	7 (26.9)	15 (65.2)	18 (66.7)	3 (75.0)	0 (0.0)
Rum	2 (22.2)	3 (11.5)	5 (21.7)	10 (37.0)	2 (50.0)	0 (0.0)
Wine	1 (11.1)	2 (7.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Whisky	4 (44.4)	8 (30.8)	2 (8.7)	3 (11.1)	1 (25.0)	1 (100)
Palm tree juice	1 (11.1)	0 (0.0)	2 (8.7)	3 (11.1)	1 (25.0)	0 (0.0)
Total Standard drink/month in last 3 months drinking						
1-50	3 (33.3)	8 (30.8)	3 (13.0)	4 (14.8)	0 (0.0)	1 (100)
51-100	0 (0.0)	6 (23.1)	5 (21.7)	9 (33.3)	0 (0.0)	0 (0.0)
101-150	0 (0.0)	2 (7.7)	2 (8.7)	5 (18.5)	2 (50.0)	0 (0.0)
151-200	2 (22.2)	1 (3.8)	3 (13.0)	2 (7.4)	0 (0.0)	0 (0.0)
201-250	1 (11.1)	1 (3.8)	3 (13.0)	3 (11.1)	0 (0.0)	0 (0.0)
251-300	0 (0.0)	1(3.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
301-350	0 (0.0)	0 (0.0)	2 (8.7)	1 (3.7)	1 (25.0)	0 (0.0)
351-400	0 (0.0)	2 (7.7)	1 (4.3)	0 (0.0)	0 (0.0)	0 (0.0)
401-450	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
451-500	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
501-550	1 (11.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
551-600	0 (0.0)	1 (3.8)	0 (0.0)	0 (0.0)	1 (25.0)	0 (0.0)
601-650	0 (0.0)	1 (3.8)	1 (4.3)	0 (0.0)	0 (0.0)	0 (0.0)
651-700	1 (11.1)	2 (7.1)	3 (13.0)	3 (11.1)	0 (0.0)	0 (0.0)
701 and above	0 (0.0)	2 (7.7)	1 (4.3)	0 (0.0)	0 (0.0)	0 (0.0)
Drinking days/month in last 3 months						
1-10 days	2 (22.2)	8 (30.8)	6 (26.1)	4 (14.8)	0 (0.0)	0 (0.0)
11-20 days	3 (33.3)	5 (19.2)	3 (13.0)	5 (18.5)	1 (25.0)	1 (100)
21-30 days	4 (44.4)	13 (50.0)	14 (60.9)	18 (66.7)	3 (75.0)	0 (0.0)
Drinking with friends						
Drink alone	0 (0.0)	9 (34.6)	6 (26.1)	14 (51.9)	1 (25.0)	0 (0.0)
2 friends	0 (0.0)	1 (3.8)	3 (13.0)	1 (3.7)	1 (25.0)	0 (0.0)
3 friends	3 (33.3)	3 (11.5)	2 (8.7)	3 (11.1)	2 (50.0)	0 (0.0)
4 friends	1 (11.1)	7 (26.9)	7 (30.4)	2 (7.4)	0 (0.0)	0 (0.0)
5 friends	2 (22.2)	4 (15.4)	4 (17.4)	3 (11.1)	0 (0.0)	0 (0.0)
6-10 friends	3 (33.3)	2 (7.7)	1 (4.3)	4 (14.8)	0 (0.0)	1 (100)
Place of drinking in last 3 months						

Homes	1 (11.1)	11 (42.3)	10 (43.5)	13 (48.1)	0 (0.0)	1 (100)
Beer shops	7 (77.8)	13 (50.0)	13 (56.5)	14 (51.9)	3 (75.0)	0 (0.0)
Workplaces	1 (11.1)	1 (3.8)	0 (0.0)	0 (0.0)	1 (25.0)	0 (0.0)
Bars	0 (0.0)	1 (3.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Time of drinking in last 3 months						
Daytimes	0 (0.0)	1 (3.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Evening	5 (55.6)	8 (30.8)	11 (47.8)	10 (37.0)	2 (50.0)	0 (0.0)
Night	4 (44.4)	10 (38.5)	4 (17.4)	8 (29.6)	1 (25.0)	1 (100)
No specific times	0 (0.0)	7 (26.9)	8 (34.8)	9 (33.3)	1 (25.0)	0 (0.0)

In table 12, for the last 3 months drinking, most beer drinkers were 25-34 age groups (50%). Most spirit (66.7%) and rum drinkers (37%) were 45-54 age group. Most whisky drinkers were 25-34 age (30.8%). For all high amount per month groups (more than 700 SD), most of them were age 25-34 (7.7%), 35-44 (4.3%). Nearly the whole month's drinkers were 35-44 ages (66.7%). Most of 25-34 age people drank with friends (65.4%) particularly in beer shops (50%). Most of evening drinkers were in 35-44 age (47.8%) and night drinkers were in age 25-34 age (38.5%).

4.7 Pattern of Alcohol consumption in last month (n=70)

Table 13. Pattern of Alcohol consumption in last month according to gender (n=70)

Variables	Males (n= 67) n (%)	Females (n= 3) n (%)
Type of alcohol in last month drinking		
Beer	32 (47.8)	1 (33.3)
Spirit	34 (50.7)	1 (33.3)
Rum	13 (19.4)	0 (0.0)
Wine	2 (3.0)	1 (33.3)
Whisky	15 (22.4)	0 (0.0)
Palm tree juice	6 (9.0)	0 (0.0)
Total Standard drink/month in last month drinking		
1-50	13 (19.4)	2 (66.7)
51-100	16 (23.9)	0 (0.0)
101-150	5 (7.5)	0 (0.0)
151-200	8 (11.9)	0 (0.0)
201-250	4 (6.0)	1 (33.3)
251-300	3 (4.5)	0 (0.0)
301-350	2 (3.0)	0 (0.0)
351-400	0 (0.0)	0 (0.0)
401-450	0 (0.0)	0 (0.0)
451-500	1 (1.5)	0 (0.0)
501-550	1 (1.5)	0 (0.0)
551-600	0 (0.0)	0 (0.0)
601-650	2 (3.0)	0 (0.0)
651-700	8 (11.9)	0 (0.0)
701 and above	4 (6.0)	0 (0.0)
Drinking days/month in last month		
1-10 days	9 (13.4)	2 (66.7)
11-20 days	13 (19.4)	0 (0.0)

21-30 days	45 (67.2)	1 (33.3)
Drinking with friends		
No, drink alone	24 (35.8)	2 (66.7)
2 friends	4 (6.0)	0 (0.0)
3 friends	9 (13.4)	0 (0.0)
4 friends	12 (17.9)	0 (0.0)
5 friends	12 (17.9)	1 (33.3)
6-10 friends	6 (9.0)	0 (0.0)
Place of drinking in last month		
Homes	27 (40.3)	2 (66.7)
Beer shops	38 (56.7)	1 (33.3)
Workplaces	2 (3.0)	0 (0.0)
Bars	0 (0.0)	0 (0.0)
Time of drinking in last month		
Daytimes	1 (1.5)	0 (0.0)
Evening	26 (38.8)	1 (33.3)
Night	20 (29.9)	1 (33.3)
No specific times	20 (29.9)	1 (33.3)

In table 13, for the last month drinking, there were 70 patients. Nearly half of the male drank beer (47.8%) and spirit (50.7%). One fifth of male drank rum (19.4%) and whisky (22.4%) while only 5 males drank palm tree juices. There were still 4 males in the highest quantity group 700 SD and above for the whole moth. Most of males (67.2%) drank over 20 days. Most of them (64.2%) drank with friends in beer shops (56.7%) especially in the evening (38.8%) followed by the night times (29.9%).

Table 14. Pattern of Alcohol consumption in last month according to age groups (n=70)

Variables	18-24 n=7 n (%)	25-34 n=24 n (%)	35-44 n=18 n (%)	45-54 n=20 n (%)	55-64 n=1 n (%)	65-84 n=0 n (0)
Type of alcohol in last month drinking						
Beer	6 (85.7)	13 (54.2)	8 (44.4)	6 (30.0)	0 (0.0)	0 (0.0)
Spirit	0 (0.0)	8 (33.3)	13 (72.2)	13 (65.0)	1 (100.0)	0 (0.0)
Rum	1 (14.3)	2 (8.3)	3 (16.7)	7 (35.0)	0 (0.0)	0 (0.0)
Wine	1 (14.3)	2 (8.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Whisky	4 (57.1)	8 (33.3)	1 (5.6)	2 (10.0)	0 (0.0)	0 (0.0)
Palm tree juice	1 (14.3)	0 (0.0)	2 (11.1)	2 (10.0)	1 (100.0)	0 (0.0)
Total Standard drink/month in last month drinking						
1-50	2 (28.6)	7 (29.2)	2 (11.1)	4 (20.0)	0 (0.0)	0 (0.0)
51-100	0 (0.0)	6 (25.0)	4 (22.2)	6 (30.0)	0 (0.0)	0 (0.0)
101-150	0 (0.0)	2 (8.3)	0 (0.0)	2 (10.0)	1 (100.0)	0 (0.0)
151-200	2 (28.6)	1 (4.2)	4 (22.2)	1 (5.0)	0 (0.0)	0 (0.0)
201-250	0 (0.0)	1 (14.2)	2 (11.1)	2 (10.0)	0 (0.0)	0 (0.0)
251-300	0 (0.0)	2 (8.3)	0 (0.0)	1 (5.0)	0 (0.0)	0 (0.0)
301-350	0 (0.0)	0 (0.0)	1 (5.6)	1 (5.0)	0 (0.0)	0 (0.0)
351-400	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
401-450	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
451-500	1 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
501-550	1 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
551-600	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
601-650	0 (0.0)	1 (4.2)	1 (5.6)	0 (0.0)	0 (0.0)	0 (0.0)
651-700	1 (14.3)	1 (4.2)	3 (16.7)	3 (15.0)	0 (0.0)	0 (0.0)
701 and above	0 (0.0)	3 (12.5)	1 (5.6)	0 (0.0)	0 (0.0)	0 (0.0)
Drinking days/month in last month						
1-10 days	1 (14.3)	5 (20.8)	3 (16.7)	2 (10.0)	0 (0.0)	0 (0.0)
11-20 days	1 (14.3)	7 (29.2)	2 (11.1)	3 (15.0)	0 (0.0)	0 (0.0)
21-30 days	5 (71.4)	12 (50.0)	13 (72.2)	15 (75.0)	1 (100.0)	0 (0.0)
Drinking with friends						
No, drink alone	0 (0.0)	9 (37.5)	6 (33.3)	11 (55.0)	0 (0.0)	0 (0.0)
2 friends	0 (0.0)	1 (4.2)	2 (11.1)	1 (5.0)	0 (0.0)	0 (0.0)
3 friends	1 (14.3)	3 (12.5)	2 (11.1)	2 (10.0)	1 (100.0)	0 (0.0)
4 friends	1 (14.3)	6 (25.0)	4 (22.2)	1 (5.0)	0 (0.0)	0 (0.0)
5 friends	2 (28.6)	4 (16.7)	4 (22.2)	3 (15.0)	0 (0.0)	0 (0.0)
6-10 friends	3 (42.9)	1 (4.2)	0 (0.0)	2 (10.0)	0 (0.0)	0 (0.0)
Place of drinking in last month						
Homes	0 (0.0)	11 (45.8)	7 (38.9)	11 (55.0)	0 (0.0)	0 (0.0)

Beer shops	7 (100.0)	12 (50.0)	11 (61.1)	9 (45.0)	0 (0.0)	0 (0.0)
Workplaces	0 (0.0)	1 (4.20)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
Bars	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Time of drinking in last month						
Daytimes	0 (0.0)	1 (4.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Evening	5 (71.4)	7 (29.2)	7 (38.9)	8 (40.0)	0 (0.0)	0 (0.0)
Night	2 (28.6)	9 (37.5)	3 (16.7)	6 (30.0)	1 (100.0)	0 (0.0)
No specific times	0 (0.0)	7 (29.2)	8 (44.4)	6 (30.0)	0 (0.0)	0 (0.0)

In the table 14, for the last month drinkers, most of them were younger and middle aged. Most of the beer (54.2%) and whisky drinkers (33.3%) were in the age 25-34. Most of spirit drinker were in 35-44 of age (33.3%). Most of the rum drinkers were 45-54 (35%). Elderly tended to drink palm tree juices. There were still a higher number of patients (16.7% of 35-44) in the highest quantity for the whole month. Most of middle groups (75% of 45-54 age) drank over 20 to nearly the whole month. Patients with 45-54 age drank more with friends (55%) in beer shops (45%) especially in the evening (40%)and night times (30%).

4.8 Intensity of alcohol consumption in last month (n=70)

Table 15. Intensity of Alcohol consumption in last month according to gender (n=70)

Variables	Males (n= 67) n (%)	Females (n= 3) n (%)
Intensity in last month drinking		
1-50 grams	27 (40.3)	2 (66.7)
51-100 grams	21 (31.3)	1 (33.3)
101-150 grams	2 (3.0)	0 (0.0)
151-200 grams	2 (3.0)	0 (0.0)
201-250 grams	11 (16.4)	0 (0.0)
251-300 grams	2 (3.0)	0 (0.0)
301 grams and above	2 (3.0)	0 (0.0)

In the table 15, during the last month, higher number of males drank in the groups of 1-50 grams (40.3%) and followed by 51-100 grams (31.3%) and followed by 201-300 grams (16.4%) per month for the intensify. Females took less than males (66.7%) for 1-50 gram.

Table 16. Intensity of Alcohol consumption in last month according to age groups (n=70)

Variables	18-24 n=7 n (%)	25-34 n=24 n (%)	35-44 n=18 n (%)	45-54 n=20 n (%)	55-64 n=1 n (%)
Intensity in last month drinking					
1-50 grams	2 (28.6)	12 (50.0)	5 (27.8)	9 (45.0)	1 (100.0)
51-100 grams	2 (28.6)	6 (25.0)	7 (38.9)	7 (35.0)	0 (0.0)
101-150 grams	0 (0.0)	0 (0.0)	1 (5.6)	1 (5.0)	0 (0.0)
151-200 grams	2 (16.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
201-250 grams	1 (14.3)	4 (16.7)	4 (22.2)	2 (10.0)	0 (0.0)
251-300 grams	0 (0.0)	0 (0.0)	1 (5.6)	1 (5.0)	0 (0.0)
301 grams and above	0 (0.0)	2 (8.3)	0 (0.0)	0 (0.0)	0 (0.0)

In the table 16, most the patients who were taking intensity 1-50 grams were in the age range of 25-34 (50%). Same number of patients could be seen in the 51-100 grams for the age range 35-44, 45-54.

4.9 Average intake of alcohol in last month (n=70)

Table 17. Average intake of Alcohol consumption in last month according to gender (n=70)

Variables	Males (n= 67) n (%)	Females (n= 3) n (%)
Average intake in last month drinking		
1-50 grams	34 (50.7)	2 (66.7)
51-100 grams	15 (22.4)	1 (33.3)
101-150 grams	2 (3.0)	0 (0.0)
151-200 grams	2 (3.0)	0 (0.0)
201-250 grams	11 (16.4)	0 (0.0)
251-300 grams	1 (1.5)	0 (0.0)
301 grams and above	2 (3.0)	0 (0.0)

In the table 17, for the average intake in the last month, most of the males (50.7%) took 1-50 grams for the whole day in the last month. After that followed by 22.4% male patients in 51-100 grams and then 16.4% in 201-250 gram.

Table 18. Average intake of Alcohol consumption in last month according to age groups (n=70)

Variables	18-24 n=7 n (%)	25-34 n=24 n (%)	35-44 n=18 n (%)	45-54 n=20 n (%)	55-64 n=1 n (%)
Average intake in last month drinking					
1-50 grams	2 (28.6)	15 (62.5)	6 (33.3)	12 (60.0)	1 (100.0)
51-100 grams	2 (28.6)	4 (16.7)	6 (33.3)	4 (20.0)	0 (0.0)
101-150 grams	0 (0.0)	0 (0.0)	1 (5.6)	1 (5.0)	0 (0.0)
151-200 grams	2 (28.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
201-250 grams	1 (14.3)	3 (12.5)	4 (22.2)	3 (15.0)	0 (0.0)
251-300 grams	0 (0.0)	0 (0.0)	1 (5.6)	0 (0.0)	0 (0.0)
301 grams and above	0 (0.0)	2 (8.3)	0 (0.0)	0 (0.0)	0 (0.0)

In the table 18, When calculating the average intake, most of the patients who were taking 1-50 gram were in the age range 25-34 (62.5%), taking 51-100 grams were in the age range 35-44 (33.3%), taking 201-250 grams were in the age range 35-44 (22.2%) respectively.

4.10 Pattern of Alcohol consumption in last week (n=44)

Table 19. Pattern of Alcohol consumption in last week according to gender (n=44)

Variables	Males (n= 43) n (%)	Female (n= 1) n (%)
Type of alcohol in last week drinking		
Beer	17 (39.5)	1 (100.0)
Spirit	23 (53.5)	0 (0.0)
Rum	9 (20.9)	0 (0.0)
Wine	0 (0.0)	0 (0.0)
Whisky	9 (20.9)	0 (0.0)
Palm tree juice	4 (9.3)	0 (0.0)
Total Standard drink in last week drinking		
1-50	24 (55.8)	0 (0.0)
51-100	6 (14.0)	0 (0.0)
101-150	3 (7.0)	1 (100.0)
151-200	9 (20.9)	0 (0.0)
201-250	0 (0.0)	0 (0.0)
251-300	0 (0.0)	0 (0.0)
301-350	0 (0.0)	0 (0.0)
351-400	0 (0.0)	0 (0.0)
401-450	0 (0.0)	0 (0.0)
451-500	1 (2.3)	0 (0.0)
Drinking days/month in last week		
1 day	4 (9.3)	0 (0.0)
4 days	1 (2.3)	0 (0.0)
5 days	6 (14.0)	0 (0.0)
6 days	1 (2.3)	0 (0.0)
7 days	31 (72.1)	1 (100)
Drinking with friends		
No, drink alone	15 (34.9)	0 (0.0)
2 friends	2 (4.7)	0 (0.0)
3 friends	7 (16.3)	0 (0.0)
4 friends	8 (18.6)	0 (0.0)
5 friends	8 (18.6)	1 (100.0)
6-10 friends	3 (7.0)	0 (0.0)

Place of drinking in last week		
Homes	16 (37.2)	0 (0.0)
Beer shops	25 (58.1)	1 (100.0)
Workplaces	2 (4.7)	0 (0.0)
Bars	0 (0.0)	0 (0.0)
Time of drinking in last week		
Daytimes	0 (0.0)	0 (0.0)
Evening	18 (41.9)	0 (0.0)
Night	12 (27.9)	0 (0.0)
No specific times	13 (30.2)	1 (100.0)
Weekends drinking in last week		
Weekdays	6 (14.0)	0 (0.0)
Weekends	1 (2.3)	0 (0.0)
Both	36 (83.7)	1 (100.0)

In the table 19, for the last week practice, there were 44 patients still drinking. Around half of the male drank beer (39.5%) and spirit (53.5%). Nearly one fifth of the equal number of male drank rum (20.9%) and whisky (20.9%). Nearly 10% of the male drunk palm tree juice. Most of the males drank 1-50 SD indicating 55.8%. There were still one fifth of the male patient (20.9%) drank total 151-200 SD in last week. Majority of them (72.1%) drank nearly all days of the last week. They drank more with friends (65.1%) and the highest number ranges from 1-10 friends. Over half of them drank in beer shops (58.1%) especially in the evening (41.9%) during both weekends and weekdays (83.7%).

Table 20. Pattern of Alcohol consumption in last week according to age groups (n=44)

Variables	18-24 n=6 n (%)	25-34 n=15 n (%)	35-44 n=11 n (%)	45-54 n=11 n (%)	55-64 n=1 n (%)
Type of alcohol in last week drinking					
Beer	5 (83.3)	7 (46.7)	3 (27.3)	3 (27.3)	0 (0.0)
Spirit	0 (0.0)	5 (33.3)	8 (72.7)	9 (81.8)	1 (100)
Rum	0 (0.0)	2 (13.3)	3 (27.3)	4 (36.4)	0 (0.0)
Wine	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Whisky	4 (66.7)	3 (20.0)	1 (9.1)	1 (9.1)	0 (0.0)
Palm tree juice	1 (16.7)	0 (0.0)	1 (9.1)	1 (9.1)	1 (100)
Total Standard drink in last week drinking					
1-50	2 (33.3)	9 (60.0)	6 (54.5)	6 (54.5)	1 (100.0)
51-100	1 (16.7)	1 (6.7)	2 (18.2)	3 (27.3)	0 (0.0)
101-150	2 (33.3)	1 (6.7)	0 (0.0)	0 (0.0)	0 (0.0)
151-200	1 (16.7)	3 (20.0)	3 (27.3)	2 (18.2)	0 (0.0)
201-250	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
251-300	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
301-350	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
351-400	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
401-450	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
451-500	0 (0.0)	1 (6.7)	0 (0.0)	0 (0.0)	0 (0.0)
Drinking days in last week					
1 day	1 (16.7)	2 (13.3)	1 (9.1)	0 (0.0)	0 (0.0)
4 days	0 (0.0)	1 (6.7)	0 (0.0)	0 (0.0)	0 (0.0)
5 days	2 (33.3)	0 (0.0)	3 (27.3)	1 (9.1)	0 (0.0)
6 days	0 (0.0)	0 (0.0)	1 (9.10)	0 (0.0)	0 (0.0)
7 days	3 (50.0)	12 (80.0)	6 (54.5)	10 (90.9)	1 (100)
Drinking with friends					
No, drink alone	0 (0.0)	5 (33.3)	4 (36.4)	6 (54.5)	0 (0.0)
2 friends	0 (0.0)	0 (0.0)	1 (9.1)	1 (9.1)	0 (0.0)
3 friends	1 (16.7)	2 (13.3)	2 (18.2)	1 (9.1)	1 (100)
4 friends	1 (16.7)	4 (26.7)	2 (18.2)	1 (9.1)	0 (0.0)
5 friends	2 (33.3)	3 (20.0)	2 (18.2)	2 (18.2)	0 (0.0)
6-10 friends	2 (33.3)	1 (6.70)	0 (0.0)	0 (0.0)	0 (0.0)
Place of drinking in last week					
Homes	0 (0.0)	6 (40.0)	4 (36.4)	6 (54.5)	0 (0.0)
Beer shops	6 (100)	8 (53.3)	7 (63.6)	5 (45.5)	0 (0.0)
Workplaces	0 (0.0)	1 (6.70)	0 (0.0)	0 (0.0)	1 (100)
Bars	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Time of drinking in last week					

Daytimes	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Evening	5 (83.3)	6 (40.0)	4 (36.4)	3 (27.3)	0 (0.0)
Night	1 (16.7)	4 (26.7)	2 (18.2)	4 (36.4)	1 (100)
No specific times	0 (0.0)	5 (33.3)	5 (45.5)	4 (36.4)	0 (0.0)
Weekends drinking in last week					
Weekdays	1 (16.7)	2 (13.3)	3 (27.3)	0 (0.0)	0 (0.0)
Weekends	0 (0.0)	1 (6.7)	0 (0.0)	0 (0.0)	0 (0.0)
Both	5 (83.3)	12 (80.0)	8 (72.7)	11 (100)	1 (100)

In the table 20, for the last week drinking, for the beer drinker, most of them were in the age 25-34 (46.7%). For the spirit drinker, most of them were in the age 45-54 (81.8%). For the rum drinker, most of them were in the age 45-54 (36.4%). For the whisky drinkers, most of them were 18-24 age (66.7%). For the 1-50 SD per week group, most of them were in age 25-34 (60%) and for the 51-100 SD group, most of them were in age 45-54 group (27.3%). Most of drinker who drank nearly the whole month were in the age 25-34 (80%), drank with friends mostly in age 25-34 (66.7%) in beer shops in age 25-34 (53.3%) and in the evening (40%) both in weekends and weekdays (80%).

4.11 AUDIT (n=167)

Table 21. AUDIT scores level according to gender (n-167)

Variables	Males (n= 159) n (%)	Females (n= 8) n (%)
AUDIT levels		
Abstainers	46 (28.9)	4 (50.0)
High risk drinker	6 (3.8)	1 (12.5)
Hazardous drinker	28 (17.6)	2 (25.0)
Harmful drinker	27 (17.0)	1 (12.5)
Probable alcohol dependent	52 (32.7)	0 (0.0)

In the table 21, for the AUDIT levels, one third of the lifetime male drinkers (28.9%) and half of the female drinkers (50%) were abstainers now. Nearly one third of the male drinkers (32.7%) were alcohol dependents. Equal percent of male were hazardous (17.6%) and harmful drinkers (17.0%). There was also one female in harmful drinker and 2 females in the hazardous drinking.

Table 22. AUDIT scores level according to age groups (n=167)

Variables	18-24 n=16 n (%)	25-34 n=40 n (%)	35-44 n=41 n (%)	45-54 n=47 n (%)	55-64 n=17 n (%)	65-84 n=6 n (%)
AUDIT levels						
Abstainers	2 (12.5)	10 (25.0)	12 (29.3)	10 (21.3)	13 (76.5)	3 (50.0)
High risk drinker	2 (12.5)	3 (7.5)	0 (0.0)	2 (4.3)	0 (0.0)	0 (0.0)
Hazardous drinker	5 (31.3)	5 (12.5)	7 (17.1)	11 (23.4)	0 (0.0)	2 (33.3)
Harmful drinker	3 (18.8)	8 (20.0)	5 (12.2)	10 (21.3)	2 (11.8)	0 (0.0)
Probable alcohol dependent	4 (25.0)	14 (35.0)	17 (41.5)	14 (29.8)	2 (11.8)	1 (16.7)

In the table 22, for the AUDIT scores level, one fourth of the age 18-24 were alcohol dependent (25%). One fifth was harmful drinker (18.8%); one third was hazardous drinker (31.3%). Over one third of 25-34 (35%) were alcohol dependent, one fifth (20%) was in harmful drinkers. Two fifth of the 35-44 group (41.5%) were in the dependent level. One third of the 45-54 group (29.8%) was in the dependent level. There were also numbers of patients for more elderly group in the dependent level (11.8% and 16.7%) respectively.

Table 23. AUDIT scores level according to viral hepatitis infection status (n=167)

Variables total=167	No-viral hepatitis n=79 n (%)	HBV n=50 n (%)	HCV n=34 n (%)	Both HBV and HCV n=4 n (%)
AUDIT levels				
Abstainers	10 (12.7)	17 (34.0)	19 (55.9)	4 (100.0)
High risk drinker	2 (2.5)	4 (8.0)	1 (2.9)	0 (0.0)
Hazardous drinker	14 (17.7)	11 (22.0)	5 (14.7)	0 (0.0)
Harmful drinker	19 (24.1)	8 (16.0)	1 (2.9)	0 (0.0)
Probable alcohol dependent	34 (43.0)	10 (20.0)	8 (23.5)	0 (0.0)

In the table 23, according to viral hepatitis status, most of the alcohol dependents did not have viral hepatitis. There were nearly equal number of patients in alcohol dependents who were having either HBV or HCV. In the harmful drinkers, most of the patients did not have viral hepatitis, followed by a half number of HBV patients. In the hazardous drinkers, most patients still did not have viral infection, followed by a large number of HBV patients and then thirdly followed by HCV patients. In the high risk drinkers, most of the patients were having HBV infection. In the abstainer group, most of the patients were having HCV infection, there were also 4 co-infected patients in that group.

Table 24. AUDIT scores level according to liver disease severity (n=167)

Variables total=167	No cirrhosis n=69 n (%)	Cirrhosis Child A n=48 n (%)	Cirrhosis Child B n=21 n (%)	Cirrhosis Child C n=12 n (%)	Hepatocellular carcinoma n=17 n (%)
AUDIT levels					
Abstainers	22 (31.9)	12 (25.0)	3 (14.3)	3 (25.0)	10 (58.8)
High risk drinker	4 (5.8)	2 (4.2)	0 (0.0)	0 (0.0)	1 (5.9)
Hazardous drinker	19 (27.)	4 (8.3)	3 (14.3)	0 (0.0)	4 (23.5)
Harmful drinker	8 (11.6)	14 (29.2)	4 (19.0)	2 (16.7)	0 (0.0)
Probable alcohol dependent	16 (23.2)	16 (33.3)	11 (52.4)	7 (58.3)	2 (11.8)

In the table 24, according to disease severity, there were equal number of 16 patients who were having either no cirrhosis or cirrhosis Child A grading in alcohol

dependents, followed by 11 Child B patients, 7 Child C patients and 2 liver cancer patients in that group.

In the harmful drinkers, most of the patients were having cirrhosis Child A grading, followed by no cirrhosis, Child B grading, Child C grading respectively.

In the hazardous drinkers, most of the patients were having no cirrhosis, followed by nearly equal number of patients having cirrhosis Child A or B or liver cancer grading respectively.

In the high risk drinkers, most of the patients were having no cirrhosis, followed by Child A and still one liver cancer patient in that group.

In the abstainers, most of the patients were in the no cirrhosis group followed by nearly equal number of patients having either cirrhosis Child A or liver cancer; equal number of patients in Child b or C grading, too.

4.12 Harms and injuries, substance use (n=167)

Table 25. Harms and injuries according to gender (n=167)

Variables	Males (n=159) n (%)	Females (n= 8) n (%)
Self-injury within past 12 months		
No	130 (81.8)	8 (100.0)
Falls	11 (6.9)	0 (0.0)
Vehicle accidents	10 (6.3)	0 (0.0)
Violence/fights	7 (4.4)	0 (0.0)
Suicidal thoughts/tendency	1 (0.6)	0 (0.0)
Injury to other people within past 12 months		
No	141 (88.7)	8 (100.0)
Vehicle accidents	9 (5.7)	0 (0.0)
Violence/fights	9 (5.7)	0 (0.0)
Taking medicine closely with alcohol (<30 min)		
No	145 (91.2)	8 (100.0)
Liver supplements	2 (1.3)	0 (0.0)

Antibiotics	3 (1.9)	0 (0.0)
Analgesics	7 (4.4)	0 (0.0)
Anti-retro viral therapy	1 (0.6)	0 (0.0)
Anti-hypertensives	1 (0.6)	0 (0.0)
Drinker in family		
No	112 (70.4)	3 (37.5)
Father	16 (10.0)	3 (37.5)
Uncle	2 (1.3)	0 (0.0)
Brothers	21 (13.2)	0 (0.0)
Husband	0 (0.0)	2 (25.0)
Sons	8 (5.0)	0 (0.0)
Smoking within last 12 months		
No	65 (40.9)	6 (75.0)
Yes	94 (59.1)	2 (25.0)
Betel chewing within last 12 months		
No	67 (42.1)	5 (62.5)
Yes	92 (57.9)	3 (37.5)
Other substance use within last 12 months		
No	154 (96.9)	8 (100.0)
Yes	5 (3.1)	0 (0.0)

In the table 25, for self-injury during last 12 months, nearly one fifth of the male drinkers (18.2%) had injury, nearly equal number of male patients were having either falls (6.9%) or vehicle accidents (6.3%) and violence /fights (4.4%) and one suicidal attempt due to drinking in past 12 months.

There were also injuries to other people due to their drinking, equal number of patients who were causing vehicle accident (5.7%) or violence/fights (5.7%) to other people due to their drinking in last 12 months.

Moreover, 8.8% of male drinker patients were taking prescribed medicine very closely (<30 minutes) together with alcohol drinking. The medicines included liver supplements, antibiotics, anti-retro viral therapy, analgesics and anti-hypertensives. Some patients (4.4%) were taking analgesics closely with their drinking.

Nearly one third of the male drinker patients (29.6%) and two third of the female drinker patients (62.5%) were having drinkers in their family. Most of the drinkers in their family were brothers (13.2% in males) followed by their fathers and sons.

Nearly two third of the male drinker patients (59.1%) and one fourth of the female drinker patients (25%) had smoked in the last 12 months.

Nearly two third of male drinkers (57.9%) and two fifth of the female's drinker patients (37.5%) had betel chewing in the last 12 months.

There were only 5 male patients had used other addictive substances during past 12 months including weeds, tobacco leaf chewing and methamphetamines tablet usage.

Table 26. Harms and injuries according to age groups (n=167)

Variables	18-24 n=16 n (%)	25-34 n=40 n (%)	35-44 n=41 n (%)	45-54 n=47 n (%)	55-64 n=17 n (%)	65-84 n=6 n (%)
Self-injury						
No	12 (75.0)	28 (70.0)	34 (82.9)	41 (87.2)	17 (100)	6 (100)
Falls	2 (12.5)	3 (7.5)	2 (4.9)	4 (8.5)	0 (0.0)	0 (0.0)
Vehicle accidents	0 (0.0)	6 (15.0)	4 (9.8)	0 (0.0)	0 (0.0)	0 (0.0)
Violence/fights	2 (12.5)	2 (5.0)	1 (2.4)	2 (4.3)	0 (0.0)	0 (0.0)
Suicidal thoughts/tendency	0 (0.0)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Injury to other people						
No	13 (81.3)	33 (82.5)	37 (90.2)	43 (91.5)	17 (100)	6 (100)
Vehicle accidents	1 (6.3)	5 (12.5)	3 (7.3)	0 (0.0)	0 (0.0)	0 (0.0)
Violence/fights	2 (12.5)	2 (5.0)	1 (2.4)	4 (8.5)	0 (0.0)	0 (0.0)
Prescribed medicine taken closely with alcohol drinking (<30min)						
No	16 (100)	35 (87.5)	37 (90.2)	43 (91.5)	16 (94.1)	6 (100)
Liver supplements	0 (0.0)	1 (2.5)	1 (2.4)	0 (0.0)	0 (0.0)	0 (0.0)
Antibiotics	0 (0.0)	1 (2.5)	1 (2.4)	1 (2.1)	0 (0.0)	0 (0.0)
Analgesics	0 (0.0)	2 (5.0)	2 (4.9)	2 (4.3)	1 (5.9)	0 (0.0)
Anti-retro viral therapy	0 (0.0)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Anti-hypertensives	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.1)	0 (0.0)	0 (0.0)
Drinker in family						
No	10 (62.5)	20 (50.0)	30 (73.2)	38 (80.9)	12 (70.6)	5 (83.3)
Father	3 (18.8)	11 (27.5)	3 (7.3)	2 (4.3)	0 (0.0)	0 (0.0)
Uncle	0 (0.0)	0 (0.0)	0 (0.0)	2 (4.3)	0 (0.0)	0 (0.0)
Brothers	3 (18.8)	8 (20.0)	7 (17.1)	2 (4.3)	1 (5.9)	0 (0.0)
Husband	0 (0.0)	1 (2.5)	1 (2.4)	0 (0.0)	0 (0.0)	0 (0.0)
Sons	0 (0.0)	0 (0.0)	0 (0.0)	3 (6.4)	4 (23.5)	1 (16.7)

Smoking within last 12 months						
No	6 (37.5)	19 (47.5)	21 (51.2)	17 (36.2)	7 (41.2)	1 (16.7)
Yes	10 (62.5)	21 (52.5)	20 (48.8)	30 (63.8)	10 (58.8)	5 (83.3)
Betel chewing within last 12 months						
No	7 (43.8)	19 (47.5)	15 (36.6)	18 (38.3)	8 (47.1)	5 (83.3)
Yes	9 (56.3)	21 (52.5)	26 (63.4)	29 (61.7)	9 (52.9)	1 (16.7)
Other substance use within last 12 months						
No	14 (87.5)	38 (95.0)	41 (100)	46 (97.9)	17 (100)	6 (100)
Yes	2 (12.5)	2 (5.0)	0 (0.0)	1 (2.10)	0 (0.0)	0 (0.0)

In the table 26, about self-injury due to drinking, most of the patients were in 45-54 age, vehicle accidents in 25-34 age range, violence/fights were equally seen the younger groups. Suicidal attempt was found in 25-34 age range. About injury to other people due to drinking, vehicle accidents were commonly found in 25-34, violence and fights in 45-54 age group. Patients who were taking medicines closely with alcohol were found equally in the age groups: 25-34, 35-44, 45-54. Most of the patients who had drinkers in their family were in the age groups 25-34, 35-44, 45-54. Most of the drinker patients who smoked or betel chewed in last 12 months were in the age group 45-54. Almost all other addictive substance users in drinker patients were younger ones.

4.13 Health related quality of life: CLDQ scores (n=280)

In this section, the health related quality of life for chronic liver diseases patients was explored among gender groups. The part began with each domain scores including abdominal symptoms, fatigue, systemic symptoms, activity, emotional functions, worry and total domain scores.

Table 27. CLDQ mean scores among chronic liver disease patients (n=280)

Domains	Patients (n= 280) Mean ± SD
Abdominal Symptom	5.11 ± 1.39
Fatigue	5.16 ± 1.17
Systemic symptoms	5.25 ± 1.14
Activity	5.40 ± 1.17
Emotional Functions	5.26 ± 1.11
Worry	5.28 ± 1.11
Total CLDQ mean score	5.2421 ± 0.9692

In the table 27, the total CLQD mean score for the 280 chronic liver disease patients was 5.2421 ± 0.9692 with the lowest score in domain – abdominal symptoms.

Table 28. CLDQ mean scores among chronic liver disease patients according to gender (n=280)

Domains	Males (n= 175) Mean ± SD	Females (n= 105) Mean ± SD
Abdominal Symptom	5.15 ± 1.35	5.03 ± 1.44
Fatigue	5.23 ± 1.15	5.04 ± 1.19
Systemic symptoms	5.29 ± 1.15	5.18 ± 1.12
Activity	5.50 ± 1.14	5.24 ± 1.21
Emotional Functions	5.37 ± 1.11	5.07 ± 1.09
Worry	5.41 ± 1.04	5.06 ± 1.18
Total CLDQ	5.32 ± 0.93	5.11 ± 1.03

In the table 28, when comparing mean scores for each domain, female had lower mean scores in all domain and overall scores than male patients. The lowest domain score for both genders was abdominal symptoms.

Table 29. CLDQ mean scores among chronic liver disease patients according to viral hepatitis status (n=280)

Domains	No infection (n= 102) Mean ± SD	HBV (n= 93) Mean ±SD	HCV (n= 78) Mean ±SD	Co-infection (n= 7) Mean ± SD
Abdominal Symptom	4.89 ±1.37	5.45 ±1.43	4.98 ±1.29	4.91 ±1.37
Fatigue	5.07 ±1.15	5.42 ±1.12	5.00 ±1.22	4.89 ±1.14
Systemic symptoms	5.06 ±1.27	5.57 ±0.99	5.13 ±1.08	5.23± 0.74
Activity	5.37 ±1.15	5.65 ±1.14	5.15 ±1.19	5.43 ±1.33
Emotional Functions	5.30 ±1.14	5.40 ±1.07	5.07 ±1.14	4.77 ±0.64
Worry	5.39 ±1.07	5.41 ±1.07	5.02 ±1.17	4.80 ±0.75
Total CLDQ	5.18 ±0.97	5.48 ±0.94	5.06 ±0.99	5.00 ±0.69

In the table 29, when comparing mean scores for each domain according to chronic viral infection status, no viral hepatitis patients had lowest scores in abdominal symptoms domain, viral coinfection patients had lowest fatigue scores, no viral hepatitis patients had lowest systemic symptom scores, HCV patients had lowest activity scores, co-infected patients had lowest emotional functions and worry scores as well as overall scores.

Table 30. CLDQ mean scores among chronic liver disease patients according to liver disease severity (n=280)

	No Cirrhosis (n= 135) Mean ± SD	**Child A** (n= 67) Mean ± SD	**Child B** (n= 25) Mean ± SD	**Child C** (n= 18) Mean ± D	**HCC** (n= 35) Mean ±SD
Abdominal Symptom	5.49 ±1.35	5.04 ±1.26	4.76 ±1.29	4.04 ±0.99	4.56 ±1.46
Fatigue	5.43 ±1.08	5.08 ±1.16	4.44 ±1.36	4.37 ±0.82	5.22 ±1.15
Systemic symptoms	5.51 ±1.01	537 ± 0.93	4.66 ±1.24	3.60± 1.09	5.28± 1.15
Activity	5.78 ±1.08	5.34 ±1.12	4.65 ±1.14	4.61 ±1.09	5.01 ±1.11
Emotional Functions	5.46 ±1.04	5.16 ±1.16	4.67 ±1.21	4.75 ±0.97	5.36 ±1.08
Worry	5.58 ±1.00	5.16 ±1.05	4.73 ±1.18	4.74 ±0.97	4.99 ±1.27
Total CLDQ	5.54 ±0.91	5.19 ±0.87	4.65 ±1.05	4.35 ±0.71	5.07 ±0.93

In the table 30, when comparing mean scores for each domain according to liver disease severity, Child C patients had lowest scores in abdominal symptoms, fatigue, systemic symptom and activity scores. Child B patients had lowest emotional and worry scores. The lowest overall score patients were Child C grading patients.

Table 31. QOL according to gender (n=280)

Variables	Males (n= 175) n (%)	Females (n= 105) n (%)
Low QOL, < mean	76 (43.4)	50 (47.6)
High QOL, ≥ mean	99 (56.6)	55 (52.4)

In the table 31, both gender had more percentage in higher mean score and HRQOL. Males had generally more numbers than females in both low and high mean score.

Table 32. QOL according to age groups (n=280)

Variables	18-24 n=27 n (%)	25-34 n=57 n (%)	35-44 n=61 n (%)	45-54 n=75 n (%)	55-64 n=42 n (%)	65-84 n=18 n (%)
Low QOL	2 (7.4)	23 (40.4)	32 (52.5)	37 (49.3)	23 (54.8)	9 (50.0)
High QOL	25 (92.6)	34 (59.6)	29 (47.5)	38 (50.7)	19 (45.2)	9 (50.0)

In the table 32, generally, younger patients with age 18-24 and 25-34 had higher QOL. Most of the low QOL people were in the current age group 45-54 followed by 35-44 age group.

Table 33. QOL according to chronic liver disease severity (n=280)

Variables	No cirrhosis n=135 n (%)	Cirrhosis Child A n=67 n (%)	Cirrhosis Child B n=25 n (%)	Cirrhosis Child C n=18 n (%)	Hepatocellular carcinoma n=35 n (%)
Low QOL< mean	42 (31.1)	30 (44.8)	20 (80.0)	16 (88.9)	18 (51.4)
High QOL ≥ mean	93 (68.9)	37 (55.2)	5 (20.0)	2 (11.1)	17 (48.6)

In the table 33, most of the no cirrhosis and cirrhosis Child A patients had higher QOL, most of the Cirrhosis Child B and Child C patients had lower QOL, more liver cancer patients had lower QOL.

4.14 Chronic liver disease causes, severity and other comorbidities (n=280)

Table 34. Current main causes of liver disease according to gender (n=280)

Chronic liver disease causes	Males (n= 175) n (%)	Females (n= 105) n (%)
Alcoholic liver disease	102 (58.3)	3 (2.9)
Non-alcoholic fatty liver diseases	11 (6.3)	28 (26.7)
Chronic viral hepatitis only	56 (32.0)	56 (53.3)
Others causes	6 (3.4)	18 (17.1)

In the table 34, when analyzing the current main diagnosis, most of the males (58.3%) had alcoholic liver diseases followed by chronic viral hepatitis only (32%). Most of the females (53.3%) were diagnosed as chronic viral hepatitis only, followed by no-alcoholic fatty liver diseases (26.7%) and other rare causes (17.1%).

Other rare causes in males are 3 drug induced hepatitis, 1 complicated liver cyst, 1 gastrointestinal malignancy with peritoneal metastasis, 1 liver abscess.

Other rare causes in the females were 6 cases of cholangio-hepatitis cases, 4 cases of hemangiomas, 3 cases of drug induced hepatitis, 2 cases of autoimmune hepatitis, 1 case of non B non C idiopathic hepatocellular carcinoma, 1 case of liver adenoma, 1 case of complicated liver cyst.

Table 35. Current main causes of liver disease according to age groups (n=280)

Variables	18-24 n=27 n (%)	25-34 n=57 n (%)	35-44 n=61 n (%)	45-54 n=75 n (%)	55-64 n=42 n (%)	65-84 n=18 n (%)
Alcoholic liver diseases	8 (29.6)	24 (42.1)	29 (47.5)	36 (48.0)	6 (14.3)	1 (5.6)
Non-alcoholic fatty liver diseases	2 (7.4)	8 (14.0)	11 (18.0)	11 (14.7)	6 (14.3)	1 (5.6)
Only viral hepatitis	15 (55.6)	22 (38.6)	17 (27.9)	19 (25.3)	25 (59.5)	15 (83.3)
Others causes of liver diseases	2 (7.4)	3 (5.3)	4 (6.6)	9 (12.0)	5 (11.9)	1 (5.6)

In the table 35, according to current age groups, most of the age group 25-34 (42.1%), age 35-44 (47.5%), age 45-54 (48%); nearly half of them were alcoholic liver diseases. For more elderly groups (59.5%) and 18-24 group (55.6%), most of the patients; over half of them were having viral hepatitis infection only. Nearly 30% of 18-24 age group had alcoholic liver diseases.

Table 36. Chronic viral hepatitis status according to gender (n=280)

Chronic Viral Hepatitis status	Males (n= 175) n (%)	Females (n= 105) n (%)
No Viral Hepatitis infection	76 (43.4)	26(24.8)
Hepatitis B	57 (32.6)	36(34.3)
Hepatitis C	39 (22.3)	39(37.1)
Both Hepatitis B and C	3 (1.7)	4 (3.8)

In the table 36, the viral hepatitis status according to gender showed that in no viral infection group (43.4%) and HBV infection (32.6%) group, there were more males. More females could be found in HCV infection group (37.1%) and co-infected groups (3.8%).

Table 37. Chronic viral hepatitis status according to age groups (n=280)

Variables	18-24 n=27 n (%)	25-34 n=57 n (%)	35-44 n=61 n (%)	45-54 n=75 n (%)	55-64 n=42 n (%)	65-84 n=18 n (%)
No viral hepatitis	8 (29.6)	21 (36.8)	27 (44.3)	35 (46.7)	10 (23.8)	1 (5.6)
HBV	16 (59.3)	20 (35.1)	20 (32.8)	26 (34.7)	6 (14.3)	5 (27.8)
HCV	3 (11.1)	15 (26.3)	12 (19.7)	12 (16.0)	25 (59.5)	11(61.1)
Both	0 (0.0)	1 (1.8)	2 (3.3)	2 (2.7)	1 (2.4)	1 (5.6)

In the table 37, the viral hepatitis status according to age group showed that in 18-24 age group, most of the patients (59.3%) were infected with HBV infection. In 25-34 group, one could find that increased number of HCV patients (26.3%). In 45-54 group, HBV patients (34.7%) were twice numbering than HCV patients (16%). However, in 55-64 group HCV patients (59.5%) were four time than that of HBV patients (14.3%) and HCV (61.1%) two times more than HBV (27.8%) in 65-84 group.

Table 38. Liver disease severity according to gender (n=280)

Liver disease severity	Males (n= 175) n (%)	Females (n= 105) n (%)
No Cirrhosis	73 (41.7)	62 (59.0)
Cirrhosis Child A	49 (28.0)	18(17.1)
Cirrhosis Child B	21 (12.0)	4 (3.8)
Cirrhosis Child C	12 (6.9)	6 (5.7)
Hepatocellular Carcinoma	20 (11.4)	15(14.3)

In the table 38, the liver disease according to gender showed that in males: from no cirrhosis (41.7%) to Child A (28%), Child B (12%) and Child C (6.9%): the numbers reduced nearly half from each stage to a higher one. However, for males, liver cancer number (11.4%) increased again nearly the same percent with Child B grading.

For the females, majority of them (59%) were having no cirrhosis, the proportion of patients reduced from each stage to a higher one but the female liver cancer number was nearly equal with the cirrhosis Child A grading.

Table 39. Liver disease severity according to age groups (n=280)

Variables	18-24 n=27 n (%)	25-34 n=57 n (%)	35-44 n=61 n (%)	45-54 n=75 n (%)	55-64 n=42 n (%)	65-84 n=18 n (%)
Disease severity						
No cirrhosis	25 (92.6)	38 (66.7)	31 (50.8)	30 (40.0)	8 (19.0)	3 (16.7)
Child A cirrhosis	2 (7.4)	9 (15.8)	17 (27.9)	25 (33.3)	13 (31.0)	1 (5.6)
Child B cirrhosis	0 (0.0)	4 (7.0)	5 (8.2)	11 (14.7)	3 (7.1)	2 (11.1)
Child C cirrhosis	0 (0.0)	4 (7.0)	4 (6.6)	3 (4.0)	7 (16.7)	0 (0.0)
Hepatocellular carcinoma	0 (0.0)	2 (3.5)	4 (6.6)	6 (8.0)	11 (26.2)	12 (66.7)

In the table 39, the liver disease according to age groups showed that in 18-24 group, most of them (92.6%) had no cirrhosis.

In 25-34 group, 7% patients started to have Child B or higher Child C and even 2 cases of liver cancer in that age group.

In 35-44 group, cirrhosis number reduced and Child A cirrhosis dramatically increased up to nearly one third of the group. The liver cancer number increased twice than that of the younger group.

In 45-54 group, no cirrhosis number were still decreasing while Child A occupied one third of that group and Child B occupied 14.7% of that group. The liver cancer number also increased up to 8%.

In 55-64 group, no cirrhosis numbers significantly reduced to lower than one fifth of that group. Child C grading increased nearly one fifth and liver cancer number suddenly increased up to more than one fourth of that group.

In the eldest group, all no cirrhosis and cirrhosis grading reduced except Child B and the liver cancer rate increased up to more than two third of that group.

4.15 Associations for lifetime alcohol consumption

Table 40. Association between sociodemographic characteristics and lifetime alcohol consumption (n=280)

	Lifetime alcohol drinking		
Variables	No (n=113) n (%)	Yes (n=167) n (%)	p value
Age (years)			
18 - 24	11 (9.7)	16 (9.6)	
25 - 34	17 (15.0)	40 (24.0)	
35-44	20 (17.7)	41 (24.6)	
45-54	28 (24.8)	47 (28.1)	0.007**
55-64	25 (22.1)	17 (10.2)	
65-84	12 (10.6)	6 (3.6)	
Gender			
males	16 (14.2)	159 (95.2)	0.000***
females	97 (85.8)	8 (4.8)	

Marital status #			
Single	29 (25.7)	38 (22.8)	
Married	67 (59.3)	121 (72.5)	0.010*
Widowed	14 (12.4)	5 (3.0)	
Divorced/separated	3 (2.7)	3 (1.8)	
Educational status			
Never been to school/just read and write	13 (11.5)	6 (3.6)	
Primary	35 (31.0)	35 (21.0)	0.007**
Middle	30 (26.5)	47 (28.1)	
High school	23 (20.4)	45 (26.9)	
Graduated and above	12 (10.6)	34 (20.4)	
Occupation #			
No occupation	38 (33.6)	15 (9.0)	
Government staffs	3 (2.7)	16 (9.6)	
Private company staffs	5 (4.4)	19 (11.4)	0.000***
Own business	32 (28.3)	74 (44.3)	
General workers	20 (17.7)	36 (21.6)	
Students	3 (2.7)	2 (1.2)	
Monks/Nuns	9 (8.0)	1 (0.6)	
Retired people	3 (2.7)	2 (1.2)	
Drivers	0 (0.0)	2 (1.2)	
Monthly Individual Income			
No income	48 (42.5)	17 (10.2)	
1-99 USD	8 (7.1)	8 (4.8)	0.000***
100 - 299 USD	48 (42.5)	102 (61.1)	
≥ 300 USD	9 (8.0)	40 (24.0)	

** p <0.05, ** p <0.01, *** p <0.001, # Fischer Exact Test applied*

in the table 40, in analysis of the association between the sociodemographic characteristics and lifetime alcohol consumption, approximately equal percent of patients drank in their lifetime in age group 25-34, 35-44, 45-54 age groups. In 18-24

and 55-64 age groups, there were also nearly same number of patients drank in their lifetimes. The age groups were found to be associated with the lifetime alcohol consumption ($p<0.01$).

More than 95% of the male patients had lifetime drinking experiences while only nearly 5% of females had lifetime drinking. There was also strong association between age and lifetime alcohol consumption ($p<0.001$)

The highest number of lifetime drinkers were found to be married ones while, the same pattern occurred in the same marital status in patients who never drank alcohol. There was association between marital status and drinking in lifetimes ($p<0.05$).

The majority of the lifetime drinker had finished middle school level education while patients who never drink indicated that they achieved primary level education. Association was also appeared to be in education with the lifetimes alcohol practice ($p<0.01$).

Nearly half of the lifetime drinkers had their own business while highest number of lifetime abstainer had no occupation at that time. A strong association was found to be with the occupation, too ($p<0.001$).

Over half of the lifetime drinkers had an income of 100-299 USD per month. Nearly the same numbers of patients were found to be in no income group and 100-299 USD per month group in lifetime abstainer. It was evident that there was a strong association in income groups ($p<0.001$).

Table 41. Association between substance use and lifetime alcohol consumption (n=280)

	Lifetime alcohol drinking		
Variables	No (n= 113) n (%)	Yes (n= 167) n (%)	p value
Smoking within 12 months			
No	106 (93.8)	71 (42.5)	0.000***
Yes	7 (6.2)	96 (57.5)	
Betel chewing within 12 months			
No	93 (82.3)	72 (43.1)	0.000***
Yes	20 (17.7)	95 (56.9)	
Other substance abuse within 12 months #			
No	113 (100.0)	162 (97.0)	0.084
Yes	0 (0.0)	5 (3.0)	

** p <0.05, ** p <0.01, *** p <0.001, # Fischer Exact Test applied*

In the table 41, in analysis of the association between last 12 months' substance use and lifetime alcohol consumption, more than half of the drinker patients had smoked in the last 12 months, showing strong association ($p<0.001$).

More than half of the drinker patients had betel chewed in last 12 months and there was also strong association with ($p<0.001$).

Only a few 3% of the drinker patients had other substance use in past 12 months and no association was found.

Table 42. Association between harms, injury, environment and lifetime alcohol consumption (n=280)

	Lifetime alcohol drinking		
Variables	No (n= 113) n (%)	Yes (n= 167) n (%)	p value
Self-injury #			
No	113 (100.0)	138 (82.6)	0.000***
Yes	0 (0.0)	29 (17.4)	
Others people injury #			
No	113 (100.00)	149 (89.2)	0.000***
Yes	0 (0.0)	18 (10.8)	
Prescribed medicine #			
No	113 (100.0)	153 (91.6)	0.001**
Yes	0 (0.0)	14 (8.4)	
Drinker in family #			
No	113 (100.0)	115 (68.9)	0.000***
Yes	0 (0.0)	52 (31.1)	

** p <0.05, ** p <0.01, *** p <0.001, # Fischer Exact Test applied*

In the table 42, for analysis of the association between harms and injury, environment and lifetime alcohol consumption, nearly one fifth of the drinker patients had self -injury during past 12 months and there was strong association with ($p<0.001$).

Around 10% of the drinker patients had given injury to other people due to their drinking showing strong association with ($p<0.001$)

Some of the drinker patients: nearly 10% had taken medicine pills very closely (<30 min) with alcohol and illustrated that an association was found with $p<0.01$.

Almost one third of the drinker patients had drinkers in their family, too and gave a strong association with $p<0.001$.

Table 43. Association between liver disease causes and lifetime alcohol consumption (n=280)

	Lifetime alcohol drinking		
Variables	No (n= 113) n (%)	Yes (n= 167) n (%)	p value
Liver disease main causes #			
Alcoholic liver diseases	0 (0.0)	104 (62.3)	
Non-alcoholic fatty liver diseases	27 (23.9)	12 (7.2)	0.000***
Only viral hepatitis	68 (60.2)	45 (26.9)	
Others causes of liver diseases	18 (15.9)	6 (3.6)	
Viral hepatitis status #			
No viral hepatitis	23 (20.4)	79 (47.3)	
HBV	43 (38.1)	50 (29.9)	0.000***
HCV	44 (38.9)	34 (20.4)	
Both HBV and HCV	3 (2.7)	4 (2.4)	

** p <0.05, ** p <0.01, *** p <0.001, # Fischer Exact Test applied*

In the table 43, for analysis of the association between liver disease main causes and lifetime alcohol consumption, nearly two third of the drinker patients had alcoholic liver disease and a strong association was found with p<0.001. More than half of the drinker patients had either HBV or HCV or con infection. A strong association was found with p<0.001.

Table 44. Association between liver disease severity and lifetime alcohol consumption (n=280)

	Lifetime alcohol drinking		
Variables	No (n= 113) n (%)	Yes (n= 167) n (%)	p value
Liver disease severity #			
No cirrhosis	66 (58.4)	69 (41.3)	
Child A cirrhosis	19 (16.8)	48 (28.7)	0.002**
Child B cirrhosis	4 (3.5)	21 (12.6)	
Child C cirrhosis	6 (5.3)	12 (7.2)	
Hepatocellular carcinoma	18 (15.9)	17 (10.2)	

** p <0.05, ** p <0.01, *** p <0.001, # Fischer Exact Test applied*

In the table 44, analysis of the association between liver disease severity and lifetime alcohol consumption, nearly half of the drinker patients had either cirrhosis Child A or B or C grading. Round about 10% of the drinker patients had currently liver cancer stage. Less than half of the drinker patients had no cirrhosis. As association was found with p<0.01.

Table 45. Association between comorbidities and lifetime alcohol consumption (n=280)

	Lifetime alcohol drinking		
Variables	No (n= 113) n (%)	Yes (n= 167) n (%)	p value
Hypertension			
No	83 (73.5)	132 (79.0)	0.313
Yes	30 (26.5)	35 (21.0)	

Diabetes			
No	96 (85.0)	156 (93.4)	0.025*
Yes	17 (15.0)	11 (6.6)	
Heart diseases and others #			
No other diseases	99 (87.6)	141 (84.4)	0.704
Heart disease	3 (2.7)	8 (4.8)	
Other diseases	11 (9.7)	18 (10.8)	
Blood transfusion times #			
0	89 (78.8)	129 (77.2)	
1	8 (7.1)	17 (10.2)	
2	9 (8.0)	8 (4.8)	
3	4 (3.5)	4 (2.4)	
4	1 (0.9)	5 (3.0)	0.374
5	2 (1.8)	0 (0.0)	
6	0 (0.0)	1 (0.6)	
7	0 (0.0)	1 (0.6)	
10	0 (0.0)	2 (1.2)	

** p <0.05, ** p <0.01, *** p <0.001, # Fischer Exact Test applied*

In the table 45, for analysis of the association between other disease comorbidities and lifetime alcohol consumption, almost one fifth of the drinker patients had hypertension and more than one fourth of no drinker had hypertension and therefore no association was found. Other diseases included pleural effusion, gall stones, tuberculosis, HIV infection, renal cell carcinoma, gastrointestinal carcinoma, osteoarthritis and so on.

A few 6.6% of the drinker patients had currently diabetes and association was found with $p<0.05$.

Nearly 5% of the drinker patients had heart diseases and 10% of the drinker had other diseases and no association was found.

Round about 10% of the drinker patients had at least one-time blood transfusion due to their liver disease.

4.16 Association for health related quality of life in chronic liver disease patients

Table 46. Association between sociodemographic characteristics and health related quality of life (n=280)

Variables	Low QOL < mean (n= 126) n (%)	High QOL ≥ mean (n= 154) n (%)	p value
Age (years) #			
18 - 24	2 (1.6)	25 (16.2)	
25 - 34	23 (18.3)	34 (22.1)	
35-44	32 (25.4)	29 (18.8)	0.000***
45-54	37 (29.4)	38 (24.7)	
55-64	23 (18.3)	19 (12.3)	
65-84	9 (7.1)	9 (5.8)	
Gender			
males	76 (60.3)	99 (64.3)	0.536
females	50 (39.7)	55 (35.7)	
Marital status #			
Single	17 (13.5)	50 (32.5)	
Married	93 (73.8)	95 (61.7)	0.000***
Widowed	11 (8.7)	8 (5.2)	
Divorced/separated	5 (4.0)	1 (0.6)	
Educational status			
Never been to school/just read and write	10 (7.9)	9 (5.8)	
Primary	32 (25.4)	28 (24.7)	0.269
Middle	36 (28.6)	41 (26.6)	
High school	34 (27.0)	34 (22.1)	
Graduated and above	14 (11.1)	32 (20.8)	

Occupation #			
No occupation	21 (16.7)	32 (20.8)	
Government staffs	5 (4.0)	14 (9.1)	
Private company staffs	13 (10.3)	11 (7.1)	0.001**
Own business	43 (34.1)	63 (40.9)	
General workers	37 (29.4)	19 (12.3)	
Students	0 (0.0)	5 (3.2)	
Monks/Nuns	2 (1.6)	8 (5.2)	
Retired people	3 (2.4)	2 (1.3)	
Drivers	2 (1.6)	0 (0.0)	
Monthly Individual Income			
No income	22 (17.5)	43 (27.9)	
1-99 USD	11 (8.7)	5 (3.2)	0.042*
100 - 299 USD	67 (53.2)	83 (53.9)	
≥ 300 USD	26 (20.6)	23 (14.9)	

** p <0.05, ** p <0.01, *** p <0.001, # Fischer Exact Test applied*

In the table 46, for analysis of the association between sociodemographic characteristics and health related quality of life, younger age groups: 18-24, 25-34 had high QRQOL. Elderly group 55-64 had more low HRQOL. An association was found with p<0.001.

In lower HRQOL, more males:60.3% had lower QRQOL and in higher HRQOL, more males: 64.3% had higher HRQOL. No association was found.

In lower HRQOL, more than two third were married while in higher QOL, nearly one third was in single group and 61.7% in the married group. An association as found with p<0.001.

In education status, most patients with lower QOL were in middle school level and in higher QOL group, more than one fifth were in graduated and above. No association was found.

In occupational; status, most low QOL patients were mostly in own business and general worker group while in high QOL, more percentage were found in student, religious persons. Association was found with p<0.01.

Equal percent of patients were found in 100-299 USD per month in both low and high QOL. More patients of high QOL were having no income at all. An association was found with p<0.05.

Table 47. Association between drinking, smoking, other substances and health related quality of life (n=280)

0	< mean	≥ mean	p value
Variables	(n= 126)	(n= 154)	
	n (%)	n (%)	
Lifetime drinking			
No	49 (38.9)	64 (41.6)	0.714
Yes	77 (61.1)	90 (58.4)	
Smoking within 12 months			
No	80 (63.5)	97 (63.0)	1.000
Yes	46 (36.5)	57 (37.0)	
Betel chewing within 12 months			
No	64 (50.8)	101 (65.6)	0.015*
Yes	62 (49.2)	53 (34.4)	

** p <0.05, ** p <0.01, *** p <0.001, # Fischer Exact Test applied*

In the table 47, for analysis of the association between lifetime drinking, past 12 months smoking, betel chewing substance using and health related quality of life, more than 50 % of both low and high HRQOL patients had drunk in lifetime. More than one third of both low and high HRQOL patients had smoked in past 12 months. Nearly half of the low QOL patients had betel chewed in past 12 months. Association was found in betel chewing (p<0.05).

Table 48. Association between liver diseases causes and health related quality of life (n=280)

Variables	< mean (n= 126) n (%)	≥ mean (n= 154) n (%)	p value
Disease main causes			
Alcoholic liver diseases	58 (46.0)	46 (29.9)	
Non-alcoholic fatty liver diseases	29 (23.0)	10 (6.5)	
Only viral hepatitis	32 (25.4)	81 (52.6)	0.000***
Others causes of liver diseases	7 (5.60)	17 (11.0)	
Viral hepatitis status #			
No viral hepatitis	53 (42.1)	49 (31.8)	
HBV	29 (23.0)	64 (41.6)	0.010*
HCV	40 (31.7)	38 (24.7)	
Both HBV and HCV	4 (3.2)	3 (1.9)	

** p <0.05, ** p <0.01, *** p <0.001, # Fischer Exact Test applied*

In the table48, for analysis of the association between liver disease main causes and health related quality of life, nearly half of the low QOL patients were having alcoholic liver diseases and more than half of the high QOL patients were the diagnosis of having viral hepatitis only. A strong association as found with p<0.001. Two fifth of the low QOL patients had no viral hepatitis infection and two fifth of the high QOL patients had HBV infection. An association was found with p<0.05.

Table 49. Association between liver diseases severity and health related quality of life (n=280)

Variables	< mean (n= 126) n (%)	≥ mean (n= 154) n (%)	p value
Liver disease severity #			
No cirrhosis	42 (33.3)	93 (60.4)	
Child A cirrhosis	30 (23.8)	37 (24.0)	
Child B cirrhosis	20 (15.9)	5 (3.2)	0.000***
Child C cirrhosis	16 (12.7)	2 (1.3)	
Hepatocellular carcinoma	18 (14.3)	17 (11.0)	

** p <0.05, ** p <0.01, *** p <0.001, # Fischer Exact Test applied*

In the table 49, for analysis of the association between liver disease severity and health related quality of life, nearly equal percent of low QOL patients were having either Child B or liver cancer stage. More than two fifth of the high QOL patients were having no cirrhosis. A strong association was found with p<0.001.

Table 50. Association between comorbidities and health related quality of life (n=280)

Variables	< mean (n= 126) n (%)	≥ mean (n= 154) n (%)	p value
Hypertension			
No	84 (66.7)	131 (85.1)	0.000***
Yes	42 (33.3)	23 (14.9)	
Diabetes			
No	111 (88.1)	141 (91.6)	0.424
Yes	15 (11.9)	13 (8.4)	

heart diseases and others #			
No heart disease and other diseases	104 (82.5)	136 (88.3)	0.315
Heart disease	7 (5.6)	4 (2.6)	
Other diseases	15 (11.9)	14 (9.1)	
Blood transfusion times #			
0	95 (75.4)	123 (79.9)	
1	12 (9.5)	13 (8.4)	
2	9 (7.1)	8 (5.2)	
3	5 (4.0)	3 (1.9)	0.487
4	2 (1.6)	4 (2.6)	
5	2 (1.6)	0 (0.0)	
6	1 (0.8)	0 (0.0)	
7	0 (0.0)	1 (0.6)	
10	0 (0.0)	2 (1.3)	

** p <0.05, ** p <0.01, *** p <0.001, # Fischer Exact Test applied*

In the table 50, for analysis of the association between underlying other disease comorbidities and health related quality of life, one third of the low QOL patients were having hypertension and majority of the high QOL patients were not having hypertension. A strong association was found with p <0.001. Majority of the high QOL patients were not having diabetes and nearly equal percent of low QOL patients were also not having diabetes. No association was found. Only a few portion 5.6% of low QOL patients and 2.6% of high QOL patients were having heart diseases. Other rare diseases summed up and accounted for only round about 10% in each low and high QOL patients including pleural effusion, gall stones, tuberculosis, HIV infection, renal cell carcinoma, gastrointestinal carcinoma, osteoarthritis and so on. No association was found. A quarter of the low QOL patients had blood transfusion time ranges from 1-10 times and one fifth of high QOL patients had transfusions related to liver diseases. No association was found.

CHAPTER V

DISCUSSION

This cross sectional study was being aimed for assessing the alcohol consumption patterns among chronic liver disease patients in a tertiary specialty center in Mandalay, Myanmar. The another objective was to determine the health related quality of life in chronic liver disease patients. Moreover, this study sought to determine the association between alcohol consumption levels and liver diseases causes and severity as well as the association between health related quality of life and liver diseases causes and severity.

The sample consisted of 280 chronic liver disease patients of various background. The proportion of males (n= 175) to females (n= 105). The mean age was 43.3 (SD ± 13.97), most of them were married, middle school level, had their own business, with monthly individual income above 100 USD. The result showed that 167 patients (90.9% males and 7.6% females) had drinking in their lifetimes, most common in the age 45-54 group, the onset started mostly from 15-19 years, with the common reason about friends, beer was the first common type in first time experiences, common types in lifetimes were beers followed by spirit. In their past 12 months, 6 months, 3 months, last month and last week drinking, the most common types of alcohol were beer, spirit and followed by whisky, most of them drank nearly the whole month, drank more with friends, drank more in beer shops, especially in the evening times. For the AUDIT levels, most of them were in dependent levels, followed by abstainers, hazardous drinkers, harmful drinkers, and high risk drinkers. Most of the levels in AUDIT scores were in having no viral hepatitis, flowed by HBV, HCV and co infection, on the other hand, having no cirrhosis or Cirrhosis Child A grading, followed by Child B, liver cancer and Child C. the most common types in self injury were falls and injuries to other people were vehicles accidents and violence/fights. Most common types of medicines that they were taking closely with alcohol was analgesics (pain killers), most

of the family drinkers were brothers followed by fathers, majority of the drinkers had smoking and betel chewing in past 12 months. The total mean score for CLDQ was 5.24 ±0.97. Total CLDQ mean was generally higher in males, hepatitis B infected people, no cirrhosis grading. More males were having alcoholic liver disease, and more female were in other causes of liver diseases. More males were having HBV infection, and equal numbers of both genders having HCV. Higher number of males were in no cirrhosis, cirrhosis Child A, B and C while more females were having liver cancers. Associations were found in lifetimes alcohol drinking describing age, gender, marital, education, occupation, income, smoking, betel chewing, self-injury within 12 months, injury to other people within 12 months, taking prescribed closely with alcohol, drinker in family, liver diseases cause, viral hepatitis, disease severity levels, diabetes. Associations were found in health related quality of life indicating age groups, marital status, occupation, income, betel chewing, liver disease main causes, viral hepatitis, liver disease severity, hypertension.

5.1 Discussion

Experiences of alcohol consumption and the patterns among chronic liver disease patients were described in the followings. The study illustrated that 59.6% of all participants had alcohol drinking practice in their life time and 90.9% of total male participants and 7.6% of female had alcohol drinking. Furthermore, it could be concluded that alcohol drinking was more common in male patients than in females and consistent finding with these study in liver disease patients (55, 56). This higher amount of male drinkers could be compared similarly with the findings in male drinker were always higher than females in every subgroups (159), 76% of males and 36% of females had drinking in another study (160), 74% male and 26% females (161). A cross-sectional study in 151 non-alcoholic liver disease (clinically significantly liver disease) patients demonstrated that light and moderate drinkers were found to be males (56). More than 90% of males had drinking and higher than other studies could be the reason that they had the chronic liver diseases related to alcohol consumption. Gender was found to be one strong associations and consistent with this study (161).

In this study nearly 75% of lifetime drinkers were in the age groups 25-34, 35-44, 45-54 and had the higher numbers of drinkers than the other group while another study showed that higher number were in 25-44 age (161) and 45-64 age (159) and consistent with previous studies. The mean age was 43±13.97 and another study showed that also 43 years for the liver patients (55). Age group was associated with lifetime time drinking in this study and there was association in another study (161).

Most of the lifetime drinkers 72.5% were married ones and a study showed that married had 49.8% lifetimes drinkers (161). This indicated that findings percent were higher for the married group. This study had association between marital status and lifetime drinking and another study demonstrated that seven out of ten participants with chronic alcoholic consumption were found to be associated with divorced or separated (57).

Most of the drinkers 28.1% in this study were middle school level educational status and these studies showed that low education is a factor in drinkers (58) and most of drinkers were graduated and above 34% in one study (161) and this present study had 20.4% graduated and above drinkers.

Most of the lifetimes drinker patients 44.3% were own business dealers and occupation was found to be strongly associated with drinking and another study showed that most of the drinkers were own business people 25.1% and also had strong association. (161) while another study showed that service and sales workers were associated with high-risk alcohol drinking than higher professions (P = 0.011) (60).

Most of the drinker patients in this study were having 100-299 USD per month (61.1%) while another study in Pha-An, Myanmar showed that most of them were 1-99 USD per month income 35.8% (161). This might be due to the fact that this study was done in bigger city and had more job and income opportunities than previous study. In a China study said that low family income were found to be connected with alcoholic liver diseases than rich family (59) and this study in liver patients also had strong association with the income groups with lifetime drinking.

Regarding the types of alcohol in first time drinking, in lifetime drinker males, beer and spirit were the commonest types with 38% and 37% respectively. In females, beer was the most common types with 50% in first time drinking whereas palm tree

juice was the most common type in first time drinking with 37.4% in male and 56.8% in female drinkers in another study (161). In this city area, beer is easily available and people meet and gather together for drinking beer for social drink.

Regarding the age at first time drinking, minimum age of first time drinking was 6 years of age and maximum age was 42 years old and mean age of first time drinking was 12.58 with SD±11.28. While one study showed that minimum age was 14 and maximum was 40 with mean age 20.7 (SD 4.2) (161) and another study with mean age 25.3 (SD±9.0) (162). Thus, this study population had younger age of initiation of drinking and it might be the factor developing the chronic liver diseases.

About first time drinking, most of the male patients (44%) started from age 15-19 where one study had similar findings with 48.7% for males in urban and 54.5% for males in rural in the age group 15-19. (161).

Regarding the reasons for first time drinking, in this study showed that 62.3% of males complained about due to their friends followed by the festivals and celebrations with 11.9% and consistent with 54.4% for these reasons in one study (161) and commonest reason was social motives in another study (163).

In the last 12 months' drinkers (n=117), patterns of drinking showed, majority of males (52.1%) drank beer, 75% of female's drinker took total 1-49 SD/ month, approximately equal numbers of male drinkers took in each range 1-50 SD, 51-100 SD per month in last 12 months and there was still 8.8% of males in 651-700 SD per month. More than 50% of males drank 21-30 days in last 12 months. More than 70% of males drank with friends, more than 60% of males drank in beer shops, more than 40% of males drank in evening times. It was evident that this finding was consistent with social cognitive theories, environment, people, friends, risky behaviors were relating each other.

In the last week drinkers (n=44), 39.5% of male's drinkers drank beer and 53.5% drank spirit, 55.8 % of male's drinker in total SD range 1-50 per week in last week, 72.1% of males drank the whole week, with friends (65.1%), at beer shops (58.1%), especially in evening (41.9%), in both weekends and weekdays (83.7%). One study showed that nearly 30% of males in urban in Myanmar drank <30 SD per 2 weeks (161). This present study had more standard drinks within one week.

Regarding the AUDIT scores, among the 167 lifetime drinker patients, there were 34.1% in abstainers and high risks drinkers, 18% in hazardous drinkers, 16.8% in harmful drinkers and 31.1% in dependent groups. One study showed that 60.7% in abstainers and high risk drinkers, 24.7% in hazardous drinkers, 10.1% in harmful drinkers and 4.5%in dependent group. Another study in Myanmar showed that 78.2% for abstainer and high risk drinkers, 11.6% in hazardous drinkers, 2.3% in harmful drinkers and 7.9% in dependent groups (161). There were higher number of drinkers in the dependent group compared to previous study. That was because, most of them already had been diagnosed as alcoholic liver disease patients and they could not still stop their drinking even having the diseases.

Results from this research showed that more than 60% of the HBV patients were in drinker groups except abstainers, prevalence of monthly alcohol consumption was 53.2% among HBV carriers (64). The present finding was similar with the previous study. In a study done in cirrhotic patients in Taiwan said that heavy alcohol drinking significantly increased the risk of cancer in patients with cirrhosis due to hepatitis B (65). So, the drinking practice should be totally stopped in liver patients. Nearly 44% of the HCV patients were in the drinker's groups except abstainer, a study done in 8985 participants (218 hepatitis C patients) indicated that excessive alcohol drinking was associated with higher overall mortality. Moreover, moderate to little drinking among these patients was found to be associate with increased overall and disease specific mortality (66). Therefore, the health authorities should concern about for total avoidance of alcohol drinking in hepatitis infection groups.

In the present study, more than 60% of the no cirrhosis patients were in drinker groups except abstainers, It was said that in patients who drink 40 and 80 g per day were significantly associated with the increasing incidence of alcoholic hepatitis and fatty liver, hepatomegaly in non-cirrhotic patients (62).

In the current study, more than 70% of the cirrhosis patients (all Child grading's) were in drinker groups except abstainers, It was described that there are dose dependent adverse effect on many severity scores, duration of drinking had effect on decreasing Child score (61). On the one hand, a study done on alcoholics who took more than 80 grams per day showed that long term excessive drinking was associated with increase fibrosis of liver (62).

Round about than 40% of the liver cancer patients were in the AUDIT drinker groups, except abstainers group. One cohort study on 333 patients in Athens showed that heavy alcohol consumption increases the hepatocellular carcinoma risks (69).

Regarding harms and injuries, environments in lifetimes drinkers (n=167), 18.2% of males had self-injury during last 12 months and no female drinker injuries. The types of self-injury included the same proportion for falls or vehicles accident and even one suicide attempts in male drinkers. Moreover, 11.3% of male drinker had caused other people injury due to their drinking.

For the alcohol and the medicinal pills, 8.8% of male drinker patients took closely prescribed medicines with dinking (<30 min) and most of the pills were analgesics. One study showed that paracetamol toxicity could be accentuated in chronic alcoholics by glutathione depletion and the induction of multiple isoforms of the cytochrome P450 family that are involved in acetaminophen metabolism and uses of pain killers in liver disease drinkers could be a threaten problems. (170)

When comparing the family drinkers status, 29.6% of male drinker had drinker in their family where another study showed that 29.8% of male drinker had drinker in their homes, too in a urban study in Myanmar (161).

Regarding past 12-month smoking in lifetimes drinker patients, 59.1% of males had experience and 25% of females had smoked. A study showed that around 90% of patients with alcohol abuse and end-stage liver diseases smoked tobacco (164). The current findings were lesser proportion than the previous studies in liver disease drinker patients.

For past 12-month betel chewing, 57.9% of males and 37.5% of females had chewed betel. A study showed that betel chewing prevalence was 42% for current chewer (171). The present finding was similar with that previous study for betel chewers.

Other substance use in male drinker patients was 3.1% in present study which was much lesser than one study that indicated that 40% of alcoholic liver disease patients had used substances other than alcohol and 27% of the total cohort had used injected drugs (70% of those who used other substances), majority of the patients (54%) had not participated in any form of addiction rehabilitation prior to transplantation (165).

In this paragraph, the following discussions about the health related quality of life among chronic liver disease patients were described. For the health related quality of life in chronic liver disease patients, the present study showed that males patients (62.5%) and females (37.5%) where another study showed that 53% males and 47% females in chronic liver disease patients. So, present study indicated more male percent than the previous one for chronic liver diseases prevalence. (166). The overall CLDQ mean score for females was less than males in present study and consistent with studies that said that female patients had significantly poorer mental and physical component scores (97) (98). Present study showed that single and married liver patients were having more better QOL than divorced and separated ones where one study gave patients who were married or living with a partner had been shown to have better HRQOL than those who were divorced, separated or widowed (98-100). Most of patients with lower QOL were middle school levels where better QOL were graduated and above and consistent with the study that no alcoholic fatty liver disease patients who did not attain a high school diploma had significantly poorer mental score than those who were better educated (98). The current study showed that 20.7% for jobless or retired where 41.7% for no job or pension patients in other study(166). Current study showed that no income group had more better QOL patients income two studies showed that liver patients with lower income had significantly impaired physical and mental scores (98, 100), while another showed an effect on two domains (Physical Functioning and Mental Health) (101). This might be the fact that they might not have income due to their illness but supported by their family and the mental support could be received form relatives. Regarding viral hepatitis status for HCV patients, current study showed more of patients were in low QOL and worst in HBV and HCV coinfection, when one study showed that patients with cirrhosis of various causes, also found that HRQOL was most impaired in HCV (107). The present study was consistent with the previous ones. Regarding severity scores, current study most of no cirrhosis and cirrhosis Child A patients were in higher QOL, most of Child B and Child C as well as liver cancer patients were in lower QOL. Most impairment scores were found in Child C score, where other study showed that no difference in HRQOL in Child B and C, using CLDQ measurement, they could not differentiate the two levels (104, 111). Liver cancer scores

occupied lowest scores after Child C and Child B score where other studies showed that patients with Liver cancer definitely had lower scores on HRQOL in most domains (129). There were also poor scores using both generic and cancer specific tools in liver cancer patients, too (130). Regarding types of liver diseases, current study showed 37.1% for alcoholic liver diseases where 32.3% of same diagnosis was found in another study (166). Regarding hepatitis status, 63.6% of current study had HBV or HCV or co infected stages where another study showed that 52.0% of viral hepatitis infection was found (166). So, when compared, the current study had higher prevalence. Regarding severity grading, present study had no cirrhosis (48.2%), Child A (23.9%), Child B (8.9%), Child C (6.4%), Hepatocellular carcinoma (12.5%), while another study showed that no cirrhosis (46%), Child A (22.1%), Child B (15.2%), Child C (16.7%) and nearly similar percent were found.

The associations were found in present study and also consistent with the previous studies: in between lifetime alcohol consumption and age groups ($p < 0.01$) (161), gender ($p<0.001$) (161), marital status ($p<0.05$), but no association in marital status in another study (161), education ($p<0.01$), (161), occupation ($p<0.001$) (161), income ($p<0.001$) (161), smoking ($p<0.001$) (172), betel chewing ($p<0.001$), self-injury within 12 months ($p<0.001$) (173), injury to other people within 12 months ($p<0.001$) (173), taking prescribed closely with alcohol ($p<0.01$) (174), drinker in family ($p<0.001$) (161), liver diseases cause ($p<0.001$) (175), viral hepatitis ($p<0.001$) (176), disease severity levels ($p<0.01$) (175), diabetes ($p<0.05$) (177).

Associations were found in present study and also consistent with the previous studies: in between health related quality of life and age groups ($p<0.01$), marital status ($p<0.01$), occupation ($p<0.01$) (178), income ($p<0.05$), betel chewing ($p<0.05$), liver disease main causes ($p<0.001$) (179), viral hepatitis ($p<0.05$), live disease severity ($p<0.001$) (179), hypertension ($p<0.001$). in another study, associations were found in age, gender ($p<0.001$), liver disease causes ($p<0.05$), liver disease severity ($p<0.01$) (179), associations were found with gender, disease severity but not with age groups in one study (180), while another study showed that no associations with the gender (108).

5.2 Benefits

In this study, the following benefits were expected mainly for the chronic liver disease patients. This research had several benefits, this is an evidence base study, findings could be applied in intervention design, knowing HRQOL might elicit the need put together a method of prevention tailored to the chronic liver disease patients affected, this study helped to raise the awareness on the emerging issue of chronic liver disease. The HRQOL was reviewed in relation to measure issues and applications to decision-making as in various uses at different levels of decision-making, from the micro (individual) to the macro (population) level for management of chronic diseases like liver diseases, for instance, applications to clinical trials and to studies of patients' needs for care. Clinical trials have already provided an unexpected result--for patients with advanced disease, pre-treatment studying QOL may predict survival outcome. Measurements have been used relatively infrequently in clinical practice, although individualized care planning and follow-up based on QOL information may lead to better outcomes of treatment and informed and autonomous decision-making by liver disease patients. Quality of life is derived from independently designed data systems that range from population-based health surveys to health records used in managing individual patient care. Therefore, research may lead to more representative data for informing decision making and ultimately for obtaining a more equitable distribution of health. Studying Health-related QOL data have been useful in clinical care studies, clinical trials, and cost-effectiveness studies. In the area of liver cancer treatment, such health-related QOL data have been influential on treatment decisions and liver cancer care. In addition, finding might address the challenges resulting from more frequent use of patient-reported outcomes by researchers and physicians. Single global intervention will improve HRQOL in advanced liver disease, but rather by systematically focusing on the individual contributing factors with a reversal component, overall improvements may be possible. There are some evidences to support improved HRQOL through effective treatment and improvement or resolution of decompensation. Modern healthcare places a great importance on demonstrating cost-effectiveness of new treatments. The research used in such appraisals is critically important as it affects whether or not a new treatment will be made available to patients.

5.3 Limitations

In this study, certain possible limitations were encountered. Readers should take caution in generalizing the study's results as the present research was carried out purposive sampling on a particularly small sample that only included patients from tertiary specialty center; thus, generalizing findings was limited. Moreover, the exact amount of strength, quality and safety of the different types of alcohol consumed by the chronic liver disease patients in Myanmar were not tested using laboratory methods. Epidemiological studies that depend on questionnaires to ascertain quantity, frequency, and pattern of consumption, which inject patient bias and memory problems, especially in alcoholics.

5.4 Recommendations

By studying this research, our findings recommended the following facts about the alcohol consumption and health related quality of life targeted especially for the chronic liver diseases patients. Many treatments for advanced liver disease aim to be life-enhancing, rather than life-prolonging. Evaluation of future therapies should therefore include HRQOL assessment, with tools chosen to provide sensitivity to changes relevant to the clinical setting. Health is the outcome of interest, lifestyle behaviours including alcohol drinking and economic and political factors are important determinants of health, which also need to be studied using standardized procedures. To prevent the possible negative impacts of chronic liver diseases on a patient's health related quality of life, health institutions must consider its surveillance, especially among the high risk groups. Based on this findings, policymakers and those involved should primarily focus on chronic liver disease patients between the age 25-54 who are high risk for alcohol drinking too. In patients with evidence of alcohol-induced liver disease, strict abstinence must be recommended, because continued alcohol use is associated with disease progression. Naltrexone or acamprosate may be considered in combination with counselling to decrease the likelihood of relapse in patients with

alcohol abuse/dependence in those who achieve abstinence. Appropriate interventions should be organized and implemented to address the emerging issue of burdens of chronic liver diseases. Appropriate patients with end-stage liver dis- ease secondary to alcoholic cirrhosis should be considered for liver transplantation, just as other patients with decompensated liver disease, after careful evaluation of medical and psychosocial candidacy. Candidates for liver transplantation should participate in alcohol counselling, and families of these patients should participate in family therapy.

We recommend to provide the offering of harm reduction interventions for the prevention of alcohol related injury, understanding the causes of drug and alcohol-related deaths and taking action to prevent premature and avoidable deaths, offering support to stop smoking, betel chewing, including harm reduction advice and appropriate pharmacotherapy, working with other medical specialities to assess and treat patients in multiple physical co-morbidity and polypharmacy, offering interventions for patient carer support and family therapy, offering interventions that improve social needs such as appropriate living conditions, activities of daily living and social activities, having safeguarding protocols in place, agreed by the local safeguarding leads, to protect older people age 45-54 at risk of abuse, having established robust risk assessment and medicines management protocols which highlight the risk of drug interactions with substances and adverse drug reactions.

All alcohol-related public health materials, training and teaching should cover mental health aspects of alcohol misuse/use. Government should invest more in treatment services, especially specialist services for chronic liver disease patients with dual diagnosis and generally in services treating alcohol dependency. The latter should have clearly defined pathways to mental health services for support and treatment. Psychology treatment centres should have staff trained in delivering cognitive behavioural therapy to people with alcohol dependency and concurrent anxiety or depression. The chronic liver disease drinker patients should be considered the mental health consequences of policies surrounding alcohol as part of the impact assessment process. Health warnings should be introduced on alcohol packaging and include the warning “Excessive use of alcohol can damage your mental health.” Government should target liver disease drinker patients with mental health problems with health promotion advice and active support in managing issues such as alcohol use. In primary

care settings, identified liver disease patients who are using alcohol to ‘treat’ underlying problems such as stress, depression or anxiety should be able to benefit from alternative approaches to managing mental health problems. These include talking therapies, exercise, diet, self-help groups and spirituality. Increased education about the association between alcohol use and physical as well as mental health in public should be used to alert people to the potential risks of using alcohol to self-medicate. Education about the complex reasons for alcohol use and misuse is also vital.

Individualized measures should be considered which tap QOL as defined by the individual patient which has obvious appeal for use in clinical practice, since they incorporate topics of greatest concern to the individual liver disease patient, while also capturing their ratings and weightings. Prevention take leadership roles not only by adopting a core health status and quality-of-life instrument for use in current and future liver cancer data collection activities but also in encouraging industry and academic investigators to implement this core instrument in their liver cancer studies. There is also a drive to provide care, which is more patient-centric for chronic liver diseases, with a focus on the issues which matter most to patients and their carers; hence, a greater emphasis on HRQOL, in both clinical practice and research, is required. Finally, consideration should be given to the way in which care delivery contributes; HRQOL driven service, alcohol policy, rules, regulations for evaluation and improvement will likely bring further gains.

5.5 Further researches

Finally, there are still be remaining further researches for the chronic liver diseases patients and their alcohol consumption patterns as well as health related quality of life. This was a cross sectional study, so it is not possible to determine cause and effect., therefore, more longitudinal research should be conducted in order to see whether the consequences. Further studies should include more early detection and diagnosis of the disease; more evidence needs to be integrated (mental health). Further studies should be done on a larger scale (inclusive of chronic liver disease patients from other hospitals from different sites and also from general population) using stratified sampling technique to allow for more generalized results. Additionally, future studies

should examine the drinking patterns beyond from one year and also the period that the patients totally avoid form drinking; the determining period for health related quality of life should extend more rather than two weeks for the disease specific measurement. The addictive behavior about smoking and betel chewing in chronic liver disease patients should be examined more. Emerging evidence suggests that quantity and frequency of drinking are important in the pathogenesis of liver disease. New studies are needed to dissect the effects of quantity and frequency on alcohol hepatotoxicity. The development of sensitive and selective biomarkers is needed not only for detecting the extent of drinking but also for identifying responders to treatment. The health service providers need to explore the responsiveness of QOL to systematic intervention to improve reversible manifestations of advanced liver disease such as ascites and encephalopathy in properly designed longitudinal studies using appropriate health related quality of life outcome measures.

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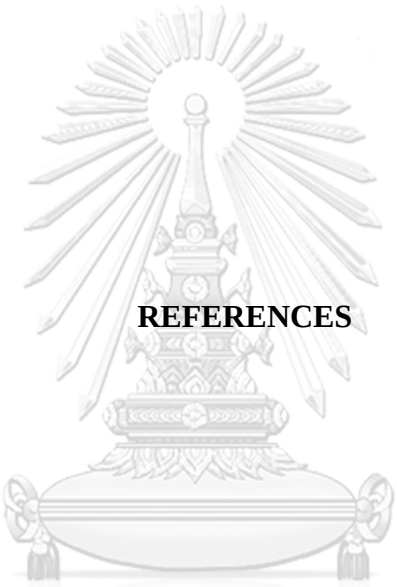

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APPENDIX

Appendix A. Questionnaires

Primary data
Questionnaires on Socio-demographic Characteristics

1.	**How old are you now? (Completed years)** **---------- years**
2.	**Gender** ☐ **Male** ☐ **Female**
3.	**What is your marital status?** ☐ **Single** ☐ **Married** ☐ **Widow** ☐ **Divorced /Separated**
4.	**What is your level of education?** ☐ **Never gone to school/read and write** ☐ **Primary school** ☐ **Middle school** ☐ **High school** ☐ **Graduated or higher levels**
5.	**What is your current occupation?** ☐ **Unemployed/retired** ☐ **Government staffs** ☐ **Private company staffs** ☐ **Own business** ☐ **General worker** **Others specify ----------**
6.	**What is your average monthly income?** **Amount ---------- kyats**

7. Alcohol consumption questionnaires
If say 'No' in lifetime, skip to question number 16.
Number of drinks will be estimated by standard drink chart.

Types of alcohol	Lifetime		Age of First time of drinking	Reasons for first time drinking *	Last 12 months		Last 6 months		Last 3 months		Last 1 month		Last 1 week	
	No	Yes			No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Beer														
Spirit														
Rum														
Wine														
Whisky														
Others specify														

*** A = Friends**
B = Socialization
C = Celebrations/festivals
D = Depressed mood
E = Just want to try
Others = specify

No.	Questions
8. a.	Did you ever drink in last 12 months? ☐ No (skip to question 9) ☐ Yes
b.	1. Type ---------- Quantity ---------- standard drinks Frequency ---------- per month 2. Type ---------- Quantity ----------standard drinks Frequency ---------- per month 3. Type ---------- Quantity ----------standard drinks Frequency ---------- per month
c.	When you drink, who will usually participate in your drinking in last 12 months? ☐ Drinking alone ☐ Drinking with friends Number of friends including participant ----------
d.	Where do you usually drink in last 12 months? ☐ Home ☐ Beer Shops ☐ Ceremony/celebrations ☐ Workplaces ☐ Bars ☐ Others specify ----------
e.	Which time do you usually drink in a day in last 12 months? ☐ Daytime ☐ Evening/Night ☐ No specific time

9. a.	Did you drink in last 6 months? ☐ No (skip to question 10) ☐ Yes
b.	1. Type ---------- Quantity ---------- standard drinks Frequency ---------- per month 2. Type ---------- Quantity ----------standard drinks Frequency ---------- per month 3. Type ---------- Quantity ----------standard drinks Frequency ---------- per month
c.	When you drink, who will usually participate in your drinking in last 6 months? ☐ Drinking alone ☐ Drinking with friends Number of friends including participant ----------
d.	Where do you usually drink in last 6 months? ☐ Home ☐ Beer Shops ☐ Ceremony/celebrations ☐ ☐ Workplaces ☐ Bars ☐ Others specify ----------
e.	Which time do you usually drink in a day in last 6 months? ☐ Daytime ☐ Evening/Night ☐ No specific time

10. a.	**Did you drink in last 3 months?** ☐ **No (skip to question 11)** ☐ **Yes**
b.	**1. Type ----------** **Quantity ---------- standard drinks** **Frequency ---------- per month** **2. Type ----------** **Quantity ----------standard drinks** **Frequency ---------- per month** **3. Type ----------** **Quantity ----------standard drinks** **Frequency ---------- per month**
c.	**When you drink, who will usually participate in your drinking in last 3 months?** ☐ **Drinking alone** ☐ **Drinking with friends** **Number of friends including participant ----------**
d.	**Where do you usually drink in last 3 months?** ☐ **Home** ☐ **Beer Shops** ☐ **Ceremony/celebrations** ☐ ☐ **Workplaces** ☐ **Bars** ☐ **Others specify ----------**
e.	**Which time do you usually drink in a day in last 3 months?** ☐ **Daytime** ☐ **Evening/Night** ☐ **No specific time**

11. a.	**Did you drink in last 1 month?** ☐ **No (skip to question 12)** ☐ **Yes**
b.	**1. Type ----------** **Quantity ---------- standard drinks** **Frequency ---------- per month** **2. Type ----------** **Quantity ----------standard drinks** **Frequency ---------- per month** **3. Type ----------** **Quantity ----------standard drinks** **Frequency ---------- per month**
c.	**When you drink, who will usually participate in your drinking in last 1 month?** ☐ **Drinking alone** ☐ **Drinking with friends** **Number of friends including participant ----------**
d.	**Where do you usually drink in last 1 month?** ☐ **Home** ☐ **Beer Shops** ☐ **Ceremony/celebrations** ☐ **Workplaces** ☐ **Bars** ☐ **Others specify ----------**
e.	**Which time do you usually drink in a day in last 1 month?** ☐ **Daytime** ☐ **Evening/Night** ☐ **No specific time**

12. a.	**Did you drink in last 1 week?** ☐ **No (skip to question 13)** ☐ **Yes**
b.	**1. Type ----------** **Quantity ---------- standard drinks** **Frequency ---------- per month** **2. Type ----------** **Quantity ----------standard drinks** **Frequency ---------- per month** **3. Type ----------** **Quantity ----------standard drinks** **Frequency ---------- per month**
c.	**When you drink, who will usually participate in your drinking in last 1 week?** ☐ **Drinking alone** **Drinking with friends** **Number of friends including participant ----------**
d.	**Where do you usually drink in last 1 week?** ☐ **Home** ☐ **Beer Shops** ☐ **Ceremony/celebrations** ☐ **Workplaces** ☐ **Bars** ☐ **Others specify ----------**
e.	**Which time do you usually drink in a day in last 1 week?** ☐ **Daytime** ☐ **Evening/Night** ☐ **No specific time**
f.	**Which days do you usually drink in last week?** ☐ **Weekdays** ☐ **Weekends**

13. AUDIT questionnaires (Skip to question 16, if say NO in lifetime drinking)

		0	1	2	3	4
1.	How often do you drink 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?	Never	3 or 4	5 or 6	7–9	10 or more
3.	How often do you have 6 or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
4.	How often during the past year have you found that you were not able to stop drinking once you started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
5.	How often during the past 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 past year have you needed a rest 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 past 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 past 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

No.	Questions
14. a.	Had you been injured in the last year because of your drinking? ☐ No ☐ Yes Which types of the injury did you suffer in last year? ☐ Falls ☐ Accidents (vehicles) ☐ Violence/fights ☐ Suicidal thoughts/tendency Others specify ----------
b.	Had someone been injured in the last year because of your drinking? ☐ No ☐ Yes Which types of the injury did you suffer in last year? ☐ Accidents (vehicles) ☐ Violence/fights Others specify ----------
15.	Have you ever take prescribed medicines close to alcohol drinking in last year? ☐ No ☐ Yes If say Yes, what would be that medicines? Specify ----------
16.	Are there any family members drinking alcohol in your home? ☐ No ☐ Yes If say yes, who would be that family members? Specify ----------
17.	Have you ever use substance in last one year? ☐ Smoking ☐ Betel nuts Others specify ----------

18. Questionnaire for health related quality of life

		All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	Hardly any of the time	None of the time
		1	2	3	4	5	6	7
1	How much of the time during the last two weeks have you been troubled by a feeling of abdominal bloating?							
2	How much of the time have you been tired or fatigued during the last two weeks?							
3	How much of the time during the last two weeks have you experienced bodily pain?							
4	How often during the last two weeks have you felt sleepy during the day?							
5	How much of the time during the last two weeks have you experienced abdominal pain?							
6	How much of the time during the last two weeks has shortness of breath been a problem for you in your daily activities?							
7	How much of the time during the last two weeks have you not been able to eat as much as you would like?							
8	How much of the time in the last two weeks have you been bothered by having decreased strength?							
9	How often during the last two weeks have you had trouble lifting or carrying heavy objects?							
10	How often during the last two weeks have you felt anxious?							
11	How often during the last two weeks have you felt a decreased level of energy?							
12	How much of the time during the last two weeks have you felt unhappy?							
13	How often during the last two weeks have you felt drowsy?							
14	How much of the time during the last two weeks have you been bothered by a limitation of your diet?							
15	How often during the last two weeks have you been irritable?							
16	How much of the time during the last two weeks have you had difficulty sleeping at night?							
17	How much of the time during the last two weeks have you been troubled by a feeling of abdominal discomfort?							
18	How much of the time during the last two weeks have you been worried about the impact your liver disease has on your family?							
19	How much of the time during the last two weeks have you had mood swings?							
20	How much of the time during the last two weeks have you been unable to fall asleep at night?							

21	**How often during the last two weeks have you had muscle cramps?**							
22	**How much of the time during the last two weeks have you been worried that your symptoms will develop into major problems?**							
23	**How much of the time during the last two weeks have you had a dry mouth?**							
24	**How much of the time during the last two weeks have you felt depressed?**							
25	**How much of the time during the last two weeks have you been worried about your condition getting worse?**							
26	**How much of the time during the last two weeks have you had problems concentrating?**							
27	**How much of the time have you been troubled by itching during the last two weeks?**							
28	**How much of the time during the last two weeks have you been worried about never feeling any better?**							
29	**How much of the time during the last two weeks have you been concerned about the availability of a liver if you need a liver transplant?**							

Secondary data

No. 1	Causes	Data	Year diagnosed
	1. Alcoholic liver disease	1.	
	2. Non-alcoholic fatty liver disease	2.	
	3. Viral hepatitis infection only	3.	
	4. Others causes (specify) ----------		

Viral Hepatitis status

No. 2	Data	Data	Year diagnosed
	No viral hepatitis infection	0.	
	Hepatitis B	1.	
	Hepatitis C	2.	
	HVB and HCV co infection	3.	
	Others specify ----------		

No. 3	Data	Data	Year diagnosed
	1. No cirrhosis	1.	
	2. Cirrhosis	2.	
	i. Child A	2.1	
	ii. Child B	2.2	
	iii. Child C	2.3	
	3. Hepatocellular carcinoma	3.	

No. 4	Data	Data	Year diagnosed
	1. Hypertension	1.	
	2. Heart diseases	2.	
	3. Diabetes	3	
	Others ---------- ---------- ---------- ----------	4	

No. 5	Data	Data
	Previous blood transfusion times due to liver diseases and alcohol related causes	---------- times

Appendix B: Questionnaires in Myanmar form

No ----------

အပိုင်း 1 လူမှုစီးပွားအချက်အလက်များ

1. သင်အသက်ဘယ်လောက်ရှိပြီလည်း? (ပြည့်ပြီးသောနှစ်) ---------- နှစ်

2.

ကျား	1.	မ	2.

3. အိမ်ထောင်ရေး?

လူလွတ်	1.	တခုလပ်	3.
အိမ်ထောင်သည်	2.	ကွာရှင်း/ပြတ်စဲ	4.

4. သင်၏ အတန်း ပညာရေး?

တခါမျှကျောင်းမနေဖူးပါ /ရေးတတ်ဖတ်တတ်ရုံ	1.	အထက်တန်း	4.
မူလတန်း	2.	ဘွဲ့ရ သို့/နှင့်အထက်	5.
အလယ်တန်း	3.		

5. သင်၏အလုပ်အကိုင်?

အလုပ်မရှိပါ/ပင်စင်စား	1.	ကိုယ်ပိုင်လုပ်ငန်း	4.
အစိုးရဝန်ထမ်း	2.	အထွေထွေလုပ်သား/နေ့စား	5.
ပုဂ္ဂလိကဝန်ထမ်း	3.	အခြား ----------	6.

6. သင်၏လစဉ်ပျမ်းမျှဝင်ငွေ (ခန့်မှန်း)? ပမာဏ ---------- ကျပ်

အပိုင်း 2 အရက်သောက်သုံးခြင်းနှင့်ပက်သက်၍ အသေးစိပ်မေးမြန်းခြင်း

7. အရက်သောက်သုံးခြင်းနှင့် ပက်သက်သော မေးခွန်းများ

အကယ်၍ တသက်တာ မသောက်သုံးဖူးပါက နံပါတ် 16 သို့ကျော်ရန်။

ယမကာအမျိုးအစား	တသက်တာ		အရက် ပထမ အကြိမ် သောက် စဉ်က အသက်	အရက် ပထမဆုံး သောက်စဉ် က အကြောင်း ပြချက်*	လွန်ခဲ့သော ၁၂လက		လွန်ခဲ့သော ၆လက		လွန်ခဲ့သော၃လက		လွန်ခဲ့သော ၁လက		လွန်ခဲ့သော ၁ပတ်က	
	မသောက်	သောက်			မသောက်	သောက်	မသောက်	သောက်	မသောက်	သောက်	မသောက်	သောက်	မသောက်	သောက်
ဘီယာ														
အရက်ဖြူ														
ရမ်														
ဝိုင်														
ဝီစကီ														
အခြား														

အရက် ပထမဆုံးသောက်စဉ်က အကြောင်းပြချက် *

1.. သူငယ်ချင်းများကြောင့်

2. လူမှုရေးကြောင့်

3. ဖျော်ဖြေရေး/ပွဲတော်များကြောင့်

4. စိတ်ညစ်/စိတ်ဓာတ်ကျသောကြောင့်

5. စမ်းသောက်ကြည့်ချင်သောကြောင့်

6. အခြားအကြောင်းပြချက် ဖော်ပြရန် ----------

8 a. ပြီးခဲ့သော 12 လအတွင်း သင်အရက်သောက်ခဲ့ပါသလား?

မသောက်ပါ (နံပါတ် ၉ သို့ ကျော်ရန်)	0.	သောက်ပါသည်	1.

8 b.

အမျိုးအစား	ပျမ်းမျှပမာဏ တကြိမ်လျှင်	ကြိမ်ရေ တလလျှင်
1.		
2.		
3.		

8 c. ပြီးခဲ့သော 12 လအတွင်း အများအားဖြင့်သင်မည်သူနှင့်သောက်သနည်း။?

တယောက်တည်းသောက်	1.	သူငယ်ချင်းမိတ်ဆွေများနှင့်သောက်	2.
		သင်အပါအဝင် ခန့်မှန်းပျမ်းမျှ ဦးရေ	----------

8 d. ပြီးခဲ့သော 12 လအတွင်းအများအားဖြင့်သင်မည့်သည့်နေရာများ၌သောက်လေ့ရှိသနည်း?

အိမ်	1.	အလုပ်နေရာ	4.
စားသောက်ဆိုင်ဘီယာဆိုင်	2.	ဘား	5.
အခမ်းအနားပွဲများ	3.	အခြားဖော်ပြရန်	6.

8 e. ပြီးခဲ့သော 12 လအတွင်းအများအားဖြင့်သင်မည့်သည့်အချိန်များ၌သောက်လေ့ရှိသနည်း?

နေ့ခင်း	1.	ညပိုင်း	3.
ညနေ	2.	အချိန်အတိအကျမရှိပါ	4.

9 a. ပြီးခဲ့သော 6 လအတွင်း သင်အရက်သောက်ခဲ့ပါသလား?

မသောက်ပါ (နံပါတ် ၁၀ သို့ ကျော်ရန်)	0.	သောက်ပါသည်	1.

9 b.

အမျိုးအစား	ပျမ်းမျှပမာဏ တကြိမ်လျှင်	ကြိမ်ရေ တလလျှင်
1.		
2.		
3.		

9 c. ပြီးခဲ့သော 6 လအတွင်း အများအားဖြင့်သင်မည်သူနှင့်သောက်သနည်း။?

တယောက်တည်းသောက်	1.	သူငယ်ချင်းမိတ်ဆွေများနှင့်သောက်	2.
		သင်အပါအဝင် ခန့်မှန်းပျမ်းမျှ ဦးရေ	----------

9 d. ပြီးခဲ့သော 6 လအတွင်းအများအားဖြင့်သင်မည့်သည့်နေရာများ၌သောက်လေ့ရှိသနည်း?

အိမ်	1.	အလုပ်နေရာ	4.
စားသောက်ဆိုင်ဘီယာဆိုင်	2.	ဘား	5.
အခမ်းအနားပွဲများ	3.	အခြားဖော်ပြရန်	6.

9 e. ပြီးခဲ့သော 6 လအတွင်းအများအားဖြင့်သင်မည်သည့်အချိန်များ၌သောက်လေ့ရှိသနည်း?

နေ့ခင်း	1.	ညပိုင်း	3.
ညနေ	2.	အချိန်အတိအကျမရှိပါ	4.

10 a. ပြီးခဲ့သော 3 လအတွင်း သင်အရက်သောက်ခဲ့ပါသလား?

မသောက်ပါ (နံပါတ် ၁၀ သို့ ကျော်ရန်)	0.	သောက်ပါသည်	1.

10 b.

အမျိုးအစား	ပျမ်းမျှပမာဏ တကြိမ်လျှင်	ကြိမ်ရေ တလလျှင်
1.		
2.		
3.		

10 c. ပြီးခဲ့သော 3 လအတွင်း အများအားဖြင့်သင်မည်သူနှင့်သောက်သနည်း။?

တယောက်တည်းသောက်	1.	သူငယ်ချင်းမိတ်ဆွေများနှင့်သောက်	2.
		သင်အပါအဝင် ခန့်မှန်းပျမ်းမျှ ဦးရေ	----------

10 d. ပြီးခဲ့သော 3 လအတွင်းအများအားဖြင့်သင်မည်သည့်နေရာများ၌သောက်လေ့ရှိသနည်း?

အိမ်	1.	အလုပ်နေရာ	4.
စားသောက်ဆိုင်ဘီယာဆိုင်	2.	ဘား	5.
အခမ်းအနားပွဲများ	3.	အခြားဖော်ပြရန်	6.

10 e. ပြီးခဲ့သော 3 လအတွင်းအများအားဖြင့်သင်မည်သည့်အချိန်များ၌သောက်လေ့ရှိသနည်း?

နေ့ခင်း	1.	ညပိုင်း	3.
ညနေ	2.	အချိန်အတိအကျမရှိပါ	4.

11 a. ပြီးခဲ့သော လအတွင်း သင်အရက်သောက်ခဲ့ပါသလား?

မသောက်ပါ (နံပါတ် ၁၂ သို့ ကျော်ရန်)	0.	သောက်ပါသည်	1.

11 b.

အမျိုးအစား	ပျမ်းမျှပမာဏ တကြိမ်လျှင်	ကြိမ်ရေ တလလျှင်
1.		
2.		
3.		

11 c. ပြီးခဲ့သော လအတွင်း အများအားဖြင့်သင်မည်သူနှင့်သောက်သနည်း။?

တယောက်တည်းသောက်	1.	သူငယ်ချင်းမိတ်ဆွေများနှင့်သောက်	2.
		သင်အပါအဝင် ခန့်မှန်းပျမ်းမျှ ဦးရေ	----------

11 d. ပြီးခဲ့သော လအတွင်းအများအားဖြင့်သင်မည့်သည့်နေရာများ၌သောက်လေ့ရှိသနည်း?

အိမ်	1.	အလုပ်နေရာ	4.
စားသောက်ဆိုင်ဘီယာဆိုင်	2.	ဘား	5.
အခမ်းအနားပွဲများ	3.	အခြားဖော်ပြရန်	6.

11 e. ပြီးခဲ့သော လအတွင်းအများအားဖြင့်သင်မည့်သည့်အချိန်များ၌သောက်လေ့ရှိသနည်း?

နေ့ခင်း	1.	ညပိုင်း	3.
ညနေ	2.	အချိန်အတိအကျမရှိပါ	4.

12 a. ပြီးခဲ့သော အပတ်အတွင်း သင်အရက်သောက်ခဲ့ပါသလား?

မသောက်ပါ (နံပါတ် ၁၃ သို့ ကျော်ရန်)	0.	သောက်ပါသည်	1.

12 b.

အမျိုးအစား	ပျမ်းမျှပမာဏ တကြိမ်လျှင်	ကြိမ်ရေ တပတ်လျှင်
1.		
2.		
3.		

12 c. ပြီးခဲ့သော အပတ်အတွင်း အများအားဖြင့်သင်မည်သူနှင့်သောက်သနည်း။?

တယောက်တည်းသောက်	1.	သူငယ်ချင်းမိတ်ဆွေများနှင့်သောက်	2.
		သင်အပါအဝင် ခန့်မှန်းပျမ်းမျှ ဦးရေ	----------

12 d. ပြီးခဲ့သော အပတ်အတွင်းအများအားဖြင့်သင်မည့်သည့်နေရာများ၌သောက်လေ့ရှိသနည်း?

အိမ်	1.	အလုပ်နေရာ	4.
စားသောက်ဆိုင်ဘီယာဆိုင်	2.	ဘား	5.
အခမ်းအနားပွဲများ	3.	အခြားဖော်ပြရန်	6.

12 e. ပြီးခဲ့သော အပတ်အတွင်းအများအားဖြင့်သင်မည့်သည့်အချိန်များ၌သောက်လေ့ရှိသနည်း?

နေ့ခင်း	1.	ညပိုင်း	3.
ညနေ	2.	အချိန်အတိအကျမရှိပါ	4.

12 f. ပြီးခဲ့သောအပတ်အတွင်း အများအားဖြင့်သင်မည့်သည့်ရက်များ၌သောက်လေ့ရှိသနည်း?

ကြားရက်	1.	စဓနေ တနင်္ဂနွေ	2.

13. အရက်သောက်သုံးခြင်းကြောင့် ရရှိသောနောက်ဆက်တွဲဆိုးကျိုးများအကြောင်းမေးမြန်းခြင်း

စဉ်	မေးခွန်း	0	1	2	3	4
1	သင်အရက်သောက်သောအကြိမ်ရေမည်မျှ ရှိသနည်း	ဘယ်တော့မှမသောက်ပါ	လစဉ်နှင့် အောက်	တစ်လလျှင် နှစ်ကြိမ်မှ လေးကြိမ်	တစ်ပတ်လျှင် နှစ်ကြိမ်မှ သုံးကြိမ်	တစ်ပတ်လျှင် လေးကြိမ်နှင့်အထက်
2	ပျမ်းမျှအားဖြင့် တစ်ကြိမ်သောက်လျှင်မည်မျှသောက်သနည်း	၁ ယူနစ်သို့ ၂ ယူနစ်	၃ ယူနစ်သို့ ၄ ယူနစ်	၅ ယူနစ်သို့ ၆ ယူနစ်	၇ ယူနစ်သို့ ၉ ယူနစ်	၁၀ ယူနစ်နှင့်အထက်
3	၆ ယူနစ်နှင့်အထက်သောက်သောအကြိမ်ရေ မည်မျှရှိသနည်း	ဘယ်တော့မှမသောက်ပါ	လစဉ်အောက်	လစဉ်	အပတ်စဉ်	နေ့စဉ် (သို့) နေ့စဉ်နီးပါး
4	လွန်ခဲ့သော တစ်နှစ်တာအတွင်း သင့်ကိုယ်သင် စသောက်မိသည်နှင့်ရပ်၍မရဟုဘယ်နစ်ကြိမ် ခံစားမိသနည်း	ဘယ်တော့မှမခံစားမိပါ	လစဉ်အောက်	လစဉ်	အပတ်စဉ်	နေ့စဉ် (သို့) နေ့စဉ်နီးပါး
5	လွန်ခဲ့သော တစ်နှစ်တာအတွင်း အရက်သောက်သုံးမှုကြောင့် သင်၏ပုံမှန်တွဝိုးဆောင်ရည်အောက် နိမ့်ကျသောအကြိမ်ရေမည်မျှရှိသနည်း။	ဘယ်တော့မှမနိမ့်ကျပါ	လစဉ်အောက်	လစဉ်	အပတ်စဉ်	နေ့စဉ် (သို့) နေ့စဉ်နီးပါး
6	လွန်ခဲ့သော တစ်နှစ်တာအတွင်း ညဘက်အလွန်အကျွံသောက်မိသဖြင့် နောက်နေ့နံနက် ပုံမှန်အနေအထားရောက်ရန် ပြန်ပြေသည့်အနေဖြင့် သောက်ရသောအကြိမ်ရေမည်မျှရှိသနည်း။	ဘယ်တော့မှမရှိပါ	လစဉ်အောက်	လစဉ်	အပတ်စဉ်	နေ့စဉ် (သို့) နေ့စဉ်နီးပါး
7	လွန်ခဲ့သော တစ်နှစ်တာအတွင်း အရက်သောက်ပြီးနောက် နောင်တရခြင်း မိမိကိုယ်ကိုအပြစ်တင်ခြင်း ဘယ်နှစ်ကြိမ်မျှ ဖြစ်သနည်း။	ဘယ်တော့မှမဖြစ်ပါ	လစဉ်အောက်	လစဉ်	အပတ်စဉ်	နေ့စဉ် (သို့) နေ့စဉ်နီးပါး
8	လွန်ခဲ့သော တစ်နှစ်တာအတွင်း အရက်အလွန်အကျွံသောက်မိသဖြင့် ယမန်နေ့ညမှအဖြစ်အပျက်များ မမှတ်မိသောအကြိမ်ရေ မည်မျှရှိသနည်း။	ဘယ်တော့မှမဖြစ်ပါ	လစဉ်အောက်	လစဉ်	အပတ်စဉ်	နေ့စဉ် (သို့) နေ့စဉ်နီးပါး
9	သင်အရက်သောက်မှုကြောင့် သင် (သို့) အခြားသူ ထိခိုက်အနာတရဖြစ်ခြင်း ရှိခဲ့ဘူးပါသလား။	မရှိဘူးပါ	-	ရှိဘူးသည် သို့သော် လွန်ခဲ့သော တစ်နှစ်အတွင်း မဟုတ်ပါ	-	လွန်ခဲ့သော နှစ်အတွင်း ဖြစ်ခဲ့ဘူးပါသည်။
10	ဆွေမျိုး မိတ်ဆွေ ဆရာဝန်(သို့) ကျန်းမာရေးဝန်ထမ်းတစ်ဦးဦးမှ သင်၏အရက်သောက်ခြင်းကိုဝေဖန်ခြင်း ဖြတ်ရန်တိုက်တွန်းခြင်းရှိဘူးပါသလား။	မရှိဘူးပါ	-	ရှိဘူးသည် သို့သော် လွန်ခဲ့သော တစ်နှစ်အတွင်း မဟုတ်ပါ	-	လွန်ခဲ့သော နှစ်အတွင်း ရှိခဲ့ဘူးပါသည်။

14. a. လွန်ခဲ့သော နှစ်အတွင်း သင်အရက်သောက်မှုကြောင့် သင် ထိခိုက်အနာတရဖြစ်ခြင်း ရှိခဲ့ဘူးပါသလား။

မရှိပါ	0.	ရှိပါသည်	1.

မည်သို့သောထိခိုက်အနာတရမျိုး ဖြစ်ခဲ့ပါသနည်း။

လိမ့်ကျမှု	1.	မိမိကိုယ်ကို သေကြောင်းကြံစည် သို့ တွေးမိမှု	4.
ယာဉ်တိုက်မှု	2.	အခြားဖော်ပြရန် ----------	5.
ရိုက်မှု ရန်ဖြစ်မှု	3.		

14. b. လွန်ခဲ့သော နှစ်အတွင်း သင်အရက်သောက်မှုကြောင့် သူတပါး ထိခိုက်အနာတရဖြစ်ခြင်း ရှိခဲ့ဘူးပါသလား။

မရှိပါ	0.	ရှိပါသည်	1.

မည်သို့သောထိခိုက်အနာတရမျိုး ဖြစ်ခဲ့ပါသနည်း။

ယာဉ်တိုက်မှု	1.	အခြားဖော်ပြရန် ----------	3.
ရိုက်မှု ရန်ဖြစ်မှု	2.		

15. လွန်ခဲ့သောနှစ်အတွင်း ညွှန်ကြားထားသောဆေးများအား အရက်နှင့်နီးကပ်စွာသောက်သုံးမှုမျိုးရှိဖူးပါသလား?

မရှိပါ	0.	ရှိပါသည်	1.
အကယ်၍ ရှိခဲ့ပါလျှင် မည်ကဲ့သို့သောဆေးဝါးမျိုး ဖြစ်မည်နည်း။ ဖော်ပြရန် ----------			

16. သင်၏အတူနေ မိသားစုအတွင်း အရက်သောက်သုံးသူရှိပါသလား?

မရှိပါ	0.	ရှိပါသည်	1.
အကယ်၍ ရှိပါလျှင် မည်သူဖြစ်ပါသနည်း။ ----------			

17. လွန်ခဲ့သော နှစ်အတွင်း သင်စွဲလန်းဇစတတ်သောအရာများ သုံးစွဲမှု ရှိပါသလား?

မရှိပါ	0.	ရှိပါသည်	1.
အကယ်၍ ရှိပါလျှင်			
ဆေးလိပ်	1.	ကွမ်းယာ	2.
အခြားဖော်ပြရန်	3. ----------		

အပိုင်း 3 အသည်းနှင့်ပက်သက်သော ကျန်းမာရေးဆိုင်ရာ လူမှုဘဝအပေါ် သက်ရောက်မှုများ
တိုင်းတာစစ်ဆေးမေးမြန်းချက်

No.	Questions	အ ရှိန် ပြည့်	အမြဲ တမ်း လိုလို	အ ရှိန် တော် တော် များ များ	ရံဖန် ရံခါ	တခါ တ လေ	ရှား ရှား ပါးပါး	ဘယ် သော အခါ မျှ
		1	2	3	4	5	6	7
1	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် အစာမကြေရင်ပြည့်ရင်ကယ်ခြင်း ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
2	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် မောပန်းနွမ်းနယ်မှုမျိုး ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
3	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် ခန္ဓာကိုယ်ကိုက်ခဲမှုမျိုး ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
4	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် နေ့အခါ အိပ်ငိုက်ခြင်း ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
5	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် ဗိုက်နာခြင်း ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
6	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် နေ့တာ၌ဝ လုပ်ရပ်များလုပ်နေစဉ် အသက်ရှူမဝမောလာခြင်းမျိုး ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
7	ပြီးခဲ့သောနှစ်ပတ်အတွင်း သင်စားချင်သလောက် မစားနိုင်မှုမျိုး ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
8	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် အားနည်းလာမှုကြောင့် ကသိကအောက်ဖြစ်ခြင်း ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
9	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် အလေးအပင်ရွှေ့မနေစဉ် အခက်အခဲဖြစ်ပေါ်မှု ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
10	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် စိုးရိမ်ကြောင့်ကြစိတ် ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
11	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် အားအင်နည်းပါးလာသည်ဟု ခံစားရမှု ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
12	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် စိတ်မချင်လန်းမှု ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
13	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် နွမ်းလျငိုက်မြည်းခြင်း အချိန်မည်မျှဖြစ်ပေါ်ခဲ့ပါသလည်း?							
14	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် အစားအသောက်တွင် ကျန်းမာရေးကြောင့်ကန့်သတ်မှုများအပေါ် ကသိကအောက်ဖြစ်မှုမျိုး ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
15	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် စိတ်တိုစိတ်ဆတ်လွယ်မှု ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							

16	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် ညဘက်တွင် နှစ်နှစ်ခြိုက်ခြိုက်အိပ်မပျော်မှု ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
17	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် ဗိုက်မအီမသာဖြစ်ခြင်း ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
18	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် သင့်ကျန်းမာရေးနှင့်ပက်သက်၍ သင့်မိသားစုအပေါ် အကျိုးသက်ရောက်မှုအတွက်စိုးရိမ်မှု ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
19	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် စိတ်အတက်အကျ ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
20	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် ညအခါ မျက်စိကြောင်အိပ်မရမှုမျိုး ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
21	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် ကြွက်တက်မှု ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
22	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် သင်နေမကောင်းခြင်း ခံစားနေရမှု ပိုဆိုးလာမည်ကို စိတ်ပူခြင်း ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
23	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် နုတ်ခမ်းခြောက်မှု ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
24	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် စိတ်ဓာတ်ကျခြင်း ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
25	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် သင့်ကျန်းမာရေး ပိုယိုယွင်းလာမည်ကို စိတ်ပူခြင်း ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
26	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် အာရုံမစူးစိုက်နိုင်မှု ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
27	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် ယားယံခြင်း ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
28	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် သက်သာလာတယ်ဟုမခံစားရခြင်းမျိုး ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							
29	ပြီးခဲ့သောနှစ်ပတ်အတွင်းသင် ဓနာက်နောင်အကယ်၍ အသည်းအစားထိုးမှုလုပ်ရန် အလှူရှင်ရနိုင်မှုအပေါ် စိုးရိမ်မှုမျိုး ဘယ်လောက်ကြာကြာ ဖြစ်ပေါ်ခဲ့ပါသလည်း?							

Appendix C: Alcohol types and brands in Myanmar

Beer brands (Myanmar beer, Mandalay beer, Dagon beer, Yoma beer, Spirulina beer, ABC beer, etc.)

Distilled spirits

Rum brands (Myanmar Rum, Mandalay Rum, Army Rum, Herbal Rum)

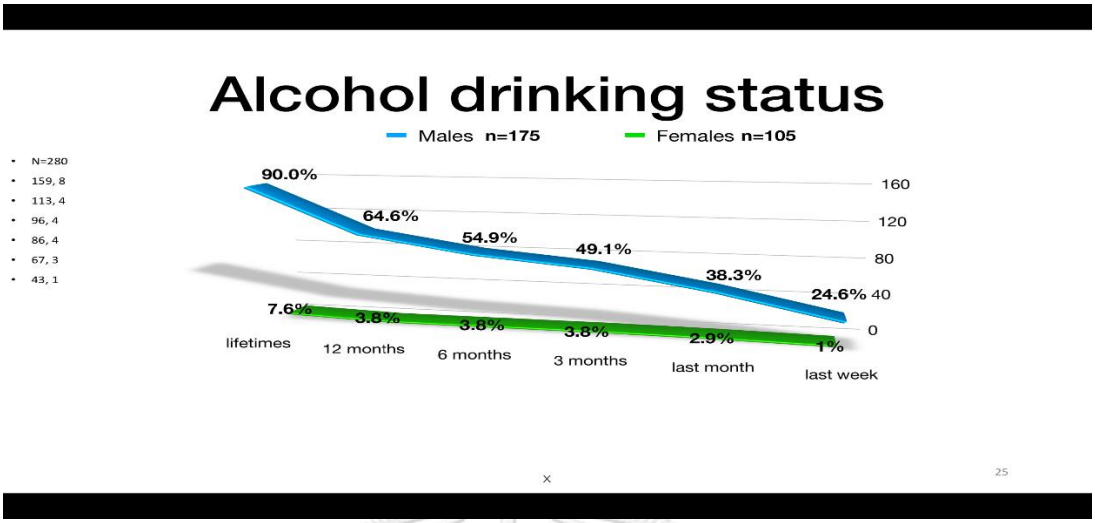
Wine brands (Red Mountain Estate, May Rose, etc.)

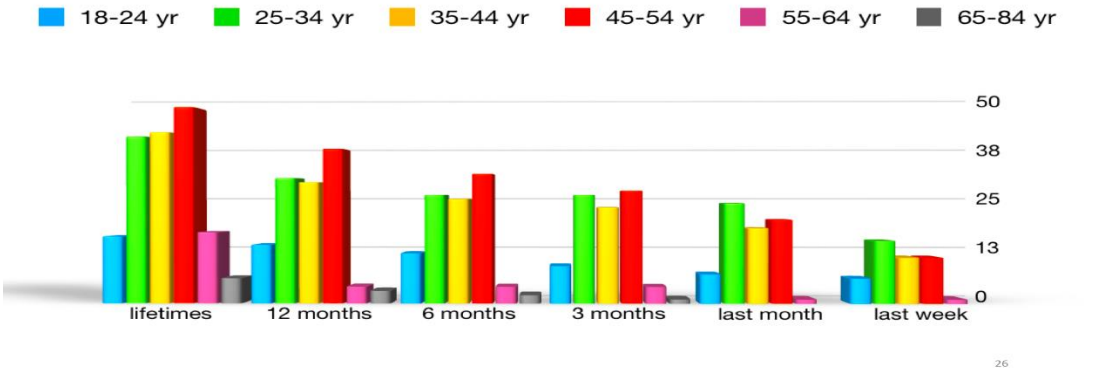
Whisky brands (Red label, Grand Royal, Myanmar, etc.)

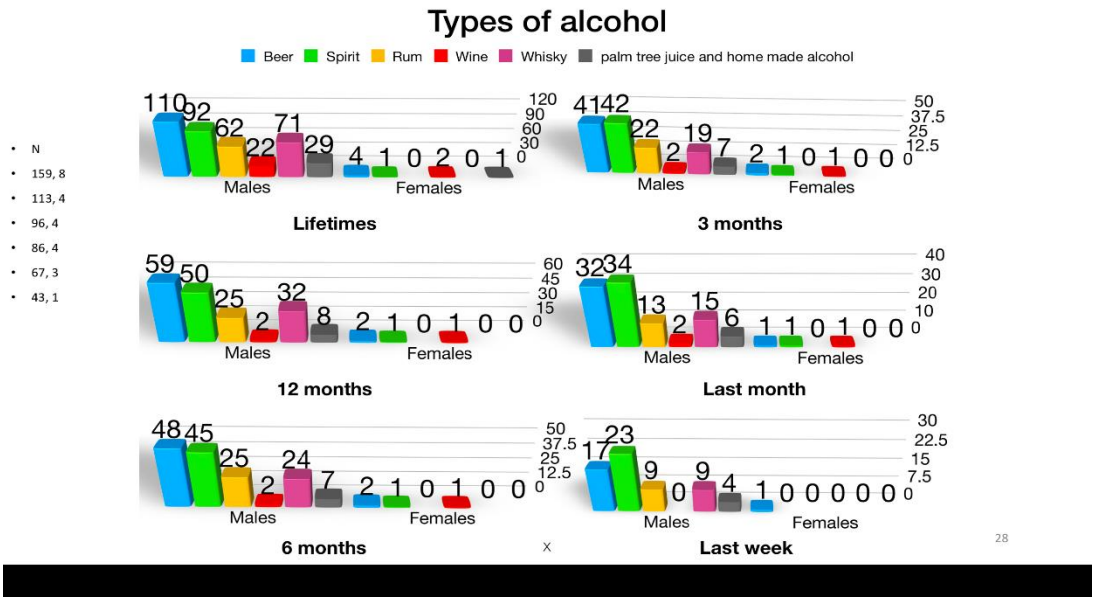
Palm tree juices

Appendix D: Measurement of Standard drinks chart

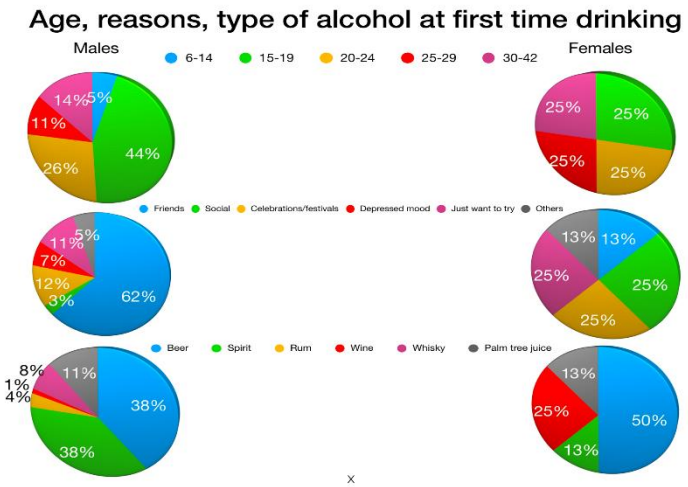
Appendix E: Bars and Charts of Drinking patterns, AUDIT levels, QOL levels







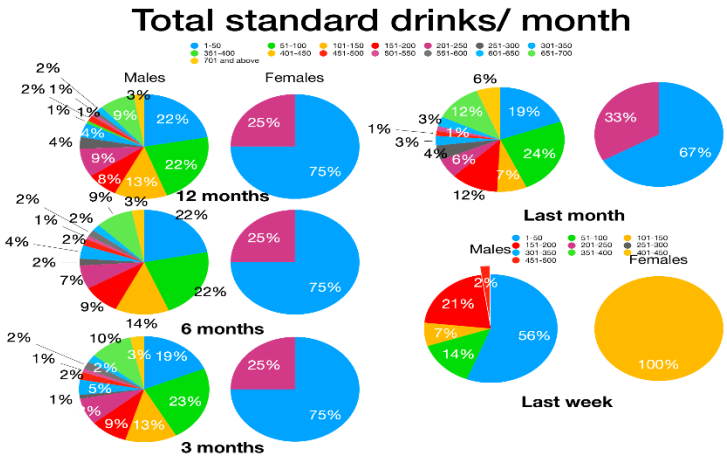
- 159, 8



X

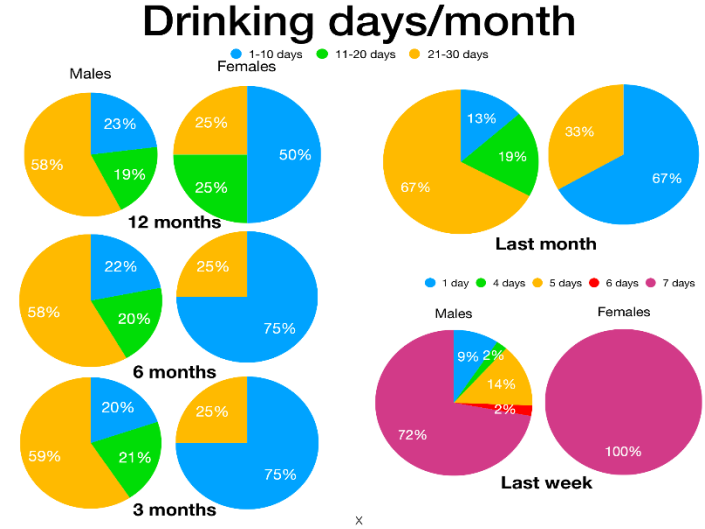
27

- N
- 113, 4
- 96, 4
- 86, 4
- 67, 3
- 43, 1



29

- N
- 113, 4
- 96, 4
- 86, 4
- 67, 3
- 43, 1

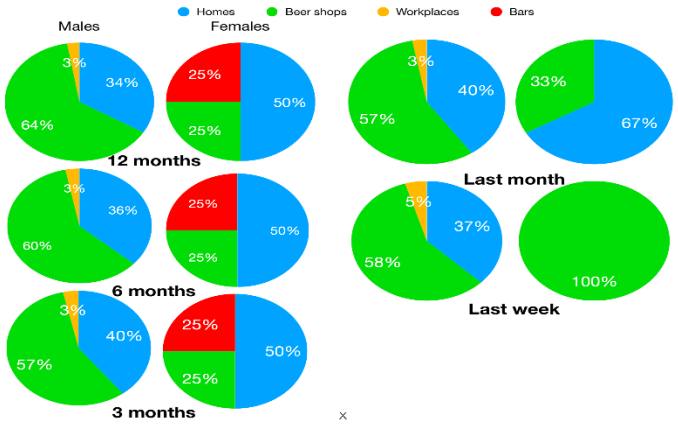


X

30

Places

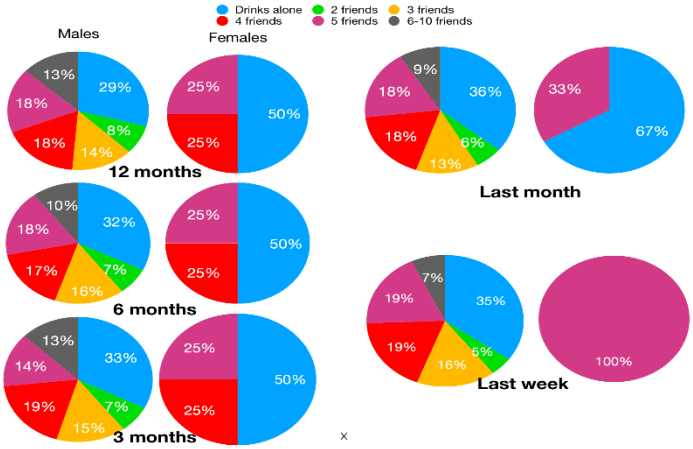
- N
- 113, 4
- 96, 4
- 86, 4
- 67, 3
- 43, 1



32

With friends

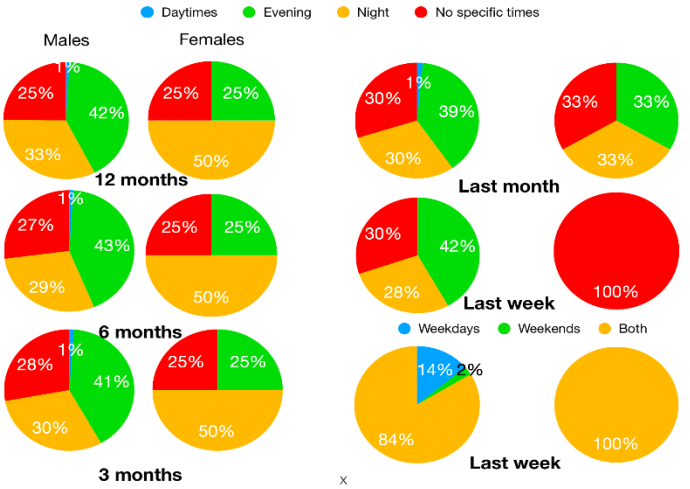
- N
- 113, 4
- 96, 4
- 86, 4
- 67, 3
- 43, 1



31

Times

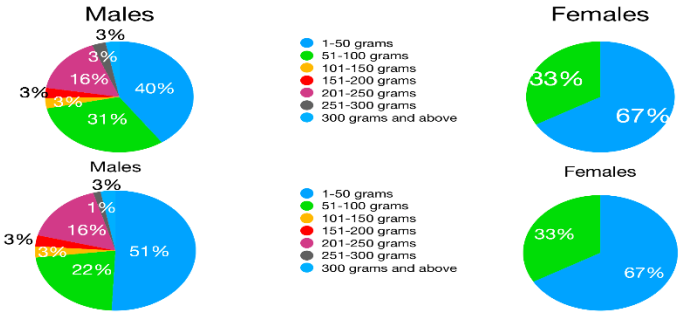
- N
- 113, 4
- 96, 4
- 86, 4
- 67, 3
- 43, 1
- 43, 1



33

Intensity and average intake

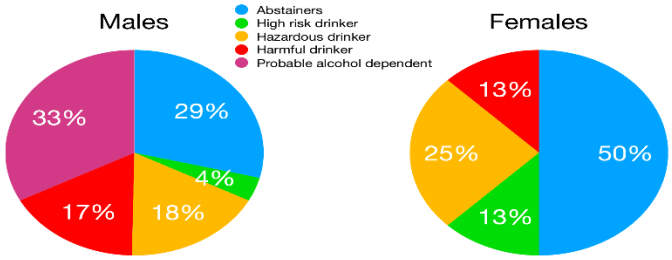
- N
- 67, 3



34

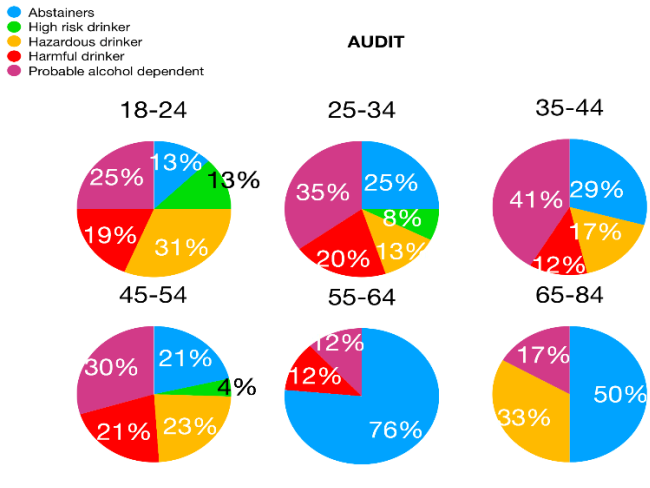
AUDIT

- N
- 159, 8



35

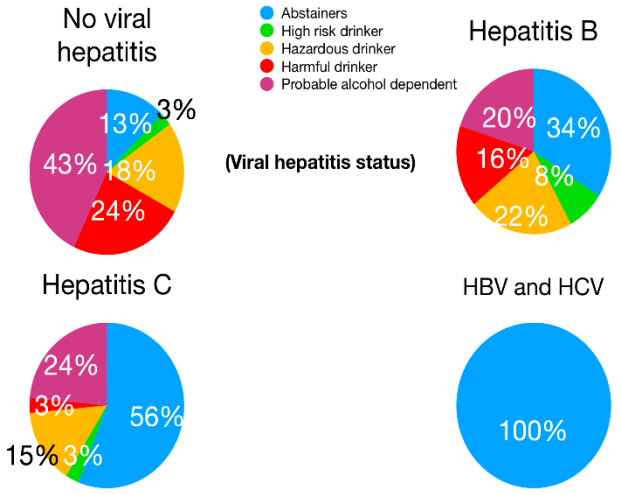
- N=167
- 16
- 40
- 41
- 47
- 17
- 6



36

AUDIT

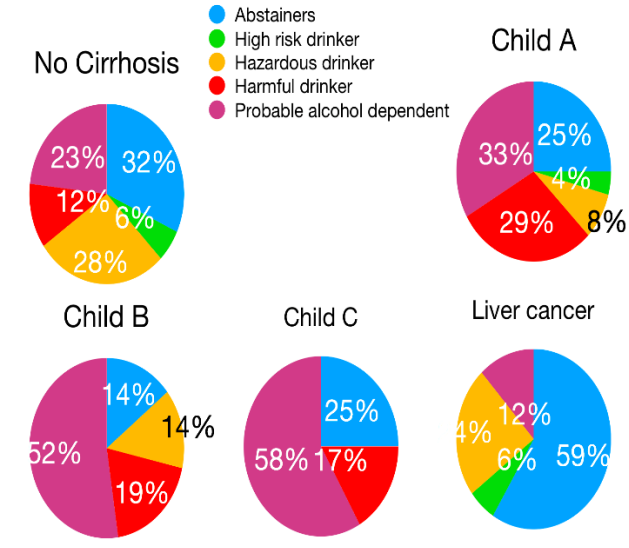
- N=167
- 79
- 50
- 34
- 4



37

AUDIT (Disease Severity)

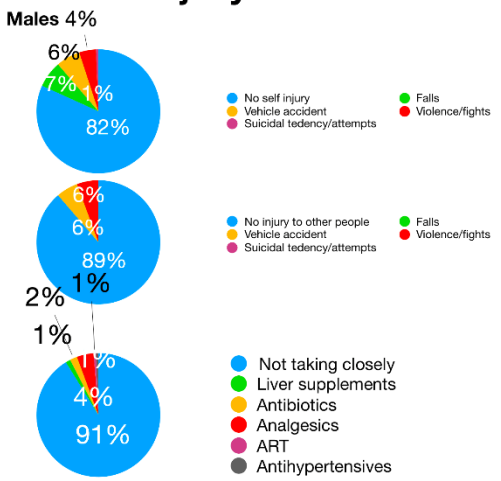
- N=167
- 69
- 48
- 21
- 12
- 17



38

Injury within 12 months

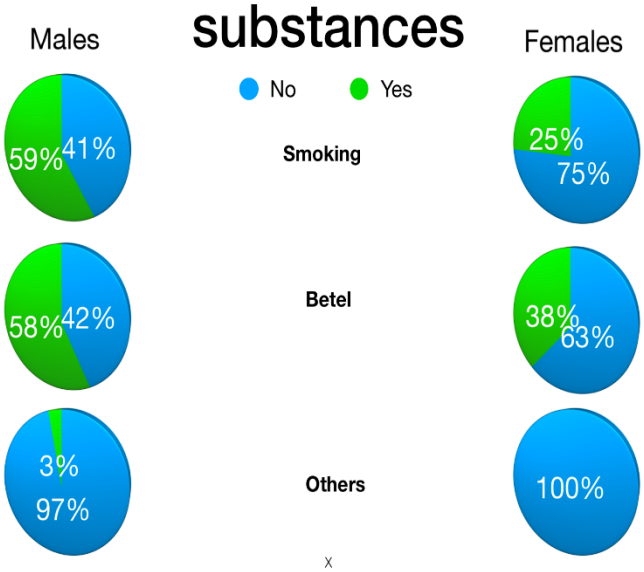
- N=167
- 159, 8



39

Smoking, betel, other substances

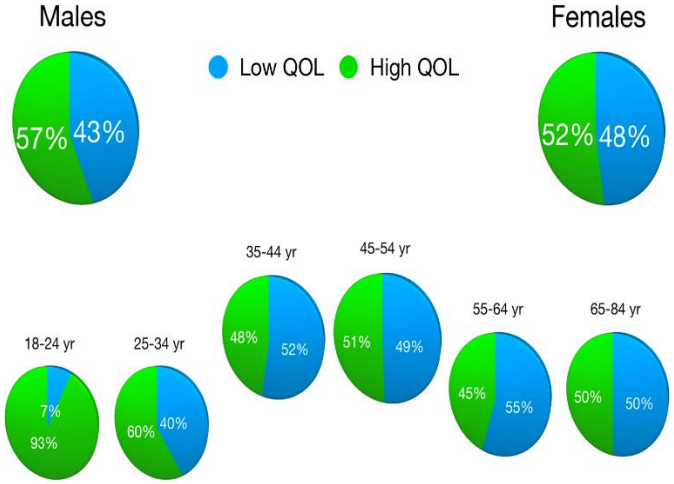
- N=167
- 159, 8



41

QOL (gender and age groups)

- N =280
- 175, 105

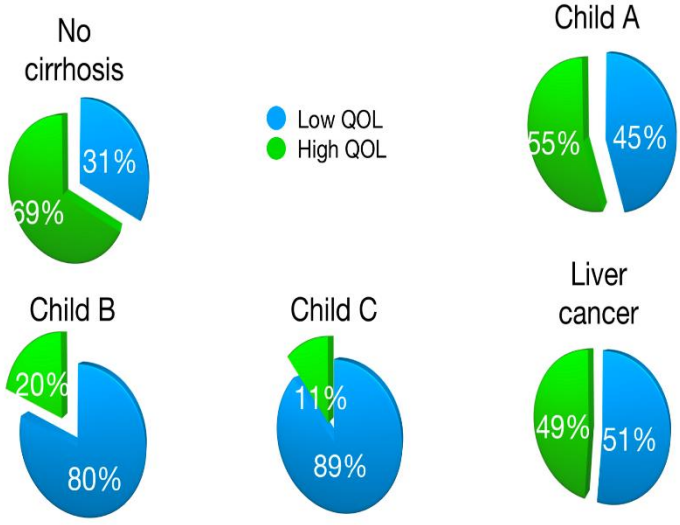


X

46

QOL (disease severity)

- N =280



X

47

Appendix F: Ethical Approval Form

AF 02-12

The Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University
Jamjuree 1 Building, 2nd Floor, Phyathai Rd., Patumwan district, Bangkok 10330, Thailand,
Tel/Fax: 0-2218-3202 E-mail: eccu@chula.ac.th

COA No. 122/2018

Certificate of Approval

Study Title No. 088.1/61 : ASSESSMENT OF ALCOHOL CONSUMPTION AND QUALITY OF LIFE AMONG CHRONIC LIVER DISEASE PATIENTS IN MANDALAY, MYANMAR

Principal Investigator : MR. CHAN HEIN TUN

Place of Proposed Study/Institution : College of Public Health Sciences, Chulalongkorn University

The Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University, Thailand, has approved constituted in accordance with the International Conference on Harmonization – Good Clinical Practice (ICH-GCP).

Signature: Prida Tasanapradit ..... Signature: Nuntaree Chaichanawongsaroj .....

(Associate Professor Prida Tasanapradit, M.D.) Chairman

(Assistant Professor Nuntaree Chaichanawongsaroj, Ph.D.) Secretary

Date of Approval : 28 May 2018 Approval Expire date : 27 May 2019

The approval documents including

1) Research proposal
2) Patient/Participant Information Sheet and Informed Consent Form
3) Researcher
4) Questionnaire

Protocol No. 088.1/61
Date of Approval 28 MAY 2018
Approval Expire Date 27 MAY 2019

The approved investigator must comply with the following conditions:

1. *The research/project activities must end on the approval expired date of the Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University (RECCU). In case the research/project is unable to complete within that date, the project extension can be applied one month prior to the RECCU approval expired date.*
2. *Strictly conduct the research/project activities as written in the proposal.*
3. *Using only the documents that bearing the RECCU's seal of approval with the subjects/volunteers (including subject information sheet, consent form, invitation letter for project/research participation (if available).*
4. *Report to the RECCU for any serious adverse events within 5 working days*
5. *Report to the RECCU for any change of the research/project activities prior to conduct the activities.*
6. *Final report (AF 03-12) and abstract is required for a one year (or less) research/project and report within 30 days after the completion of the research/project. For thesis, abstract is required and report within 30 days after the completion of the research/project.*
7. *Annual progress report is needed for a two- year (or more) research/project and submit the progress report before the expire date of certificate. After the completion of the research/project processes as No. 6.*

VITA

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EDUCATIONAL BACKGROUND

Bachelor of Medicine and Bachelor of Surgery (MBBS) from University of Medicine, Mandalay in 2015.

WORKING EXPERIENCES

6/2014 – 6/2015 --- house officer internship for clinical experience and training in government hospitals in Mandalay.

2015-2017 --- laboratory and practical training in gemology and color stones