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DISEASE PATTERNS AND IN-HOSPITAL OUTCOMES IN A TERTIARY-CARE GASTROENTEROLOGY WARD IN SOUTH PUNJAB, PAKISTAN: A CROSS-SECTIONAL STUDY

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Abstract

Background: *Gastroenterology wards of tertiary hospitals cater to a wide range of gastrointestinal and hepatobiliary diseases, but there is limited ward level data regarding disease pattern and hospital outcome from South Punjab, Pakistan.*

Objective: *To describe the diagnostic spectrum, demographic profile, length of stay and in hospital outcomes of patients admitted to Gastroenterology Ward of Nishtar Hospital, Multan.*

Methods: *The study was a retrospective cross-sectional study, in which records of all 169 patients admitted during the period August to October 2025 were retrieved on a structured proforma. One primary diagnosis was assigned to each patient. Data were analysed descriptively in SPSS version 27, proportions are presented with 95% confidence intervals (CIs).*

Results: *Mean age was 48.4 ± 16.4 years (range 16–87), and 103 patients (60.9%) were male. Decompensated chronic liver disease/liver cirrhosis was the most frequent diagnosis (49/169, 29.0%), followed by hepatocellular carcinoma (22, 13.0%), upper gastrointestinal bleeding (15, 8.9%) and chronic viral hepatitis (11, 6.5%). The total number of liver-related diagnosis was 92 (54.4%). The median hospital stay was 4 days (range 1-20). Overall, 124 patients (73.4%) were discharged, 18 (10.7%; 95% CI 6.8–16.2) died, 15 (8.9%) were referred or transferred, and 12 (7.1%) left against medical advice. The crude mortality rates were 16.3% (95% CI 8.5–29.0) for cirrhosis and 18.2% (7.3–38.5) for hepatocellular carcinoma, with 12 of the 18 deaths being liver-related.*

Conclusion: *Liver disease was the leading cause of admission to this tertiary gastroenterology ward and 12 of 18 deaths were attributable to liver disease, especially decompensated cirrhosis and hepatocellular carcinoma. The in-hospital mortality rate was 10.7% and 7.1% of patients left against medical advice. Regional service planning requires multicentre studies which record aetiology, disease severity, endoscopic findings and treatment data.*

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INTRODUCTION

Gastrointestinal and hepatobiliary disorders account for a large share of inpatient medical care, and chronic liver disease remains a major global health burden. Recent estimates show a persistent burden of cirrhosis with marked geographic and aetiological variation, as the relative contributions of viral hepatitis, metabolic dysfunction-associated steatotic liver disease (MASLD), alcohol-associated liver disease and other causes continue to shift.[1,2]

In Pakistan, viral hepatitis remains a leading contributor to chronic liver disease.[3–5] Population-level modelling has characterised the burden of hepatitis C virus (HCV) infection with marked provincial variation,[3] a serosurvey in Sindh Province has estimated the prevalence of hepatitis B, hepatitis C and HIV,[4] and a recent review describes the changing aetiology and complications of cirrhosis in the country.[5] Hepatitis B virus (HBV) also remains an important cause, and current international and national guidelines emphasise diagnosis, prevention, treatment eligibility and long-term monitoring,[6,7] while MASLD is increasingly recognised in contemporary liver-disease guidance.[8]

Progressive chronic liver disease leads to portal hypertension, ascites, spontaneous bacterial peritonitis, gastrointestinal bleeding, hepatic decompensation and other complications that require hospital care. Current guidance stresses risk stratification for clinically significant portal hypertension and complication-specific management,[9,10] including management of ascites and volume overload,[11] while acute-on-chronic liver failure and critical illness in cirrhosis carry substantial short-term mortality.[12,13] Vasoactive drugs, albumin and transjugular intrahepatic portosystemic shunt (TIPS) placement have defined roles in selected patients.[14,15]

Hepatocellular carcinoma (HCC) is another major complication of chronic liver disease; international guidelines recommend risk-based surveillance, standardised diagnostic work-up, staging and multidisciplinary treatment that accounts for tumour burden, liver function and performance status.[16–20] Upper gastrointestinal bleeding (UGIB), whether portal hypertensive or non-variceal, also frequently leads to admission and requires early assessment with endoscopic or radiological management.[21,22] One Pakistani hospital-based study has examined UGIB arising during hospitalisation.[23]

Gastroenterology wards also treat acute pancreatitis and inflammatory bowel disease (IBD), for which disease-specific guidelines have recently been updated.[24–26] Leaving against medical advice (LAMA) is a further relevant outcome because it can interrupt investigation and treatment and has been associated with adverse outcomes.[27] Chronic liver disease also affects quality of life and carries financial and social burdens for patients in Pakistan, although such studies do not explain individual admission outcomes.[28,29]

Published inpatient studies from Pakistan have examined single conditions, such as outcomes of hospitalised patients with cirrhosis,[30] whereas ward-level descriptions of the complete diagnostic case-mix together with hospital outcomes remain limited, particularly for South Punjab, although such baseline data are needed to plan services and quality improvement. We therefore described the diagnostic spectrum, demographic profile, length of hospital stay and in-hospital outcomes of patients admitted to the Gastroenterology Ward of Nishtar Hospital, Multan, a tertiary-care referral hospital serving South Punjab.

METHODOLOGY

Study Design and Setting

This was a retrospective cross sectional study conducted in the department of gastroenterology, Nishtar hospital, Multan, Pakistan, which is a tertiary care referral hospital in south Punjab. The patient records from August to October 2025 were examined. The study is reported according to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) statement for cross-sectional studies.

Participants and Sample Size

The screening was carried out on all the patients admitted to the Gastroenterology Ward during the study period (total enumeration). Patients were eligible to be included if they were 16 years or older and admitted to the ward during August to October 2025, and had a clinical record with

a documented final diagnosis and final outcome. Records were not included if the final diagnosis or outcome was not recorded. Repeat admissions were identified by the medical record number (MRN) to ensure that each patient was only analysed once, and only the first admission in the study period was analysed. Final analytic sample consisted of 169 patients. There was no formal sample size calculation as all eligible admissions in the study period were included, and the precision of the overall in-hospital mortality is reported as a 95% CI.

Data Collection and Outcome Definitions

A structured proforma was used to extract data from the hospital clinical records. The variables included age, sex, presenting complaints, medical history, pre-admission treatment, duration of illness, final diagnosis, length of hospital stay (days) and clinical outcome. Demographic data were checked for consistency with the available clinical information, and age and sex were complete for all 169 patients. The results were the final disposition on the index admission: discharge, in-hospital death, referral/transfer to another facility, or LAMA. The terminal event documented in the death records was obtained for patients who died, but was not used to determine the underlying cause of death.

Diagnostic Categorisation

The final diagnosis recorded in the clinical record was grouped into pre-defined primary diagnostic categories, and each patient was classified in a single category to prevent double counting. The categories were decompensated chronic liver disease/liver cirrhosis, HCC, UGIB, chronic viral hepatitis, unspecified/obstructive jaundice, abdominal tuberculosis, acute pancreatitis, other gastrointestinal/hepatobiliary malignancy, IBD/colitis, acute or acute-on-chronic hepatitis, liver abscess, Budd–Chiari syndrome, leptospirosis, spontaneous bacterial peritonitis and other diagnoses. Concurrent diagnoses were not included in the frequency analysis as only one category was assigned to each patient. For descriptive purposes, categories were also combined with a posteriori as liver-related (decompensated chronic liver disease/liver cirrhosis, HCC, chronic viral hepatitis, acute or acute-on-chronic hepatitis, liver abscess, Budd–Chiari syndrome and spontaneous bacterial peritonitis) or other. Categories were assigned based on documented final diagnosis and not presumed aetiology, as the source of bleeding (variceal or non-variceal) was not always documented, so UGIB was not categorised as liver-related.

Potential Sources of Bias

The retrospective design might have led to information bias, because the completeness and consistency of the variables were dependent on the documentation. Selection and referral bias may have been present as the study was performed at a single tertiary referral hospital and only gastroenterology ward admissions were included. To minimize selective inclusion, all available eligible records within a specified time frame were included.

Statistical Analysis

IBM SPSS Statistics version 27 (IBM Corp., Armonk, NY, USA) was used to analyse the data. Continuous variables are expressed as mean ± SD (standard deviation) and median and range as appropriate. Categorical variables are shown as frequencies and percentages. The 95% CIs for proportions were obtained by the Wilson score method and the 95% CIs for means were obtained by the t distribution. The in-hospital death rate for each category was determined by dividing the number of deaths in the hospital by the number of patients in the category. The aim of the study was descriptive, so no hypothesis testing, effect size estimation or multivariable modelling were performed, and no P values are reported. All patients had age, sex, diagnostic category and outcome data, and no data were imputed.

Ethical Considerations

The study has been approved by the Institutional Ethical Review Board (IERB) of Nishtar Medical University, Multan (Approval number 4180). Data were anonymized, patient confidentiality was protected and no personal identifiers were reported.

RESULTS

Participant Characteristics

There were 169 patients (Table 1). The mean age was 48.4 ± 16.4 years (95% CI 45.9–50.9; range 16–87 years). Most patients were aged 41–60 years (80 patients, 47.3%), followed by 21–40 years (39, 23.1%), >60 years (38, 22.5%) and ≤20 years (12, 7.1%). The male to female ratio was 1.6:1 (103 males and 66 females).

Length of Stay and In-Hospital Outcomes

The mean length of hospital stay was 4.7 ± 2.6 days (median 4 days; range 1–20). Of the 169 patients, 124 (73.4%) were discharged, 18 (10.7%; 95% CI 6.8–16.2) died during hospitalisation, 15 (8.9%) were referred or transferred, and 12 (7.1%; 95% CI 4.1–12.0) left against medical advice (Table 1).

Table 1. Characteristics and in-hospital outcomes of patients admitted to the gastroenterology ward (N = 169)

Variable	n (%) or as indicated	95% CI
Age, years		
Mean ± SD (range)	48.4 ± 16.4 (16–87)	45.9–50.9
≤20	12 (7.1)	4.1–12.0
21–40	39 (23.1)	17.4–30.0
41–60	80 (47.3)	40.0–54.8
>60	38 (22.5)	16.8–29.4
Sex		
Male	103 (60.9)	53.4–68.0
Female	66 (39.1)	32.0–46.6
Length of hospital stay, days		
Mean ± SD	4.7 ± 2.6	4.3–5.1
Median (range)	4 (1–20)	—
In-hospital outcome		
Discharged	124 (73.4)	66.2–79.5
Died in hospital	18 (10.7)	6.8–16.2
Referred/transferred	15 (8.9)	5.5–14.1
Left against medical advice	12 (7.1)	4.1–12.0

Percentages are calculated using the total population (N = 169). CI, confidence interval (Wilson score method for proportions; t distribution for means); SD, standard deviation.

Diagnostic Spectrum

Decompensated chronic liver disease/liver cirrhosis was the most common category (49/169, 29.0%), followed by HCC (22/169, 13.0%), UGIB (15/169, 8.9%) and chronic viral hepatitis (11/169, 6.5%) (Table 2; Figure 1). The other categories were unspecified/obstructive jaundice (8, 4.7%), abdominal tuberculosis (6, 3.6%), acute pancreatitis, other gastrointestinal/hepatobiliary malignancy and IBD/colitis (5 each, 3.0%), acute or acute-on-chronic hepatitis (4, 2.4%), liver abscess (3, 1.8%), Budd–Chiari syndrome and leptospirosis (2 each, 1.2%) and spontaneous bacterial peritonitis (1, 0.6%). Thirty-one patients (18.3%) were diagnosed with other conditions. The liver-related categories combined accounted for 92 admissions (54.4%; 95% CI 46.9–61.8).

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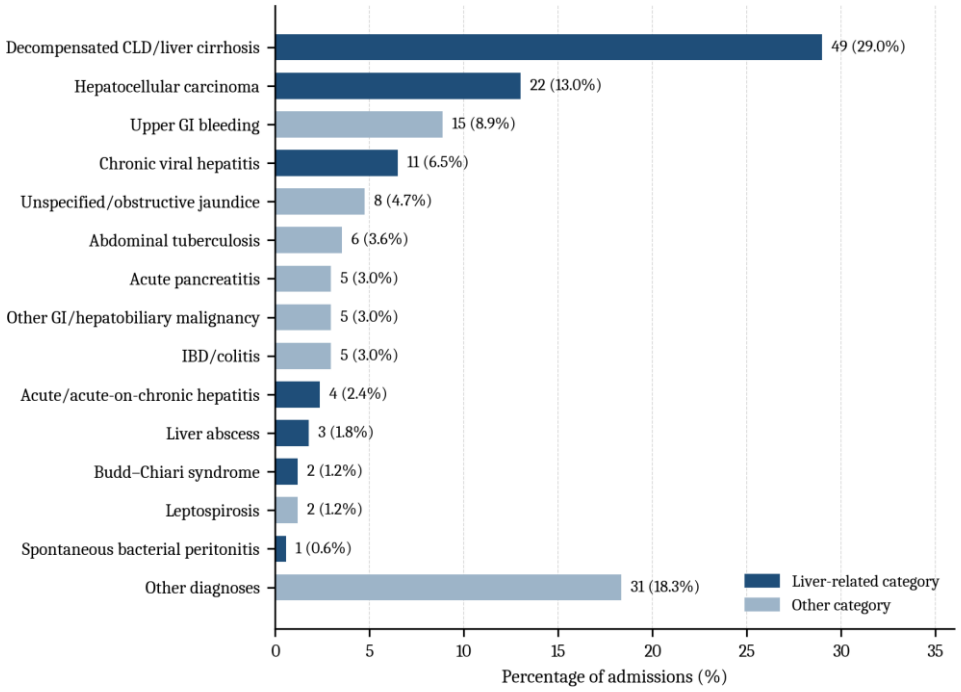


Figure 1. The gastroenterology ward (N = 169) had a diagnostic spectrum of patients. Bars show the percentage of all admissions in each primary diagnostic category, labelled with number (percentage). Liver related categories are shown as dark blue bars. CLD, chronic liver disease; GI, gastrointestinal; IBD, inflammatory bowel disease.

Category-Specific Mortality and Terminal Events

In-hospital deaths occurred in 8 of 49 patients with decompensated chronic liver disease/liver cirrhosis (16.3%; 95% CI 8.5–29.0), 4 of 22 with HCC (18.2%; 7.3–38.5), 2 of 15 with UGIB (13.3%; 3.7–37.9), 1 of 6 with abdominal tuberculosis, 1 of 5 with IBD/colitis and 2 of 31 with other diagnoses (6.5%) (Table 2). Cirrhosis, HCC and UGIB accounted for 8 (44.4%), 4 (22.2%) and 2 (11.1%) of the 18 deaths, respectively. There were 12 deaths in liver-related categories (66.7%) versus 7.8% (3.6–16.0%) in other categories, which is a descriptive difference that may be due to case-mix and severity; this difference was not formally tested. For most categories, the number of observations was too small to give narrow confidence intervals.

Table 2. Primary diagnostic categories and category-specific in-hospital mortality

Primary diagnostic category	n	% of admissions	Deaths, n	Mortality, %	95% CI
Decompensated CLD/liver cirrhosis	49	29.0	8	16.3	8.5–29.0
Hepatocellular carcinoma	22	13.0	4	18.2	7.3–38.5
Upper gastrointestinal bleeding	15	8.9	2	13.3	3.7–37.9
Chronic viral hepatitis	11	6.5	0	0.0	0.0–25.9
Unspecified/obstructive jaundice	8	4.7	0	0.0	0.0–32.4
Abdominal tuberculosis	6	3.6	1	16.7	3.0–56.4
Acute pancreatitis	5	3.0	0	0.0	0.0–43.4
Other GI/hepatobiliary malignancy	5	3.0	0	0.0	0.0–43.4

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Primary diagnostic category	n	% of admissions	Deaths, n	Mortality, %	95% CI
IBD/colitis	5	3.0	1	20.0	3.6–62.4
Acute/acute-on-chronic hepatitis	4	2.4	0	0.0	0.0–49.0
Liver abscess	3	1.8	0	0.0	0.0–56.1
Budd–Chiari syndrome	2	1.2	0	0.0	0.0–65.8
Leptospirosis	2	1.2	0	0.0	0.0–65.8
Spontaneous bacterial peritonitis	1	0.6	0	0.0	0.0–79.3
Other diagnoses	31	18.3	2	6.5	1.8–20.7
Total	169	100.0	18	10.7	6.8–16.2
Post hoc grouping†					
Liver-related diagnoses	92	54.4	12	13.0	7.6–21.4
Other diagnoses (all non-liver-related)	77	45.6	6	7.8	3.6–16.0

Mortality is the number of deaths in the hospital divided by the number of patients in the category. CI, confidence interval (Wilson score method); CLD, chronic liver disease; GI, gastrointestinal; IBD, inflammatory bowel disease. Estimates are not precise, especially for small numbers of cases, †Liver-related diagnoses: decompensated CLD/liver cirrhosis, hepatocellular carcinoma, chronic viral hepatitis, acute/acute-on-chronic hepatitis, liver abscess, Budd–Chiari syndrome and spontaneous bacterial peritonitis.

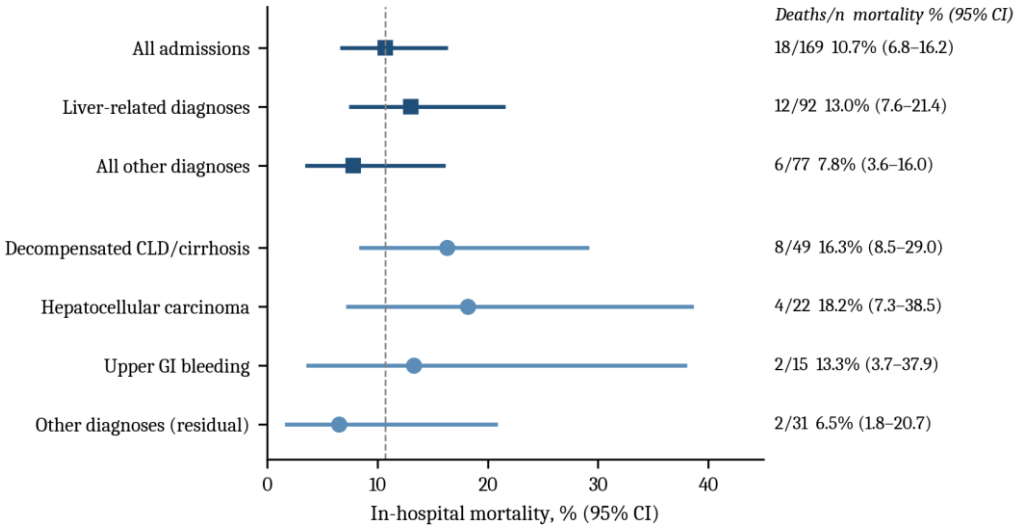


Figure 2. In-hospital mortality (95% confidence intervals, Wilson score method) for all admissions, liver-related admissions and other admissions, and diagnostic categories with at least 15 patients. Dashed line, overall mortality (10.7%). Table 2 shows the categories with less than 15 patients. CI, confidence interval; CLD, chronic liver disease; GI, gastrointestinal.

Of the 18 deaths, 17 (94.4%) were documented as being due to cardiopulmonary arrest, and one (5.6%) was due to aspiration pneumonia. The records did not contain underlying causes of death.

DISCUSSION

Liver disease was the most common diagnosis in this ward-level analysis of 169 admissions to a tertiary gastroenterology service in South Punjab, accounting for over half of admissions (54.4%) and 12 of 18 deaths; decompensated chronic liver disease/liver cirrhosis (29.0%) and HCC (13.0%) were the most common liver-related diagnoses. The in-hospital mortality rate was 10.7% and 12 (7.1%) patients left against medical advice.

This predominance of cirrhosis is in keeping with the ongoing burden of chronic liver disease (CLD) in the world and in Pakistan, where viral hepatitis is a major contributor.[1–5] In our dataset, aetiology was not recorded, so these admissions cannot be attributed to HBV, HCV, MASLD or alcohol, and the increasing importance of MASLD in current guidance[6–8] cannot be evaluated. The proportions in the hospitals also reflect the referral patterns and should not be interpreted as incidence or prevalence in the population.

The majority of the demographic profile was male (60.9%) and middle aged (mean age 48.4 years, 47.3% aged 41-60 years). The male predominance is similar to that of a Lahore hospital series of 450 patients with cirrhosis (60% male) in which hepatitis C accounted for 86% of cases,[29] and the mean age is lower than that of the cirrhosis-only group, which is expected in a ward where the case-mix also includes younger patients with acute and non-hepatic conditions; the age distribution nonetheless shows that most patients (70.4%) were aged 21–60 years, which magnifies the economic and social consequences of this burden.[28,29]

The 16.3% in-hospital mortality among patients with decompensated chronic liver disease/liver cirrhosis (95% CI 8.5–29.0) is close to the 15.7% reported among 1,304 hospitalised patients with cirrhosis in Gujranwala, Punjab, where hepatic encephalopathy at presentation and tracheobronchial aspiration were the strongest independent predictors of death.[30] That study also cited international in-hospital mortality in cirrhosis of 13.5–35%, a range that includes our estimate.[30] Comparison is limited because our cohort was smaller, case definitions may differ, and we lacked severity measures (Child–Pugh, MELD) and acute-on-chronic liver failure grading, which strongly influence short-term outcome.[12,13] Aspiration pneumonia was recorded in one of our deaths, but terminal events were documented coarsely, so the contribution of encephalopathy and aspiration cannot be judged. Guideline recommended treatment for portal hypertension, ascites, vasoactive therapy, albumin and TIPS is becoming more protocolised,[9–11,14,15] and disease severity and interventions delivered could be recorded, which would enable future audits to correlate disease severity with care processes and outcomes.

HCC accounted for 13.0% of admissions, with a crude mortality of 18.2% (95% CI 7.3–38.5). We are unable to distinguish whether these admissions are due to late presentation or surveillance gaps as tumour stage and surveillance history and treatment were not recorded. The burden of this in the ward is consistent with guidelines for risk-based surveillance in patients at risk and multidisciplinary, stage-adapted treatment,[16–20] and warrants further focus on surveillance and referral pathways in the region, though this is a hypothesis for future studies.

UGIB accounted for 8.9% of admissions, with a crude mortality of 13.3% (95% CI 3.7–37.9). Complete endoscopic data were not available and variceal and non-variceal bleeding were not separated.[21,22] The Pakistani study above looked at bleeding that occurred during hospitalisation in patients admitted for non-gastrointestinal illness and cannot be directly compared with our admissions.[23]

The terminal event recorded in 17 of 18 deaths was cardiopulmonary arrest. It is a final common pathway and does not identify the underlying cause, suggesting a lack of documentation, not a clinical finding; future mortality audits would be more informative with structured documentation of immediate and underlying causes of death. Structured reasons for LAMA were not recorded, and thus financial, logistic or other drivers cannot be attributed, but the financial and social burden of chronic liver disease in Pakistan is well described,[28,29] and recording structured reasons for LAMA would be a low-cost improvement that would support targeted counselling.

Acute pancreatitis (3.0%) and IBD (3.0%) were rare, but both are known to be causes of hospitalisation and require disease-specific management,[24–26] and the low prevalence in this study does not reflect a low prevalence of these conditions in the region. There is less granularity for less common conditions due to the relatively large residual category of other diagnoses (18.3%).

The strengths of this study are that all admissions were included within a fixed time frame, mutually exclusive diagnostic categories were pre-defined, and all demographic data were available and statistical uncertainty was explicitly reported. In practice, the results indicate that there are four priorities for gastroenterology services in South Punjab: (i) sufficient inpatient hepatology capacity for decompensated cirrhosis and its complications; (ii) good access to timely endoscopy for gastrointestinal bleeding; (iii) improved HCC surveillance and referral pathways; and (iv) structured documentation of aetiology, severity, cause of death and reasons for LAMA to enable quality of care to be audited. These are inferences from descriptive data and must be substantiated in analytical studies.

This was a single centre, three-month, retrospective study and results may not be generalizable to other settings or seasons. The analysis is descriptive only as aetiology, disease severity, endoscopic findings and treatment were not always recorded and small subgroups provided wide confidence intervals. The liver-related proportion may be underestimated as the source of upper gastrointestinal bleeding was not recorded. The disposition of the 27 patients referred, transferred or left against medical advice is not known, and the actual mortality rate may be higher than 10.7%.

CONCLUSION

More than half of admissions to this tertiary gastroenterology ward in South Punjab and 12 of the 18 in-hospital deaths were due to liver disease, especially decompensated cirrhosis and hepatocellular carcinoma. In-hospital mortality rate was 10.7% and 7.1% of patients left against medical advice. Structured recording of underlying causes of death and reasons for leaving against medical advice would be a practical, low-cost measure to improve quality of care, as these are not documented. These baseline data can be used to guide planning for hepatology capacity, access to endoscopy and HCC surveillance in the region. Multicentre studies or registries should include aetiology, Child–Pugh and MELD scores, grade of acute-on-chronic liver failure, endoscopic findings, HCC stage, treatments received, LAMA reasons and post-discharge outcomes.

Ethical Approval: The study was approved by the Institutional Ethical Review Board (IERB) of Nishtar Medical University, Multan (approval no. 4180). The study was conducted in accordance with the Declaration of Helsinki and the ICMJE Recommendations.

Informed Consent: Because this was a retrospective study based on existing clinical records, the requirement for informed consent from patients was waived by the IERB.

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Conflict of Interest: The authors declare no conflict of interest.

Author Contributions:

Hira Khan: Conceptualization, Data curation, Methodology, Formal analysis, Software, Investigation, Visualization, Writing – original draft, Project administration, Writing – review and editing. **Muhammad Ilyas:** Methodology, Supervision, Validation, Writing – original draft, Writing – review and editing, Project administration, Resources. **Badar Un Nisa:** Writing – original draft, Visualization. **Muhammad Ahmed:** Data curation, Formal analysis. All authors have read and approved the final version of the manuscript.

Data Availability: The data are available upon reasonable request from the corresponding author, subject to institutional and ethical restrictions.

Artificial Intelligence Disclosure: Artificial intelligence tools were not used in the preparation of this manuscript.

REFERENCES

Devarbhavi H, Asrani SK, Arab JP, Nartey YA, Pose E, Kamath PS. Global burden of liver disease: 2023 update. J Hepatol. 2023;79(2):516-537. doi:10.1016/j.jhep.2023.03.017

Huang DQ, Terrault NA, Tacke F, Gluud LL, Arrese M, Bugianesi E, et al. Global epidemiology of cirrhosis—aetiology, trends and predictions. Nat Rev Gastroenterol Hepatol. 2023;20(6):388-398. doi:10.1038/s41575-023-00759-2

Mooneyhan E, Qureshi H, Mahmood H, Tariq M, Maqbool NA, Anwar M, et al. Hepatitis C prevalence and elimination planning in Pakistan, a bottom-up approach accounting for provincial variation. J Viral Hepat. 2023;30(4):345-354. doi:10.1111/jvh.13802

Qureshi H, Alam E, Dharejo Z, Mahmood H. Prevalence of hepatitis and HIV in Pakistan. East Mediterr Health J. 2024;30(10):689-697. doi:10.26719/2024.30.10.689

Lal A, Amjad A, Zaidi S, Parkash O. Changing epidemiology (etiology, complications) and projections of liver cirrhosis in Pakistan and beyond—a review. J Pak Med Assoc. 2026;76(2):233-242. doi:10.47391/JPMA.22515

European Association for the Study of the Liver. EASL clinical practice guidelines on the management of hepatitis B virus infection. J Hepatol. 2025;83(2):502-583. doi:10.1016/j.jhep.2025.03.018

You H, Wang F, Li T, et al. Guidelines for the prevention and treatment of chronic hepatitis B (version 2022). J Clin Transl Hepatol. 2023;11(6):1425-1442. doi:10.14218/JCTH.2023.00320

European Association for the Study of the Liver; European Association for the Study of Diabetes; European Association for the Study of Obesity. EASL-EASD-EASO clinical practice guidelines on the management of metabolic dysfunction-associated steatotic liver disease (MASLD). J Hepatol. 2024;81(3):492-542. doi:10.1016/j.jhep.2024.04.031

Téllez L, Guerrero A, Albillos A. Update on the diagnosis and management of portal hypertension in cirrhosis according to the Baveno VII consensus conference recommendations. Rev Esp Enferm Dig. 2022;114(9):534-542. doi:10.17235/reed.2022.8868/2022

Kaplan DE, Ripoll C, Thiele M, Fortune BE, Simonetto DA, Garcia-Tsao G, et al. AASLD practice guidance on risk stratification and management of portal hypertension and varices in cirrhosis. Hepatology. 2024;79(5):1180-1211. doi:10.1097/HEP.0000000000000647

Orman ES, Fortune BE, John BV, Asrani S. AGA clinical practice update on the management of ascites, volume overload, and hyponatremia in cirrhosis: expert review. Gastroenterology. 2025;169(7):1547-1557. doi:10.1053/j.gastro.2025.08.029

Moreau R, Tonon M, Krag A, Angeli P, Berenguer M, Berzigotti A, et al. EASL clinical practice guidelines on acute-on-chronic liver failure. J Hepatol. 2023;79(2):461-491. doi:10.1016/j.jhep.2023.04.021

Karvellas CJ, Bajaj JS, Kamath PS, Napolitano L, O'Leary JG, Solà E, et al. AASLD practice guidance on acute-on-chronic liver failure and the management of critically ill patients with cirrhosis. Hepatology. 2024;79(6):1463-1502. doi:10.1097/HEP.0000000000000671

Garcia-Tsao G, Abraldes JG, Rich NE, Wong VWS. AGA clinical practice update on the use of vasoactive drugs and intravenous albumin in cirrhosis: expert review. Gastroenterology. 2024;166(1):202-210. doi:10.1053/j.gastro.2023.10.016

European Association for the Study of the Liver. EASL clinical practice guidelines on TIPS. J Hepatol. 2025;83(1):177-210. doi:10.1016/j.jhep.2025.01.029

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Singal AG, Llovet JM, Yarchoan M, Mehta N, Heimbach JK, Dawson LA, et al. AASLD practice guidance on prevention, diagnosis, and treatment of hepatocellular carcinoma. Hepatology. 2023;78(6):1922-1965. doi:10.1097/HEP.0000000000000466

European Association for the Study of the Liver. EASL clinical practice guidelines on the management of hepatocellular carcinoma. J Hepatol. 2025;82(2):315-374. doi:10.1016/j.jhep.2024.08.028

Vogel A, Chan SL, Dawson LA, Kelley RK, Llovet JM, Meyer T, et al. Hepatocellular carcinoma: ESMO clinical practice guideline for diagnosis, treatment and follow-up. Ann Oncol. 2025;36(5):491-506. doi:10.1016/j.annonc.2025.02.006

Gordan JD, Kennedy EB, Abou-Alfa GK, Beal E, Finn RS, Gade TP, et al. Systemic therapy for advanced hepatocellular carcinoma: ASCO guideline update. J Clin Oncol. 2024;42(15):1830-1850. doi:10.1200/JCO.23.02745

Su GL, Altayar O, O'Shea R, Shah R, Estfan B, Wenzell C, et al. AGA clinical practice guideline on systemic therapy for hepatocellular carcinoma. Gastroenterology. 2022;162(3):920-934. doi:10.1053/j.gastro.2021.12.276

Nagpal P, Dane B, Aghayev A, Fowler KJ, Hedgire SS, Bartel TW, et al. ACR Appropriateness Criteria® nonvariceal upper gastrointestinal bleeding: 2024 update. J Am Coll Radiol. 2024;21(11 Suppl):S433-S447. doi:10.1016/j.jacr.2024.08.021

Barkun AN, Laine L, Leontiadis GI, Gralnek IM, Carman N, Ibrahim M, et al. Canadian Association of Gastroenterology clinical practice guideline for the endoscopic management of nonvariceal nonpeptic ulcer upper gastrointestinal bleeding. Gastroenterology. 2025;169(5):863-891. doi:10.1053/j.gastro.2025.04.041

Essani ZMS, Naeem F, Parkash O. Risk factors and outcomes of upper gastrointestinal bleeding in hospitalized patients in a tertiary care hospital. J Pak Med Assoc. 2024;74(2):224-228. doi:10.47391/JPMA.7141

Tenner S, Vege SS, Sheth SG, Sauer B, Yang A, Conwell DL, et al. American College of Gastroenterology guidelines: management of acute pancreatitis. Am J Gastroenterol. 2024;119(3):419-437. doi:10.14309/ajg.0000000000002645

Rubin DT, Ananthakrishnan AN, Siegel CA, Barnes EL, Long MD. ACG clinical guideline update: ulcerative colitis in adults. Am J Gastroenterol. 2025;120(6):1187-1224. doi:10.14309/ajg.0000000000003463

Lichtenstein GR, Loftus EV, Afzali A, Long MD, Barnes EL, Isaacs KL, et al. ACG clinical guideline: management of Crohn's disease in adults. Am J Gastroenterol. 2025;120(6):1225-1264. doi:10.14309/ajg.0000000000003465

Pasay-An E, Mostoles R Jr, Villareal S, Saguban R. Factors contributing to leaving against medical advice (LAMA): a consideration of the patients' perspective. Healthcare (Basel). 2023;11(4):506. doi:10.3390/healthcare11040506

Ahmed B, Ahmad MH, Gohar A, Tarique S, Arshad S, Rehman A, et al. Assessment of health-related quality of life in patients suffering from chronic liver disease in a tertiary care hospital: a cross-sectional study. Health Sci Rep. 2025;8(9):e71225. doi:10.1002/hsr2.71225

Salim A, Farooq MO, Saleem S, Malik K. Financial burden and social implications of chronic liver disease in a patient population group in Pakistan. Pak J Med Sci. 2024;40(7):1503-1508. doi:10.12669/pjms.40.7.7976

Irfan M, Mahmud Y, Khan RMS, Rafiq Q, Nadeem MA, Mohsin A. Factors affecting the outcome of hospitalization among liver cirrhosis patients. Pak J Med Sci. 2019;35(5):1382-1386. doi:10.12669/pjms.35.5.884

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