REASONS OF ADMISSION AND IDENTIFICATION OF COMPLICATIONS OF CHRONIC LIVER DISEASE PATIENTS ADMITTED TO MEDICAL WARD OF JIMMA UNIVERSITY MEDICAL CENTER FROM SEPTEMBER 11/ 2018 TO SEPTEMBER 10/2020 G.C

BY: Dr. BAWEKE WASSIE (MEDICAL RESIDENT)

A RESEARCH PAPER TO BE SUBMITTED TO THE DEPARTMENT OF INTERNAL MEDICINE, COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCES FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE SPECIALTY CERTIFICATE IN INTERNAL MEDICINE

MARCH, 2021

JIMMA, ETHIOPIA

JIMMA UNIVERSITY INSTITUTE OF HEALTH

DEPARTMENT OF INTERNAL MEDICINE

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Summary

Background: *Liver disease is one of the major causes of mortality and morbidity worldwide. Chronic liver disease (CLD) is the progressive destruction and regeneration of liver tissue with subsequent necrosis that persists for at least 6 months. The burden of liver disease is raising, due in part to the increasing prevalence of the non-alcoholic fatty liver disease, hazardous alcohol consumption are most frequent etiologies in high-income countries. Viral hepatitis B and C are prevalent in Ethiopia but there are only few studies done in relation to chronic liver disease.*

Objective: *To assess reasons of admission and identify complications with its associated factors of CLD patients admitted to the medical ward of JUMC, Jimma, Southwest of Ethiopia.*

Methods: *A facility-based retrospective cross-sectional study design was employed. Data was collected by reviewing of charts of CLD patients who had been admitted to the medical ward of JUMC from September 11/ 2018 to September 10/2020 G.C by trained data collectors using a checklist containing the reasons of admission, complications, and underlying causes of chronic liver disease; laboratory and imaging findings and the condition of these patients at discharge. The collected data was entered, cleaned, and analyzed using SPSS statistical software V20.*

Result: *From a total of 90 reviewed charts of patients with diagnosis of CLD, 77 (85.6%) of them were males & and majority of these patients were in the age range of 15 - 45 years .The reasons of admission were only ascites, encephalopathy and ascites, splenomegaly,and portal hypertension(56.7%, 30%,25.6%, &10% respectively) and the complications were ascites + encephalopathy (30.0%), UGIB +anemia (21.1%), ascites (21.1%), hepatoma +splenomegaly (11.1%), splenomegaly (8.9%) and hepatocellular carcinoma (2.2%). The overall prevalence of HBV, alcohol, HCV, herbal medication and HBV & HCV co-infection were 21.1%,17.8%,8.9%,6.7%, and 1.1% respectively but 44.4% of the study participants etiology of CLD was unknown. In the multiple logistic regression analysis, age, sex, marital status, residence and educational status had no statistically significant association to ascites as a complication of the CLD patients.*

Conclusion and Recommendation: *Chronic liver disease is the endpoint of continual liver damage by different inciting factors. It is the most common route to hepatic failure and often ends in cirrhosis. Being of great importance as among the common causes of admission in JUMC and it must get adequate attention on prevention, diagnosis and management.*

Keywords*: JUMC, Chronic liver disease, Reasons of admission, complication*

Acknowledgement

First and foremost, thanks to God, for his showers of blessings throughout my work to complete this thesis successfully

I would like to thank Jimma University, college of public health and medical sciences, department of Internal medicine for giving me the chance to prepare this proposal. Also, I would like to thank and express my sincere gratitude to my advisors Dr. Dagimawi Tewolde (Ass. Professor, Internist) and Mr. Chernet Hailu (MPH, Ass. Professor), for the constructive comments and advice they gave me for the preparation of this research and in advance for their willingness in helping and giving valuable comments.

I would also like to acknowledge Jimma University, College of Public Health, and Medical sciences for sponsoring me. Also, I would like to thank my friends for their encouragement, which has motivated me to work harder in my research paper.

Finally, I would like to express my greatest thanks to my family.

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Abbreviations and acronyms

ACLF: acute-on-chronic liver failure

ALD: Alcoholic liver disease

ALT: Alanine aminotransferase

APRI: Aspartate aminotransferase to Platelets Ratio Index

ARF: Acute renal failure

AST: aspartate aminotransferase

CDC: Center for Disease Control and Prevention

CHB: chronic hepatitis B infection

CLD: Chronic Liver Disease

DAA: Direct-Acting Antiviral

DB: direct bilirubin

HBsAg: Hepatitis B surface antigen

HBV: Hepatitis B Virus

HCC: Hepatocellular Carcinoma

HCV: Hepatitis C Virus

HE: Hepatic Encephalopathy

HPS: Hepatopulmonary Syndrome

HRS: Hepatorenal Syndrome

ICU: Intensive Care Unit

JUMC: Jimma University Medical Center

NAFLD: Non-alcoholic fatty liver disease

PITC: Provider initiative testing and counseling

PLT: Platelet

SAPS: Simplified Acute Physiology Score

SBP: Spontaneous bacterial peritonitis

SOFA: Sequential Organ Failure Assessment

SPSS: Statistical package for social sciences

UGI: Upper gastrointestinal bleeding

ULN: Upper Limit Normal

WHO: World Health Organization

Chapter One

Introduction

1.1. Background Information

Chronic liver disease (CLD) is the progressive destruction & regeneration of liver tissue with subsequent necrosis that lasted for more than/at least 6 months. Cirrhosis is the end spectrum of all chronic liver disease (CLD) characterized by advanced fibrosis, scarring, and formation of regenerative nodules leading to hepatic architectural distortion which is defined histopathologically and has a variety of clinical manifestations and complications, some of which can be life-threatening. It is characterized by the longest asymptomatic phase of compensated cirrhosis, followed by a decompensated phase characterized by the occurrence of its complications. The rate of transition is estimated to be 5%-7% per year and this period of transition is a critical step, which ends up in hepatic decompensation unless controlled [1, 2].

In the past, it has been thought that cirrhosis was never reversible; however, it has become apparent that when the underlying insult that has caused the cirrhosis has been removed, there can be reversal of fibrosis. This is most apparent with the successful treatment of chronic hepatitis C and hemochromatosis and in patients with alcoholic liver disease who have discontinued alcohol use. [5]

Regardless of the cause at the end most of the patients develop cirrhosis, the pathologic features consist of the development of fibrosis to the point that there is architectural distortion with the formation of regenerative nodules, results in a decrease in hepatocellular mass, and thus function, and alteration of blood flow. The induction of fibrosis occurs with the activation of hepatic stellate cells, which result in the formation of increased amounts of collagen and other components of the extracellular matrix.[5].

Common causes of cirrhosis are alcoholism, chronic viral hepatitis (HBV & HCV), autoimmune hepatitis, NASH, biliary cirrhosis, cardiac cirrhosis, inherited metabolic liver diseases (hemochromatosis, Wilson's disease, α1 Antitrypsin deficiency, cystic fibrosis) and cryptogenic cirrhosis. [5].

Clinical features of cirrhosis are the result of pathologic changes and mirror the severity of the liver disease and the manifestations of the complications. [5] Patients may have compensated cirrhosis or decompensated cirrhosis. Portal hypertension with its complications, ascites and bleeding from esophagogastric varices, signify decompensated cirrhosis. Loss of hepatocellular function results in jaundice, coagulation disorders, and hypoalbuminemia and encephalopathy are also other features of decompensated cirrhosis. The complications of cirrhosis like ascites, spontaneous bacterial peritonitis, gastroesophageal varices, hepatic encephalopathy, coagulopathy, renal failure, hypersplenism, malnutrition, etc are basically the same regardless of the etiology [5, 6].

Globally 1.4 million people die yearly because of CLD (from its complications) and also WHO estimated that over one million deaths in 2010, which equates to approximately 2% of all deaths worldwide were due liver cirrhosis [3, 4, and 40].

1.2. Statement of the Problem

Worldwide, the burden of CLD is increasing which is within the top 20 causes of disability-adjusted life years and years of life lost, accounting for 1.6% and 2.1% respectively.[36,53]. Of major causes of CLD, chronic hepatitis C (CHC) has been widely implicated for the recent increases in the incidence of HCC and is currently the main etiologic indication for liver transplantation in the United States. On the other hand, accumulating evidence suggests that nonalcoholic fatty liver disease (NAFLD)-related cirrhosis is rapidly becoming another important cause of CLD and HCC. In addition, individuals with NAFLD-related cirrhosis are less likely to undergo HCC screening and tend to present with larger metabolic syndromes related to overweight and obesity are the leading causes of cirrhosis and primary liver cancer in Europe (2). Also in USA, despite a recent decline in a number of other cancers, the incidence of HCC continues to increase, especially in men which was shown in a study in use to see the relationship between NAFD and HCC which again showed that NAFD may be a common underlying liver disease in patients with HCC. According to National Health and Nutrition Examination Surveys conducted between 1988 and 2008 in USA, prevalence rates for CLD were 11.78% (1988 –1994), 15.66% (1999 –2004), and 14.78% (2005–2008).(38,39).In Ethiopia as in other Sub-Saharan Africa, the prevalence of liver disease is high. They account for 12% of the hospital admissions as indicated in a study on epidemiology, prevention and treatment of viral hepatitis. (37).

Major complications of cirrhosis (which are also reasons of admission) include ascites, spontaneous bacterial peritonitis, hepatic encephalopathy, portal hypertension, variceal bleeding, hepatorenal syndrome, hepatic hydrothorax and portal vein thrombosis [4, 22, and 32].

Liver disease is a major cause of morbidity and mortality worldwide. Globally, liver cirrhosis was estimated to be responsible for over one million deaths in 2010, which equates to approximately 2% of all deaths worldwide as shown in world health statistics of WHO in 2010 G.C . Cirrhosis is currently the 11th most common cause of death globally and liver cancer is the 16th leading cause of death; combined, they account for 3.5% of all deaths worldwide [5, 40, 53].

In most cases, liver-related mortality results from complications of chronic liver disease (CLD) including advanced cirrhosis and hepatocellular carcinoma (HCC) [2]. CLD and complications of cirrhosis also are associated with severe impairments in health-related quality of life. Furthermore, CLD influences resource use, negatively contributing to well-being of the individual patient and society as indicated in a study on predictors of health related quality of life (HRQL) in patients with CLD in USA. (42).

Most of increased in CLD mortality has been reported from the low and low-middle income (LMIC) countries of Asia and Africa. It is intriguing to note that most countries in this region have very poor vital events reporting systems, indicating that the current data could underestimate the existing situation and complimentary approaches are needed to assess the overall impact of CLDs on health systems (32) (46) (47). The development of highly effective, well-tolerated, oral direct-acting antiviral (DAA) treatment regimens with high rates of cure has revolutionized the treatment of chronic HCV infection. Multiple etiological factors lead to a similar clinico-pathological syndrome in CLDs, although the rates of progression and clinical course may be different (48).There are several key reasons for current low rate of hepatitis testing in LMICs. These include the limited facilities or services for hepatitis testing, lack of effective testing policies or national standards due to weak or non-existent hepatitis surveillance programs to inform regional epidemiology and testing policies, costly and complex diagnostic assays and algorithms, poor laboratory capacity and infrastructure, and use of poor-quality test kits and reagents. In addition, in LMICs, HBV and HCV treatment remains unaffordable for those most in need, even if they have been diagnosed (49). Viral hepatitis places a heavy burden on the health care system because of the costs of treatment of liver failure and chronic liver disease. In Such end-stage treatments are expensive, easily reaching up to hundreds of thousands of dollars per person (50).Worldwide, overall, HBV accounts for around 45% of cases of HCC, 30% of cirrhosis and is responsible for about 650,000 people death from CHB complication with much higher proportions in LMICs. HCC is ranked among the top three causes of death in males, especially in South-East Asia. In Africa rural western Alaska and the Amazon, the incidence of HCC is also high in infected children and young male adults. HBV infection also causes a significant economic burden in terms of years of life lost from liver disease in high-income settings as well as LMICs, and accounts for 5–10% of liver transplants [43, 51].

In Ethiopia, liver disease account 31% of the mortality in medical wards of Ethiopian hospitals as indicated in a study on epidemiology, prevention and treatment of viral hepatitis. [37].From which, a study done on patterns of mortality in public and private hospitals of Addis Ababa, Ethiopia showed that chronic liver disease attributes to 2% of the overall deaths in Addis Ababa [41].

There are several key reasons for current low rate of hepatitis testing in LMICs. These include the limited facilities or services for hepatitis testing, lack of effective testing policies or national standards due to weak or non-existent hepatitis surveillance programs to inform regional epidemiology and testing policies, costly and complex diagnostic assays and algorithms, poor laboratory capacity and infrastructure, and use of poor-quality test kits and reagents. In addition, in LMICs, HBV and HCV treatment remains unaffordable for those most in need, even if they have been diagnosed (49).

Many researchers have investigated prevalence rate of viral hepatitis but there are only few studies done in relation to chronic liver disease and clinical characteristic of chronic liver disease and its etiologies in Sub-Saharan as general and Ethiopia in particular. So, this research can contribute to fill this gap and can be one indicator of future further researches.

Chapter Two

Literature Review

2.1. Epidemiology

Liver disease has a worldwide distribution. According to WHO 2010 G.C report , the world wide prevalence of CLD is 18.5% with prevalence of cirrhosis range from 4.5 to 9.5 %.[40].According to National Health and Nutrition Examination Surveys conducted between 1988 and 2008 in USA, prevalence rates for CLD were 11.78% (1988 –1994), 15.66% (1999 –2004), and 14.78% (2005–2008). [38,39]. According to Review of 260 European epidemiological studies published five Years before 2013 G.C about 0.1% of the European population is affected by cirrhosis, corresponding to 14-26 new cases per 100,000 inhabitants per year [44,45]. A Retrospective analysis of patients admitted to the medical wards of the University of Nigeria Teaching Hospital Ituku/Ozall showed that the commonest liver diseases were Primary Liver Cancer (44.3%) ,liver cirrhosis (20.4%)and 12.7 % of them were unclassified liver diseases.[28]

CLD is a common entity with male preponderance and affecting mostly people of the middle age group (31 to 50 years) as shown in Central Indian study which is also shown in a hospital based cross-sectional study done in three selected hospitals of Addis Ababa, Ethiopia with male preponderance (70.1% were male while 29.9% were female) with the set age range of 18 to 78 years of age and a median age of 39 [17,30] but the other retrospective case control study conducted in Addis Ababa , Ethiopia , on 812 CLD patients, the male/female ratio was 1 to 4 with the mean age 40.7 ± 15.4 years [17,29,30].

2.2. Causes, underlying disease and associated factors of CLD

The most common global cause of CLD from WHO report of 2010 G.C is HBV (43%), HCV (24%), ALD (19%), NAFLD (10%) and other causes contribute for about 5%. [40]. Worldwide, around 350 million people have chronic HBV, and another 170 million have chronic HCV

infection.[19]. According to National Health and Nutrition Examination Surveys conducted between 1988 and 2008 in USA, the underlying causes of CLD were NAFLD account for 75.1% of CLD, HCV and HBV were responsible for 2.05%, 1.68% and 0.034% of CLD during 2005-2008 respectively[38,39]. According to Review of 260 European epidemiological studies, the four leading causes of cirrhosis and primary liver cancer are harmful alcohol consumption, viral hepatitis B and C and metabolic syndromes related to overweight and obesity. In Asia, more than half of the liver cirrhosis burden is attributable to hepatitis B and hepatitis C. Hepatitis B accounted for 44% and 42% of DALYs from liver cirrhosis estimated for East Asia and Central Asia, respectively, in 2010. [44, 45].

A study done in the University of Nigeria Teaching Hospital putative etiological and risk factors were HBV infection (49.4%), HCV infection (8.4%), alcohol consumption (52.1%), cigarette smoking (30.1%), use of native herbs and roots (45.5%), and family history of liver disease (10.6%) among patients with liver cirrhosis (28).The World Health Organization (WHO) has estimated the prevalence of HBV, HCV infections and alcohol intake in sub-Saharan Africa to be 10%, 3% and 18% respectively [44,45].

According to retrospective case control study conducted in Addis Ababa on 812 CLD patients treated during 2013 in a Clinic for Gastroenterology and Hepatology the most common etiologies of chronic liver disease were hepatitis B infection (57.5%) followed by hepatitis C infection (17.1%). Studies done in selected teaching hospitals of Ethiopia showed the exposure of infection (presence of any markers of infection for HCV & HBV) was found to be 1.4% and 68% respectively [3, 4, 19, 29]. According to a hospital based cross-sectional study done in three selected hospitals of Addis Ababa, Ethiopia, showed that from 117 samples of clinically diagnosed CLD patients 34.2% of them were HBsAg positive, 18.8% were Anti- HCV positive, while 9.4% samples were positive for HIV. Concerning to confection 3.4% were HBV / HIV positive, 2.5% were HCV/HIV and 2.5% were HCV/HBV [30].

A cross-sectional study was undertaken between April 2015 and April 2016 in two public hospitals in Harar, eastern Ethiopia, on unexplained chronic liver disease showed that chronic hepatitis B virus infection was found in around one-third of patients admitted with CLD. However, in over 50% of the patients, the etiology of the liver disease was unexplained. The prevalence of khat chewing was much higher in the CLD patients than the expected

one,suggesting khat has an effect and/or independent risk factor for the development of CLD in this part of Ethiopia[16].

Studies done in Eastern Ethiopia and Jimma Zone where khat is available and used frequently showed that CLD is increased among khat chewers (adults age 15-49) unlike adults of the same age group of northern Ethiopia .The possible explanation for this might be the availability of khat in this area (an indigenous chewing plant used as a stimulant in some parts of Ethiopia, especially in the eastern part of the country), as khat chewing is a risk factor for CLD [18, 20]. This plant is a cash crop in both communities of Kersa and Butajira, compared to the Kilte Awlalo district communities of northern Ethiopia [18]. There are multiple case reports which implicate khat as a risk factor in the development of both acute & chronic liver disease. Also, khat related hepatotoxicity/liver injury has been convincingly demonstrated in animal models. The fact that khat use was similar amongst patients with & without other risk factors indicated that it may act as a sole/determinant or an adjuvant cause/risk factor of liver injury. Although only a few liver biopsies were undertaken, the histological findings of focal parenchymal changes mirror those observed in animal models and are supportive of toxic liver injury/herbal induced liver injury. [16].

2.3. Complications of CLD

Globally, there are multiple studies on complications of CLD and global burden of liver disease which shows that the common complications are variceal hemorrhage, ascites, SBP, hepatic encephalopathy, HCC, hepatorenal syndrome, hepatic hydrothorax and portal vein thrombosis but the exact figure was difficult to determine because of very sparse data from some some regions of the world, particularly from Africa. [22, 32]**.**

A study done in India showed that mode of presentation of patients with chronic liver disease was an important consideration taken in the study, ascites in 52% of patients followed by jaundice in 40%, and GI bleeding in 24%. People presenting to clinics were at a fairly advanced stage with frank symptoms of CLD like ascites, jaundice, and history of gastrointestinal bleeding present in most of them. Few patients may also present with the life-threatening condition of hepatic encephalopathy (HE). In the same study the common complications of CLD identified during admission were ascites in 56.8%, hepatic encephalopathy (HE) in 27.2%, variceal UGI bleeding in 17.3%, spontaneous bacterial peritonitis (SBP) in 4.9%, hepatorenal syndrome

(HRS) in 1.2%, and hepatopulmonary syndrome (HPS) in 1.2%. A total of 34.6% of the patients presented with some grade of kidney failure upon hospital admission. [8]. Another study done in the same country on complication patterns in patients with CLD at tertiary care center indicates these patients develop ascites (87.1%), jaundice (69.4%), gastrointestinal bleeding (48.4%), peripheral edema (46.8%), encephalopathy (24.2 %) and decreased appetite (48.4%)[13] .

A retrospective observational cohort study done in Singapore in 2015 on Epidemiology and Clinical Evolution of Liver Cirrhosis showed that the clinical presentation of 83% were compensated and 17% of cirrhotic presented with decompensated cirrhosis disease at diagnosis. The most common decomposition events were development of ascites (16.8%) and hepatic encephalopathy (14.4%), Variceal bleeding (9.8%), jaundice (6.7%) and SBP (4.6%) occurred less often. On multivariate analysis, only age at diagnosis of cirrhosis, presence of portal vein thrombosis, Child-Pugh class and decomposition within 1 year of diagnosis were identified as independent predictors for mortality.[35].

A study on epidemiology and frequency of complications of CLD in Africa is lacking but in Ethiopia there was a study from July 1986 up to April 1989 which showed that patients commonly present for the first time with complications like ascites, splenomegaly, hematemesis and/or melena from esophageal avarices, and mental changes due to hepatic encephalopathy which again lacks the exact figure of these complications. [37].

According to a study done in Ethiopia from July 1986 up to April 1989, patients commonly present for the first time with complications like ascites, splenomegaly, hematemesis and/or melena from esophageal avarices, and mental changes due to hepatic encephalopathy. [37].

2.4. Morbidity and Mortality of CLD

CLD has significant public health and economic impact. According to the Global Burden of Disease study (GBD), CLD had caused an estimated 1,322,867.92 mortality (2.36% of the all-cause mortality), and 41,397,987.89 Disability-Adjusted Life Years (DALYs) in the year 2017 which is mainly among individuals with viral hepatitis, non-alcoholic fatty liver disease, and alcohol abuse. . In 2015, the Centers for Disease Control and Prevention (CDC) reported estimated mortality of 40,326(1.5% of total deaths) attributed to CLD, making it to rank 12th among the 15 major causes of death (4, 20, 21, 35).

Globally 1.4 million people die yearly because of CLD and also WHO estimated that over one million deaths in 2010, which equates to approximately 2% of all deaths worldwide were due liver cirrhosis [3, 4, and 40]. According to National Health and Nutrition Examination Surveys conducted between 1988 and 2008 in USA, liver disease is currently the 12th leading cause of death in the United States [38,39] .In Europe cirrhosis is responsible for 170,000 and 47,000 deaths per year [44,45].

The burden and impact of liver disease is rising, due in part to the increasing prevalence of the non-alcoholic fatty liver disease, hazardous alcohol consumption, and chronic viral hepatitis B (HBV) and C (HCV). In Australia, liver disease, including fatty liver, affects more than a quarter of the population, and in 2012 the health costs of treating liver disease were estimated to be $ 432 million. Regardless of the cause, most of the morbidity and mortality from CLD occur among patients with advanced fibrosis or cirrhosis, who are at risk of developing complications of CLD which are again the causes of morbidity and mortality [6].

A study done in India on hospital mortality in cirrhotic patients at a tertiary care center showed that the inpatient mortality rate was 23.5% and that there was no significant (major) differences were found in the distribution of patient profiles (age, sex, the region of birth, educational level, or prevalence of comorbidities). There were also no significant differences concerning alcohol consumption between survivors and nonsurvivors, and the etiology/cause distribution was similar between those 2 groups. The most common cause of death was septic shock (68.4%), followed by hypovolemic shock (10.5%), liver carcinoma (10.5%), and acute renal failure (ARF) (5.3%).[8]. A retrospective study done in Australia in 2015 on Burden of decompensated cirrhosis and ascites on hospital services in a tertiary care facility showed most admissions (80.3%) were for the management of ascites, of which 41.2% were unplanned. Of those eligible, 69.7% were readmitted and 42.4% had early unplanned readmission. Of those eligible for readmission, more patients died and/or developed spontaneous bacterial peritonitis if they had early unplanned readmission during the study period [6].

A study done in Brazil on in-hospital mortality of cirrhotic patients showed that in-hospital mortality was 23.5% and the most frequent cause of death was a septic shock (68.4%), followed by hypovolemic shock (10.5%). [17]. Another research done in Sydney on cirrhosis outcomes, the HCC mortality rates were highest in NAFLD and CHB cirrhosis groups (3.0 and 3.1/100

patient-years respectively), compared with ALD and CHC groups (2.2 and 1.4 / 100 patient-years). Patients with ALD and NAFLD cirrhosis had the highest all-cause and non-HCC mortality rates compared with viral hepatitis cirrhosis. [19, 20]

Accurate epidemiological data on liver-related mortality in sub-Saharan Africa are lacking, and verbal autopsy remains the predominant method of ascertaining the cause of death, which is highly likely to underestimate the true burden of disease [32]. In Sub-Saharan Africa, GBD reported an estimated number of 157,558.69 deaths (2.11% of the all-cause mortality) due to chronic liver disease in 2017. In this year, in Ethiopia, an estimated 16,068.94 deaths were attributable to CLD .Of all-cause deaths attributed to CLD in Ethiopia. However, data from Ethiopia are scares, and the burden of CLD is likely to be grossly underestimated. Only a few studies have been carried out in our country, Ethiopia, previously, reporting that CLD ranks among the top ten causes of hospital admission (12%) and mortality in the medical ward (31%) in the adult population, with large geographical variations. However, most of the previous studies were old, and retrospective [4,35,37]

A study of short-term clinical outcomes of patients admitted with chronic liver disease to selected teaching hospitals in Ethiopia showed that the 30-day mortality was 34.9%, and most of the deaths, (81.6%) occurred before hospital discharge/while inpatient. Hepatic encephalopathy at admission; being with unidentified risk factor/etiologies of CLD and total bilirubin level were independent predictors of in-hospital mortality. Patients with hepatic encephalopathy (HE) at admission had about 11 times increased risk of death as compared to patients without HE at admission. Similarly, the risk of mortality was 5.8 times higher in those patients with unidentified risk factors as compared to others. The risk of dying had also increased with an increase in bilirubin [1]. HE development was independently associated with previous HE episodes; survival probabilities worsen about the presence and grade of HE. There were marked differences between HE associated and not associated with acute-on-chronic liver failure (ACLF). Hepatic encephalopathy not associated with acute on chronic liver failure (ACLF) occurred in older cirrhotics inactive drinkers, without severe liver failure or systemic inflammatory reaction and in relation to diuretic use. In contrast, HE associated with ACLF occurred in younger cirrhotics, more frequently alcoholics, with severe liver failure and systemic

inflammatory reaction, and in relation to bacterial infections, active alcoholism, and/or dilutional hyponatremia.[11, 12]

A Research done in Eastern Ethiopia indicates that the analysis of the ten top specific causes of death based on these adult age groupings showed that among the age group 15–49 years, chronic liver disease was the major cause of mortality (13.7%), followed by tuberculosis (TB)(11.4%), and then intestinal infectious diseases (9.1%). Among middle-aged adults (50- 64 years of age), intestinal infectious disease was the leading cause of death (17.0%), TB was the 2nd leading (14.3%), followed by cardiovascular diseases (CVD) (8%)[18].

Studies done in Eastern Ethiopia and Jimma Zone showed that, in terms of specific causes of death, a nearly similar proportion of deaths were reported due to CLD among adults age 15–49 years in both communities (13.7% for Kersa HDSS and 11.3% for Butajira HDSS). In contrast, chronic liver disease was the least contributing cause of death (3.5%) among adults aged 15–49 years in rural communities of the Northern part of Ethiopia. The possible explanation for this might be the availability of khat in this area (an indigenous chewing plant used as a stimulant in some parts of Ethiopia, especially in the eastern part of the country), as khat chewing is a risk factor for CLD as explained above [20].

4. Conceptual Framework

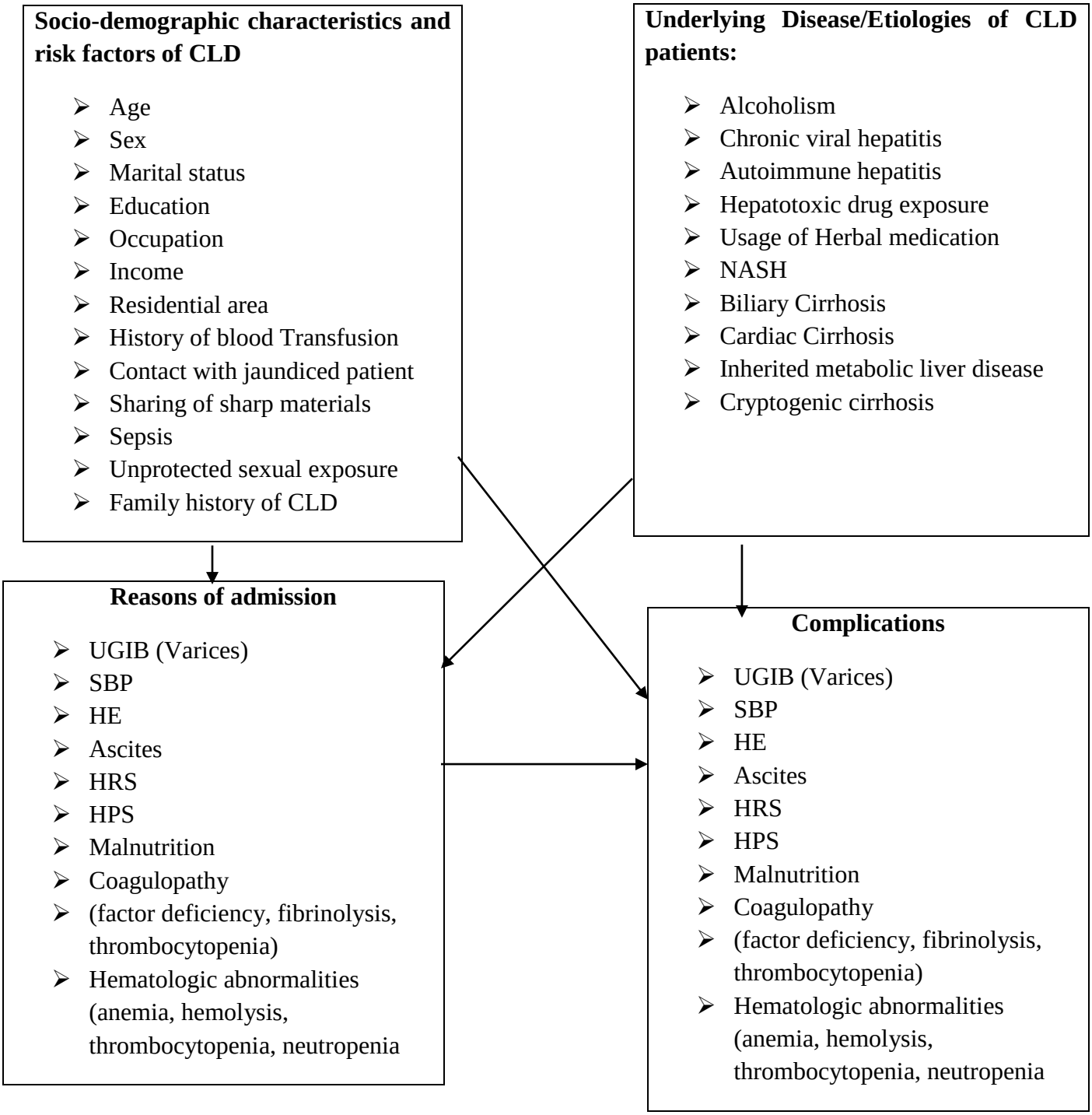

Figure 1: Conceptual framework of the study

2.5. Significance of the Study

There are no adequate researches that can show the causes of admission and patterns of complications of chronic liver disease in the medical ward of JUMC. Therefore, it is important to study and know these variables and data that will provide information on reasons of admission and complications as well as the associated factors of complications occurring in admitted chronic liver disease patients. Also, the findings of this study will help as a starting point and input for further studies, for improvement of hospital care of the CLD patients and will assist in the avoidance of unnecessary admissions. It will also help the hospital to fulfill the necessary diagnostic and therapeutic equipment's for CLD patients.

Chapter Three

Objectives

3.1. General Objective

To assess reasons of admission and identify complications with its associated factors of CLD patients admitted to the medical ward of JUMC, from September 11/ 2018 – September 10/2020 G.C

3.2. Specific Objectives

1. To assess reasons of admission of CLD patients admitted to the medical ward of JUMC from September 11/ 2018 – September 10/2020 G.C
2. To assess the complications of CLD patients admitted to the medical ward of JUMC from September 11/ 2018 – September 10/2020 G.C
3. To identify factors associated with complications of CLD patients admitted to the medical ward of JUMC, from September 11/ 2018 – September 10/2020 G.C

Chapter Four

Method

4.1. Study Area and Period

The study was conducted in Jimma University Medical Center, medical ward, Jimma town which is located in the Oromia region, southwest of Ethiopia with an estimated population of 2,486,155. The town is located 346 KM from the capital, Addis Ababa.

JUMC is one of the teaching hospitals in the country which serves as a referral hospital for southwestern Ethiopia including the Jimma zone. Jimma University runs both undergraduate and postgraduate programs in several disciplines. The hospital gives health service at the inpatient and outpatient levels as a specialized Hospital for about more than 15 million populations in the South West of Ethiopia. It has general medical wards and sub-specialty units with a total of 120 beds. Internal medicine has wards for inpatient, many follow-up clinics including gastrointestinal and hepatology cases where care and service are delivered for patients by trained nurses, medical interns, residents, and specialists.

From September 11, 2018, to September 10, 2020 G.C, a total of 3484 patients were admitted to the medical ward of JUMC. Of this number of admitted patients, 96 of them were chronic liver disease patients.

The study was conducted from September- October, 2020G.C.

4.2. Study Design

A facility-based retrospective cross-sectional study design was employed

4.3. Population

4.3.1. Source population

All adult (age ≥ 15 years) patients admitted with the diagnosis of chronic liver disease to the medical ward of JUMC from September 11/2018 to September 11/2020 G.C

4.3.2. Study population

All adult(age ≥ 15 years) patients admitted to the medical ward with the diagnosis of chronic liver disease from September 11, 2018, to September 10, 2020 G.C for whom inclusion criteria was fulfilled.

4.4. Sample Size Calculation and Sampling Techniques

No sampling method used for this study since all available charts of patients with the diagnosis of chronic liver disease who had been admitted to the medical ward from September 11, 2018-September 10, 2020 G.C were revised in the study(six charts and computer records were not found).

4.5. Eligibility Criteria

4.5.1. Inclusion Criteria

All adult patients (age ≥ 15 years)) admitted to the medical ward of JUMC with the diagnosis of CLD diagnosed clinically and by available diagnostic modalities during the study period.

Chronic Liver Disease (CLD) - is a disease of the liver which has persisted for six or more months without complete resolution [23].

4.5.2. Exclusion criteria

1. CLD patient but admitted due to unrelated reasons.

2. The patients for which medical records (history, physical examination, and /or needed investigation) are either not done or lost without documenting on the charts and backup information is not available such as a computerized database.

4.6 Study variables

4.6.1. Dependent Variables

- Reasons of admission of CLD Patients
- Complications occurred in the admitted CLD patients (after admission, before discharge)
- Underlying diseases of CLD

4.6.2. Independent Variables

- Age
- Sex
- Alcohol consumption
- History of Blood transfusion
- Unprotected sexual exposure
- Hepatotoxic drug exposure
- Usage of Herbal medication
- Sepsis
- Sharing of sharp materials
- Family history of CLD
- Contact with jaundiced patient
- Residential area

4.7. Operational definition

- **Acute liver disease**: -Is liver diseases which resolve within sixth months [23].
- **Chronic Liver Disease (CLD)**: is a disease of the liver which has persisted for six or more months without complete resolution [23].
- **Aspartate aminotransferase to Platelets Ratio Index (APRI) score**; - calculated by (AST elevation/platelet count) x 100 in which the sensitivity and specificity for fibrosis depend on the cut-offs used.
- APRI <=0.3: Unlikely cirrhosis or significant fibrosis
- APRI >0.3 and <=0.5: Unlikely cirrhosis, significant fibrosis possible
- APRI >0.5 and <=1.5: Significant fibrosis or cirrhosis possible
- APRI >1.5 and <=2: Likely significant fibrosis, cirrhosis possible
- APRI >2: Likely cirrhosis [22].

- **Compensated cirrhosis: -** Cirrhosis patients who did not develop major complications. Patients with varices but who have not developed variceal bleeding are considered to have compensated cirrhosis, but their prognosis is worse than that of patients who have compensated cirrhosis with no varices [22, 23].
- **Decompensated cirrhosis** (Child-Pugh score ≥12 or a Model for End-stage Liver Disease (MELD) score ≥21) - Patients who have developed complications of cirrhosis, such as variceal hemorrhage, ascites, spontaneous bacterial peritonitis, hepatocellular carcinoma, hepatorenal syndrome, or hepatopulmonary syndrome, are considered to have decompensated cirrhosis and have a worse prognosis than those with compensated cirrhosis. [22, 23].
- **The normal value**-laboratory value within the laboratory reference ranges.
- **Significant alcohol consumption**: - more than two drinks (22–30 g) per day in women and three drinks (33–45 g) in men.[22]
- **Cirrhosis** - development of liver fibrosis to the point that there is architectural distortion with the formation of regenerative nodules, which results in decreased liver function and alteration of blood flow.[6]
- **Hepatic encephalopathy** - a spectrum of potentially reversible neuropsychiatric abnormalities seen in patients with liver dysfunction and/or portosystemic shunting.[6]
- **Hematemesis** - vomiting of blood or coffee ground-like material.[6]
- **Melena** -black, tarry stools[6]
- **Normal values** [22]

  ALT; - 0-40 U/L

  AST; - 0-40 U/L

  TB; - 0.3–1.3 mg/dL

  DB; - 0.1–0.4 mg/Dl

  PL; - 150–450 × 109/l

4.8. Data collection procedures

4.8.1. Data collection

Data was collected by trained data collectors by reviewing charts of patients admitted to JUMC Medical Ward with a diagnosis of CLD. A structured data collection tool (checklist) prepared in

the English language was used to collect the data. The tool was adapted from different relevant literatures. It has four parts. The first part will contain questions about socio-demographic variables; the second part questions about the reasons of admission, complications, and underlying causes (etiologies) of chronic liver disease; the third part - laboratory and imaging findings, and the last part-the condition of these patients at discharge.

4.8.2. Personnel

The data collectors were 4 trained nurses on the way of collecting clear, full, and non-biased data. The training included the ways of prevention of covid-19 while collecting data. There were two supervisors (year one internal medicine residents).

4.9. Data quality control

The quality of data was assured through careful design, proper training of the data collectors and supervisors on the data collection procedures. Before data collection, two days of training was given for data collectors and supervisors about the aim of the study, procedures, and data collection technique questions by the question to have a common sense/understanding of all questions. In order to assure the completeness of the data collection tool, the collected data was checked daily by supervisors and the investigator, and the necessary feedback was offered to data collectors the next day (morning) before starting the data collection of the day.

4.10. Data processing and analysis plan

The collected data was coded, entered, cleaned and analyzed using SPSS statistics Version 20.

A descriptive statistic was used to describe categorical variables as frequencies and percentages while continuous data was described. The potential predictor variable was tested in bivariate analyses separately for their association. The variables which are significant in the bivariate analysis at a cut point of P-value of < 0.05 were a candidate for bivariate logistic regression analysis. Then, the candidate variables were entered to employ multiple logistic regression analyses using the backward elimination method. In the final model, adjusted odds ratios (AORs) with their corresponding CIs and P-Value < 0.05 cut-off points was used to identify the independently associated factors to the dependent variable of the study.

4.11. Ethical Considerations

Ethical clearance was obtained from Jimma University College of public health and medical sciences Ethical review committee. An official letter was obtained from the department of

internal medicine and was given to the responsible body at the chronic illness clinic and information obtained from the records was kept confidential by not recording participants' name and their phone numbers on the checklist. Besides, the checklists were put in a closed cabinet in the internal medicine department until the publication of the study. Also, this subject matter was kept confidential if the next research is needed.

4.12. Dissemination of Result

The findings of the study were disseminated to all relevant stakeholders like Jimma University, Clinicians, researchers, and others through presentations (seminars) and publication. Copies of the research were given to Jimma University, Faculty of public health postgraduate program, and the Department of Internal Medicine. Publication in national or international journals will also be considered.

4.13. Limitation of the study

This retrospective study has some limitations. These include, it has relatively small number of participants, covers relatively short period of time and done only in one institution which may make it unrepresentative of the wider area like national, continental or international levels.

Except ascites, association of independent variables to other complications of CLD was not done due to small size of the sample.

Chapter Five

Result

5.1. Socio demographic characteristics

In this retrospective study, 90 patients with chronic liver disease admitted in the medical ward of JUMC from September 11/ 2018 to September 10/2020 G.C were included. Majorities (85.6%) of the patients were males, and the remaining 14.4% were females. Of 70% of the patients came from outside of Jimma town and the rest 30% from Jimma. Thirty-nine (43.3%) of the study participant patients were married. From all participants 41.1% of them were older than 45 years; the mean age was 50.5±19.5 years with an age range of 15-88 years. Thirty four (37.8%) of the study participants had the background of education up to grade 10 and 21.1% completed Diploma and 16.7% of CLD patients were not involved in formal academic activities /not attend formal school (Table 1).

Table 1: Socio demographic characteristics of patients with Chronic liver disease admitted at JUMC from September 11/ 2018 – September 10/2020

Socio-demographic characteristics	Category	Frequency N=90	Percentage
Age	15-24	11	12.2
	25-34	22	24.4
	35-44	20	22.2
	>45	37	41.1
Gender	Male	77	85.6
	Female	13	14.4
Residence	Jimma Town dwellers	27	30.0
	Outside of Jimma Town	63	70.0
Marital status	Married	39	43.3
	Unmarried	46	51.1
	Divorced	5	5.6
Educational status	Not attend formal school	15	16.7
	Up to grade 6	13	14.4
	Up to grade 10	34	37.8
	Diploma	19	21.1
	Degree	9	10.0

5.2. Clinical diagnosis and risk screening history of CLD patients

Regarding the clinical presentation, abdominal distension (84.4%), easy fatigability (55.6%) and loss of appetite (40%) were the common complaints of CLD patients who had been admitted at JUMC during the study period.

Related to the risk factors, unvaccination to HBV (100%), unprotected sexual exposure (31.1%) ,significant alcohol consumption(15.6%), use of herbal medications (10%) and exposure to hepatotoxic medications (3.3%) were common but there was no sharing of sharp materials, contact with jaundiced patient(s), family history of CLD or history of blood transfusion among the study participants during the study period.

Table 2: Clinical diagnosis and risk screening history of the study participants at JUMC from September 11/ 2018-September 11/2020

Characteristics	Category	Frequency N=90	Percentage
Presentation			
Abdominal swelling	Present	76	84.4
Easy fatigability	Present	50	55.6
Hematemesis	Present	19	21.1
Melena	Present	19	21.1
Behavioral change	Present	15	16.7
Nausea, vomiting	Present	27	30.0
Loss of Appetite	Present	36	40.0
Jaundice	Present	12	13.3
Risk screening history			
Significant alcohol consumption	Yes	14	15.6
	No	76	84.4
Blood transfusion	No	90	100.0
Unprotected sexual exposure	Yes	28	31.1
	No	62	68.9
Herbal medication	Yes	9	10.0
	No	81	90.0
Hepatotoxic medication exposure	Yes	3	3.3
	No	87	96.7
No HBV immunization	Yes	90	100.0
Family history of CLD	No	90	100.0
Contact with jaundiced patient(s)	No	90	100.0
Sharing of sharps	No	90	100.0

5.3. Laboratory investigation of CLD patients

Table 3: Laboratory investigation of the study participants at JUMC from September 11/ 2018-September 11/2020

Characteristics	Reference Range	Investigation (N=90)		
		Low	Normal	High
WBC	3.2-11x10^9/L	19 (21.1)	61(67.8)	7(7.8)
Hgb	12-18g/dl	41(45.6)	47(52.2)	2(2.2)
PTL	150-450U/L	16(17.8)	68(75.6)	4(4.4)
ALT	10-40 U/L	3(3.3)	30(33.3)	57(63.3)
AST	10-40 U/L	2(2.2)	41(45.6)	47(52.2)
ALP	20-140 U/L	7(7.8)	8(8.9)	59(65.6)
TB	0.3-1mg/dL	4(4.4)	14(15.6)	30(33.3)
DB	0.1-0.3 mg/dL	2(2.2)	8(8.9)	26(26.7)
Creatinine	0.5-1.3 mg/dL	1(1.1)	65(72.2)	24(26.7)
BUN (mg/dl)	7-21mg/dL	1(1.1)	87(96.7)	2(2.2)
Serum albumin(mg/dl)	3.5–5.5 g/dL	4(4.4)	72(80.0)	8(8.9)
FBS (mg/dl)	70-100 mg/ dL	3(3.3)	10(11.1)	11(12.2)
LDL (mg/dl)	<100 mg/dL	2(2.2)	12(13.3)	8(8.9)
HDL (mg/dl)	<50 mg/dL	1(1.1)	10(11.1)	7(7.8)
Total cholesterol(mg/dl)	<130mg/dl	2(2.2)	9(10.0)	4(4.4)

5.4. Etiology, cause of admission and complication of CLD patients

In this retrospective study, the most common reasons for admission were ascites (56.7%), ascites and encephalopathy (30.0%), splenomegaly (25.6%), portal hypertension (10%) and the most common complications of admitted CLD patients were ascites + encephalopathy (30.0%), UGIB + anemia (21.1%), ascites (21.1%), hepatoma +splenomegaly (11.1%), splenomegaly (8.9%) and hepatocellular carcinoma (2.2%). Regarding etiology; HBV (21.1%), alcohol (17.8%), HCV (8.9%), herbal medication (6.7%) and HBV & HCV co-infection (1.1%) were found, but 44.4% of the study participants' etiology of the CLD were unknown.

Table 4: Peritoneal fluid analysis, Risk factors/etiologies of CLD, and ultrasound findings of the CLD patients admitted at JUMC from September 11/ 2018-September 11/2020

Characteristics	Admitted CLD patients	
	No	%
Peritoneal fluid analysis (n=71)		
Lymphocyte	56	78.87
Neutrophils	15	21.13
Ultrasound findings (n=90)		
Ascites	51	56.7
CLD+ Splenomegaly	23	25.6
Cirrhosis+ Portal HTN	9	10.0
Irregular liver	4	4.4
heterogeneous (HCC)	3	3.3
Diagnosis (n=90)		
CLD	61	67.8
Ascites	19	21.1
Splenomegaly	8	8.9
Hepatocellular carcinoma	2	2.2
Known Risk factors/Etiology (n=90)		
HBV	19	21.1
Alcohol	16	17.8
HCV	8	8.9
Herbal medication	6	6.7
HBV&HCV	1	1.1
Unknown factors	40	44.4
Reason of admission (n=90)		
Ascites	24	26.7
Ascites + Encephalopathy	27	30.0
UGIB + Anemia	19	21.1
	10	11.1

Hepatocyte + Splenomegaly	6	6.7
Encephalopathy +Impaired Ascites + SBP + Encephalopathy	4	4.4
Complications (n=90)		
Ascites	24	26.7
Ascites + Encephalopathy	27	30.0
UGIB + Anemia	19	21.1
Hepatocyte + Splenomegaly	10	11.1
Encephalopathy +Impaired Ascites + SBP + Encephalopathy	6	6.7
	4	4.4

5.5. Factors associated with complications (Ascites) of CLD patients

As shown in table 5, the multiple logistic regression analysis of selected independent variables (age, sex, marital status, residence and educational status) had no statistically significant association to ascites as a complication of CLD patients included in this study.

Table 5 : **Binary logistic regression analysis of factors association to CLD complication (Ascites) of admitted patients at JUMC from September 11/ 2018-September 11/2020.**

Variables	Ascites		COR (95%CI)	AOR (95%CI)	P-value
	Yes	No			
Age					
<30 years	19(65.5)	10(34.5)	1.32(0.53, 3.31)	2.36(0.80, 6.95)	0.12
>30 years	36(59)	25(41)	1	1	
Sex					
Male	47(61)	30(39)	0.98(0.29, 3.28)	1.12(0.29,4.23)	0.87
Female	8(61.5)	5(38.5)	1	1	
Marital status					
Married	36(64.4)	20(35.7)	1.42(0.60, 3.39)	0.73(0.28, 1.94)	0.53
Unmarried	19(55.90)	15(44.1)	1	1	
Residence					
Urban	14(51.2)	13(48.8)	0.58(0.23, 1.47)	0.50(0.19, 1.33)	0.17
Rural	41(65.1)	22(34.9)	1	1	
Education status					
<Grade 10	19(57.6)	14(42.4)	0.79(0.0.33, 1.93)	0.73(0.28, 1.90)	0.52
>Grade 10	36(63.2)	21(36.8)	1	1	

Table 6.Comparison of HBV and HCV infections with age and gender

Variables		Investigation of hepatitis viruses			
		HBsAg		HCV	
		Positive	Negative	Positive	Negative
Age	<30 years	5 (5.7)	23 (26.1)	2 (2.4)	26 (31.3)
	>30 years	16 (18.2)	44 (50.0)	7 (8.4)	48 (57.8)
Sex	Male	15 (17.0)	60(68.2)	9 (10.8)	62 (74.7)
	Female	6 (6.8)	7(8.4)	-	12 (14.5)

Chapter Six

Discussion

A facility-based retrospective cross-sectional study design was employed. Data was collected by reviewing of charts of CLD patients who had been admitted to the medical ward of JUMC from September 11/ 2018 to September 10/2020 G.C using a checklist containing the reasons of admission, complications, and underlying causes of chronic liver disease; laboratory and imaging findings.

The gender of CLD patients in this study showed that male predominance (85.6%) and majorities (41.1%) were in age group of above 45 years. Only 30% of them were from Jimma town. These are consistent with Hospital based cross-sectional studies conducted in Addis Ababa, except majority of participants in the latter studies were urban dwellers (27) (30). An explanation for variation in residency may be due to difference in study area, the latter study was conducted in Addis Ababa city while my study includes all coverage of JUMC, where most of patients are from rural area. Study done at Calabar University and metacentric study in India also show similar finding of male predominance (27; 26).

The most common etiology of chronic liver disease from identified was hepatitis B infection (21.1%) followed by alcohol (17.8%) and hepatitis C infection (8.9%),herbal medication (6.7%) and HBV and HCV co-infection (1.1%). But in majority of patients (44.4%) with chronic liver disease, that cause CLD was not identified. These are consistent with studies conducted in Addis Ababa (29) (30) (1) (10) (6), but sero-status for anti-body to HCV were higher in those study than my study. This is probably due to those study were focus at urban areas where intravenous drug use might be higher than my study area. The result of other studies like retrospective analysis of patients admitted at medical wards of Nigeria University and retrospective observational cohort study in Singapore's (28) (24) are almost consistent with the result of this study. However unclassified cause of chronic liver disease was high (44.4%) in my study compared to other studies which is most likely due to lack of documentation, scanty of certain investigation modalities to diagnosis other cause of CLD like NAFLD ,autoimmune hepatitis, biliary cirrhosis and etc. Not only what mentioned, but also all of them were categorized as unclassified etiologies in my study.

According to this study, the prevalence of HBV was 2.5 times higher in male patients than in female. This is in accordance with a previous study from Addis Ababa and metacentric study conducted in India (29) (26). But in this study there was no HCV antibody positive female patient which is not consistent with other studies may be due to small size of the sample and the study area which covers more of the rural areas.

Age of HBV among CLD patients in my study showed that 18.2% of them were older 30 years. The highest proportion was observed in this age. A comparable older age distribution of HBV among CLD patients has been reported from Addis Ababa and metacentric study in India (29; 26).

Chronic liver disease patients' positive for HCV showed that majority (8.4%) of them were 30 years or more. This is consistent with a previous study in Addis Ababa and study of chronic hepatitis C virus infection in sub-Saharan Africa (29) (32) (33). This age distribution may reflect different risk factors and behaviors are important for transmission of HBV and HCV. The prevalence of HBV is high among the young people and low older age. This supports the concept that transmission of HBV primarily occurs through sexual contact. HCV transmission is most often through risk factors studied were multiple sexual partners, blood transfusions, and history

of STD/STI, ear piercing, uvuloctomy, tattooing , contact with jaundiced patient, alcohol consumption (30).

All of the study participants had decompensated chronic liver disease at admission. In opposite to this study, retrospective observational cohort study of cirrhotic patients at clinic of Singapore's (24) showed that eighty-three percent of patients had compensated chronic liver disease. This difference may be reflects differences in awareness of patients, availability and affordability of health facilities and geographical variation.

In my study, abdominal swelling was the most common (84.4%) presentation, easy fatigability (55.6%) and loss of appetite (40%) of patients which has similarity with the study of conducted in India (13).

The most common decomposition events were development of ascites with or without other complications (65.5%) and hepatic encephalopathy (30.0%), upper gastrointestinal bleeding (21.1%), hepatoma (2.2%) and splenomegaly (8.9%). These are consistent with studies conducted in Addis Ababa, retrospective study at liver unit of Bir Hospital and retrospective observational cohort study of at clinic of Singapore's (31) (25) (24)(13) (17).

Furthermore, age, sex, marital status, residence and educational status had no statistically significant association to ascites as a complication of CLD patients included in this study which is also the same in other studies (20).

Chapter seven

Conclusion and Recommendation

7.1. Conclusion

Chronic liver disease is the endpoint of continual liver damage by enciting factors. It is the most common route to hepatic failure and often ends in cirrhosis (diffuse process characterized by fibrosis and the conversion of normal liver architecture into structurally abnormal nodules).

The common reasons of admission were ascites, encephalopathy, splenomegaly, portal hypertension and the common complications of admitted CLD patients are ascites, encephalopathy, UGIB, anemia, ascites, hepatoma and hepatocellular carcinoma. Regarding etiology, HBV, alcohol, HCV, herbal medication and HBV & HCV co-infection were common but some of the study participants' etiology of the CLD was unknown.

7.2. Recommendation

This research is retrospective study conducted on Chronic Liver Diseases in Jimma medical center, Ethiopia. Based on the study, the gastrointestinal unit of JUMC should be well organized to deal with chronic liver disease by performing more studies and establishing diagnostic and/or therapeutic center as this study showed many of CLD patients (44.4%), the underlying cause/etiology is not determined/identified. There should also be educational programs to raise awareness about chronic liver disease in general; the role HBV and its vaccination, alcohol and HCV in particular, as well early medical seeking behavior of the community and diagnosis of chronic liver disease.

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Annex 1: Information Sheet

Topic: Reasons of Admission and Identification of Complications of Chronic Liver Disease Patients Admitted To Medical Ward of Jimma University Medical Center from September 11, 2018 – September 10, 2020 G.C

Principal Investigator: Baweke Wassie (Resident)

Organization: Jimma University, College of Health Sciences

Sponsor: Jimma University, College of Public Health and Medical sciences

Purpose of the Research Project

To assess reasons of admission and identify complications with its associated factors of CLD patients admitted to the medical ward of JUMC, from September 11, 2018 – September 10, 2020 G.C

Procedure

The study involves patients admitted to the medical ward in the study period. Trained hospital staff, clinical nurses, and residents were included for this purpose.

Benefits, Risk, and /or Discomfort

There is no risk from being involved in the study as there will not be any invasive procedure and patients may benefit from this project if results suggest the need for further investigation or follow-up.

Confidentiality

The personal information collected from the individual participants' charts was kept confidential and stored in a file, without their names by assigning a code number to it.

Person to contact

This research project was reviewed and approved by the ethical review committee of Jimma University. If you have any questions, you can contact the following principal investigator at any time.

Dr. Baweke Wassie (Internal medicine Resident) Telephone Number: **0912487609**, Email address: bawekewassiemd@gmail.com

Annex 2: Questionnaire /Checklist

Instructions:-Dear data collector the objective of this study is to assess reasons of admission and identify complications with its associated factors of CLD patients admitted to the medical ward of JUMC, from September 11, 2018 – September 10, 2020 G.C

I. You so are kindly requested to revise each chart thoroughly and record on the designed checklist.

II. **For data collectors:** For each question please put a cross clearly inside one box/space provided and write clearly for questions those need a specific answer.

Part I: Identification and Sociodemographic characteristics of the study participants

1. Research code_____
2. Medical Record Number_____
3. Age (Years) _____
4. Sex A. male □B. Female □
5. Residence A.in Jimma town □ B. outside of Jimma town □.
6. Profession_____
7. Marital Status A.Maried B.Unmaried C.Divorced
8. Educational Status A.Upto grade 6 □ B.Upto grade 10 □ C.Diplloma □ D.Degree□ E.Not involved in formal academic activities □
9. Profession (Specify)_____

Part II: patient presentation and clinical diagnosis

A. Presentation

1. Abdominal swelling □
2. Easy fatigability □
3. Hematemesis □
4. Melena □
5. Behavioral change /sleep disturbance
6. Nausea, vomiting □
7. Weight loss □
8. Others (specify)_____

Risk screening history

	Yes	No
Significant alcohol consumption		
Blood transfusion (If yes – describe amount and duration)		
Unprotected sexual exposure		
Herbal medication		
Hepatotoxic medication exposure		
No HBV immunization		
Family history of CLD		
Contact with jaundiced patient(s)		
Sharing of sharps		

Part III: Investigations

HBsAg		ALT		Bun(mg/dl)	
HCV antibody		AST		FBS/RBS(mg/dl	
PITC		ALP		LDL(mg/dl)	
WBC		TB		HDL(mg/dl)	
Hgb		DB		Total cholesterol(mg/dl)	
PLT		Creatinine		Serum albumin(mg/dl)	

Peritoneal fluid analysis result if determined._____

Abdominal (Ultrasound /CT-Scan/MRI)

Conclusion_____

Part IV: Cause(s) of admission, complication(s) and etiology (ies) identified

A. Diagnosis _____

B. Etiology/Underlying disease	C.Reason of admission	D. Complication
		Ascites □
HBV □	Ascites □	SBP □
HCV □	SBP □	UGIB □
Alcohol □	UGIB □	Encephalopathy□
HBV and HCV □	Encephalopathy□	Splenomegaly/Hypersplenism
HBV and ALD □	Splenomegaly □	□
HCV and ALD □	Anemia □	Anemia □
Herbal Medication □	Impaired renal function	Impaired renal function
Hepatotoxic medication□	□	□
Unknown □	8.other	other specify
	specify_____	_____

B. Calculate the APRI score if the etiology is HBV and/or HCV.

APRI = * (AST/ULN) x 100) / platelet count (10^9/L)_____

Assurance of Principal Investigator

I, undersigned, agree to accept responsibility for the scientific ethics and technical conduct of the medical research and the provision of required progress reports as conditions Institute of health sciences, department of internal medicine in the effect of specialization proposal requirements. Moreover, all investigators will assure to guarantee the safety and proper care of the study participants.

Principal investigator: - Dr.Baweke Wassie, Signature _____, Date_____

Advisors: -

1. Dr.Dagimawi Tewolde (Ass. Prof, Internist) Signature _____, Date_____

2. Mr.Chernet Hailu (MPH, Assist. Prof.) Signature_____, Date_____

Head of department: - _____ Signature_____Date_____