e-ISSN: 2248-9126
Vol 12|Issue 2| 2022|25-32. Print ISSN: 2248-9118

Indian Journal of Pharmaceutical Science & Research

www.ijpsrjournal.com

STUDY ON PRESCRIBING PATTERNS OF DRUGS IN THE TREATMENT OF LIVER DISORDERS AND ASSESSMENT OF SEVERITY USING MELD SCORE IN HOSPITALIZED PATIENTS AT TERTIARY CARE TEACHING HOSPITAL - PROSPECTIVE OBSERVATIONAL STUDY

Dr. P. Sai Sunil[*1], A.P Damarathan[2], D. Kishore Kumar[2], M. Sowmya Sree[2], T. Karthika Yadav[2]

[1]Assistant Professor, Department Of Pharmacy Practice, Sri Padmavati School Of Pharmacy, Tiruchanoor, Tirupati, Andhra Pradesh, India, 517503.
[2]Pharm D, Department Of Pharmacy Practice, Sri Padmavati School Of Pharmacy, Tiruchanoor, Tirupati, Andhra Pradesh, India, 517503.

ABSTRACT

Liver diseases are one of the global health care problems with enormous social, economic and clinical consequences accounting for death. Liver disease constitutes about 10% of all diseases. According to WHO liver disease was the 10th leading cause of death. Liver disease accounts for approximately 2 million deaths per year worldwide in which 1 million due to complications of cirrhosis and 1 million due to viral hepatitis and hepatocellular carcinoma. Cirrhosis is likely to be underestimated as almost 3/4th of patients remain asymptomatic until their liver is irreversibly damaged. Many of the drug related problems were also raised during the treatment of various liver disorders. To enlist drugs used in the treatment to categorize the details of the drug for better rational drug use to improve patient quality of life. To reduce the risk of disease and evaluate the utilization and effectiveness of hepatoprotective agents along with the utilization of antimicrobials. To assess the severity of disease by using MELD score in hospitalized patient. A prospective observational study was conducted in general medicine department in tertiary care hospital for a period of 6 months, patients with or without co-morbidities was included in the study. In a total of 150 patients, DCLD is the most common liver disorder seen in these patients. Most of the liver disorders are seen in between age groups 30-50 years. In this study ascites is the most seen complication next to encephalopathy and portal hypertension. The severity of the disease was accessed by using MELD score. The study emphasizes the need to improve awareness of the patients on liver disease to promote early diagnosis, and reduce the mortality of the hospitalized patients. There is a considerable scope to improve prescribing patterns in various liver disorders by reducing drug use and lowering drug doses to decrease the risk of hepatotoxicity and antibiotic resistance. As a result, clinical pharmacists must collaborate with other health care experts to develop suitable therapy regimens, with the ultimate goal of minimizing mortality from liver disorders.

Keywords: Alcohol Liver Disease, Chronic Liver Disease, Magnetic Resonance Imaging, Model for End Stage Liver Disease.

INTRODUCTION

Liver is the heaviest gland of the body. The average adult liver weighs between 1400 and 1600 grams. The portal vein supplies 60 percent to 70% of hepatic blood flow, while the hepatic artery supplies the remaining 30 percent to 40% [1, 2]. There are a variety of diseases and ailments that affect the liver. Viruses cause some, such as hepatitis. Others may be caused by drugs or excessive alcohol consumption. Cirrhosis is caused by a long-term damage or scar tissue in the liver. Jaundice, or skin yellowing, is a symptom of liver illness [3].

Corresponding Author:- **Dr. P. Sai Sunil** Email: Saisunil.13p@gmail.com

Common Causes of Liver Disease

- Viruses
- Genetics
- Autoimmune disease
- Excessive use of alcohol
- Poor diet and/or obesity
- Reactions to medications, street drugs, or toxic chemicals

Most liver disorders cause identical damage to your liver, and the development of liver disease in many cases looks the same regardless of the underlying disease. The importance of early detection of liver disease cannot be overstated.

Damage to your liver may be avoided if you are diagnosed early. Your liver is a magnificent organ. Your liver can mend and even rebuild itself if you're diagnosed before scar tissue has grown. As a result, with a well-managed treatment plan, liver disease damage can often be reversed [4].

STAGES OF LIVER DISORDER:

There are several conditions that are diagnosed with liver diseases. However, the damage of the liver follows a consistent pattern from the initial stage to advanced stages of the disease.

STAGE 1-INFLAMMATION:

The liver and liver ducts get inflamed causing abdominal pain. Untreated it can cause further damage to the tissues. Inflammation of liver is often treated completely.

STAGE 2- FIBROSIS:

It is marked by scaring in the tissues which may affect blood flow to liver and liver functions.

STAGE 3- CIRRHOSIS:

Cirrhosis of the liver is a chronic condition causes decompensation of liver and causes serious symptoms and comorbid conditions.

STAGE 4- LIVER FAILURE:

In which liver functions are failed and get affected with irreparable damage and thus the liver fails to perform the routine activities.

DIAGNOSIS:

A variety of biochemical tests can be used to assess and manage patients with hepatic impairment. These tests can be used to (1) detect the presence of liver illness, (2) differentiate between different types of liver problems, (3) assess the severity of known liver damage, and (4) track therapy response [5, 6].

There are flaws in liver tests. They can be normal in people with serious liver illness and abnormal in those who don't have liver disease. Liver tests rarely reveal a precise diagnosis; instead, they reveal a broad category of liver illness, such as hepatocellular or cholestatic, which guides the examination further.

Alanine transaminase (ALT) and aspartate transaminase (AST), alkaline phosphatase (ALP), gamma glutamyl transferase, serum bilirubin, prothrombin time, or international normalized ratio, and serum albumin are some of the most commonly used assays . They represent the liver's various functions, including the excretion of anions (bilirubin), hepatocellular integrity (transaminases), bile production and subsequent free flow (bilirubin and ALP), and protein synthesis (albumin) [7].

Hepatitis serology, iron and copper studies, 1-antitrypsin levels, and autoantibodies are just a few of the tests that a specialist may undertake. These have to do with the abnormality's likely cause. Although the enzymes examined are most typically elevated in liver illness, several enzymes are also found in other tissues and can thus be elevated in other situations.

AIM:

- The main aim of the present study is to evaluate the prescribing pattern of drugs in the treatment of liver disorder and assessment of severity using MELD score in hospitalized patients at tertiary care hospital

OBJECTIVES:

- To enlist drugs used in the treatment to categorize the details of the drug for better rational drug use to improve patient quality of life.
- To reduce the risk of disease, and evaluate the utilization and effectiveness of hepatoprotective agents along with the utilization of antimicrobials.
- To assess the severity of disease by using MELD score in hospitalized patient.
- To educate the patient regarding early diagnosis of the disease.
- To improve adherence to life style changes.

STUDY DESIGN:

- Prospective observational study

STUDY SITE:

Study was conducted in the Department of General Medicine at (SVRRGGH) Sri Venkateshwara Ramnarain Ruia Government General Hospital, tertiary care teaching hospital, Tirupati.

STUDY DURATION:

6 months

STUDY POPULATION:

150 patients

STUDY MATERIALS:

- Patient data collection Proforma
- Informed Consent Form (ICF)
- MELD score

INCLUSION CRITERIA:

- Patients of either gender who are above 20 years of age in general medicine inpatient ward with or without co-morbidities

EXCLUSION CRITERIA:

- Hospital stays less than 48 hrs. Immobilization less than 24hrs, Pregnant and lactating- women and Patient with underlying diseases like HIV, AIDS.
- Patients unwilling to participate in the study.

METHOD OF DATA COLLECTION:

This prospective study was carried out after obtaining the permission of institutional review board, Sri Padmavathi School of Pharmacy, Tiruchanoor, Tirupati, A.P, India. All the patients (≥ 20 years), admitted in the general medicine in-patient ward of SVRRGGH, between November 2021 to April 2022 has been included in the study. Patients admitted only for observation were excluded in the study.

A specially designed proforma has been used for collecting data which includes patient demographics, past medical history, family and surgical history, co-morbidities, diagnosis and present medications prescribed for each patient. The data was obtained by direct patient interview and from patient case profiles. 150 cases were collected from general medicine wards, according to study criteria. All the prescriptions which contain different drugs are included in the study. The information collected was documented in patient profile form. Data has been analyzed and assessed.

RESULTS:

A total of 150 patients admitted in general medicine department of a tertiary care hospital with diagnosis of liver disorders for a period of 6 months.

In this study, A total of 150 patients was evaluated during a period of 6 months, out of which (78%) of the study population were predominantly male and 32 Patients (21%)were female, as shown in figure 1. Many of the liver disorder patients belongs to the age >50years(53, 35.10%), followed by 41-50 years (45, 30.46%), followed by 31-50 years (36, 23.84%) followed by 21-50 years (16, 10.60%) patients respectively.

Out of 150 patients 59% are affected with DCLD (90), 10.6% are affected with chronic liver disease (16), 9.27% are affected with jaundice (14), 5.96% are affected with hepatitis (9), 5.3% are affected with fatty liver (8), 3.8% are affected with liver cirrhosis (6), 2% are affected with alcoholic liver disease (3), 1.32% are affected with cholelithiasis (2), 1.32% are affected with liver abscesses (2), 0.6% are affected with acute liver failure with TB (1), as shown in Figure 2.

Among the study population 116 patients has seen comorbidities in which Hypertension 74 (63.8%) is most commonly seen followed by Diabetes 54(46.6%), UGI bleed 23(19.8%),

Anemia 19(16.4%), Thrombocytopenia10 (8.6%), Viral hepatitis 8(6.9%), TB 4(3.4%), Cellulitis 3(2.6%), AKI 2(1.7%) respectively, as shown in [Figure 3].

Out of 150 patients complications are seen in 108 patients in which ascites(75.4%)are mostly seen followed by hepatic encephalopathy(34.7%),infections(13%) respectively [Figure 4].

Out of 50 patients, Antibiotics 145 (96%) are highly prescribed followed by Vitamin supplements 135 (89%), hepato protectants 128 (84.8%), PPI's 111 (73.5%), diuretics 83 (55%), and other drugs [figure 5].

Among the Study Population of 150, only 75 patients had the possibility calculate MELD SCORE. Out of which common range was (20-29) i.e. 34 patients, while 27 patients had scores between (10-19), 9 Patients with Score between (30-39), followed by 4 patients (0-9) and 1 patient had scores of 50 [Table 1].

FIGURE 1: Gender wise distribution

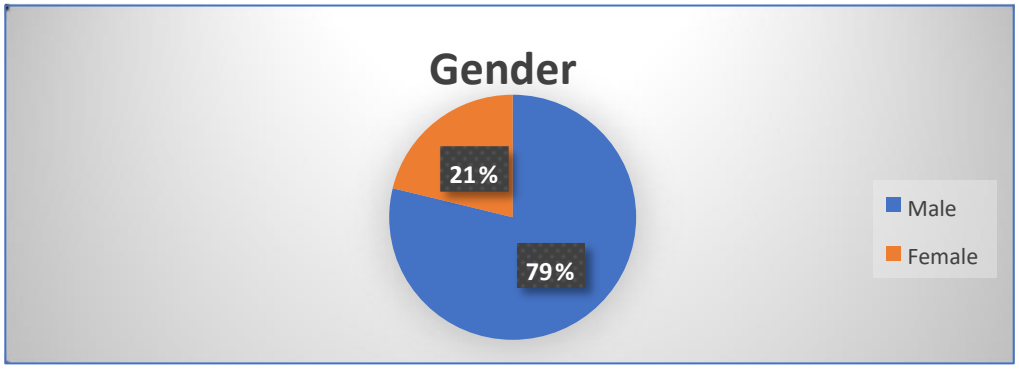

FIGURE 2 : VARIOUS LIVER DISORDERS

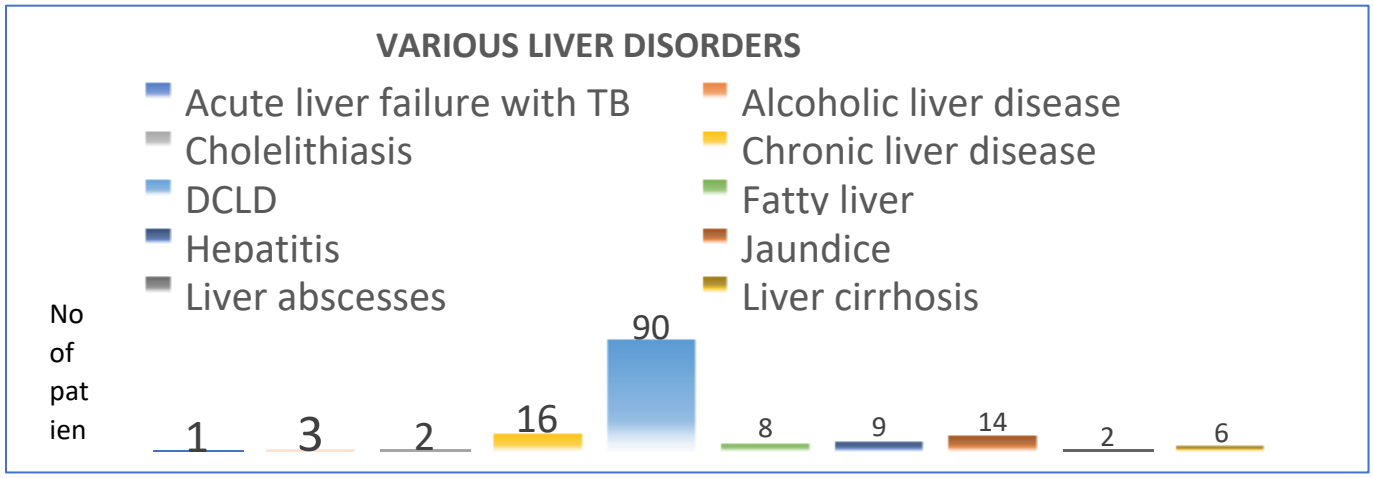

FIGURE 03: COMORBIDITIES OF LIVER DISORDERS

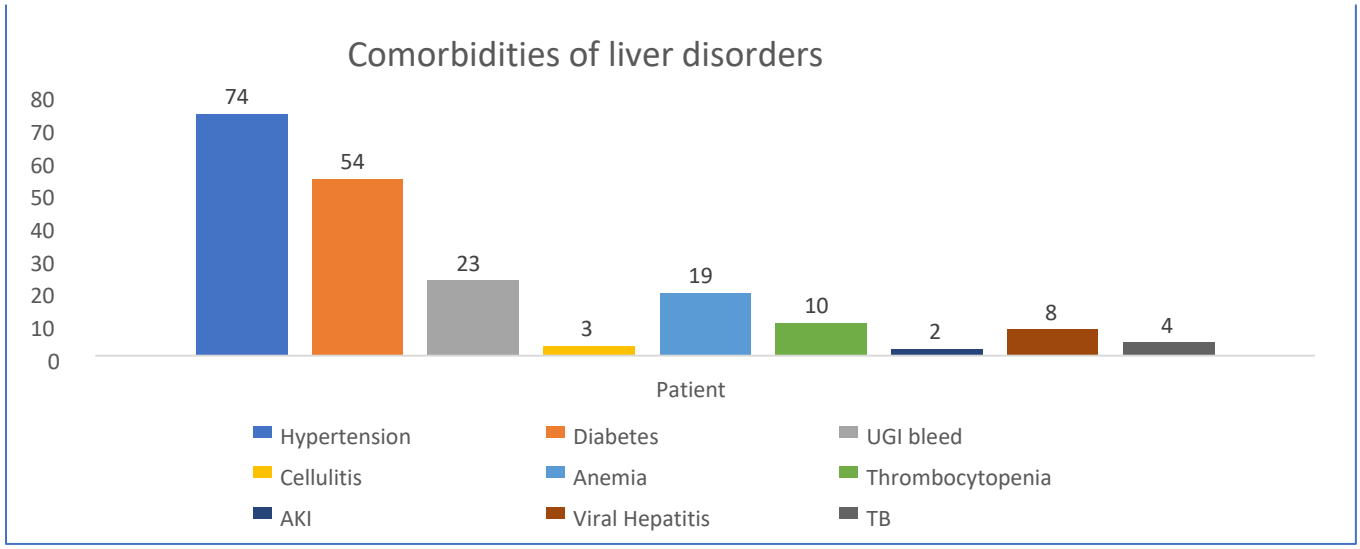

FIGURE 4 : COMPLICATIONS OF LIVER DISEASE

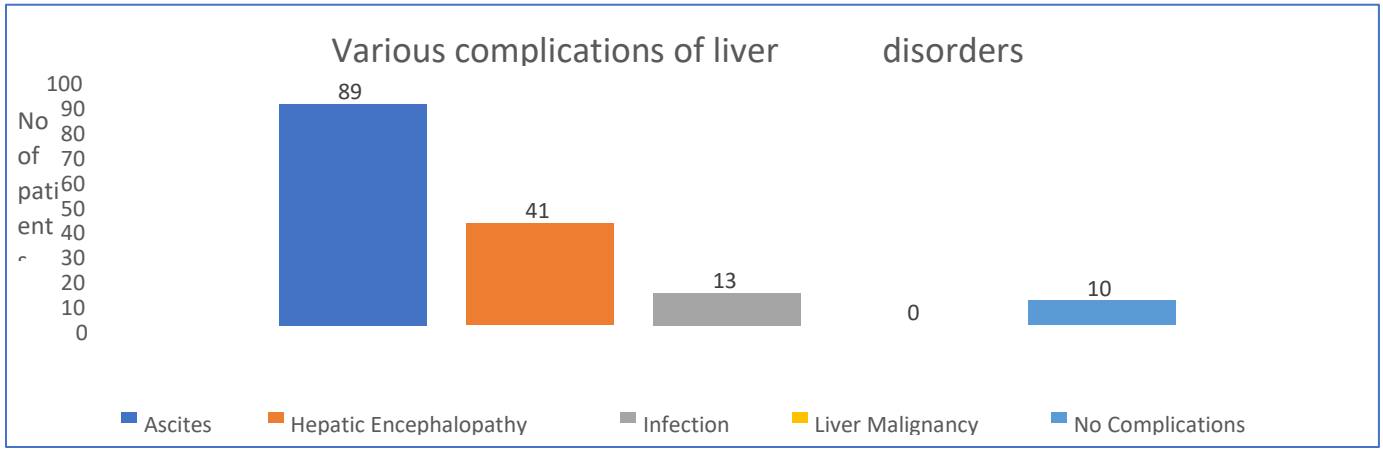

FIGURE 5: DIFFERENT CLASS OF DRUGS

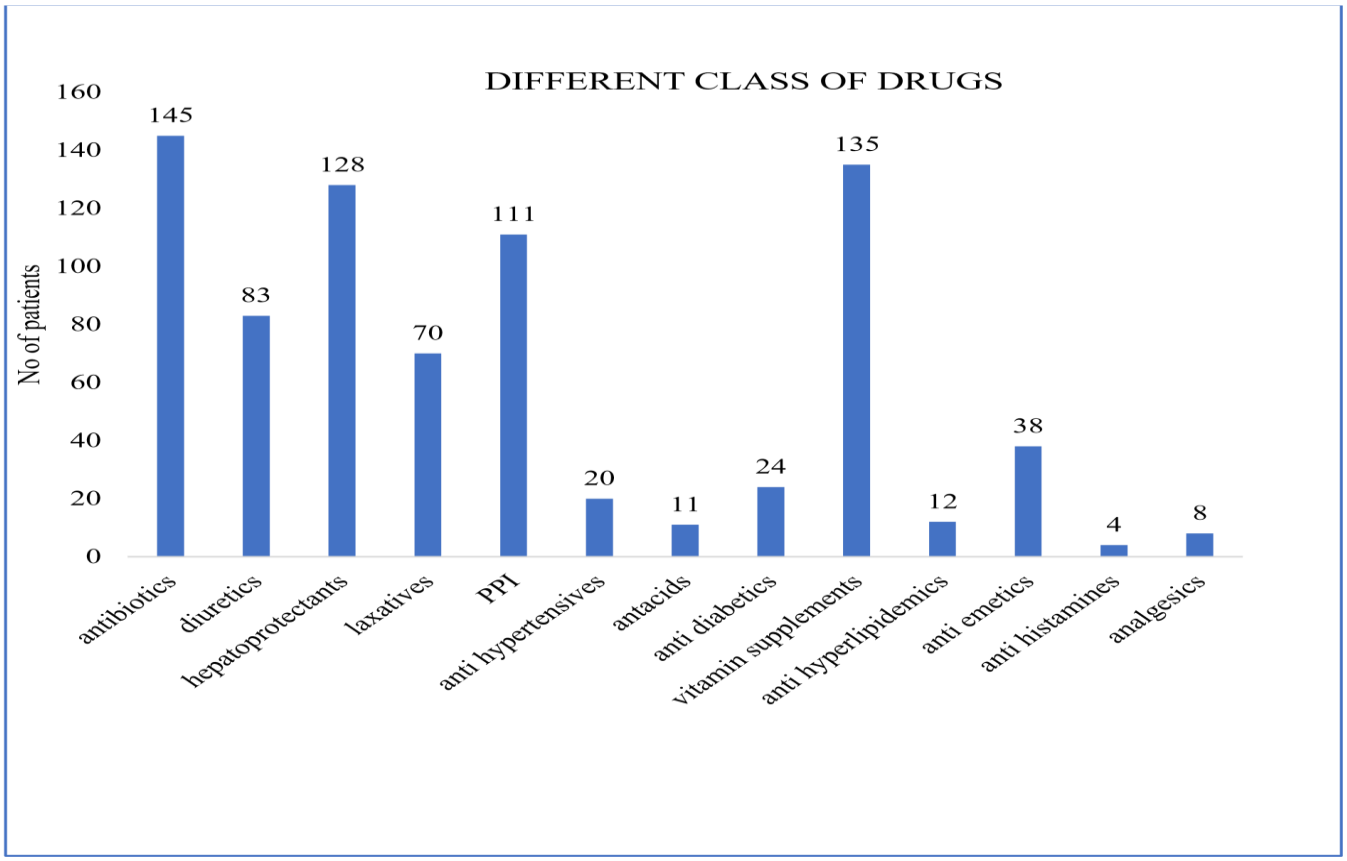

FIGURE 06: SUPPORTIVE THERAPY

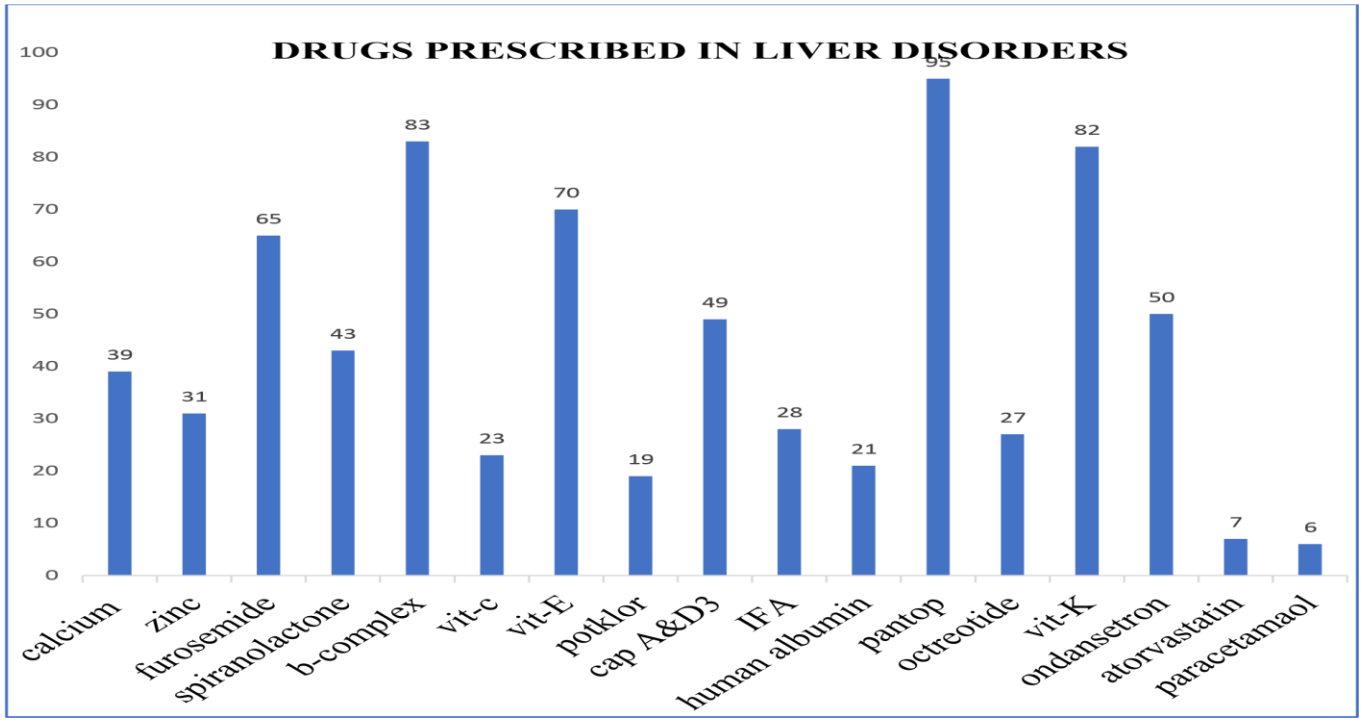

FIGURE 7: EFFECT OF HEPATOPROTECTIVE AGENTS ON SGPT

LEVELS

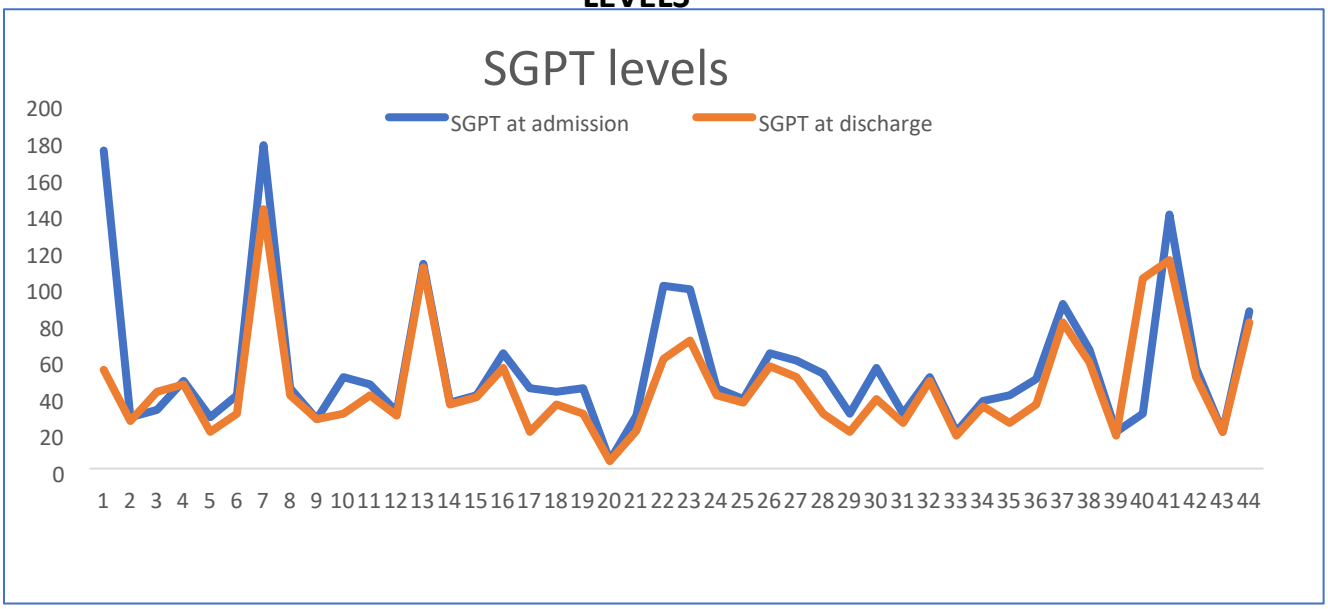

FIGURE 8: EFFECT OF HEPATO PROTECTIVE AGENTS ON SGOT LEVELS

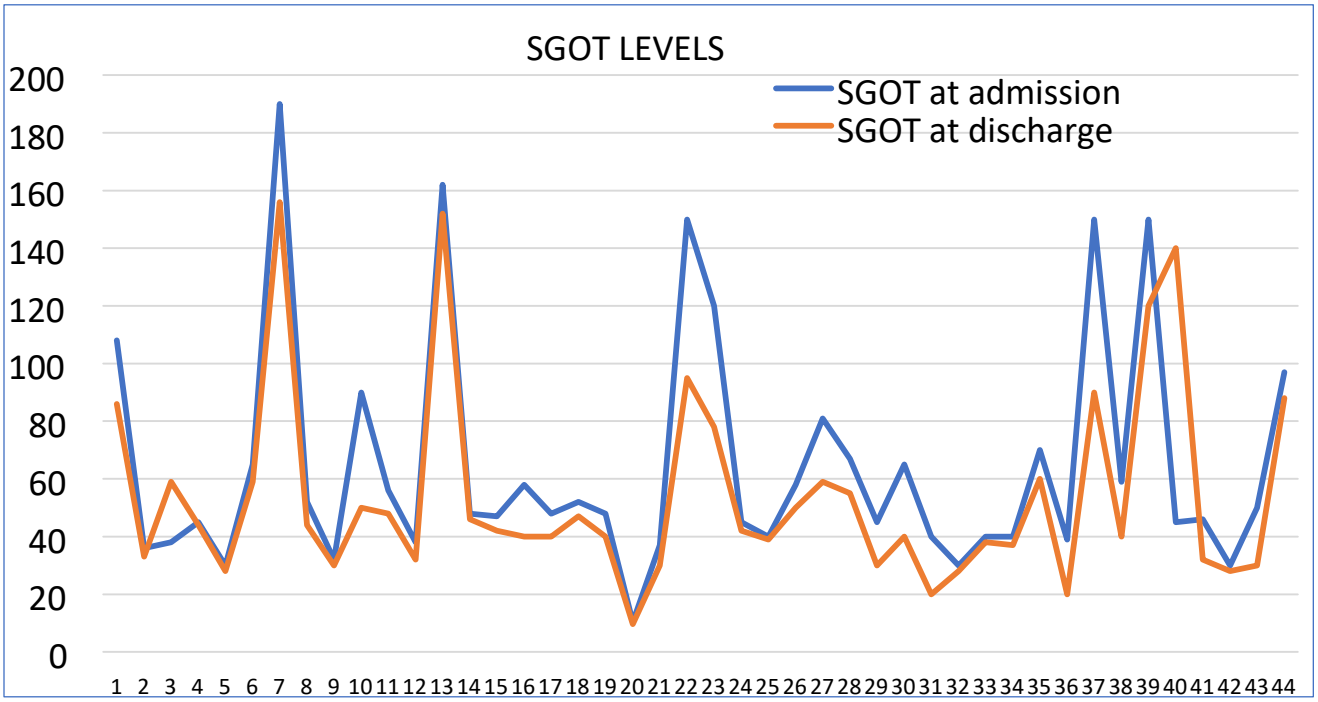

Table 1: MELD SCORES

MELD Score	Mortality
≤9	1.9%
10–19	6.0%
20–29	19.6%
30–39	52.6%
≥40	71.3%

DISCUSSION:

Liver diseases are the most frequently occurring disease in the world, and they can have a variety of pathological patterns. According to the NHS, there are over 100 different types of liver diseases, and they are the second largest cause of death in India. Cirrhosis affects between 4.5 to 9.5 percent of the world's population. This is due to the fact that cirrhosis is likely to be estimated as nearly $3/4^{th}$ of patients remain asymptomatic until their liver is irreversibly destroyed, and several drug-related issues have also been highlighted during the treatment of various liver disorders.

A six-month prospective observational study was conducted in the SVRRGGH hospital's general medicine inpatient unit. This research involved 150 patients in total. There were 118 male patients and 32 female patients in the entire study population. This could be because the male population has a higher rate of liver disease than females because, males consume more alcohol than females in India, and these findings are similar to those of Meenu Vijayan et al [8].

In the present study more number of patients were seen in between the age of >50years (53 patients,35.10%),followed by 41-50 years (46 patients,30.46%), 31-40years(36 patients,23.84%), 20-30years(16 patients,10.60%), this may be due to more stress full life between 31-50 years of age groups. Excessive alcohol consumption, urban environmental factors and socio-economic factors plays a key role for the occurrence of liver diseases, which is similar to Vinayak s. jamdade et al study [9].

The major etiological factors involved in the cause of liver disease in this study are alcohol intake (90 patients) and smoking. The duration of alcohol consumption has no effect on disease development, whereas the amount of alcohol consumed can worsen liver disease. The National Institute on Alcohol Abuse and Alcoholism recommends no more than two drinks per day (one drink equals 11-14 gms of alcohol) [10]. Pathological processes such as altered fat metabolism, oxidative stress, lipid peroxidation, immunological adduct generation, and cytokine release all contribute to hepatocyte apoptosis in alcohol-induced liver disease [11].

Out of 150 population, 59.6% had end-stage liver disease with irreversible damage and poor diagnosis, as well as several complications and comorbidities. This is due to the fact that the majority of the patients in our study were unaware of the signs and symptoms of early stage liver disorders and were unwilling to stop drinking until their symptoms progressed to cirrhosis. The most common complications were ascites (75.4%), portal hypertension (63.8%), and hepatic encephalopathy (34.7%). There were no complications in 10 of the individuals. These problems were caused by a change in the liver's functional condition, such as ascites, increased pressure in the portal vein, and esophageal and abdominal varices. Hepatic encephalopathy can occur when the liver's ability to convert ammonia to urea is impaired. Decreased liver synthesis of various coagulation factors will results in bleeding manifestations. The present study results were in contrast with the study conducted by chandresh b damutre et al., in which they observe of the patients with hepatic encephalopathy [12].
Antibiotics (145) are the most commonly recommended medications, followed by vitamin supplements (135), hepatoprotectants (128), and diuretics (83), which are used to remove excess water from the body due to liver diseases. Other medications include lactulose for hepatic encephalopathy, beta blockers for portal hypertension, anti-emetics and proton pump inhibitors to reduce vomiting and stomach irritation, and hepatoprotectants to slow disease development.

Cephalosporins (111) were the most commonly administered antibiotic among the 145 patients because they are well tolerated, readily available, and safe when compared to other antibiotic groups. Hepatotoxicity is a concern that physicians should be aware of when using cephalosporins. This was similar to the study conducted by k. leelaprasad babu et.al [12]. Rifagut was most prescribed in liver disorders, because it helps in reducing the risk for hepatic encephalopathy. An Increase in the MELD Score is associated with a decrease in residual Liver Function.

Among the study Population of 75 Patients, MELD Score of 34 of the Patients was between 20-29, 27 of the patients showed with ranges between 10-19, 9 Patients had MELD Score between 30-39 & 4 Patients had MELD Score between 0-9. Whereas study carried out by Balthasar L.Hug, et.al shows Increased MELD scores of 15 to 19, 20 to 29, and ≥30 points were positively associated with LOS and the number of comorbidities in uni- and multivariable analysis. Majority of the Prescription were rational [13].

CONCLUSION:

We looked at the pattern of co-morbid conditions, drug use, and severity rating using a model for end-stage liver disease in this study (MELD). Patients with liver disorders had a variety of co-morbid illness. The most common co-morbid findings were analyzed and it includes hypertension and diabetes. Our research reveals that antibiotics are mostly prescribed; there is significant room for improvement in the health-care system's prescribing patterns by reducing the use and dose of antibiotics in order to lower the risk of microorganisms developing antibiotic resistance. After the increasing prevalence of hepatotoxicity and antibiotic resistance, the antibiotics should be rigorously observed. The study emphasizes the need to improve awareness of the patients on liver disease to promote early diagnosis, and reduce the mortality of the hospitalized patients**.** As a result, clinical pharmacists must collaborate with other health care experts to develop suitable therapy regimens, with the ultimate goal of minimizing mortality from liver disorders. The pharmacist is the key to properly manage therapy according to the

patient's stage and condition, as well as managing undesirable side effects. Since our study has made attempts to educate patients about the negative impacts of alcohol use on health, family, social well-being, and community, and to reduce any adverse effects (at least to some extent).

REFERENCES

1. Eftekhari, Z., Gholizadeh, M., Sharath N. Drug Utilization Pattern of Patients with Alcoholic Liver Disease in Jayanagar General Hospital, Bangalore, India. Arch Pharma Pract 2020;11(S1):89-92.
2. M, Poojitha & P, Vyshnavi & K, Sekhar & K, Krishna. (2020). A Prospective Observational Study On Aetiology, Complications And Drug Related Problems Of Liver Disorders In A Tertiary Care Teaching Hospital. International Research Journal of Pharmacy.
3. Kamath PS, Wiesner RH, Malinchoc M, et al. A model to predict survival in patients with end-stage liver disease. Hepatology. 2001;33(2):464-470.
4. Wiesner R, Edwards E, Freeman R, et al. Model for end-stage liver disease (MELD) and allocation of donor livers. Gastroenterology. 2003;124(1):91-96.
5. Parthasarathi, Nyfort-Hansen, Nahata. A text book of clinical pharmacy practice. 2nd ed. Published by universities press. Hyderabad; 2013.
6. Kolasani BP, Sasidharan P, Divyashanthi CM, Jayabal P, Rajaseharan A. Prescribing pattern of drugs in patients with alcoholic liver disease in a tertiary care teaching hospital. Natl J Physiol Pharm Pharmacol 2017;7(5):538-544.
7. Ahmed, H., Naseem, S., Unnisa, H., Amreen, A., Ansari, J. and Sultana, R. 2018. a prospective observational study on effects of hepatoprotective agents in alcoholic liver disease at a tertiary care hospital. *Journal of Drug Delivery and Therapeutics*. 8, 1 (Jan. 2018), 7-12.
8. Vijayan, Meenu & KA, Anisha & Selina, Sanal & PR, Roshni. (2014). Clinical Profile and Prescribing Pattern of Cirrhosis in a Tertiary Care Hospital. Indian Journal of Pharmacy Practice. 7. 69-74.
9. Jamdade, Vinayak Sudhir et al. "Prescription Pattern Of Drugs And Who Prescribing Indicators Used In Alcoholic Liver Disease Patients In A Tertiary Care Teaching Hospital In North Eastern India." International journal of pharma and bio sciences (2015).
10. S., Zeebaish et al. A prospective observational study on prescribing patterns of drugs used in alcoholic liver disease patients at tertiary care teaching hospital. International Journal of Basic & Clinical Pharmacology, [S.l.], v. 6, n. 6, p. 1386-1392, may 2017. ISSN 2279-0780.
11. Stewart SF, Day CP. The management of alcoholic liver disease. *J Hepatol*. 2003;38 Suppl 1:S2-S13.
12. Dumatar, Chandresh B, and Rakesh Ashok Malpure. 2018. "Study of Prescribing Patterns for Prophylaxis and Treatment of Complications of Liver Cirrhosis in Hospitalised Patients at A Tertiary Care Teaching Hospital: Study of Prescribing Patterns for Prophylaxis and Treatment of Complications of Liver Cirrhosis". *National Journal of Integrated Research in Medicine* 8 (3), 98-104
13. Roth JA, Widmer AF, Tschudin-Sutter S, et al. The Model for End-stage Liver Disease (MELD) as a predictor of short-term mortality in Staphylococcus aureus bloodstream infection: A single-centre observational study. PLoS One. 2017;12(4):e0175669.