CLINICOEPIDIMOLOGICAL PATTERN OF CHRONIC LIVER DISEASE AMONG ADULT PATIENTS ADMITTED TO MEDICAL WARD AND THOSE ON FOLLOW UP AT GASTRO-INTESTINAL CLINIC, JIMMA MEDICAL CENTER, JIMMA TOWN, SOUTH WEST OF ETHIOPIA

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JIMMA UNIVERSITY, INSTITUTE OF HEALTH

SCHOOL OF MEDICINE

STUDENT RESEARCH PROJECT

CLINICOEPIDIMOLOGICAL PATTERN OF CHRONIC LIVER DISEASE AMONG ADULT PATIENTS ADMITTED TO MEDICAL WARD AND THOSE ON FOLLOW UP AT GASTRO-INTESTINALCLINIC, JIMMA MEDICAL CENTER, JIMMA TOWN, SOUTH WEST OF ETHIOP

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Abstract

Background: Liver disease causes serious public health problems because of its high prevalence worldwide and poor long-term clinical outcome, including premature deaths from liver decompensation and its complications. The major causes of liver diseases are alcohol, infections, autoimmune, genetic, and metabolicand malignancy. Viral hepatitis is the predominant cause for liver disease in low and middle-income countries, while nonalcoholic-fatty-liver-disease and 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 the Clinicoepidimologic pattern of chronic liver disease among adult patients admitted to medical ward and those on follow up at GI clinic with clinical diagnosis chronic liver disease,JMC, Jimma, south west of Ethiopia

Methods: A retrospective cross-sectional study design wasemployedby reviewing the charts of patients admitted and on follow up at GI clinic with clinical diagnosis of chronic liver diseasefrom April l, 2017 to April 1, 2018 GC. Out of 102 patientswith clinical diagnosis of chronic liver disease,charts of 96 patients with complete data were reviewed. Check-list containing Sociodemographic, clinical presentation and investigation were completed by data collectors.Data was cleaned, coded and entered to SPSS version 20 for analysis. The result was summarized and presented in tables and figure with descriptions.

Result: From totalof 96reviewed charts of patients with diagnosisofchronic liverdisease 66 (68.8%) were males. Most of the patients, 76(79.2%) were in the age group of 20 to 49 years of age. The overall prevalence of HBsAg, alcohol consumption and HCV was 31.2%, 19.8% and 7.2% respectively. In about half of cases (45.8%) the cause of chronic liver disease was not found. Almost all (97.9%) CLD patients had one or more complication that classified them as decompensated chronic liver disease.

Conclusion and recommendation: Viral hepatitis and alcohol consumption are common causes of chronic liver disease. Therefore, an initiative needs to be in Prevention of viral hepatitis infections and transmission along with control of alcohol consumption need to be strengthened in order to reduce the burden of chronic liver disease in Ethiopia.

Key words: Chronic liver disease, Pattern, Hepatitis B; hepatitis C; Alcohol; unknown causes

Acknowledgement

Table of Contents

List of Tables

List of figures

List of Abbreviations

Ag– Antigen

ALD-Alcoholic liver disease

ALT-Alanine aminotransferase

APRI –aspartate aminotransferase to platelet ratio index

ARF-Acute renal failure

AST-aspartate aminotransferase

DB- direct bilirubin

CDC - Center for Disease Control

CHB-chronic hepatitis B infection

CLD - Chronic liver disease

GI – Gastrointestinal

HBIG -hepatitis B immune globulin

HBsAg - Hepatitis B surface antigen

HBV - Hepatitis B Virus

HCC - Hepatocellular carcinoma

HCV - Hepatitis C Virus

HE- Hepatic encephalopathy

IDU - Injection drug users

JMC-Jimma medical center

LMIC- Low and low middle income

NAFLD- Nonalcoholic fatty liver disease

NV-normal value

Plt - platelet

SBP- Spontaneous bacterial peritonitis

TB - total bilirubin

UGIB- Upper gastro intestine bleeding

US -ultrasound

WHO - World Health Organization

Yrs.-years

CHAPTER ONE: INTRODUCTION

1.1 Back ground

Chronic liver disease (CLD) is a disease of the liver resulting from an inflammatory, infiltrative, immunologic, mechanical or metabolic injury to the liver, which has persisted for six or more months without complete resolution(1). It has different characteristics in terms of risk factors, incubation, latency, induction and the final state of the disease process. The most common CLDs are associated with chronic viral hepatitis, alcohol use and obesity; the least common are liver cancer and those due to certain genetic, autoimmune and vascular conditions ordrug toxicity (2)

Regardless of the cause at theend 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. This results in a decrease in hepatocellular mass, and thus function, and an alteration of blood flow. The induction of fibrosis occurs with activation of hepatic stellate cells, resulting in the formation of increased amounts of collagen and other components of the extracellular matrix.

Patients may have compensated cirrhosis or decompensated cirrhosis. Portal hypertension with its complication 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 feature of decompensated cirrhosis. The complications of cirrhosis like ascites,spontaneous bacterial peritonitis, gastro esophageal varices, hepatic encephalopathy, coagulopathy, renal failure, Hypersplenism, malnutrition and etc are basically the same regardless of the etiology(3).

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

Liver disease has a worldwide distribution. According to World Health Organization 2010 G.C report the world wide prevalence of CLD is 18.5% with prevalence of cirrhosis range from 4.5 to

9.5 %. The most common cause of CLD from this report is HBV (43%), HCV (24%), ALD (19%), NAFLD (10%) and other cause contribute for about 5%. It was estimated that over one million deaths in 2010, which equates to approximately 2% of all deaths worldwide were due liver cirrhosis (4).

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). The underlying causes were NAFLD account for 75.1% of CLD and ALD, HCV and HBV were responsible for 2.05%, 1.68% and 0.034% of CLD during 2005-2008 respectively. Liver disease is currently the 12th leading cause of death in the United States(5; 6)

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 and Liver cirrhosis and cancer are responsible for 170,000 and 47,000 deaths per year.The four leading causes of cirrhosis and primary liver cancer in Europe 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. In sub-Saharan Africa, the burden related to liver cirrhosis rose to 57% from 1990 to 2010. liver disease was an underlying cause of death in 186,373 deaths and 34%, 18% and 17% of liver cirrhosis in the region was attributable to hepatitis B, alcohol intake and hepatitis C, respectively (7)(8).

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(9). In Ethiopia as in other Sub-Saharan Africa, the prevalence of liver disease is high. They account for 12% of the hospital admissions and 31% of the mortality in medical wards of Ethiopian hospitals(10)

1.2 Statement of the Problem

Liver disease is a major cause of mortality and morbidity 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% (4).

Globally, the estimated total liver cancer mortality can be attributed to HCV (34, 500) and HBV (30, 000), with a smaller fraction due to alcohol. Most of this increase 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 (11)(12)(13)(14). 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(15).

In Ethiopia as in other Sub-Saharan Africa, the prevalence of liver disease is high. They account for 12% of the hospital admissions and 31% of the mortality in medical wards of Ethiopian hospitals(10). Chronic liver disease attributes to 2% of the overall deaths in Addis Ababa (16)

In most cases, liver-related mortality results from complications of chronic liver disease (CLD) including advanced cirrhosis and hepatocellular carcinoma (HCC).Despite a recent decline in a number of other cancers, the incidence of HCC continues to increase, especially in men(17). 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 (18).

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(19)

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 (20).

Worldwide, it is estimated that around 650 000 people die each year from the complications of CHB. Overall, HBV accounts for around 45% of cases of HCC and 30% of cirrhosis, 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(21)(22)

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 (23)

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.

1.3. Significance of the Study

 To our knowledge, even though there are some studies on sero-prevalence /burden of viral hepatitis but there were only few study in our country which assess clinical pattern of chronic liver disease among admitted and non-admitted adults

This study will provide information on clinical characteristics of chronic liver diseases among the study participants. This study also provides input for different institutions, gastroenterology research and others who want to study more on Clinicoepidimologic pattern of chronic liver disease.

The findings will be published in peer reviewed journals for a wider dissemination to institutions with similar settings for further study and concerned government sectors.

CHAPTER TWO: LITERATURE REVIEW

Chronic liver disease (CLD) is a disease of the liver resulting from an inflammatory, infiltrative, immunologic, mechanical or metabolic injury to the liver, which has persisted for six or more months without complete resolution(24) .It has different characteristics in terms of risk factors, incubation, latency, induction and the final state of the disease process. The most common CLDs are associated with chronic viral hepatitis, alcohol use and obesity; the least common are liver cancer and those due to certain genetic, autoimmune and vascular conditions or to drug toxicity(2) .

According to American Association for the study of liver disease Multi ethnic cohort study the prevalence of CLD ranged from 3.9% in African Americans and Native Hawaiians to 4.1% in whites, 6.7% in Latinos, and 6.9% in Japanese. Nonalcoholic fatty liver disease (NAFLD) was the most common cause of CLD in all ethnic groups combined (52%), followed by alcoholic liver disease (21%). Alcoholic liver disease was the most common cause of cirrhosis in whites (38.2%), while hepatitis C virus was the most common cause in African Americans (29.8%)(25).

According to 2008-2010 mortality analysis in Northeastern Italy, CLD represented almost 6% of all deaths in males and greater than 3% in females, but among those aged 35 to 74 years it was as high as 10% and 6% in males and females, respectively.The main etiological factors listed on death certificates were alcohol and HCV infection, with a small proportion of deaths attributable to HBV. About1.6% of death due to coexistence of alcoholic liver disease and HCV; about half did not specify any etiology. In people aged 45 to 64 years, alcohol-related deaths represented a substantial proportion of all deaths (4% in males and 2% in females) and of CLD deaths (about one-third in both genders)(26)

Similarly retrospective observational cohort study of cirrhotic patients attending the ambulatory clinic of Singapore's largest tertiary hospital over 5 years, CHB was the most common cause of liver cirrhosis accounting for almost two-thirds of the entire cohort (63.3%), followed by alcohol (11.2%), cryptogenic (9%) and CHC (6.9%).Clinical Presentation Eighty-three percent had 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(27).

A retrospective study involving 130 patients admitted to the Liver Unit at liver unit of Bir Hospital, Kathmandu from April 13, 2008 to October 16, 2008 shows acute and chronic liver disease was account for 38.5%and 56.9% respectively and 16.7% had hepatocellular carcinoma. Among patients with chronic disease, the main etiological agents were alcohol (60.8%), infections (14.9%) including HBV (54.5%) and HCV (45.5%), unknown cause 10 (13.5%) and autoimmunity (1.4%). 9.5% of patients had more than one or mixed etiology. Complications like spontaneous bacterial peritonitis (SBP) 20.2%, hepatic encephalopathy (HE) 14.9% and acute renal failure (ARF) in 2.7% were found in patients with CLD. Portal hypertension (PHTN) was present in 32.4% patients. Out of them 25.0% had esophageal varices and 20.8% presented with upper gastrointestinal bleeding (UGIB)(28).

Other Prospective, metacentric study in India From a total of 20701383 patients attended the participating hospitals during February, 2010 to January, 2013, Liver disease in any form was diagnosed in 266621 patients (1.28%).Overall about half of the patients were resident of urban areas (50.4%).Median age of presentation with CLD was 43 years. Patients with HBV related CLD were younger at diagnosis (median 36 years) in comparison to those with alcohol and NAFLD related disease (median 46 and 45 years, respectively). Men predominated in all clinical patterns of CLD as well as across the etiologies. HBV was the commonest cause of CLD. HCC was found in 3.4% of the patients with CLD at the time of diagnosis(29).

Similar study done at Calabar University on 213 patients shows age range of the cases was 18-76 years, with a mean age of 39.9 (±14.07) years. There was a male predominance (68.9%) in this study with a Male to Female ratio of 2.2: 1.A history of not receiving hepatitis B vaccination was found to be quite high (89.6%) among cases, while 54.7% and 47.2% of them admitted sharing sharps and drinking herbal medications respectively. On the other hand 46.2% admitted to having more than one sexual partner, while 31% of patients interviewed admitted receiving injection from quack doctors or nurses/scarification markings and eating moldy grains(30).

A Retrospective analysis of patients admitted to the medical wards of the University of Nigeria Teaching Hospital Ituku/Ozall(from January 1, 2005 to December 31, 2010) state of admitted patient 652 (7.9%) had various forms of liver disease. They consisted of 443 males (67.9%) and 209 females (32.1%). The mean age of the patients with liver disease was 46.4 ± 18.0 years. The commonest liver diseases were Primary Liver Cancer (44.3%) and liver cirrhosis (20.4%). Unclassified liver disease accounted for 12.7% of the cases. 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%).Hepatitis B surface antigen (HBsAg) in blood was present in 61.4% of patients with PLC and 45.9% of patients with liver cirrhosis. Anti-HCV was present in 10.9% of patients with primary liver cancer and 5.4% of patients with liver cirrhosis(31).

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 likely etiology of chronic liver disease was hepatitis B infection (57.5%) followed by hepatitis C infection (17.1%). The male/female ratio was 1 to 4 .The mean age was 40.7 ± 15.4 years(32)

Similar Hospital based cross-sectional study was conducted in three selected hospitals of Addis Ababa over a period of 3 months (March2014- May 2014) 117 on clinically diagnosed chronic liver disease patients, from which 70.1% were male while 29.9% were female. The set age range was 18 to 78 years of age with a median age of 39 and range 60. In relation to living area, 59.8% of the study participants were urban dwellers and the remaining 40.2 % were rural dwellers. The results of the study showed that from 117 samples of clinically diagnosed CLD patients 34.2% 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(33).

According to study done between July 1986 and April 1989, 334 on hospitalized adult Ethiopian patients with chronic liver disease, 14 had chronic hepatitis, 208 cirrhosis and 112 hepatocellular carcinoma. Patients commonly present for the first time with ascites, splenomegaly, hematemesisand/or melena from esophageal varices, and mental changes due to hepatic encephalopathy. One or more hepatitis B virus markers were found in 86% of chronic hepatitis,

88% cirrhosis and 78% HCC and the HBsAg carrier state was found in 36%, 29% and 23%, respectively(34)

CHAPTER THREE: OBJECTIVES

3.1. General Objective
To assess the Clinicoepidimologic pattern of chronic liver disease among adult patients admitted and on follow up at GI clinic,JMC from April 1, 2017 to April 1, 2018 G.C

3.2. Specific objectives

- To identify pattern of CLD patient among clinically diagnosed chronic liver disease patients
- To describe clinical characteristics among clinically diagnosed chronic liver disease patients

CHAPTER FOUR: METHOD AND MATERIALS

4.1 Study area and period

The study was conducted a JMC, Jimma university, which is located in Oromia region 354 km, from the capital, Addis Ababa, south west of Ethiopia. JMC is one of the teaching hospitals in the country which serve as a referral hospital for south western Ethiopia including Jimma zone which has total population of 2,773,730 according to figures from Central static Agency in 2005. The hospital gives health service at inpatient and outpatient level as a referral Hospital for about more than15 million populations in the South West of the country. Internal medicine has wards for inpatient, many follow up clinics from which GI clinic is one where follow up given for patients with gastrointestinal problems. At outpatient level, care and service is delivered for patients with Chronic liver disease at GI clinic by trained nurses, medical interns, residents, and specialists weekly.From 1st April 2017 to 1st April 2018 a total of 2198 patients were admitted at medical ward and medical records of 107 clinically diagnosed chronic liver diseases of which 102 were admitted and five those were on follow up without admission were found.

The study was conducted from July 15-26/ 2018.

4.2   Study design

A retrospective study design was employed

4.3   Population

4.3.1 Source population

Alladult patients admitted to medical ward and follow up atJMC from April 1/2017 to April 1/2018 G.C

4.3.2 Study population

The study population was all adult patients admitted at medical ward and on follow up at GI clinic with clinically diagnosed chronic liver disease during the period of April 1st2017-April 1st2018 GC

4. 3.3 Sampling size and Sampling technique

No sampling method used for this study since all charts of patients with final diagnosis of chronic liver disease who admitted to medical ward and on follow up at GI clinic from 1st April 2017 to 1st April 2018 G.C were revised in the study.

4.3. 4 Eligibility criteria

Inclusion criteria: -All adult patients admitted and on follow up at GI clinicwith diagnosisof chronic liver disease in JMC during the study period diagnosedclinically and by available diagnostic modalities were eligible.

Diagnostic Criteria: The clinical feature of patients defined a diagnosis of CLD by the attending clinician, results of laboratory and imaging techniques

Exclusion criteria: -

1. The patients for which medical records (history, physical examination and /or needed investigation) either not done or lost without documenting on charts.

2. Patient with pre-hepatic fibrosis and acute liver disease

4.5Study variables
- Chronic liver disease
- Age
- Sex
- Alcohol consumption
- Blood transfusion
- Unprotected sexual exposure
- Herbal medication
- Sharing sharps
- Family history of CLD
- Contact with jaundiced patient

4.6 Operational definition

Acute liver disease:-Is liver diseases which resolve within sixth months

Chronic liver disease (CLD): - is a disease of the liver which haspersisted for sixor more months without complete resolution

APRI score; -calculated by (AST elevation/platelet count) x 100 in which the sensitivity and specificity for fibrosis depend on the cut-offs used. For predicting cirrhosis (F4), an APRI cutoff of 1.0 had a sensitivity of 76 % and a specificity of 72 %.

Compensated chronic liver disease: - all patients that presented with history and/or evidence of chronic liver by ultrasound and/or persistent abnormality (more than 6months duration) and biochemical abnormality but not fulfill the criteria of decompensation

Decompensated chronic liver disease: - diagnosed based on clinical features with presence of complication of portal hypertension like ascites, encephalopathy, Varices and/or coagulopathy or liver failure.

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.

Unknown; - if determination of specific etiology of CLD is not possible with clinical and /or available investigation modalities

<u>Normal values</u>

 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 $\times$ 10^9/l

4.7Data collection process

Data was collected by record review using Checklist. The checklist includes the socio-demographic characteristics of the patients, clinical presentation and investigations. Data was collected by six medical interns and two medical residents by reviewing each patient register

chart and charts of all Patients with CLD were selected from the patient's medical record log book, then the charts were revised.

4.8 Data processing and analysis plan

Collected data was cleaned, coded, entered and analyzed using SPSS windows version 20. Results were presented in writing, tabulation and figurative presentations from which conclusions and recommendations were made. In addition, results were also compared with other studies and discussed.

4.9 Data quality control

The measures that were undertaken to ensure quality of data include: -Pre-testing for the data collection methods and instrument, Training on data collection for data collectors before data collection and then study was started with supervision of the data collection process during, at the end of each day of data collection and before data entry and analysis for filled check list, data storage and management.

4.10 Ethical consideration

Ethical clearance was obtained from JMC and medical sciences Ethical review committee. An official letter was obtained from department of internal medicine and was submitted to responsible body at study area. Information obtained from the records were kept confidentially by not recording participants name and their phone number on check lists ,besides the check lists were put in closed cabinet in the internal medicine department till publication of the study.

4.11 Dissemination of the result

After research completion and finalizing report, it will be submitted to department of internal medicine, Jimma Medical center, the ministry of health and other concerned institutions and stake holders for possible application and effort will be made for publication on repeatable journal.

CHAPTER FIVE: RESULTS

5.1 Socio demographic characteristics

A total of 102 charts of CLD were identified from source population, of which charts of eight patients were not found. Of other five patients who were started on follow up to GI clinic directly with no history of admission, charts of three patients were not complete. So, charts of 96 CLD patients were analyzed.Among them, 66 (68.8%)were males; with a male to female ratio of 2.2:1. Most of the patients, 76(79.2%) were in the age group of 20 to 49 years of age, while older age greater than or equals to 50 years of age accounts for 16(16.7%) and four (4) patients were in the age group of 15-19 years of age (**Fig: 1**). Majority of patients with CLD, 77(80.2%) were out of Jimma town.

Percent

Chart showing age distribution percentages: 15-19: 3.1, 20-29: 35.4, 30-39: 31.3, 40-49: 12.5, 50-59: 10.4, 60 or above: 7.3. Y-axis (0-40), X-axis labeled "Age".
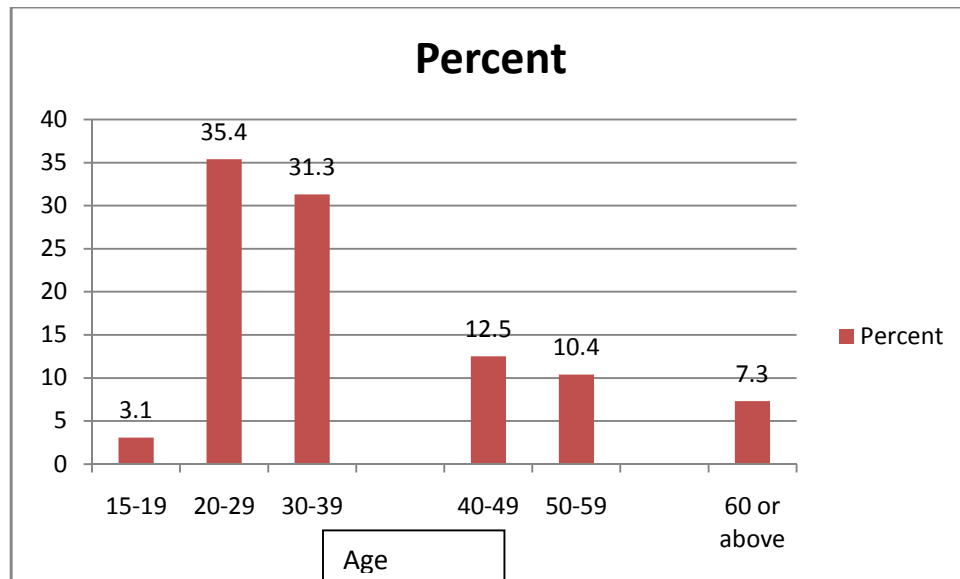
Figure 1: Age distribution of chronic liver Disease at Jimma University, from April 2017 - April 2018 G.C

5.2 Etiology of Chronic Liver Disease

Infectious causes, Hepatitis B S-antigen and antibodies to HCV, were present in 37(38%) of patients with chronic liver disease. Alcohol consumption was recorded in 20 (20.8%) patients with CLD. Eliminating viral hepatitis and alcohol consumption, 44(45.8%) of patient with chronic liver disease left without apparent predisposing factor.
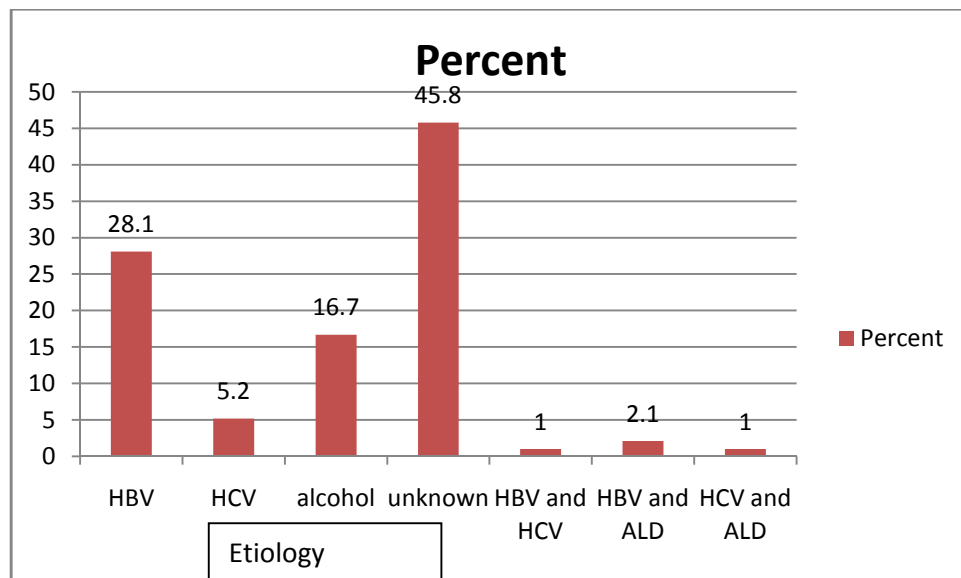
Figure 2: Etiology of chronic liver disease at Jimma University, from April 2017 - April 2018 G.C

5.2.1 Role of Viral Hepatitis B

According to this study,from 96 patients with clinical diagnosisCLD, 30(31.3%) were HBsAg positive. The prevalence of HBsAg was higher in male 21(21.9%) than female 9(9.4%).**Figure**.3 below summarizes the prevalence of HBsAg in patients with CLD stratified by age. The occurrence of HBV was highest (n: 11; 36.7%) in the age group of 20 - 29 years and 30 - 39 years (n: 10; 33.3%). There was only one CLD patient in the age group 15 – 19 years.
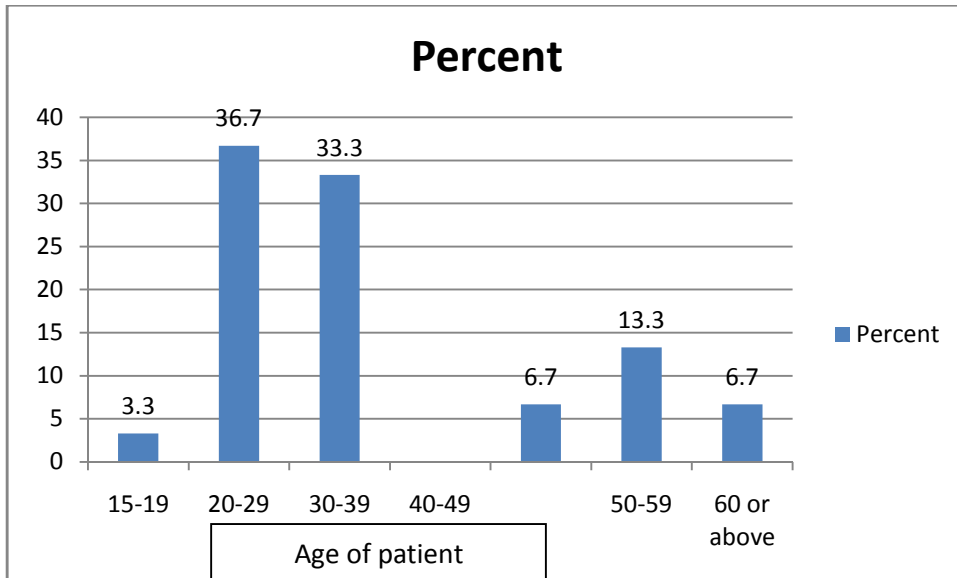
Figure 3: Age of CLD patients with hepatitis B s-antigen positive at Jimma University, from April 2017 - April 2018 G.C

With regard to living area almost all 90% (n=27) HBsAgpositive CLD patients were out of Jimma town (**figure 4**).
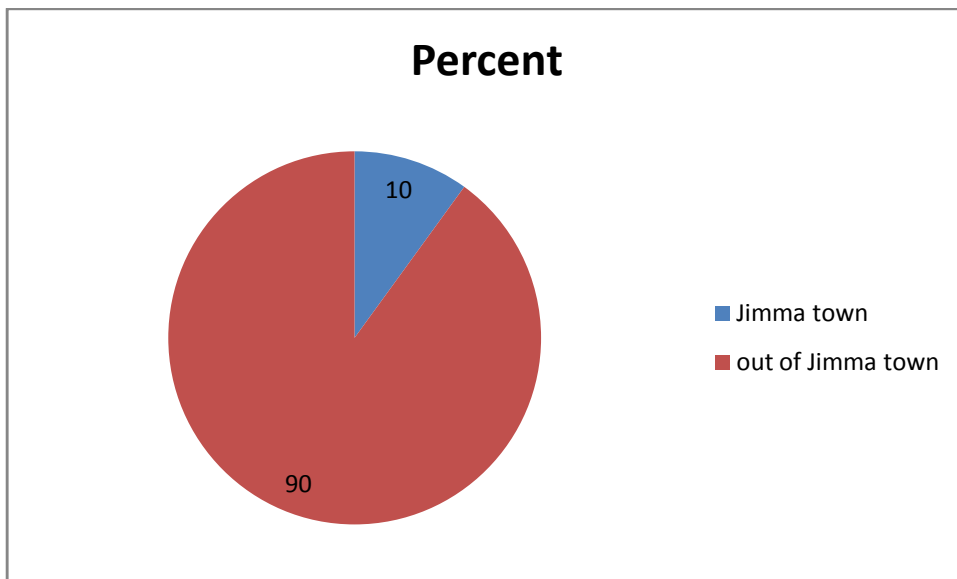
Figure 4: Residency of CLD patients with hepatitis B s-antigen positive at Jimma University, from April 2017 - April 2018 G.C

5.2.2 Role of Viral Hepatitis C

Antibody to HCV showed differences according to gender and age of patients. Figure 2 show that HCV prevalence was higher in women (N: 4; 4.2%) than in men (N: 3; 3.1%). It's prevalence increased with increasing age and highest in age group 50-59 years.
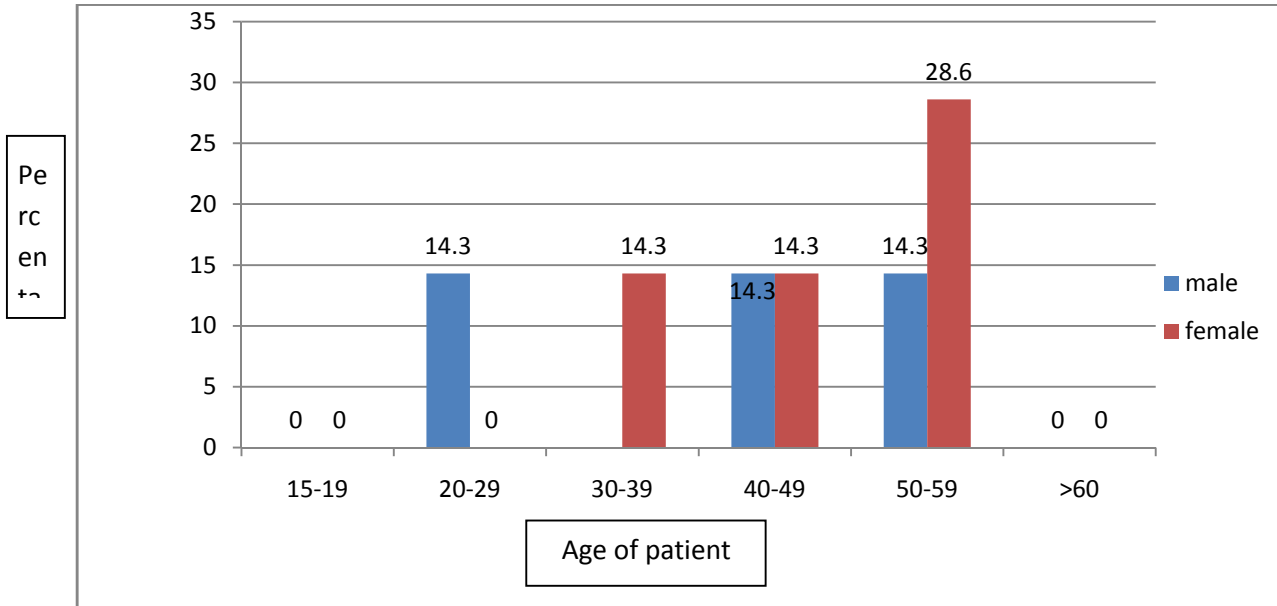
Figure 5: Age and sex distribution of CLD patients with positive antibody to HCV at Jimma University, from April 2017 - April 2018 G.C

For CLD patients whose cause were hepatitis(HBV/or HCV) only two(5.7%) had APRI score of less than one, while the rest had more than one.
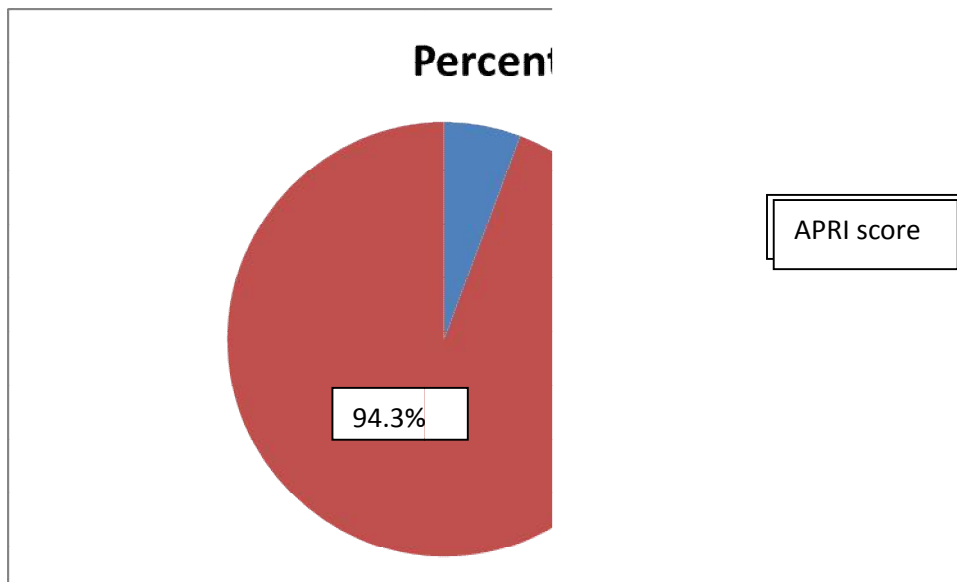
Figure 6: APRI score of CLD patients with hepatitis B s-antigen and Antibody to HCV positive, at Jimma University, from April 2017 - April 2018

5.2.3 Alcohol

Alcohol consumption was registered in 20(20.8%) patients. From them two patients were positive for HBsAg and one for HCV antibody. Almost all 19(95%)of patients who had history of alcohol consumption were male and those in age group of 20-39 years account for 70%. There is no data on the quantity consumed and duration of consumption and the role of other factors that may accelerate alcohol⬜induced liver damage include pattern of drinking, iron overload and diet.
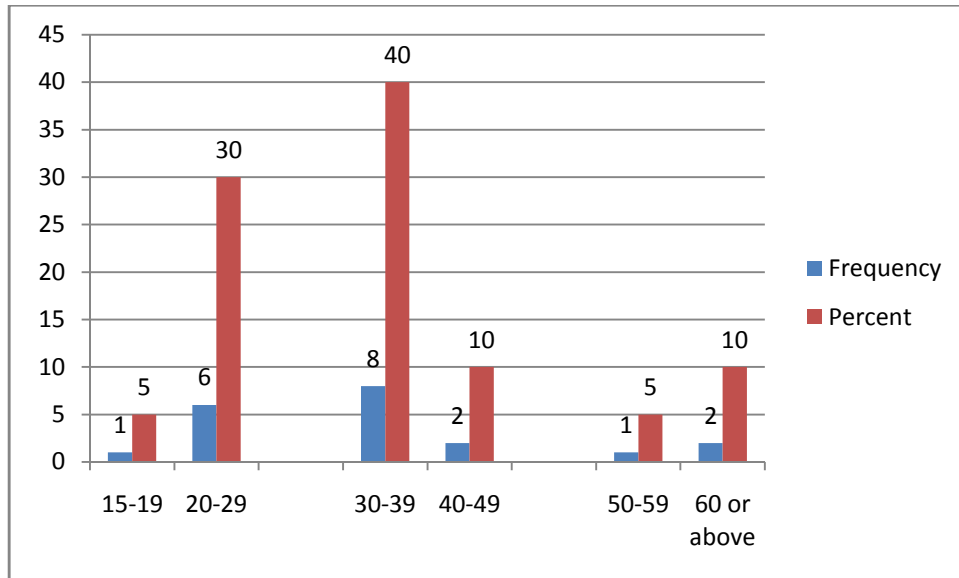
Figure 7: Age of CLD patients with history of alcohol consumption at Jimma University, from April 2017 - April 2018 G.C

5.2 4 other factors/unknown etiology

In 44 (45.8%) of the CLD, no clear etiologic factors were determined.There was no clinical diagnosis documented as NAFLD and anthropometric measurements (obesity) on the charts of all patients. Blood sugar of 55(57.3%) were not determined, 3(3.1%) were diabetic and 5(5.2%) had impaired blood sugar while the rest had normal value.

Table 1: Blood sugar among CLD of patients at Jimma University, from April 2017 - April 2018 G.C

Blood sugar of patient	Frequency	Percent
Normal	33	34.4
Impaired	5	5.2
Diabetic	3	3.1
Not done	55	57.3
Total	96	100.0

The cause of chronic liver disease in almost all, 75% of patients with impaired/diabetic blood sugar were unknown.

percentage

- unknown
- Other causes

25

75
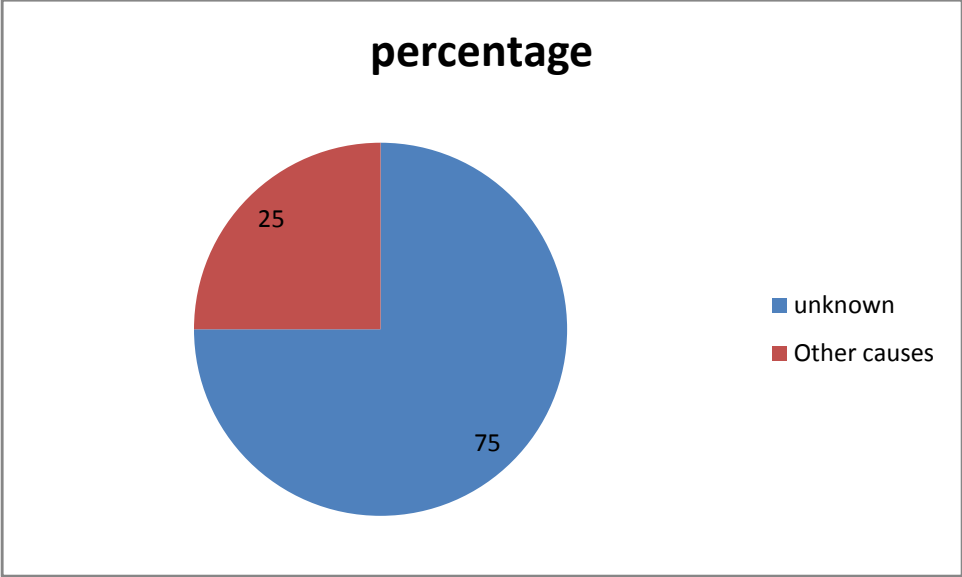
Figure 8: Blood glucose of patients with chronic liver disease by etiology among CLD patients at Jimma University, from April 2017 - April 2018 G.C

5.3 Clinical presentation

Except two (2.1%) patients those started follow up from cold OPD all CLD patients had one or more complication that classified them as decompensated chronic liver disease. Most of them were presented with abdominal swelling 67(69.8%), hematemesis/melena 24(25%), fatigability 3(3.1%) and yellow discoloration of eye 2(2.1%).

Percent

- abdominal swelling
- Fatigablity
- hematemesis/melena
- yellow discoloration of eye

2.1

25

3.1

69.8
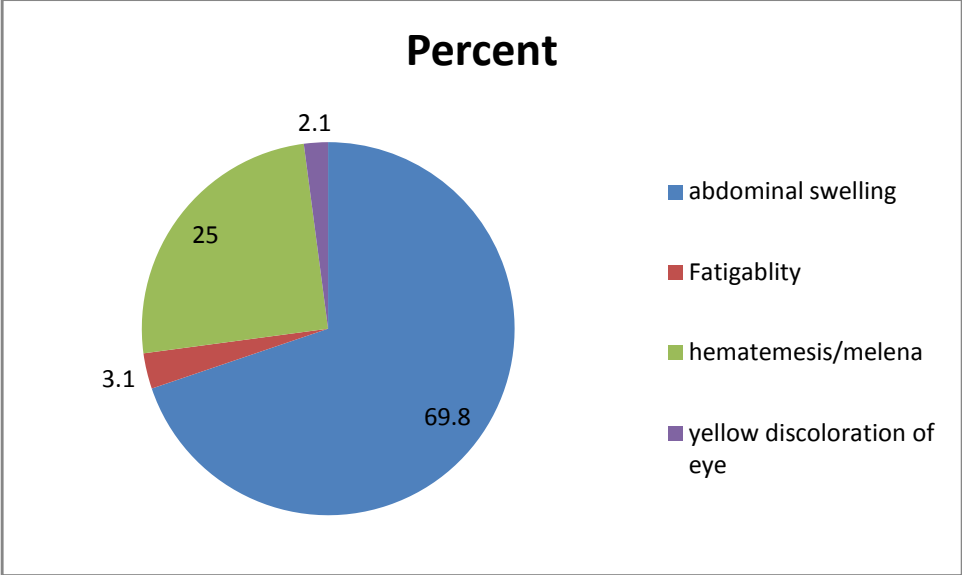
Figure 9: Common clinical presentation of patients with CLD at Jimma University, from April 2017 - April 2018 G.C

Laboratory findings of patients with chronic liver show that more than half (69%) were thrombocytopenic, 26% were anemic and 34% had low serum albumin.

Table 2: Selected laboratory values of patients with Chronic liver disease at Jimma University, from April 2017 – April2018 G.C.

	Hgb		Plt		ALT		TB			SA			ANC		
	Normal Value	<Normal Value	Normal Value	<Normal Value	Normal Value	>Normal Value	Normal Value	>Normal Value	Not Found	Normal Value	<Normal Value	Not Found	<250	>250	Not Found
N	70	26	27	69	57	38	46	25	25	57	34	4	75	6	15
%	72.9	27.1	28.1	71.9	59.4	39.6	47.9	26	26	59.4	35.4	4.2	78	6.3	15.6

5.4 Complication

Complications like ascites and associated complications were found in almost all patients 92(95.8%).Upper gastrointestinal bleeding,encephalopathy, spontaneous bacterial peritonitis (SBP), impaired renal function and hepatic mass were found in 27.1%,32.3%,8.3%,5.2% and1% respectively.

**Table 3:-** Complication of chronic liver disease among CLD patients at Jimma University, from April 2017 - April 2018 G.C.

Complication of CLD	Frequency	Percent
Ascites	26	27.1
Splenomegaly/Hypersplenism	2	2.1
Ascites and SBP	3	3.1
Ascites and UGIB with anemia	20	20.8
Ascites and encephalopathy	11	11.5
Ascites UGIB & Encephalopathy	4	4.2
Ascites and splenomegaly /Hypersplenism	15	15.6
Ascites, SBP and encephalopathy	5	5.2
Ascites and impaired renal function	5	5.2
Ascites and hepatic mass	1	1.0
Ascites, UGIB with anemia and splenomegaly	2	2.1
No complication detected	2	2.1
Total	**96**	**100.0**

CHAPTER SIX: DISCUSSION

This retrospective study was conducted by reviewing charts of patients admitted to medical ward and on follow up at GI clinic with clinical diagnosis of chronic liver disease (CLD) from 1st April 2017- April 1st2018, Jimma medical center. Checklists containing Sociodemographic characteristics, clinical presentations, and biochemical and imaging resultswere completed from records of patientswith a chronic liver disease.

The gender of CLD patients in this study showed that male predominance (68.8%) with ratio of 2.2:1 and majorities (79.2%) were in age group of 20-49 years. Only 19.8% 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 wereurban dwellers[30][33].An explanation for Variation in residencymay be due to difference in study area, the latter study was conducted in Addis Ababa city while my study includes all coverage of JMC, where most of patients are from rural area. Study done at Calabar University andmetacentric study in India also show similar finding, male predominance[30; 29].

The most likely etiology of chronic liver disease from identified was hepatitis B infection (31.2%) followed by alcohol (19.8%) and hepatitis C infection (7.2%).But in majority of patients (45.8%) with chronic liver disease, what cause CLD was not identified.These are consistent with studies conducted in Addis Ababa [36] ([32][33]), but sero-status for anti-body to HCV higher in those study than my study. This is probably due to those study were focus at Addis Ababa city(urban) 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 (31)(27) are almost consistent with the result of thisstudy. However unclassified cause of chronic liver disease was high (45.8%) in my study compared to other studies which is most likely due to lack of documentation, unavailability of certain investigation modalities to diagnosis other cause of CLD like NAFLD ,autoimmune hepatitis, biliary cirrhosis andetc. Not only what mentioned, but also all of them were categorized as unclassified etiologies in my study.

According to my study, the prevalence of HBV was 2.3 times higher in male patients than in female. In contrast, the female patients had a 1.3 times higher risk of HCV compared to male patients. This is in accordance with a previous study from Addis Ababa andmetacentric study conducted in India(32)(29).

Age of HBV among CLD patients in my study showed that 76.7% of them were below 50 years. The highest proportion was observed in the age group 20-29 years. A comparable high age distribution of HBV among CLD patients has been reported from Addis Ababa andmetacentric study in India(32; 29).

Chronic liver disease patients' positive for HCV showed that majority (71.5%) of them were 40 years or more. This isconsistent with a previous study in Addis Ababaand study of chronic hepatitis C virus infection in sub-Saharan Africa (32)(11)(14). 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 in high 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, dental extraction at health facility, circumcision, surgical procedure, hospital admission, ear piercing, uvuloctomy, tattooing on body, tattooing on gum, contact with jaundiced patient, alcohol consumption(33).

Clinical Presentation

Almost all (97.9%) had decompensated chronic liver disease at diagnosis.In opposite to this study, retrospective observational cohort study of cirrhotic patients at clinic of Singapore's (27)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.

The most common decomposition events were development of ascites with or without other complications (95.8%) and hepatic encephalopathy (32.3%), upper gastrointestinal bleeding (27.1%), SBP (8.3%) and impaired renal function (5.2%).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(34)(28)(27)

The limitations of this study include; small sample size, its retrospective design,Lack of adequate investigative capacity, Lack of documentation and poor record keeping.

Another limitation is despite the presence of viral markers (HBsAg and HCV antibody) and alcohol consumption identified as etiologiesof CLD in this study, the role other causes of CLD such as NAFLD, hereditary metabolic diseases and autoimmune liver disease on these groups could not be excluded at the time of this study.

CHAPTER SEVEN: CONCLUSION AND RECOMMENNDATION

This is the first retrospective study conducted on Chronic Liver Diseases in Jimma medical center, Ethiopia. It concluded that, while a direct cause and effect relationship is difficult to demonstrate, the high prevalence of HBV, HCV and alcohol consumption among CLD patients suggest a possible etiological relationship. This study also points to the importance of other predisposing factors like, NAFLD, hereditary metabolic diseases, autoimmune liver disease and etc.

Based on the study, the gastrointestinal unit should plan priority programs to deal with chronic liver disease by performing other study and establishing diagnostic center. JMC should focus on hospital recording system. There should also be educational programs to raise awareness about chronic liver disease in general; the role HBV, alcohol and HCV in particular, as well early medical seek and diagnosis of chronic liver disease.

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Annex I Questionnaire

- **Instructions:**-Dear data collector the objective of this study is to assess Clinicoepidimologic patterns of chronic liver disease admitted to medical ward and those on follow up at GI clinic of JUMC. The results of the study will help as to identify pattern of CLD and describe clinical characteristics among clinically

diagnosed chronic liver disease patients. So you are kindly requested to revise each chart thoroughly and record on the designed check list.

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

Part I: Identification, Sociodemographic characteristics and anthropometric measurements of the study participants

1. Research code_____
2. Card number----------------------
3. Age------------------------------.
4. Sex   A. male ☐B. Female ☐
5. Residence A.in Jimma town☐ B. outside of Jimma town

Part II: **patient presentation and clinical diagnosis**
    A. Presentation
1. abdominal swelling☐
2. fatigability ☐
3. hematemesis☐
4. melena☐
5. Behavioral change /sleep disturbance ☐
6. Nausea, vomiting ☐
7. Weight loss☐
8. Others (specify) ---

B. Risk screening history

	Yes	No
significant alcohol consumption		
Blood transfusion		

Unprotected sexual exposure		
Herbal medication		
Sharing sharps		
No HBV immunization		
Family history of CLD		
Contact with jaundiced patient		

Part III: Investigation

HBsAg		ALT		Bun(mg/dl)	
HCV antibody		AST		FBS/RBS(mg/dl	
PIHCT		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

Conculusion_____

_____

_____

Part IV: diagnosis, complication and etiology identified

A. Diagnosis _____

B. Etiology	C. Complication
1. HBV	1. Ascites

2. HCV▯ 3. Alcohol 4. HBV and HCV 5. HBV and ALD 6. HCV and ALD 7. Unknown	2. SBP▯ 3. UGIB▯ 4. Encephalopathy▯ 5. Splenomegaly/Hypersplenism 6. Anemia 7. Impaired renal function 8. other specify _____

C. Calculate APRI score if the etiology is HBV or HCV.

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

Annex II: Declaration

I the undersigned, declare that this is my original work and all sources of materials used for this thesis have been acknowledged.

Name: Gaddisa Desu

Signature _____

Date of submission _____

This thesis has been submitted with my approval as University

Advisor

Name: Dr. Dagmawi T (MD, Internist, GI fellow)

Signature _____

Date of submission _____