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Original Research Article

CLINICAL AND SOCIODEMOGRAPHIC PROFILES OF PATIENTS WITH CHRONIC LIVER DISEASE: A HOSPITAL-BASED DESCRIPTIVE CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Aims: Chronic liver disease (CLD) represents a significant public health challenge in India, with rising mortality rates and late-stage presentations. This study aimed to assess clinical characteristics, diagnostic parameters, and sociodemographic patterns of CLD patients in a tertiary care setting. **Materials and Methods:** A hospital-based, observational, cross-sectional study was conducted over 8 months in the Medicine Department of a tertiary care hospital in Jamnagar, India. One hundred patients with confirmed CLD were enrolled using consecutive sampling. Data collection included sociodemographic information (age, gender, education, occupation, socioeconomic status) and clinical parameters (complete blood count, liver function tests, coagulation profile, renal function tests). Statistical analysis was performed using JAMOVI 2.0 software with descriptive statistics for categorical and continuous variables. **Result:** The study revealed marked male predominance (68% vs 32% female), with males presenting at younger mean age (44.7 years vs 53 years). Most patients (80%) belonged to the 21-60 years age group. Significant gender disparities existed in education (33% males vs 4% females completed high school) and employment (31% females unemployed vs 10% males). Alcoholic liver disease was predominant (66%), followed by NAFLD (24%) and viral hepatitis (8%). Common presenting symptoms included abdominal pain (95%), generalized weakness (71%), jaundice (64%), and abdominal distension (62%). Laboratory investigations demonstrated hyperbilirubinemia (99%), hypoalbuminemia (80%), elevated INR (85%), and prolonged prothrombin time (79%). Anemia was present in 95% and thrombocytopenia in 68%. Child-Pugh classification showed 87% Class C and 13% Class B patients. Complications occurred in 37%, with upper GI bleeding (54%), sepsis (32%), and hepatic encephalopathy (24%) being most common. Radiological findings showed hepatomegaly (98%) and ascites (78%). **Conclusions:** This study reveals advanced CLD presentation in tertiary care with significant male predominance and sociodemographic disparities. The high prevalence of alcohol-related etiology, late-stage presentation, and substantial complication rates underscore the urgent need for enhanced primary care screening, targeted public health interventions for alcohol use disorders, and strategies to reduce gender-based healthcare disparities.

INTRODUCTION

Chronic liver disease (CLD) is characterized by progressive liver function decline persisting beyond six months, driven by inflammation, parenchymal destruction, and regeneration, culminating in fibrosis and cirrhosis.[1] The 2017 Global Burden of Disease study documented an alarming 11.4% increase in CLD-related mortality since 2012, making it one of the most significant global health concerns.[2] This problem is particularly pronounced in developing nations with limited healthcare infrastructure.

In India, CLD has emerged as a major contributor to premature mortality and disability. Unlike China, where CLD mortality rates have stabilised, India has witnessed a consistent rise in CLD-related deaths

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since 1980.[3] This trend highlights gaps in public health interventions and healthcare access. The economic burden extends beyond direct healthcare costs to include lost productivity and psychological impact on families.

CLD poses unique diagnostic challenges due to its insidious nature. Patients commonly present with non-specific symptoms such as jaundice, fatigue, pruritus, anorexia, and abdominal distension.[1,4] However, the disease frequently remains asymptomatic during early stages, progressing silently until cirrhosis develops. Clinical decompensation manifests through complications including ascites, variceal bleeding, and hepatic encephalopathy.[5] This delayed presentation results in patients seeking care only at advanced stages when therapeutic options become limited.

The etiological spectrum of CLD in India reflects complex interactions between lifestyle factors, infectious diseases, and metabolic conditions. While alcoholic liver disease and viral hepatitis have traditionally dominated, non-alcoholic fatty liver disease (NAFLD) has emerged as an increasingly significant contributor.[6] This transition mirrors broader societal changes including urbanization, dietary modifications, and sedentary lifestyles.

Despite CLD's substantial burden in India, there remains a critical paucity of hospital-based studies systematically evaluating clinical profiles and sociodemographic patterns of affected patients. Limited data exists on key diagnostic parameters essential for assessing disease severity.[3,7]

This observational, cross-sectional study was conducted to address these knowledge gaps by investigating the clinical and sociodemographic characteristics of CLD patients admitted to a tertiary care hospital in Jamnagar, Gujarat. The study aims to evaluate clinical profiles, determine mean values of diagnostic parameters, and analyse sociodemographic distribution patterns. The findings may inform clinical practice guidelines, public health policies, and targeted intervention strategies aimed at reducing CLD burden in resource-constrained settings.

MATERIALS AND METHODS

Study Design and Setting

This investigation was designed as a hospital-based, descriptive, cross-sectional study conducted in the Department of General Medicine at a tertiary care hospital in Jamnagar, Gujarat, India. The study design was selected as the most appropriate methodology to capture a comprehensive snapshot of CLD characteristics and diagnostic parameters at a single point in time, enabling efficient assessment of prevalent disease patterns without requiring extended follow-up periods. The study was conducted over 8 months from August 2024 to April 2025.

Tertiary care hospitals serve as referral centers for complex cases and advanced disease states, making them ideal locations for studying CLD in its various stages and manifestations. The study hospital functions as a major referral center for the Saurashtra region, receiving patients from both urban and rural areas, thereby ensuring a diverse patient population representative of the broader regional demographic.

Study Population

The target population comprised adult patients (aged 18 years or above) with confirmed chronic liver disease admitted to the Medicine Department during the study period. CLD was operationally defined as progressive deterioration of liver function persisting for more than six months, characterized by inflammation, parenchymal destruction, and regeneration, potentially progressing to fibrosis and cirrhosis. This definition aligns with internationally accepted clinical criteria and encompasses the full spectrum of chronic hepatic disorders.

Inclusion Criteria

1. Age 18 years or above at the time of admission
2. Confirmed diagnosis of CLD based on clinical presentation, laboratory investigations, and radiological findings
3. Willingness and ability to provide informed consent
4. Admission to the Medicine Department during the study period

Exclusion Criteria

1. Patients who declined to provide informed consent for study participation
2. Patients with incomplete medical records or missing essential data
3. Patients with acute liver failure without underlying chronic liver disease
4. Patients transferred to other facilities before complete data collection

The confirmation of CLD diagnosis was based on a combination of clinical features (such as jaundice, ascites, hepatomegaly, splenomegaly, stigmata of chronic liver disease), laboratory evidence of hepatic dysfunction (elevated bilirubin, decreased albumin, prolonged prothrombin time), and radiological confirmation through ultrasonography demonstrating characteristic findings such as altered liver echotexture, surface nodularity, or portal hypertension.

Sampling Methodology and Sample Size Determination

A non-probability, convenience sampling technique was employed for participant recruitment. This method involves enrolling all eligible patients who meet the inclusion criteria and consent to participate during the specified study period, in the order of their admission.

The sample size was calculated using Cochran's formula for population proportions, The formula used was:

$n_0 = (Z^2 \times p \times q) / e^2$

Where:

- n_0 = required sample size for large populations

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- Z = Z-score corresponding to desired confidence level (1.96 for 95% confidence)
- p = estimated proportion of population with CLD characteristics (0.20 or 20%, based on review of existing Indian studies suggesting CLD prevalence ranges between 9-32%)
- q = 1 - p (0.80 or 80%)
- e = desired margin of error (0.08 or 8%)

Calculation

$n_0 = (1.96^2 \times 0.20 \times 0.80) / 0.08^2$

$n_0 = (3.8416 \times 0.16) / 0.0064$

$n_0 = 0.6146 / 0.0064$

$n_0 = 96.04 \approx 96$

To account for potential non-responders, incomplete data, or other contingencies (estimated at 5%), an additional 4 patients were added, resulting in a final target sample size of 100 patients. This sample size provides adequate statistical power for descriptive analysis and estimation of population parameters with acceptable precision.

Data Collection Procedures

Data collection was conducted through a systematic, multi-faceted approach combining patient interviews, medical record reviews, and extraction of laboratory and radiological findings. A standardized case record form was developed and pilot-tested before full-scale implementation to ensure clarity, completeness, and feasibility of data capture.

Sociodemographic Data

Sociodemographic information was gathered through structured interviews conducted by trained research personnel in the local language to ensure participant comprehension and accurate response recording. The following variables were systematically documented:

1. **Basic Demographics:** Age (in completed years), gender (male/female), weight (kg), height (cm), and calculated Body Mass Index (BMI)
2. **Family Structure:** Type of family (nuclear defined as single married couple with or without unmarried children; joint family defined as two or more married couples of single generation or three or more couples of multiple generations)
3. **Geographic Distribution:** Area of residence (urban/rural classification based on census definitions)
4. **Educational Status:** Highest level of education completed, categorized as illiterate, primary school (classes 1-7), middle school (classes 8-10), high school (classes 11-12), diploma, or graduate/post-graduate
5. **Occupational Profile:** Current occupation classified according to Modified Kuppuswamy classification categories (professional, semi-professional, skilled worker, semi-skilled worker, unskilled worker, unemployed)
6. **Socioeconomic Status:** Determined using the Modified Kuppuswamy Socioeconomic Scale (updated for 2025), which incorporates education, occupation, and monthly family income to classify families into upper, upper-middle, lower-middle, upper-lower, and lower socioeconomic classe
7. **Substance Use History:** Detailed documentation of addiction history including alcohol consumption, tobacco use (smoke and smokeless forms), with duration and quantity when applicable
8. **Comorbidities:** Presence of concurrent medical conditions including hypertension, diabetes mellitus, coronary heart disease, chronic obstructive pulmonary disease, tuberculosis, and other
9. **Family History:** Family history of chronic liver disease in first- or second-degree relatives

Clinical Data

Comprehensive clinical evaluation was performed at the time of admission, with the following parameters systematically documented:

1. **Presenting Complaints:** All symptoms reported by patients, including but not limited to abdominal pain, abdominal distension, jaundice, generalized weakness, nausea/vomiting, hematemesis, melena, fever, breathlessness, altered behaviour, and giddiness
2. **Level of Consciousness:** Assessed and categorized as alert, lethargic, obtunded, stuporous, or comatose based on standardized neurological criteria
3. **Vital Signs:** Blood pressure, heart rate, respiratory rate, and temperature recorded at admission
4. **General Physical Examination:** Systematic evaluation for cardinal signs including:
   - Pallor (conjunctival and palmar)
   - Icterus (scleral and sublingual)
   - Cyanosis (central and peripheral)
   - Clubbing (assessed in fingers)
   - Edema (pedal, facial, or generalized)
5. **Stigmata of Chronic Liver Disease:** Careful examination for specific signs including:
   - Spider telangiectasias (spider nevi)
   - Palmar erythema
   - Dupuytren's contractures
   - Gynecomastia
   - Testicular atrophy
   - Leukonychia
   - Terry's nails
   - Parotid enlargement
6. **Systemic Examination:** Complete physical examination including:
   - Cardiovascular system
   - Respiratory system
   - Abdominal examination (hepatomegaly, splenomegaly, ascites, caput medusae)
   - Neurological examination (for hepatic encephalopathy)

Laboratory Investigations

All patients underwent comprehensive laboratory testing as part of their routine clinical management. Laboratory data were extracted from hospital records

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and electronic laboratory systems. The following investigations were systematically recorded:

1. Complete Blood Count:
- Hemoglobin (g/dL) - with categorization as normal or anemic based on gender-specific cutoffs (males <13 g/dL, females <12 g/dL)
- Total white blood cell count
- Platelet count (per μL) - categorized as normal (150,000-500,000) or thrombocytopenic
2. Liver Function Tests:
- Total bilirubin (mg/dL)
- Direct (conjugated) bilirubin (mg/dL)
- Indirect (unconjugated) bilirubin (mg/dL)
- Serum glutamic-pyruvic transaminase/Alanine aminotransferase (SGPT/ALT) (IU/L)
- Serum albumin (g/dL)
- Total serum protein (g/dL)
3. Coagulation Profile:
- Prothrombin time (PT) in seconds
- International Normalized Ratio (INR)
- Activated partial thromboplastin time (APTT) in seconds
4. Renal Function Tests:
- Blood urea (mg/dL)
- Serum creatinine (mg/dL)
- Serum sodium (mEq/L)
- Serum potassium (mEq/L)
5. Ascitic Fluid Analysis (when clinically indicated):
- Total protein (g/dL)
- Glucose (mg/dL)
- White blood cell count
- Serum-Ascites Albumin Gradient (SAAG) calculation

All laboratory tests were performed in the hospital's central laboratory, which maintains quality assurance protocols and participates in external quality assessment programs. Standard reference ranges were used for interpretation, with adjustments for gender and age where applicable.

Radiological Investigations

Ultrasonographic examination of the abdomen was performed for all patients using standardized protocols. The following findings were systematically documented:

1. Liver characteristics:
- Size (hepatomegaly or atrophy)
- Echotexture alterations
- Surface nodularity
- Focal lesions
2. Portal hypertension features:
- Portal vein diameter
- Splenic vein diameter
- Presence of collaterals
- Splenomegal
3. Ascites presence and volume estimation
4. Splenic varices
5. Other relevant findings (gallstones, biliary tree abnormalities)

Disease Severity Assessment

The Child-Pugh classification system was applied to assess liver disease severity for all patients. This well-validated scoring system incorporates five clinical and laboratory parameters:

- Ascites (absent, slight, moderate)
- Hepatic encephalopathy (none, grade 1-2, grade 3-4)
- Total bilirubin (mg/dL)
- Serum albumin (g/dL)
- Prothrombin time/INR

Based on the cumulative score, patients were classified as:

- Class A (5-6 points): Well-compensated disease
- Class B (7-9 points): Significant functional compromise
- Class C (10-15 points): Decompensated disease

Etiological Assessment

The underlying etiology of CLD was determined through comprehensive evaluation incorporating clinical history, serological testing, radiological findings, and exclusion of alternative diagnoses. Etiologies were categorized as:

- Alcoholic liver disease (based on significant alcohol consumption history)
- Non-alcoholic fatty liver disease (metabolic risk factors, imaging findings, exclusion of other causes)
- Viral hepatitis (serological confirmation of HBV, HCV)
- Autoimmune liver diseases (serological markers)
- Biliary cirrhosis
- Other/cryptogenic causes

Complications

All patients were systematically evaluated for the presence of CLD-related complications:

- Upper gastrointestinal bleeding (hematemesis, melena)
- Hepatic encephalopathy (graded according to West Haven criteria)
- Spontaneous bacterial peritonitis (clinical and ascitic fluid criteria)
- Hepatorenal syndrome (diagnostic criteria)
- Sepsis/systemic infections
- Coagulopathy with bleeding manifestations

Statistical Analysis

Statistical analysis was performed using JAMOVI version 2.0. The analysis plan was developed a priori to address the study objectives systematically.

Descriptive Statistics:

For categorical variables (gender, residence, occupation, education level, presence of symptoms, complications, etc.), data were summarized using frequencies and percentages. Results were presented in tabular format with appropriate categorization.

For continuous variables (age, BMI, hemoglobin, bilirubin levels, albumin, etc.), descriptive statistics including:

- Mean ± standard deviation (SD)

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- Median (for skewed distributions)
- Minimum and maximum values
- Range

Data Presentation

Results were organized according to study objectives:

1. General demographic profile
2. Sociodemographic characteristics
3. Clinical presentation and physical findings
4. Laboratory parameters
5. Disease severity and complications
6. Etiological distribution

Gender-wise comparisons were presented where relevant to highlight potential disparities in disease patterns and healthcare access.

Statistical Significance:

As this was primarily a descriptive study, inferential statistics were not extensively employed. However, where gender comparisons were made, appropriate statistical tests (chi-square for categorical variables, independent t-tests for continuous variables) were considered, with p-value <0.05 considered statistically significant.

Ethical Considerations

Ethics Committee (IEC) approval was obtained from the IEC of Shri M.P. Shah Government Medical College, Jamnagar, prior to study commencement.

Informed Consent:

All eligible patients or their legally acceptable representatives (in cases where patients lacked capacity to consent) were provided with detailed information about the study in their preferred language. The information sheet explained:

- Study purpose and procedures
- Voluntary nature of participation
- Right to withdraw at any time without affecting medical care
- Confidentiality measures
- Contact information for queries

Written informed consent was obtained from all participants before enrollment. For patients with altered consciousness or hepatic encephalopathy, consent was obtained from legally acceptable representatives, with patient assent sought when possible.

Operational Definitions

For consistency and reproducibility, the following operational definitions were used:

BMI Classification: Based on WHO Asian criteria

- Underweight: <18.5 kg/m²
- Normal: 18.5-22.9 kg/m²
- Overweight: 23.0-24.9 kg/m²
- Obese: ≥25.0 kg/m²

Anemia: Gender-specific hemoglobin levels

- Males: <13.0 g/dL
- Females: <12.0 g/dL

Thrombocytopenia: Platelet count <150,000/μL

Coagulation Abnormalities:

- Prolonged PT: >16.9 seconds
- Elevated INR: >1.2
- Prolonged APTT: >40 seconds

Hyperbilirubinemia: Total bilirubin >1.4 mg/dL

Hypoalbuminemia: Serum albumin <3.5 g/dL

Renal Dysfunction:

- Elevated urea: >40 mg/dL
- Elevated creatinine: >1.4 mg/dL
- Electrolyte Abnormalities:
- Hyponatremia: Sodium <135 mEq/L
- Hypernatremia: Sodium >145 mEq/L
- Hypokalemia: Potassium <3.5 mEq/L
- Hyperkalemia: Potassium >5.5 mEq/L

Portal Hypertension: SAAG >1.1 g/dL

Consciousness Levels:

- Alert: Spontaneous eye opening, appropriate responses
- Lethargic: Drowsy but arousable, responds to verbal stimuli
- Obtunded: Requires tactile stimulation for arousal
- Stuporous: Arouses only to painful stimuli
- Comatose: Unarousable, no purposeful responses

RESULTS

Table 1: Demographic Characteristics of Study Population (N=100)

Characteristic	Male (n=68)	Female (n=32)	Total (N=100)	p-value
Mean Age (years ± SD)	44.7 ± 13.5	53.0 ± 16.1	47.2 ± 14.8	0.008
Age Groups, n (%)				
11-20 years	0 (0)	1 (3.1)	1 (1.0)	
21-40 years	31 (45.6)	9 (28.1)	40 (40.0)	
41-60 years	28 (41.2)	12 (37.5)	40 (40.0)	
61-80 years	9 (13.2)	10 (31.3)	19 (19.0)	
BMI (kg/m² ± SD)	21.9 ± 1.67	23.3 ± 2.49	22.3 ± 2.08	0.002
BMI Classification, n (%)				
Underweight (<18.5)	2 (2.9)	1 (3.1)	3 (3.0)	
Normal (18.5-22.9)	65 (95.6)	25 (78.1)	90 (90.0)	
Overweight (23.0-24.9)	1 (1.5)	6 (18.8)	7 (7.0)	
Residence, n (%)				
Urban	44 (64.7)	14 (43.8)	58 (58.0)	0.046
Rural	24 (35.3)	18 (56.3)	42 (42.0)	
Family Type, n (%)				
Nuclear	20 (29.4)	3 (9.4)	23 (23.0)	0.026

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Joint	48 (70.6)	29 (90.6)	77 (77.0)	

Statistically significant (p<0.05)

This table presents the baseline demographic profile of 100 patients with chronic liver disease, stratified by gender (68 males, 32 females). Females were significantly older than males (53.0±16.1 vs 44.7±13.5 years, p=0.008) and had higher BMI (23.3±2.49 vs 21.9±1.67 kg/m², p=0.002). Most participants had normal BMI (90%). Rural residence was more common among females (56.3% vs 35.3%, p=0.046), while joint family structure predominated in both groups (77% overall), being significantly higher in females (90.6% vs 70.6%, p=0.026).

Table 2: Sociodemographic Characteristics by Gender (N=100)

Characteristic	Male (n=68)	Female (n=32)	p-value
Education Level, n (%)			<0.001
Illiterate	1 (1.5)	14 (43.8)	
Primary school (1-7)	15 (22.1)	10 (31.3)	
Middle school (8-10)	11 (16.2)	4 (12.5)	
High school (11-12)	33 (48.5)	4 (12.5)	
Diploma	7 (10.3)	0 (0)	
Graduate	1 (1.5)	0 (0)	
Occupation, n (%)			<0.001
Semi-professional	1 (1.5)	0 (0)	
Skilled worker	33 (48.5)	1 (3.1)	
Semi-skilled worker	23 (33.8)	0 (0)	
Unskilled worker	1 (1.5)	0 (0)	
Unemployed	10 (14.7)	31 (96.9)	
Socioeconomic Status (Kuppuswamy), n (%)			<0.001
Upper middle	63 (92.6)	8 (25.0)	
Lower middle	5 (7.4)	24 (75.0)	
Addiction History, n (%)			<0.001
Present	67 (98.5)	3 (9.4)	
Absent	1 (1.5)	29 (90.6)	

Statistically significant (p<0.05)

This table demonstrates marked gender disparities in socioeconomic parameters. Educational attainment differed significantly (p<0.001), with 43.8% of females being illiterate compared to only 1.5% of males. Occupational patterns showed 96.9% of females were unemployed versus 14.7% of males (p<0.001). Males predominantly belonged to upper middle socioeconomic status (92.6%) while females were mainly lower middle class (75%, p<0.001). Addiction history was present in 98.5% of males but only 9.4% of females (p<0.001).

Table 3: Clinical Presentation and Physical Findings (N=100)

Parameter	Frequency (n)	Percentage (%)
Presenting Symptoms		
Abdominal pain	95	95.0
Generalized weakness	71	71.0
Jaundice	64	64.0
Abdominal distension	62	62.0
Vomiting/nausea	59	59.0
Black stool (melena)	34	34.0
Breathlessness	34	34.0
Giddiness	20	20.0
Fever	18	18.0
Altered behavior	14	14.0
Hematemesis	10	10.0
Consciousness Level on Admission		
Drowsy	60	60.0
Alert	25	25.0
Stupor	15	15.0
Cardinal Signs		
Icterus	92	92.0
Edema	52	52.0
Pallor	48	48.0
Clubbing	3	3.0
Cyanosis	2	2.0
Stigmata of CLD		
Present	39	39.0
Palmar erythema (of those with stigmata)	38/39	97.4
Spider telangiectasias (of those with stigmata)	10/39	25.6

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Child-Pugh Classification		
Class A (5-6 points)	0	0.0
Class B (7-9 points)	13	13.0
Class C (10-15 points)	87	87.0

This table summarizes clinical manifestations at presentation. Abdominal pain was the most common symptom (95%), followed by generalized weakness (71%), jaundice (64%), and abdominal distension (62%). On admission, 60% of patients were drowsy, 25% alert, and 15% in stupor. Icterus was the predominant cardinal sign (92%). Among 39 patients with chronic liver disease stigmata, palmar erythema was present in 97.4%. Disease severity assessment revealed 87% were Child-Pugh Class C and 13% Class B, with no Class A patients.

Table 4: Laboratory Parameters by Gender

Parameter	Male (n=68) Mean ± SD	Female (n=32) Mean ± SD	Normal Range	Abnormal n (%)
Hematology				
Hemoglobin (g/dL)	8.96 ± 2.3	9.13 ± 1.86	M: 13-18, F: 12-17	95 (95.0)
Platelets (×10³/μL)	133.5 ± 54.2	116.4 ± 56.7	150-500	68 (68.0)
Coagulation Profile				
PT (seconds)	22.2 ± 5.87	18.5 ± 3.69	11-16.9	79 (79.0)
INR	2.0 ± 0.689	1.64 ± 0.44	0.8-1.2	85 (85.0)
APTT (seconds)	44.4 ± 11.91	41.2 ± 7.67	30-40	56 (56.0)
Liver Function Tests				
Total Bilirubin (mg/dL)	8.16 ± 10.12	4.77 ± 4.30	0.2-1.4	99 (99.0)
Direct Bilirubin (mg/dL)	3.48 ± 4.56	2.02 ± 1.94	0.0-0.4	96 (96.0)
Indirect Bilirubin (mg/dL)	4.05 ± 3.79	2.83 ± 2.44	0.2-1.0	86 (86.0)
SGPT (IU/L)	55.1 ± 96.2	46.4 ± 36.7	<40	37 (37.0)
Albumin (g/dL)	2.95 ± 0.53	3.16 ± 0.58	3.5-5.0	80 (80.0)
Total Protein (g/dL)	6.03 ± 0.61	6.02 ± 0.81	6.0-8.0	32 (32.0)
Renal Function Tests				
Blood Urea (mg/dL)	36.2 ± 22.6	32.3 ± 17.4	20-40	30 (30.0)
Creatinine (mg/dL)	1.24 ± 0.63	1.11 ± 0.46	0.7-1.4	26 (26.0)
Sodium (mEq/L)	137.8 ± 6.05	138.8 ± 4.12	135-145	28 (28.0)†
Potassium (mEq/L)	3.96 ± 0.74	4.05 ± 0.70	3.5-5.5	30 (30.0)‡

†Includes hyponatremia (n=24) and hypernatremia (n=4)
‡Includes hypokalemia (n=27) and hyperkalemia (n=3)

This table details laboratory abnormalities across hematological, coagulation, hepatic, and renal parameters. Anemia was nearly universal (95%), with mean hemoglobin of 8.96±2.3 g/dL in males and 9.13±1.86 g/dL in females. Coagulopathy was evident with 85% showing elevated INR. Liver dysfunction was marked by elevated total bilirubin in 99% (mean 8.16±10.12 mg/dL in males, 4.77±4.30 mg/dL in females) and hypoalbuminemia in 80%. Renal parameters showed electrolyte disturbances in 28% (sodium) and 30% (potassium) of patients.

Table 5: Etiology, Complications, and Radiological Findings

Parameter	Frequency (n)	Percentage (%)
Etiology of CLD		
Alcoholic liver disease	66	66.0
Non-alcoholic fatty liver disease	24	24.0
Viral hepatitis	8	8.0
Biliary cirrhosis	2	2.0
Complications (n=37)		
Upper GI bleeding	20	54.1
Sepsis	12	32.4
Hepatic encephalopathy	9	24.3
Hepatorenal syndrome	5	13.5
Spontaneous bacterial peritonitis	3	8.1
Ultrasonography Findings		
Hepatomegaly	98	98.0
Ascites	78	78.0
Splenic varices	40	40.0
Splenomegaly	24	24.0
Portal hypertension	18	18.0
Gallstones	1	1.0

Percentage calculated among patients with complications (n=37)

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This table characterizes disease etiology, complications, and imaging findings. Alcoholic liver disease was the predominant cause (66%), followed by non-alcoholic fatty liver disease (24%) and viral hepatitis (8%). Among 37 patients with complications, upper GI bleeding was most common (54.1%), followed by sepsis (32.4%) and hepatic encephalopathy (24.3%). Ultrasonography revealed hepatomegaly in 98% of patients, ascites in 78%, splenic varices in 40%, and splenomegaly in 24%.

coagulopathy (INR elevated in 85%) and thrombocytopenia (68%) reflect advanced hepatic synthetic failure and portal hypertension. Renal dysfunction (26-30% with elevated urea/creatinine) and electrolyte disturbances (28% sodium, 30% potassium abnormalities) indicate end-organ complications.

DISCUSSION

This observational study of 100 chronic liver disease patients at a tertiary care hospital in Jamnagar reveals concerning patterns of late presentation and significant sociodemographic disparities.

Demographic and Gender Patterns

The male predominance (68%) aligns with Indian and global literature, directly correlating with higher addiction rates among males (98.5% vs 9.4%, $p<0.001$). Males presented earlier (mean age 44.7 vs 53.0 years, $p=0.008$), likely reflecting earlier disease onset from prolonged alcohol exposure. The concentration of patients in economically productive age groups (21-60 years: 80%) has profound socioeconomic implications for families and communities.

Striking Sociodemographic Disparities

Gender disparities were remarkable: female illiteracy (43.8%) was 30-fold higher than males (1.5%), with 96.9% of females unemployed versus 14.7% of males ($p<0.001$). Consequently, 92.6% of males belonged to upper-middle socioeconomic class while 75% of females were lower-middle class ($p<0.001$). These interconnected educational, occupational, and economic disadvantages likely contribute to delayed healthcare-seeking and worse outcomes among female patients. The higher rural representation among females (56.3% vs 35.3%, $p=0.046$) suggests additional barriers to accessing tertiary care.

Etiological Patterns

Alcoholic liver disease predominated (66%), reflecting regional consumption patterns and tertiary referral bias toward advanced alcohol-related disease. The emergence of non-alcoholic fatty liver disease as the second leading cause (24%) reflects India's epidemiological transition toward metabolic diseases. Relatively low viral hepatitis prevalence (8%) may indicate successful vaccination programs or regional variations.

Disease Severity at Presentation

The most alarming finding was that 87% of patients presented as Child-Pugh Class C with no Class A patients, contrasting sharply with other studies reporting 46-52% Class C. This pattern indicates critical healthcare system failures: delayed presentation, poor disease awareness, and inadequate primary care screening. The high prevalence of drowsiness (60%) and stupor (15%) at admission reflects severe hepatic encephalopathy requiring immediate intensive management.

Laboratory and Clinical Manifestations

Near-universal anemia (95%), hyperbilirubinemia (99%), and hypoalbuminemia (80%) confirmed severe multisystem dysfunction. High rates of

Complications

Among patients with complications (37%), upper GI bleeding was most common (54%), followed by sepsis (32%) and hepatic encephalopathy (24%). Hepatorenal syndrome in 14% of complicated cases carries particularly poor prognosis without transplantation.

Clinical and Public Health Implications

These findings demand urgent multilevel interventions:

1. Primary prevention: Comprehensive alcohol control policies and NAFLD prevention through lifestyle interventions
2. Early detection: Enhanced primary care screening for at-risk populations
3. Healthcare access: Addressing geographic, economic, and gender-based barriers to care
4. Gender-sensitive approaches: Targeted interventions addressing educational and socioeconomic disparities affecting female patients
5. Capacity building: Expanded hepatology services, endoscopy capabilities, and liver transplantation programs
6. Community education: Public awareness campaigns about symptoms and risk factors

Study Limitations

Single-center tertiary care design overrepresents advanced disease and limits generalizability. Cross-sectional methodology precludes assessment of disease progression or outcomes.

CONCLUSION

This study reveals a concerning pattern of late-stage CLD presentation with profound sociodemographic disparities, particularly affecting women. The predominance of Class C cirrhosis represents preventable morbidity and mortality, demanding comprehensive strategies spanning primary prevention, early detection, equitable healthcare access, and enhanced treatment capacity.

REFERENCES

1. 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. 2020;72(5):1605-1616. doi:10.1002/hep.31296

ISSN (O): 2687-5365; ISSN (P): 2753-6556

2. Mokdad AA, Lopez AD, Shahraz S, et al. Liver cirrhosis mortality in 187 countries between 1980 and 2010: a systematic analysis. BMC Med. 2014;12(1):145. doi:10.1186/s12916-014-0145-y
3. Mukherjee PS, Vishnubhatla S, Amarapurkar DN, et al. Etiology and mode of presentation of chronic liver diseases in India: A multi centric study. PLoS ONE. 2017;12(10):e0187033. doi:10.1371/journal.pone.0187033
4. Andrade LF, Haq Z, Abdi P, et al. Association of Liver Disease and Chronic Pruritus: A Case-Control Study. Liver Int. 2025;45(4):e16126. doi:10.1111/liv.16126
5. Kim HY, Kim CW, Choi JY, et al. Complications Requiring Hospital Admission and Causes of In-Hospital Death over Time in Alcoholic and Nonalcoholic Cirrhosis Patients. Gut Liver. 2016;10(1):95-101. doi:10.5009/gnl14329
6. Sharma A, Nagalli S. Chronic Liver Disease. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2025. http://www.ncbi.nlm.nih.gov/books/NBK554597/
7. Jain P, Shasthry SM, Choudhury AK, et al. Alcohol associated liver cirrhotics have higher mortality after index hospitalization: Long-term data of 5,138 patients. Clin Mol Hepatol. 2021;27(1):175-185. doi:10.3350/cmh.2020.0093
8. Suresh A, M P. An observational study to assess the clinical profiles of patients with chronic liver disease. Int J Adv Med. 2023;10(7):511-517. doi:10.18203/2349-3933.ijam20232034
9. Kardashian A, Serper M, Terrault N, Nephew LD. Health disparities in chronic liver disease. Hepatology. 2023;77(4):1382-1401. doi:10.1002/hep.32743
10. Duah A, Agyei-Nkansah A, Osei-Poku F, et al. Sociodemographic characteristics, complications requiring hospital admission and causes of in-hospital death in patients with liver cirrhosis admitted at a district hospital in Ghana. PLoS ONE. 2021;16(6):e0253759. doi:10.1371/journal.pone.0253759
11. Juanola O, Martínez-López S, Francés R, Gómez-Hurtado I. Non-Alcoholic Fatty Liver Disease: Metabolic, Genetic, Epigenetic and Environmental Risk Factors. Int J Environ Res Public Health. 2021;18(10):5227. doi:10.3390/ijerph18105227.

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