ISSN: 2091-2331 (Print) 2091-234X (Online)

Journal of Nobel Medical College

Volume 14, Number 01, Issue 26, January-June 2025, 76-81

Original Article

Clinical Profile of Patients with Chronic Liver Disease

Pratap Sagar Tiwari [1]*, Surendra Shah [2], Sudhamshu KC [3]

1 Department of Hepatology, 2 Department of Medicine, Nobel Medical College Teaching Hospital, Biratnagar, Nepal,3 Department of Hepatology, Bir Hospital, Kathmandu, Nepal

Article Received: 24th March, 2025; Accepted: 17th May, 2025; Published: 31st July, 2025

DOI: https://doi.org/10.3126/jonmc.v14i1.83325

Abstract

Background
Chronic liver disease is a major problem worldwide. Understanding the demographics, clinical profile, and staging of the condition helps in forming a better management plan for the disease and which reflects the outcomes as well.

Materials and Methods
Three hundred and eighty patients with chronic liver disease were prospectively studied at the Department of Hepatology in Nobel Medical college, which is a tertiary care hospital of eastern Nepal, from September 2023 to March 2024. Clinical characteristics, endoscopy results and lab reports were studied. Statistical Package for the Social Sciences (SPSS) version was used for the analysis.

Results
Mean age was 48.3±11.1 years with 73 % males. The maximum number of patients [112 (29.5%)] belonged to the age group 45-54 years old. The aetiology of Chronic liver disease was alcohol-related in 81 %. Chronic Hepatitis B virus and Hepatitis C virus-related liver disease was found in 11.6% & 2.6 % of patients. Eighty-six percent had esophageal varices. There were 11.8% patients with MELD score <10, 35.5% with MELD score 10-15, and 52.6% with MELD score >15. Based on the Child-Pugh score, 15.5% of patients were in CPC-A, 38.4% were in CPC-B, and 46.1% were in CPC-C at presentation.

Conclusion
Alcohol-related liver disease is the most common cause of Chronic liver disease in Nepal, followed by Chronic Hepatitis B and Hepatitis C virus-related liver disease. Most patients present in their advanced stages, as reflected by esophageal varices and high MELD & Child Pugh scores.

Keywords: *Esophageal varices, Fibrosis, Liver Diseases*

***Corresponding Author:**
Dr Pratap Sagar Tiwari
Associate Professor
Email: pratapsagartiwari@gmail.com
ORCID: https://orcid.org/0000-0003-4084-5879

Citation
Tiwari PS, Shah S, KC S, Clinical Profile of Patients with Chronic Liver Disease, JoNMC. 14:1 (2025) 76-81. DOI: https://doi.org/10.3126/jonmc.v14i1.83325.

Introduction

Alcohol-related liver diseases and Chronic hepatitis B & C-related are the most common causes of CLD in Nepal [1]. Chronic liver (CLD) is a major public health concern and more importantly carries high economic burden to the individual and the nation [2]. The median survival of patients with compensated CLD is approximately 9 to 12 years, whereas it drops significantly to approximately 2 years in decompensated stage [3, 4].

Child-Pugh classification (CPC) and Model for End-stage Liver Disease (MELD) are common model of risk stratification in CLD. Child-Pugh class is associated with the increased likelihood of developing complications. Studies have also confirmed the correlation of MELD score with the degree of liver functional impairment [5].

There have been several studies [6, 7] around the worlddone to profile the CLD patients, and fewer studies have been done in Nepal [8-10] as well. The aim of this study is to detail the profile of CLD patients.

Materials and Methods

This was a cross-sectional observational hospital-based study conducted in the department of Hepatology, Nobel Medical College, Biratnagar, Nepal. The study was carried out from September 2023 to March 2024. This study was approved by the ethical review committee of the institute and written informed consent was taken from all the patients. All patients, aged more than 18 years, with the diagnosis of chronic liver disease were included in the study. Chronic liver disease was diagnosed on the basis of history, clinical examination, laboratory parameters, imaging diagnosis, and or a histopathological examination (when necessary). Patient <18 years old, unwilling to give consent, or with ongoing comorbid conditions like acute exacerbation of chronic obstructive pulmonary disease/asthma, myocardial infarction (within six months), and patients on the ventilator were excluded. Patients having Hepatocellular carcinoma, portal vein or splenic vein thrombosis, Severe alcoholic hepatitis, acute on chronic liver failure, non-cirrhotic portal hypertension, and CLD of unknown/mixed Aetiology were excluded. Patients on beta-blockers, non-steroidal anti-inflammatory drugs, proton pump inhibitors, and active bleeding were also excluded.

All the patients underwent EGD and the presence of esophageal varices (EV) was noted and graded as small varices (straight, <5 mm) and large EV (tortuous >5 mm) as per the American Association for the Study of Liver Disease Guidelines [11].

Stratifying liver disease severity

Complete blood count, renal function test, liver function test, abdominal ultrasonography, prothrombin time, INR level data were collected. Liver disease severity was assessed by Child Pugh class and MELD score.

Table 1: Child Pugh Score/class [12]

Parameter	Points Assigned		
	1	2	3
Ascites	Absent	Slight	moderate
Bilirubin	<2 mg/dL	2 to 3 mg/dL	>3 mg/dL
Albumin	>3.5 g/dL	2.8 to 3.5 g/dL	<2.8 g/dL
International Normalized ratio	<1.7	1.7 to 2.3	>2.3
Encephalopathy	None	Grade 1 to 2	Grade 3 to 4

A total Child-Turcotte-Pugh score of 5 to 6 is considered Child -Pugh class A (well -compensated disease); 7 to 9 is class B (significant functional compromise); and 10 to 15 is class C (decompensated disease).

Model For End-stage Liver Disease (MELD) equation [13]

The MELD equation is calculated online or with offline MELD calculator.

*MELD = 3.8*loge (serum bilirubin [mg/dL]) + 11.2*loge (INR) + 9.6*loge (serum creatinine [mg/dL]) + 6.4*

We stratified CLD patients into three groups i.e., MELD < 10, MELD 10-15 and MELD >15.

The sample size was calculated using the formula: n= Z2 x p x q / e2

= (1.96)2 x 0.5 x (1-0.5) / (0.06)2 = 267, where, n= required sample size, Z= 1.96 for 95% Confidence Interval (CI), prevalence= 56% [14], for maximum sample size calculation q= 1-p, e= margin of error, 5%. The calculated minimum sample size was 379. However, the total sample size taken was 380.

The data were entered into and analysed by using the Statistical Package for the Social Sciences (SPSS) version 26. Continuous variables were expressed as mean (±SD) and discrete variables as numbers and percentage. Continuous variables were compared by using Student T-test or Mann Whitney as relevant and discrete variables by chi-square test or Fischer's exact test as relevant. Pearson's correlation coefficient assessed bivariate correlation. A two-sided p-value of <0.05 was considered significant.

Results

A total of 380 CLD patients were enrolled for the study. Mean age was 48.3±11.1 years with 278 (73 %) males and 102 (27%) females. Patient demographics are listed in Table 2.

Table 2: Profile of study population

	All (n=380)	Male N=278	Female N=102	P-value
Age, years, mean (±SD)	48.3±11.1	48.9±11.1	46.7±11.3	0.88
Clinical findings [n (%)]				
Ascites	278 (73.2%)	239 (75.2%)	79 (24.8%)	0.04
HE	38 (10 %)	31 (81.6%)	7 (18.4%)	0.21
Child pugh class				
CPC- A	59 (15.5%)	39 (66.1%)	20 (33.9%)	0.14
CPC- B	146 (38.4%)	103 (70.5%)	43 (29.5%)	
CPC- C	175 (46.0%)	136 (77.7%)	39 (22.3%)	
Laboratory findings				
Haemoglobin, gm/dl	9.6± 1.7	9.6± 1.7	9.5± 1.9	0.73
Platelet $10^3/\mu L$	124± 42	123± 41	127± 44	0.43
AST, IU/L	128± 113	127± 115	130± 108	0.84
ALT, IU/L	65± 125	66± 122	62± 133	0.77
INR	1.5± 0.4	1.5± 0.4	1.5± 0.3	0.73
Creatinine, mg/dl	1± 0.5	1± 0.5	0.9± 0.5	0.16

According to age group, there were 3 (8%) patients below 25 years. Maximum number of patients [112 (29.5%)] belonged to age group 45-54 years old, and five (1.3%) were above 74 years old. The detailed age-group distribution is shown in Figure1.

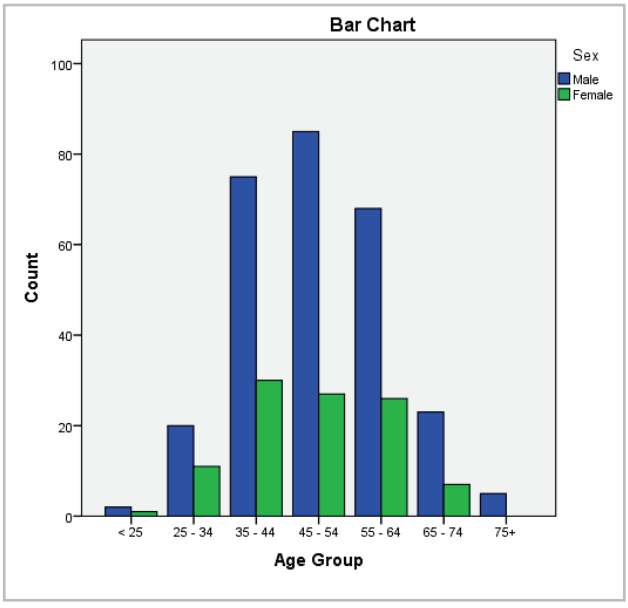

Figure 1: Age-group distribution

The aetiology of CLD was alcohol-related (ALD) in 308 (81 %) patients. Chronic HBV andHCV related liver disease was found in 44 (11.6%) &10 (2.6 %) of patients. And, eight (2.1%) patients were found to be NASH related and 5 (1.3%) patients had Wilson's disease. There were two patients of Primary biliary cholangitis and 3 patients of Autoimmune hepatitis. Figure 2.

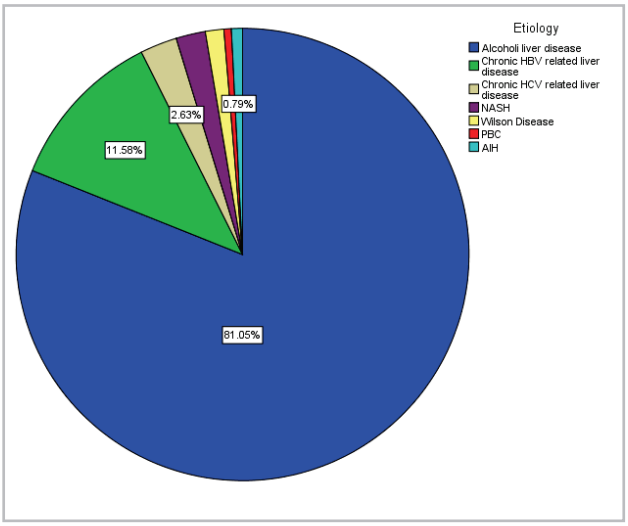

Figure 2: Chronic liver diseases according to aetiology

NASH: probable non-alcoholic steatohepatitis, PBC: primary biliary cholangitis, AIH: autoimmune-related liver disease

Profile of variceal Assessment

Among 380 patients,328 (86.3%) had esophageal varices. Among all patients, 121 (31.8%) had small and 207 (54.7%) had large esophageal varices. Figure 3.

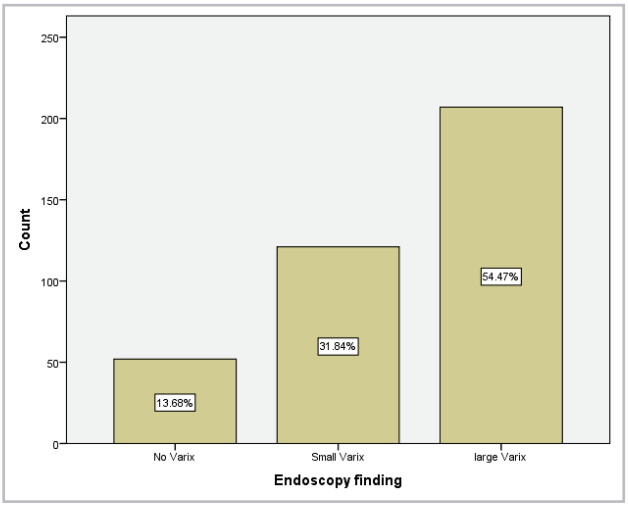

Figure 3: Assessment of esophageal varices after endoscopy

NV; no varices, SEV; small esophageal varices, LEV; large esophageal varices

Liver disease severity assessment

Severity of liver disease was assessed by Child-Pugh classification and MELD.

There were 45 (11.8%) patients with MELD score

<10. Similarly, 135 (35.5%) with MELD score 10-15 and 200 (52.6%) patients with MELD score >15. Based on Child-Pugh score, 59 (15.5%) patients were in CPC-A, 146 (38.4%) in CPC-B and 175 (46.1%) patients in CPC-C at presentation. Table 3 and 4

Table 3: Severity of liver disease by MELD Score

MELD Score	n (%)
<10	45 (11.8%)
10-15	135 (35.5%)
=15	200 (52.6%)
Total	380 (100 %)

Table 4: Severity of liver disease by CP Score

CP CLASS	n (%)
CPC A	59 (15.5%)
CPC B	146 (38.4%)
CPC C	175 (46.1%)
Total	380 (100 %)

Discussion

According to World Health Organization reports, Chronic liver disease is the 11th leading cause of death and 15th leading cause of morbidity, accounting for 2.2% of deaths and 1.5% of disability-adjusted life years worldwide in 2016 [15]. Most of the patients are in their middle Ages with male predominance [16]. In this study, mean age was 48±11 years and 73 % were males. The Maximum number of patients i.e., 29.5% belonged to the age group 45-54 years old. The distribution of agegroup and sex is almost similar to most of the other studies done in Nepal. Among those, Bhattarai et al[10]studied 600 CLD patients. The mean age was 54 ±11 years and 72 % were males and most of the patients belonged to the 50-64 years age group. In other small studies, the mean age was 50 [17], 49 ±12 [8], and 51±12 [9] years.

Studies from the past decade have clearly shown the changing trend in the burden of CLD. Although Alcohol-related liver disease is still the most common cause worldwide, the growing impact of Metabolic dysfunction associated steatotic liver disease (MASLD), previously known as "Non-alcoholic fatty liver disease (NAFLD)" cannot be underestimated [18]. In this study, the aetiology of CLD was alcohol-related (ALD) in 81 % of patients, followed by Chronic HBV and HCV-related liver disease. Eight patients were found to be NAFLD-related. The rising number of MASLD in the clinical practice can be appreciated in our part of the world as well, but due to the reluctance for liver biopsy, most of the cases are underdiagnosed. However, the advent of newer diagnosing methods that include liver elastography by Fibroscan and newer scoring systems, will definitely assist the clinicians and researchers in screening and diagnosing these cases in the days to come. Whether the study done by Mishra et al [14] more than 20 years back or the study by Chaudhary et al [9] done in 2020, almost all the studies conducted in Nepal shows a similar trend regarding the aetiology of CLD i.e., similar to this study, thus need not be exaggerated.

The variceal assessment was done by upper gastrointestinal endoscopy. The prevalence of varices in CLD patients is approximately 60-80% [19]. In this study, 86.3% of patients had esophageal varices. Esophageal varies were present in 57 % of patients in the study by Bhattarai et al [10] and Chaudhary et al [9]. However, it was present in 97 % in the study conducted by Shrestha et al [17]. Among patients with varices, large varices were present in 74% and 73 % in the studies by Chaudhary et al [9] and Shrestha et al [17], respectively. In this study 64 % had large varices. The variation could be due to several reasons. Use of different classification systems for variceal grading, variable number of cases enrolled, center-specific could be among the few reasons.

The severity of liver disease was assessed by the Child-Pugh classification and the MELD scoring system. The laboratory-based MELD score reflects the function of the liver, kidney, and coagulation pathway and can be used as a general prognostic tool while assessing CLD patients [20,21]. The model has shown to quite accurately predict 3 months mortality in patients with chronic end-stage liver disease awaiting LT [22,23]. Similarly, CPC- A denotes compensated, CPC- B denotes decompensated and CPC- C denotes patients with End-stage liver disease. According to the MELD score, we categorized the patients in three groups i.e., MELD scores 10, 10-15, and >15. In this study, 52.6% of patients had MELD score >15. Based on the Child-Pugh score, 15.5% patients were in CPC-A, 38.4% in CPC-B, and 46.1% of patients in CPC-C at presentation. The study done by Shrestha et al [17] showed that 38.1% of patients were in CPC-C. Similarly, the maximum percentage of patients were in Child Pugh classification – C in other studies as well, i.e., 51% in Chaudhary et al [9], 52% in Maskey et al [8] and 63.1% in Bhattarai et al [10] studies. The trend denotes that the maximum number of patients with CLD present in the

advance stage of their disease.

This study is not without limitations. It was a single center study conducted in a tertiary center; thus, most patients were in the advance stage of the disease. Though elastography scans can be done with Fibroscan in our center at present, but it wasn't available at the time of study, thus patients were diagnosed as chronic liver disease on the basis of clinical, biochemical and imaging evidences. However, further studies can be conducted in homogenous groups and with long follow ups to determine a better profile and the natural course of illness in Nepalese population.

Conclusion

Chronic liver disease patients presenting at the tertiary center were predominantly male and generally middle-aged. Alcohol-related liver disease is the most common, followed by Chronic HBV and HCV related liver diseases. Majority of the cases are in the advance stage of their disease with presence of esophageal varices and the simple scoring systems like MELD and Child Pugh class can be quite helpful in risk stratification.

Acknowledgement

Assoc. Professor Shital Bhandary, Patan Academy of Health Sciences

Conflict of interest: None

References

[1] Shrestha SM, Liver diseases in Nepal, Kathmandu Univ Med J. 3:2 (2005) 178-180. PMID: 16415618.

[2] Ma C, Qian, A S, Nguyen N H, Stukalin I, Congly S E, Singh S, et al, Trends in the Economic Burden of Chronic Liver Diseases and Cirrhosis in the United States: 1996-2016, The American Journal of Gastroenterology. 116:10 (2021) 2060-2067. DOI:10.14309/ajg.0000000000001292. PMID: 33998785.

[3] Ginés P, Quintero E, Arroyo V, Terés J, Bruguera M, Rozman C, et al, Compensated cirrhosis: natural history and prognostic factors, Hepatology. 7:1 (1987) 122-128. DOI:10.1002/hep.1840070124. PMID: 3804191.

[4] D'Amico G, Pasta L, Morabito A, D'Amico M, Caltagirone M, Pagliaro L, et al, Competing risks and prognostic stages of cirrhosis: a 25-year inception cohort study of 494 patients, Aliment Pharmacol Ther.39:10 (2014) 1180-1193.DOI:10.1111/apt.12721. PMID: 24654740.

[5] Botta F, Giannini E, Romagnoli P, Fasoli A, Malfatti F, Testa R, et al, MELD scoring system is useful for predicting prognosis in patients with liver cirrhosis and is correlated with residual liver function: a European study, Gut. 52:1 (2003) 134-139. DOI: 10.1136/gut.52.1.134. PMID: 12477775.

[6] Bhattacharyya M, Barman NN and Goswami B, Clinical profile of cirrhosis of liver in a tertiary care hospital of Assam, North East India, IOSR-JDMS. 15:1 (2016) 21-27. DOI:10.9790/0853-151102127.

[7] Mishra D, Dash KR, Khatua C, Panigrahi S, Parida PK, Singh SP, et al, A Study on the Temporal Trends in the Etiology of Cirrhosis of Liver in Coastal Eastern Odisha,Euroasian J Hepatogastroenterol. 10:1 (2020) 1-6. DOI:10.5005/jp-journals-10018-1312. PMID: 32742964.

[8] Maskey R, Karki P, Ahmed SV and Manandhar DN, Clinical profile of patients with cirrhosis of liver in a tertiary care hospital, Dharan, Nepal, Nepal Med Coll J. 13:2 (2011) 115-118.PMID: 22364095.

[9] Shatdal C, Jaiswal NK, Shahi A and Chhetri P, Clinical Profile and Upper Gastrointestinal Endoscopic Findings of Patients Presenting with Liver Cirrhosis with Portal Hypertension, Journal of Karnali Academy of Health Sciences. 3:7 (2020) 13-24. DOI: 10.3126/jkahs.v3i1.27780.

[10] Bhattarai S, Gyawali M, Dewan KR and Shrestha G, Demographic and Clinical Profile in Patients with Liver Cirrhosis in a Tertiary Care Hospital in Central Nepal, J Nepal Med Assoc. 56:208 (2017) 401-406.DOI: 10.31729/jnma.3362. PMID: 29453469.

[11] Garcia-Tsao G, Sanyal AJ, Grace ND, Carey W, Practice Guidelines Committee of the American Association for the Study of Liver Diseases; Practice Parameters Committee of the American College of Gastroenterology: Prevention and management of gastroesophageal varices and variceal hemorrhage in cirrhosis, Hepatology. 46:3 (2007) 922-938. DOI: 10.1002/hep.21907. PMID: 17879356.

[12] Child CG and Turcotte JG: Surgery and Portal Hypertension. The Liver and Portal Hypertension. In: Child, C.G (ed): Saunders, Philadelphia; 1964. p. 50-64.

[13] Singal AK and Kamath PS, Model for End-stage Liver Disease, J Clin Exp Hepatol. 3:1 (2013) 50-60. DOI: 10.1016/j.jceh.2012.11.002. PMID: 25755471.

[14] Mishra A, Shrestha P, Bista N, Bhurtel P, Bhattarai S, Pathak S, et al, Pattern of Liver Diseases, Journal of Nepal Health Research Council. 7:1 (2009) 14-18. DOI: 10.3126/jnhrc.v7i1.2273.

[15] Global Health Estimates. Geneva: World Health Organization; 2016 Available at: https://www.who.int/data/global-health-estimates. Accessed March 25, 2025.

[16] Sepanlou SG, Safiri S, Bisignano C, Merat S, Saberifiroozi M, Poustchi H, et al, The global, regional, and national burden of cirrhosis by cause in 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017, Lancet Gastroenterol Hepatol. 5:3 (2020) 245-266.DOI: 10.1016/S2468-1253(19)30349-8. PMID: 31981519.

[17] Shrestha A, Khadka D, Shrestha R, Correlation of Grading of Esophageal Varices with Child Turcotte Pugh Class in Patients of Liver Cirrhosis, JNGMC. 16:2 (2018)50-53. DOI: 10.3126/jngmc.v16i2.24879.

[18] Paik JM, Golabi P, Younossi Y, Mishra A, Younossi ZM, Changes in the Global Burden of Chronic Liver Diseases From 2012 to 2017: The Growing Impact of NAFLD, Hepatology.72:5 (2020)1605-1616. DOI: 10.1002/hep.31173. PMID: 32043613.

[19] Amico GD, Morabito A, Noninvasive markers of esophageal varices: Another round, not the last, Hepatology. 39:1 (2004) 30-34. DOI:10.1002/hep.20018. PMID: 14752818.

[20] Kamath PS, Wiesner RH, Malinchoc M, Kremers W, Therneau TM, Kosberg CL, et al, A model to predict survival in patients with end-stage liver disease, Hepatology.33:2 (2001) 464-470.DOI: 10.1053/jhep.

2001.22172. PMID: 11172350.
[21] Biegus J, Zymlinski R, Sokolski M,Siwo?owskiP, Gajewski P, Poniewierka E, et al, Impaired hepato-renal function defined by the MELD XI score as prognosticator in acute heart failure,Eur J Heart Fail. 16;18 (2016) 1518-1521.DOI: 10.1002/ejhf.644. PMID: 27709804.
[22] Brandsaeter B, Friman S, Broome U, Outcome following liver transplantation for primary sclerosing cholangitis in the Nordic countries, Scand J Gastroenterol. 38:11 (2003) 1176-1183. DOI: 10.1080/00365520310006009. PMID: 14686722.
[23] Said A, Williams J, Holden J, Model for end stage liver disease score predicts mortality across a broad spectrum of liver disease, J Hepatol.40:6 (2004) 897-903. DOI: 10.1016/j.jhep.2004.02.010. PMID: 15158328.