Communications on Applied Nonlinear Analysis
ISSN: 1074-133X
Vol 32 No. 9s (2025)

Liver Disease and Its Associated Complications in Mizoram

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Article History:

Received: 12-01-2025

Revised: 15-02-2025

Accepted: 01-03-2025

Abstract:

This study assessed the demographic, lifestyle, and health parameters of 157 individuals, focusing on the impact of long-term alcohol consumption. Participants had an average age of 42.01 years, with varied occupational backgrounds. Key findings included a high prevalence of liver-related complications, such as ascites (51%), hepatomegaly (42.7%), and splenomegaly (46.5%). A significant proportion (68.2%) exhibited jaundice, and other complications included upper gastrointestinal bleeding and hepatic encephalopathy. Statistical analysis revealed associations between gender, respiratory conditions, cardiovascular health, and complications. Ascites and jaundice showed significant relationships with the condition. The results underscore the need for targeted health interventions and monitoring to address the complications associated with chronic alcohol use.

Keywords: Alcohol Consumpion, Liver Disease, Mizoram, Odd Ratio, Crude Odd Ratio.

INTRODUCTION

The most common etiologies of CLD which includes – first one is Alcoholic liver disease includes several conditions, such as alcohol-induced hepatitis (a reversible condition from heavy drinking), cirrhosis (an irreversible condition), and alcoholic fatty liver (with or without inflammation). People with severe alcohol use problems are at a high risk of developing chronic liver disease, making it one of the main causes of CLD. Secondly, Non-Alcoholic Fatty Liver Disease (NAFLD/NASH) is closely linked to metabolic syndrome, which includes obesity, hyperlipidaemia, and diabetes mellitus. In some cases, NAFLD progresses to non-alcoholic steatohepatitis (NASH), which can result in liver fibrosis. The risk factors associated with metabolic syndrome contribute significantly to the progression of this disease. Third one is Chronic infections with hepatitis B, C, co-infections of hepatitis B and D are major causes of chronic liver disease in regions such as East Asia and Sub-Saharan Africa. Hepatitis C, in particular, presents with different genotypes: genotypes 1a and 1b are most common in Europe

and North America, while genotype 3 predominates in Southeast Asia. Studies have identified a high prevalence of hepatitis C virus (HCV) genotype 4, specifically sub type 4a, among Egyptian patients in Sharkia governorate. If untreated, chronic hepatitis C can progress to hepatocellular carcinoma[1]. Since 2000, the global incidence of chronic liver disease (CLD) and cirrhosis has risen by 13%, reaching an estimated rate of 20.7 per 100,000 individuals in 2015[2]. A study examining the causes of cirrhosis from 1990 to 2017 found that the incidence of cirrhosis linked to viral hepatitis, specifically hepatitis B and C, increased slightly, accounting for 29% and 28% of cases, respectively. This trend is likely due to the success of targeted vaccines and antiviral treatments, which have helped reduce the overall burden of these infections. The study highlights the increasing significance of preventive strategies like effective antiviral treatments in managing liver disease and vaccination. However, despite these advancements, cirrhosis continues to be a major health issue, especially in communities with limited access to healthcare and treatment[3]. Chronic liver disease is a significant cause of mortality, particularly in developing countries. Its prevalence has been on the rise in recent years. In developed nations, the most common forms of chronic liver disease include alcoholic liver disease, chronic viral hepatitis (such as hepatitis B and C), non-alcoholic fatty liver disease (NAFLD), and hemochromatosis[1]. Liver diseases can be passed down through families or caused by factors like viruses, drugs, chemicals, obesity, diabetes, or the immune system attacking the liver. If left untreated, these conditions can become life-threatening and cause permanent damage to the liver or bile duct, which may turn cancerous. The outcome of liver disease depends on how early it is detected and treated.

LITERATURE REVIEW

Hector Leal-Lassalle, Olga Estevez-Vazquez, Francisco Javier Cubero, and Yulia A. Nevzorova in their study on metabolic and alcohol-associated liver disease (MetALD) highlight the interplay between metabolic syndrome and alcohol consumption in the progression of liver disease. They identify MetALD as a dual condition where metabolic risk factors, such as obesity, diabetes, and dyslipidemia, interact with alcohol intake to exacerbate liver damage. This combination speeds up the progression of damage to liver, leading to cirrhosis, fibrosis and liver cancer (HCC). Moderate drinking can even make liver problems worse for people with non-alcoholic fatty liver disease. Similarly, metabolic issues like obesity or diabetes can increase the harmful effects of alcohol in the liver[4]. The study by P. Schlichting, E. Christensen, L. Fauerholdt, H. Poulsen, E. Juhl, and N. Tygstrup focuses on the primary causes of death in patients with cirrhosis. Their findings highlight that the leading causes of mortality in cirrhotic patients include complications directly related to liver failure, such as variceal bleeding, hepatic encephalopathy, and ascites. Additionally, infections are a significant cause of death in these patients, as cirrhosis compromises the immune response. The development of hepatocellular carcinoma (HCC) is another major contributor to mortality in advanced cases. The study emphasizes the importance of monitoring for these complications to improve outcomes in patients with cirrhosis[5]. A study on liver diseases shows that they can be caused by several factors, such as viral infections like hepatitis B and C, metabolic problems like autoimmune disorders, non-alcoholic fatty liver disease (NAFLD), drinking too much alcohol, and exposure to harmful toxins. Hepatocellular carcinoma (HCC) and Cirrhosis are identified as the most severe outcomes of chronic liver disease (CLD), often leading to significant morbidity and mortality. The study also sheds light on the role of

lifestyle factors such as physical activity, diet and alcohol intake in the progression of liver conditions[6]. Increasing awareness and taking preventive actions against liver health problems caused by alcohol consumption are crucial in minimizing the impact of alcohol-related liver disease. It is vital to educate the public on the risks of excessive alcohol intake and its long-term consequences for liver health. Preventive measures should include advocating for regular liver screenings, especially for individuals who consume alcohol heavily or have additional risk factors like obesity or a family history of liver disease. Additionally, promoting healthy lifestyle choices such as regular physical activity and a balanced diet can help maintain liver health and reduce the harmful effects of alcohol.

DATA SOURCE

This study relies on primary data obtained through a structured questionnaire. The data was collected from two healthcare institutions in Mizoram: Civil Hospital, Aizawl, and Synod Hospital, Durtlang. These facilities facilitated access to the study population, enabling the acquisition of relevant and comprehensive information. Utilizing primary data enhances the authenticity and reliability of the findings, as it directly represents the experiences and health conditions of the participants within the chosen hospitals.

METODOLOGY

The analysis in this study was conducted using IBM SPSS software. Descriptive statistics were applied to examine the statistical relationships between various medical variables and the condition under investigation. The P-value serves as a statistical indicator of significance, helping to determine whether observed associations are likely due to chance[7]. A P-value of ≤ 0.05 generally signifies statistical significance. The Crude Odds Ratio (OR) quantifies the likelihood of the condition occurring in the presence of a specific variable compared to its absence. An OR greater than 1 indicates higher odds of the condition when the variable is present, while an OR below 1 suggests lower odds. The 95% Confidence Interval (CI) provides a range within which the true odds ratio is expected to fall with 95% certainty. A broader confidence interval indicates greater variability and lower precision, whereas a narrower interval suggests higher precision. [7]The Adjusted Odds Ratio accounts for potential confounding factors that may influence the observed relationship. By adjusting for these variables, a more accurate evaluation of the variable's true effect can be achieved. Through the analysis of P-values, crude and adjusted odds ratios, and confidence intervals, meaningful conclusions can be drawn about the variables significantly associated with the condition. This statistical approach highlights the crucial role of rigorous data analysis in medical research, contributing to a deeper understanding of complex health conditions.

Table 1: Baseline Characteristics of the Study Cohort:

Variable	Total Cohort (n= 157)
Age	42.01 ± 9.83
Gender	0.87 ± 0.33
Occupation	

Business	6(3.8)
Housewife	9(5.7)
Retired	3(1.9)
Service	33(21)
Skilled Worker	40(25.5)
Unskilled Worker	59(37.6)
Others	7(4.5)
Marital Status	
Married	119(75.8)
Unmarried	38(24.2)
Height	5.49 ± 0.20
Weight	66.36 ± 7.87
Duration of alcohol drinking	16.62 ± 9.39 (in years)
Blood Pressure Systolic	119.16 ± 11.17
Blood pressure Diastolic	78.36 ± 8.46
Respiratory System	
B/L air entry decreased	10(6.4)
B/L VBS +, NO AS(Added Sound)	131(83.4)
Decreased air entry right IAA	16(10.2)
Cardiovascular System	
S1S2 +, No murmur	147(93.6)
Central Nervous System	
Conscious, Oriented	127(80.9)
Conscious, disoriented	10(6.4)
Conscious, drowsy	7(4.5)
Per Abdomen	
Ascites	80(51.0)
Hepatomegaly	67(42.7)

Splenomegaly	73(46.5)
Complication(s)	
Ascites	73(46.5)
Jaundice	107(68.2)
UGI Bleed	63(40.1)
Hepatic Encephalopathy	18(11.5)
Hepatorenal Syndrome	21(13.4)

This study evaluated various demographic, lifestyle, and health-related parameters in a cohort of 157 individuals. The average age of the participants was 42.01 years, with a standard deviation of 9.83 years. The gender distribution was relatively homogenous with a gender score of 0.87 ± 0.33. The occupational distribution among the participants was varied. The majority were unskilled workers (37.6%), followed by skilled workers (25.5%), and service workers (21%). Other occupations included housewives (5.7%), businesspersons (3.8%), and retirees (1.9%), with a small percentage (4.5%) in other categories. A significant majority of the participants were married (75.8%), while the remaining 24.2% were unmarried. The average height and weight of the participants were 5.49 ± 0.20 feet and 66.36 ± 7.87 kg, respectively. All participants reported having consumed alcohol, with an average duration of alcohol consumption being 16.62 ± 9.39 years. The mean systolic and diastolic blood pressures were 119.16 ± 11.17 mmHg and 78.36 ± 8.46 mmHg, respectively. In terms of respiratory health, 83.4% of the participants had bilateral vesicular breath sounds (B/L VBS) with no added sounds (AS), while 10.2% had decreased air entry in the right inferior axillary area (IAA) and 6.4% had bilateral air entry decreased. Cardiovascular examination revealed that 93.6% of the participants had normal heart sounds (S1S2+) with no murmurs. For the central nervous system, 80.9% were conscious and oriented, while a small percentage were conscious but disoriented (6.4%) or drowsy (4.5%). A significant number of participants exhibited symptoms of ascites (51.0%), hepatomegaly (42.7%), and splenomegaly (46.5%). The study also assessed various complications related to alcohol consumption. A notable 68.2% of participants had jaundice, 46.5% had ascites, 40.1% had an upper gastrointestinal (UGI) bleed, 11.5% experienced hepatic encephalopathy, and 13.4% had hepatorenal syndrome. This study highlights the prevalence of significant health issues and complications among a cohort of individuals with long-term alcohol consumption. The findings underscore the critical need for targeted health interventions and preventive measures to address these health challenges.

Table 2: Odd Ratio and Adjusted Odd Ratio of the Study Variable: Binary Logistic Regression Analysis (n= 157)

Variable	P-value	Crude OR	95% C. I	P-value	Adjusted Crude OR	95% C. I

Age	0.627	1.026	0.697– .456			
Gender	0.043	0.729	0.173– .637	0.263	1.032	0.536– 6.457
Marital Status	0.439	0.806	0.270– .421	0.639	1.320	0.413– 4.221
Respiratory System						
B/L air entry decreased	0.212	1.079	1.029– .131	0.091	0.399	0.137– 1.160
B/L VBS +, NO AS(Added Sound)	0.053	2.507	0.862– .291	0.001	0.070	0.018– 0.279
Decreased air entry right IAA	0.107	1.132	1.065– .203			
Cardiovascular System						
S1S2+,No murmur	0.001	14.250	3.586–56.632			
Central Nervous System						
Conscious, Oriented	0.053	2.669	0.960 – 7.418			
Conscious, disoriented	0.212	1.079	1.029 – 1.131			
Conscious, drowsy	0.900	0.870	0.099 – 7.629			
Per Abdomen						
Ascites	0.045	2.741	0.995 – 7.553	0.051	0.365	0.132– 1.005
Hepatomegaly	0.094	0.447	0.172 – 1.165			
Splenomegaly	0.039	2.957	1.018 – 8.586	0.046	0.338	0.116– 0.982
Complication						
Ascites	0.039	2.058	1.258 – 7.690	0.046	0.338	0.116– 0.982
Jaundice	0.004	3.908	1.482– 0.305	0.006	0.256	0.097– 0.675
UGI Bleed	0.003	7.224	1.613– 2.349	0.010	0.138	0.031– 0.620

Hepatic Encephalopathy	0.031	2.692	0.338– 1.417	0.049	0.372	0.026– 2.956
Hepatorenal Syndrome	0.819	0.857	0.228 – 3.221			

This statistical analysis is related to various health variables and their impact on a condition. The data includes *p-values, crude odds ratios (OR), and confidence intervals (CI) for different factors such as age, gender, marital status, respiratory system conditions, cardiovascular system conditions, central nervous system status, abdominal conditions, and complications. Age has a p-value of 0.627, indicating it is not statistically significant. Gender shows a p-value of 0.043 with a crude OR of 0.729, suggesting that gender might have a weak association with the condition. However, the adjusted OR (1.032, p=0.263) suggests no significant impact. Bilateral air entry decreased has a p-value of 0.212 with an adjusted OR of 0.399, indicating a potential association. The presence of bilateral vesicular breath sounds with no added sounds (B/L VBS+, NO AS) is significant (p=0.001), with an adjusted OR of 0.070, suggesting a strong protective effect. Decreased air entry in the right lower lung (IAA) has a p-value of 0.107, indicating a possible, though not statistically significant, association. The presence of normal heart sounds (S1S2+) with no murmur is highly significant (p=0.001, OR = 14.250), implying a strong correlation between cardiovascular health and the condition. Consciousness levels show some association, with conscious but disoriented (p=0.212, OR=1.079) and drowsy state (p=0.900, OR=0.870) indicating potential relationships. Ascites has a p-value of 0.045 with an OR of 2.741, suggesting a significant relationship. Splenomegaly is significant (p=0.039, OR=2.957), but after adjustment, it becomes less impactful (OR=0.338, p=0.046). Ascites, jaundice, upper gastrointestinal (UGI) bleeding, and hepatic encephalopathy are statistically significant. UGI Bleeding has a p-value of 0.003 and an OR of 7.224, indicating a strong association. Jaundice is also significant (p=0.004, OR=3.908). Hepatic encephalopathy (p=0.031, OR=2.692) shows a moderate association. This study provides important insights into the relationship between various physiological factors and disease progression. Significant variables include cardiovascular health, respiratory conditions, complications like jaundice, ascites, and UGI bleeding. These findings highlight the need for close monitoring of these conditions to manage patient outcomes effectively.

CONCLUSION

In conclusion, this study provides valuable insights into the health status of individuals with long-term alcohol consumption, highlighting several significant medical issues and complications prevalent in the cohort. The findings emphasize the impact of alcohol on various physiological systems, with notable conditions such as jaundice, ascites, hepatomegaly, and splenomegaly observed in a substantial proportion of participants. The analysis also reveals a strong correlation between upper gastrointestinal bleeding and alcohol-related health complications, underlining the severity of such conditions in this population. Importantly, the statistical analysis of various demographic and health-related factors identified key variables that are significantly linked to the condition, including ascites, jaundice, and UGI bleeding. These factors serve as critical indicators for clinicians when assessing patients with alcohol-related health problems. The study underscores the need for targeted health interventions,

including preventive measures and early detection, to mitigate the impact of these complications and improve patient outcomes. Given the high prevalence of alcohol-related diseases and their associated risks, this research calls for greater attention to monitoring and managing the health of individuals with long-term alcohol consumption to reduce the burden of these health issues on the population.

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