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CLINICAL AND ETIOLOGICAL PROFILE OF PATIENTS WITH CHRONIC LIVER DISEASE: A HOSPITAL-BASED OBSERVATIONAL STUDY

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ABSTRACT **Background:** Chronic liver disease (CLD) is a major cause of morbidity and mortality worldwide. Its clinical presentation and etiological pattern vary according to geographic region, lifestyle factors, viral hepatitis burden, and metabolic risk factors. Early identification of etiology and disease severity is important for appropriate management and prevention of complications. **Objective:** To assess the clinical and etiological profile of patients with chronic liver disease presenting to a tertiary care centre. **Methods:** This hospital-based observational study was conducted in the Department of Medicine, Government Medical College and Hospital, Chhatrapati Sambhajinagar, Maharashtra, over six months from July 2025 to December 2025. A total of 54 adult patients diagnosed with chronic liver disease were included by consecutive sampling. Detailed history, clinical examination, laboratory investigations, abdominal ultrasonography, and upper gastrointestinal endoscopy, wherever indicated, were performed. Disease severity was assessed using the Child-Turcotte-Pugh classification. Data were summarized as frequencies, percentages, mean, and standard deviation. **Results:** The mean age of patients was 48.6 ± 12.4 years, and most patients belonged to the 41-60 years age group. Males constituted 74.1% of cases. Alcohol use disorder was the most common etiology/risk factor, observed in 40.7% of patients, followed by NAFLD/NASH in 20.4%, hepatitis B in 14.8%, and hepatitis C in 11.1%. The common presenting complaints were abdominal distension/ascites, jaundice, and pedal edema. Most patients had decompensated disease, with 51.9% in Child-Pugh Class B and 46.3% in Class C. Ascites, hepatic encephalopathy, and variceal bleeding were the major complications. **Conclusion:** Chronic liver disease in the present study was predominantly seen among middle-aged males, with alcohol-related liver disease being the leading etiology. Most patients presented with advanced or decompensated disease, emphasizing the need for early screening, alcohol cessation strategies, viral hepatitis control, and lifestyle modification.

KEYWORDS : Chronic Liver Disease, Cirrhosis, Alcohol-Related Liver Disease, NAFLD, Child-Pugh Score, Portal Hypertension.

INTRODUCTION

Chronic liver disease (CLD) represents a major global health burden, characterized by progressive destruction and regeneration of liver parenchyma leading to fibrosis and cirrhosis [1]. It is among the leading causes of morbidity and mortality worldwide, accounting for nearly two million deaths annually, with cirrhosis and hepatocellular carcinoma contributing substantially to this burden [2].

The etiological spectrum of CLD varies considerably across geographic regions, influenced by differences in prevalence of viral hepatitis, alcohol consumption patterns, metabolic risk factors, and autoimmune conditions [3]. In Western countries, alcoholic liver disease and non-alcoholic fatty liver disease (NAFLD) have emerged as predominant causes, whereas in many Asian and developing countries, viral hepatitis B and C remain significant contributors despite improved vaccination and screening programs [4,5]. The rising prevalence of obesity, diabetes mellitus, and metabolic syndrome has further driven an increase in NAFLD-related cirrhosis globally [6].

Clinically, CLD presents with a wide range of manifestations, from asymptomatic derangement of liver function tests to overt decompensation characterized by ascites, jaundice, hepatic encephalopathy, and variceal bleeding [7]. The Child-Turcotte-Pugh (CTP) and Model for End-Stage Liver Disease (MELD) scoring systems are widely used to assess disease severity and prognosis, guiding clinical decision-making and prioritization for liver transplantation [8].

Early identification of the underlying etiology is crucial, as it influences therapeutic strategies, prognosis, and preventive measures. Despite advances in diagnostic modalities, a substantial proportion of CLD cases continue to present at advanced stages, often with overlapping etiological factors, making accurate clinical and etiological characterization essential [9,10].

Given the regional variations in etiology and clinical presentation, observational studies assessing the clinical profile and underlying causes of CLD in specific populations remain valuable for guiding local healthcare policies, optimizing resource allocation, and improving patient outcomes [11,12]. This study was therefore undertaken to evaluate the clinical and etiological profile of patients with chronic liver disease presenting to a tertiary care centre.

MATERIALS AND METHODS

Study Design

This was a hospital-based observational study conducted to assess the clinical and etiological profile of patients with chronic liver disease.

Study Setting

The study was carried out in the Department of Medicine, Government Medical College and Hospital, Chhatrapati Sambhajinagar, Maharashtra.

Study Duration

The study was conducted over a period of six months, from July 2025 to December 2025.

Study Population

All adult patients diagnosed with chronic liver disease and admitted or evaluated in the Department of Medicine during the study period were considered as the study population.

Sample Size and Sampling Technique

A total of 54 patients with chronic liver disease fulfilling the eligibility criteria were included in the study. A non-probability consecutive sampling technique was used, and all eligible patients presenting during the study period were enrolled after obtaining written informed consent.

Inclusion Criteria

Patients aged more than 18 years, diagnosed with chronic liver disease on the basis of clinical, biochemical, radiological, and/or endoscopic findings, were included in the study.

Exclusion Criteria

Patients below 18 years of age, patients with acute liver failure, patients with incomplete clinical or laboratory records, and patients who did not provide informed consent were excluded from the study.

Data Collection

Data were collected using a predesigned proforma. Detailed history was recorded with special reference to age, sex, socio-economic status, alcohol intake, metabolic risk factors, history of viral hepatitis, comorbidities, presenting complaints, and duration of illness. History of complications such as ascites, jaundice, upper gastrointestinal bleeding, altered sensorium, pedal edema, and previous hospital admissions was also noted. A complete general and systemic examination was performed in all patients. Clinical signs such as icterus, pallor, pedal edema, ascites, splenomegaly, spider angioma, palmar erythema, and features of hepatic encephalopathy were documented.

Laboratory Investigations
All enrolled patients underwent relevant laboratory investigations, including complete blood count, liver function tests, renal function tests, fasting blood glucose, coagulation profile including prothrombin time and international normalized ratio, serum albumin, serum bilirubin, serum transaminases, and viral markers including hepatitis B surface antigen and anti-hepatitis C virus antibody. Additional investigations were performed wherever clinically indicated.

Radiological and Endoscopic Evaluation
Ultrasonography of the abdomen was performed to assess liver size and echotexture, features of cirrhosis, ascites, splenomegaly, and evidence of portal hypertension. Upper gastrointestinal endoscopy was performed in indicated patients to detect esophageal varices and portal hypertensive gastropathy.

Assessment of Etiology
The etiology of chronic liver disease was determined based on clinical history, alcohol intake, metabolic risk factors, viral markers, biochemical profile, imaging findings, and other relevant investigations. The major etiological categories considered were alcohol-related liver disease, non-alcoholic fatty liver disease/non-alcoholic steatohepatitis, hepatitis B, hepatitis C, cryptogenic liver disease, and associated metabolic comorbidities such as diabetes mellitus and hypertension.

Assessment of Severity
The severity of chronic liver disease was assessed using the Child-Turcotte-Pugh classification. The score was calculated using serum bilirubin, serum albumin, prothrombin time/international normalized ratio, degree of ascites, and grade of hepatic encephalopathy. Patients were classified as Child-Pugh Class A, B, or C according to the total score.

Written informed consent was taken from all study participants. Confidentiality of patient information was maintained throughout the study.

Statistical Analysis
Data were entered in Microsoft Excel and analyzed using appropriate statistical methods. Quantitative variables were expressed as mean and standard deviation, while categorical variables were presented as frequency and percentage. Associations between categorical variables were planned to be assessed using the chi-square test or Fisher's exact test, wherever applicable. A p value of less than 0.05 was considered statistically significant.

RESULTS
A total of 54 patients with chronic liver disease were included in this observational study. The mean age of the study participants was 48.6 ± 12.4 years. The majority of patients belonged to the 41-60 years age group, accounting for 66.6% of the total study population. Males constituted 74.1% of the cohort, while females constituted 25.9%. Most patients belonged to the below-poverty-line category. Alcohol use disorder was the most common etiological factor, followed by NAFLD/NASH, chronic hepatitis B, and chronic hepatitis C. Diabetes mellitus and hypertension were also noted as important associated comorbidities among the study participants (Table 1).

Table 1. Socio-demographic Characteristics and Risk Factors/ Etiology Among Patients with Chronic Liver Disease (n = 54)

Category	Variable	n	%
Age group	21-30 years	2	3.7
	31-40 years	8	14.8
	41-50 years	20	37.0
	51-60 years	16	29.6
	>60 years	8	14.8
Gender	Male	40	74.1
	Female	14	25.9
Socio-economic status	BPL	42	77.8
	APL	12	22.2
Risk factors/Etiology*	Alcohol use disorder	22	40.7
	NAFLD/NASH	11	20.4
	Hepatitis B	8	14.8
	Hepatitis C	6	11.1
	Cryptogenic	5	9.3
	Diabetes mellitus	14	25.9
	Hypertension	11	20.4

**Multiple responses were possible for risk factors/etiology.*

The most frequent presenting complaint was abdominal distension/ascites, reported by 83.3% of patients. Jaundice/icterus was present in 70.4%, followed by pedal edema in 59.3% and anorexia/weakness in 51.9%. Upper gastrointestinal bleeding in the form of hematemesis or melena was reported in 33.3% of cases. Altered sensorium or symptoms suggestive of hepatic encephalopathy were present in 25.9% of patients. On clinical examination, icterus was the most common sign, followed by ascites, pedal edema, and splenomegaly. Among 31 patients who underwent upper gastrointestinal endoscopy, esophageal varices were detected in 71.0%, Grade III-IV varices in 45.2%, and portal hypertensive gastropathy in 29.0% (Table 2).

Table 2. Clinical Presentation, Signs, and Endoscopic Findings Among Patients with Chronic Liver Disease (n = 54)

Category	Variable	n	%
Presenting symptoms*	Abdominal distension/Ascites	45	83.3
	Jaundice/Icterus	38	70.4
	Pedal edema	32	59.3
	Upper GI bleed, hematemesis/melena	18	33.3
	Anorexia/Weakness	28	51.9
	Altered sensorium/HE symptoms	14	25.9
Clinical signs	Icterus	41	75.9
	Splenomegaly	26	48.1
	Spider angioma/Palmar erythema	19	35.2
	Pedal edema	34	63.0
	Ascites, clinical	39	72.2
Endoscopic findings, n = 31	Esophageal varices, any grade	22	71.0
	Grade III-IV varices	14	45.2
	Portal hypertensive gastropathy	9	29.0

**Multiple responses were noted for symptoms.*

Assessment of disease severity using the Child-Turcotte-Pugh classification showed that the majority of patients presented with decompensated disease. Child-Pugh Class B was observed in 51.9% of patients, while Class C was observed in 46.3%. Only 1.9% of patients were in Class A. The most common complication was ascites, seen in 72.2% of cases, followed by hepatic encephalopathy in 37.0%, variceal bleeding in 33.3%, and coagulopathy in 44.4%. Spontaneous bacterial peritonitis and hepatorenal syndrome were observed in 14.8% and 11.1% of patients, respectively. Laboratory evaluation revealed hyperbilirubinemia in 88.9%, hypoalbuminemia in 90.7%, thrombocytopenia in 53.7%, and INR >1.5 in 50.0% of patients. Ultrasonography showed features of chronic liver disease with portal hypertension in 81.5% of patients (Table 3).

Table 3. Severity, Complications, Laboratory Findings, and Imaging Profile Among Patients with Chronic Liver Disease (n = 54)

Category	Variable	n/value	%/SD
Child-Turcotte-Pugh Class	Class A, 5-6	1	1.9
	Class B, 7-9	28	51.9
	Class C, 10-15	25	46.3
Complications	Ascites	39	72.2
	Hepatic encephalopathy	20	37.0
	Upper GI bleed/ Variceal bleed	18	33.3
	Coagulopathy, INR >1.5	24	44.4
	Spontaneous bacterial peritonitis	8	14.8
	Hepatorenal syndrome	6	11.1
Key laboratory findings	Total bilirubin raised, >2 mg/dL	Mean 5.8 ± 3.9; n = 48	88.9
	AST raised	Mean 92 ± 58; n = 46	85.2
	ALT raised	Mean 78 ± 49; n = 41	75.9
	Serum albumin <3.5 g/dL	Mean 2.6 ± 0.6; n = 49	90.7
	INR >1.5	Mean 1.8 ± 0.7; n = 27	50.0
	Thrombocytopenia, <1.5 lakh	29	53.7

Imaging	USG: CLD with portal hypertension	44	81.5

Discussion

Chronic liver disease remains an important global health problem because of its progressive course, late clinical presentation, and high risk of complications. It contributes substantially to morbidity and mortality worldwide, with cirrhosis and hepatocellular carcinoma forming a major part of this burden [1,2]. Global mortality analyses have shown that liver cirrhosis remains an important cause of premature death across countries [3,5]. In the Asia-Pacific region, the etiological spectrum of CLD varies widely, with alcohol use, viral hepatitis, metabolic dysfunction, and autoimmune causes contributing in different proportions [4]. In the present study, most patients were in the 41–60 years age group, with a mean age of 48.6 ± 12.4 years, suggesting that CLD commonly affects individuals during economically productive years. Similar findings were reported by Suresh and Praveen, who observed that most patients belonged to the 41–60 years age group [13]. Patel et al. also reported that most CLD patients were within the 21–60 years age group [14].

Male predominance was observed in the present study, with males comprising 74.1% of cases. This was comparable to Suresh and Praveen, who reported 79.5% males, and Patel et al., who reported 68% males among CLD patients [13,14]. Nayak also reported marked male predominance among patients with alcoholic liver disease [15]. Alcohol use disorder was the most common etiological factor in the present study, observed in 40.7% of patients, followed by NAFLD/NASH, hepatitis B, and hepatitis C. This pattern is consistent with Indian data showing that alcohol use, viral hepatitis, and metabolic risk factors remain important contributors to CLD [11]. At the same time, the rising burden of NAFLD/NASH reflects the global increase in obesity, diabetes mellitus, and metabolic syndrome [6]. Suresh and Praveen also reported a high proportion of alcohol use among CLD patients, while Patel et al. reported alcoholic liver disease as the predominant etiology, followed by NAFLD and viral hepatitis [13,14]. Nayak further emphasized that prolonged and excessive alcohol consumption leads to significant clinical morbidity and repeated hospitalization [15].

The most common presenting complaints in the present study were abdominal distension/ascites, jaundice, pedal edema, anorexia/weakness, and upper gastrointestinal bleeding, indicating that many patients presented after decompensation. Cirrhosis is known to progress from compensated to decompensated stages, with ascites, variceal bleeding, jaundice, and hepatic encephalopathy being important clinical events associated with poor prognosis [7,10,12]. Similar clinical patterns were reported by Suresh and Praveen, who found abdominal distension and jaundice to be common presenting complaints [13]. Patel et al. reported abdominal pain, generalized weakness, jaundice, and abdominal distension as common symptoms, while Nayak observed nausea/vomiting, jaundice, hepatomegaly, signs of liver failure, and anorexia as frequent features in alcoholic liver disease [14,15]. On examination, icterus, ascites, pedal edema, and splenomegaly were the dominant findings in the present study, reflecting advanced liver dysfunction and portal hypertension.

Assessment of severity using the Child–Turcotte–Pugh classification showed that most patients had advanced disease, with 51.9% in Class B and 46.3% in Class C. Only 1.9% were in Class A. The Child–Pugh and MELD scoring systems are widely used to assess severity and prognosis in advanced liver disease [8]. Suresh and Praveen reported a very similar distribution, with 51.5% patients in CTP Class B and 46.5% in Class C [13]. Patel et al. reported an even higher proportion of advanced disease, with 87% patients in Child–Pugh Class C [14]. Upper gastrointestinal endoscopy in the present study showed esophageal varices in 71.0% of patients who underwent endoscopy, and variceal bleeding was documented in 33.3% of cases. This highlights the high burden of portal hypertension-related complications and the need for timely endoscopic screening and prophylactic treatment.

Ascites was the most common complication in the present study, followed by hepatic encephalopathy, variceal bleeding, coagulopathy, spontaneous bacterial peritonitis, and hepatorenal syndrome. Hepatic encephalopathy is an important complication of advanced liver disease and requires early recognition and appropriate management [9]. Similar complications were reported by Suresh and Praveen and Patel et al., including hepatic encephalopathy, upper gastrointestinal bleeding, sepsis, spontaneous bacterial peritonitis, and hepatorenal syndrome [13,14]. Laboratory findings in the present study also reflected advanced disease, with hypoalbuminemia, raised bilirubin, raised transaminases, prolonged INR, and thrombocytopenia being common. These findings were comparable with Suresh and Praveen and Patel et al., who reported deranged liver function tests, coagulation abnormalities, anemia, and thrombocytopenia in a high proportion of CLD patients [13,14].

Ultrasonography demonstrated features of CLD with portal hypertension in 81.5% of patients in the present study, which was comparable to the 82.5% reported by Suresh and Praveen [13]. Patel et al. also reported radiological evidence of advanced liver disease, including hepatomegaly, ascites, splenic varices, splenomegaly, and portal hypertension [14]. Overall, the present study shows that CLD in this tertiary-care setting was predominantly alcohol-related, commonly affected middle-aged males, and was frequently diagnosed at an advanced stage. The findings support the need for early screening of high-risk individuals, alcohol cessation measures, hepatitis B vaccination, hepatitis B and C testing and treatment, metabolic risk control, timely endoscopic evaluation, and early referral to reduce progression to decompensated liver disease.

Limitations

This was a single-centre hospital-based observational study with a relatively small sample size, and therefore the findings may not be generalizable to the wider community. As only patients presenting to a tertiary care hospital were included, the study may have over-represented patients with advanced or decompensated disease. Long-term follow-up and outcome assessment were not performed. Some etiological factors may have overlapped, and advanced diagnostic tests for less common causes of chronic liver disease may not have been performed in all patients.

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Conflict of Interest

The authors declare no conflict of interest.

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