

A Study on Drug Prescribing Patterns among Patients with Liver Disorders - A Prospective Observational Study

K. Mounika¹, Araveti Manasa², Ballani Naga Bhagya Lakshmi³, M. Baby Shalini⁴,
Ramesh Reddy Kudamala⁵, M. Himasaila⁶

^{1,2,3,4}Department of Pharmacy Practice, Sri Padmavathi School of Pharmacy, Tiruchanur, Tirupathi –
517503, Andhra Pradesh, India

⁵Professor, Department of Pharmaceutics, Sri Padmavathi School of Pharmacy, Tiruchanur, Tirupathi –
517503, Andhra Pradesh, India

⁶Department of Pharmacology, Sri Padmavathi School of Pharmacy, Tiruchanur, Tirupathi – 517503,
Andhra Pradesh, India

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Corresponding author: Dr. K. Mounika

Conflict of interest: Nil

Abstract:

Background: The rational use of medications requires prescribing the appropriate medication to the appropriate patient at the appropriate time, with the appropriate dose, frequency and mode of administration. The liver is the second-largest organ in the body and plays a vital role in digestion, metabolism, immunity, and storage of nutrients.

Objectives: To determine age and gender wise distribution. To identify the various risk factors for various liver disorders. To describe the comorbidities and complications. To determine the distribution of patients based on type of liver disorders. To determine the average no. of drugs and types of drugs prescribed.

Methodology: Prospective observational Study was conducted in the Department of General Medicine at (SVRRGGH) Sri Venkateshwara Ramnarain Ruia Government General Hospital, tertiary care teaching hospital, Tirupati for 6 months with a sample size of 149 patients.

Conclusion: The conclusion that despite many patients receiving monotherapy, those who received a two-drug regimen i.e., antibiotics and hepatoprotectants responded effectively, and multidrug therapy was only given to a small number of patients because it is ineffective. All the drugs were prescribed in generic names, whereas none of the drugs prescribed out of respective hospital formulary and all the drugs prescribed were mentioned in the essential drug list.

Keywords: Prescription pattern, Liver disorders, Essential drug list.

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Introduction

The rational use of medications requires prescribing the appropriate medication to the appropriate patient at the appropriate time, with the appropriate dose, frequency, and mode of administration. The liver is the second-largest organ in the body and plays a vital role in digestion, metabolism, immunity, and storage of nutrients. There are many factors that can cause different liver disorders, some of which include alcohol-related liver cirrhosis, alcohol-related ascites, and cirrhosis with portal hypertension, hepatitis, hepatosplenomegaly, jaundice, cirrhosis with cirrhosis, liver abscess, polycystic liver disease, and alcohol-related fatty liver disease. Liver cancer, cholelithiasis, Wilson's disease, drug-induced liver disorders, and hepatic encephalopathy. Antibiotics, hepatoprotectives,

diuretics, antacids, proton pump inhibitors, and others are frequently prescribed medications for hepatic diseases.¹

Aim:

The main aim of the present study is to describe the prescribing patterns of various liver diseases.

Objectives:

- To determine the age and gender wise distribution.
- To identify the various risk factors for various liver disorders.
- To describe the comorbidities and complications.
- To determine the distribution of patients based on the type of liver disorders.

- To determine the average no. of drugs and types of drugs prescribed.

Materials & Methods:

Prospective observational Study was conducted in the Department of General Medicine at (SVRRGGH) Sri Venkateshwara Ramnarain Ruia Government General Hospital, tertiary care teaching hospital, Tirupati for 6 months with a sample size of 149 patients. All the inpatients

admitted in department of General Medicine with any liver disease during study period. Patients of age above 18years and willing to participate in study.

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.

Results:

Table 1: Gender wise distribution of patients

Gender	Number	Percentage	Mean	Std deviation
Male	113	75.83%	48.04	12.655
Female	36	24.16%	50.75	8.987

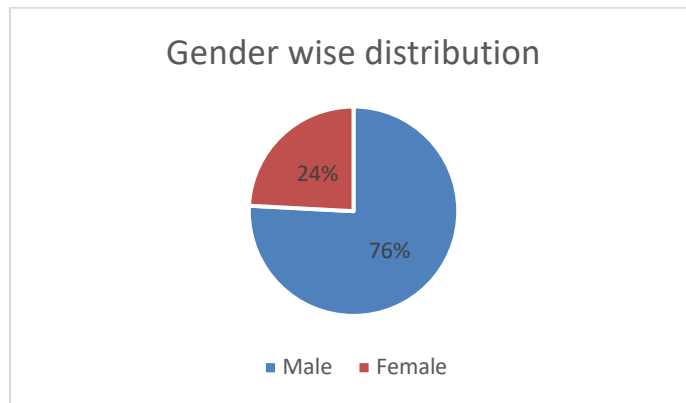


Figure 1:

In this study, A total 149 patients were evaluated during a period of 6 months, out of which 113(75.83%) of the study were predominantly male and 36(24.16%) were female. Mean and Standard

deviation were calculated the values were found to be 48.04 for male and 50.75 for female, whereas 12.655 for male and 8.987 for female were determined respectively.

Table 2: Age wise distribution

Age	Number	Percentage
25-35yrs	9	6.04
36-45yrs	25	16.77
46-55yrs	57	38.25
56-65yrs	49	32.88
66-75yrs	7	4.69
>75 yrs.	3	2.01

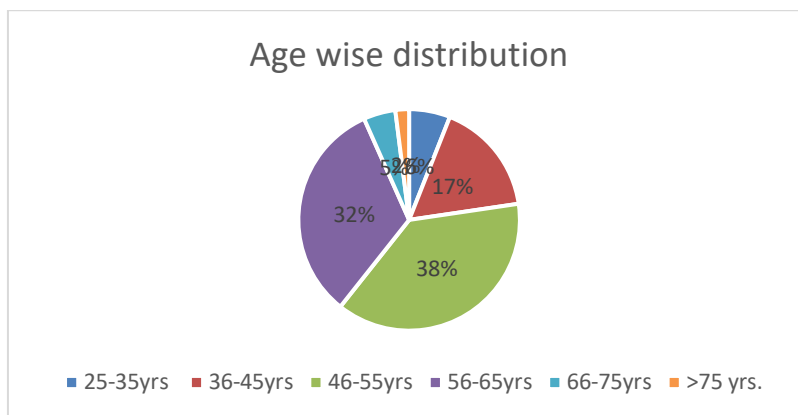


Figure 2:

Out of 149 patients, majority of the patients were under the age category of 46-55 years contributing 57 (38.25%) patients, followed by 56-65 years with 49 (32.88%) patients, 36-45 years with 25 (16.77%), 25-35 years with 9 (6.04%) patients, 66-75 years with 7 (4.69%) patients, >75 years with 3 (2.01%) patients.

Table 3: Social habits

S. no	Social habitats	No. of patients	Percentage
1	Alcohol	34	22.81
2	Smoking	41	27.51
3	Both alcohol and smoking	44	29.53
4	Betel chewing	29	19.46



Figure 3:

Out of 149 patients, majority of the patients were under the category of both alcohol and smoking with 44 patients followed by smoking with 41 patients, alcohol with 34 patients and minority of the patients i.e., 29 with betel chewing.

Table 3.1: One-way Anova between age, gender and social habits

	Anova	Mean square	F	Significance
Gender	Between gender and social habits	3.775	35.296	0.000
	Within gender and social habits	107		
Age	Between Age and social habits	204.453	1.449	0.231
	Within age and social habits	141.096		

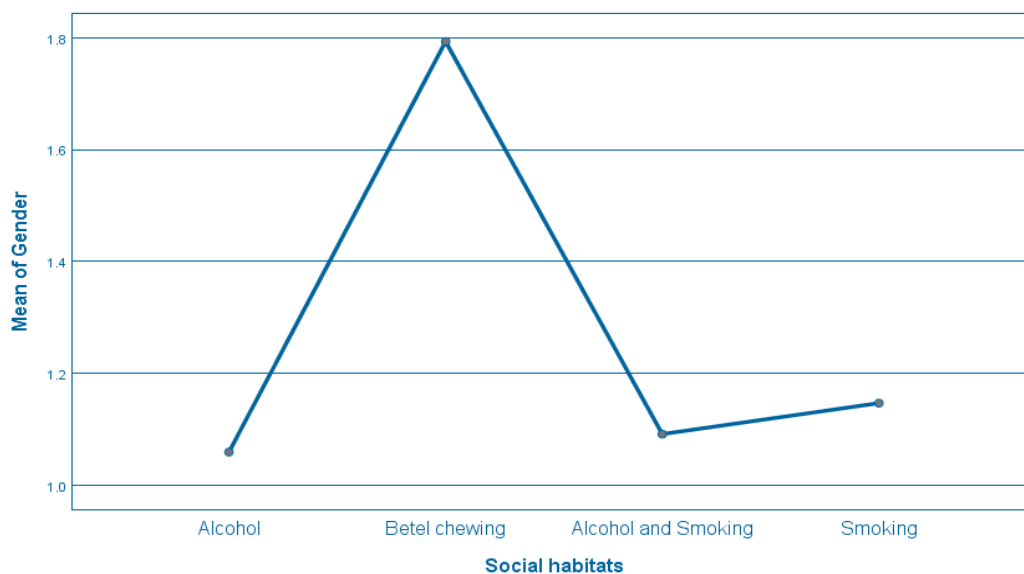


Figure 4:

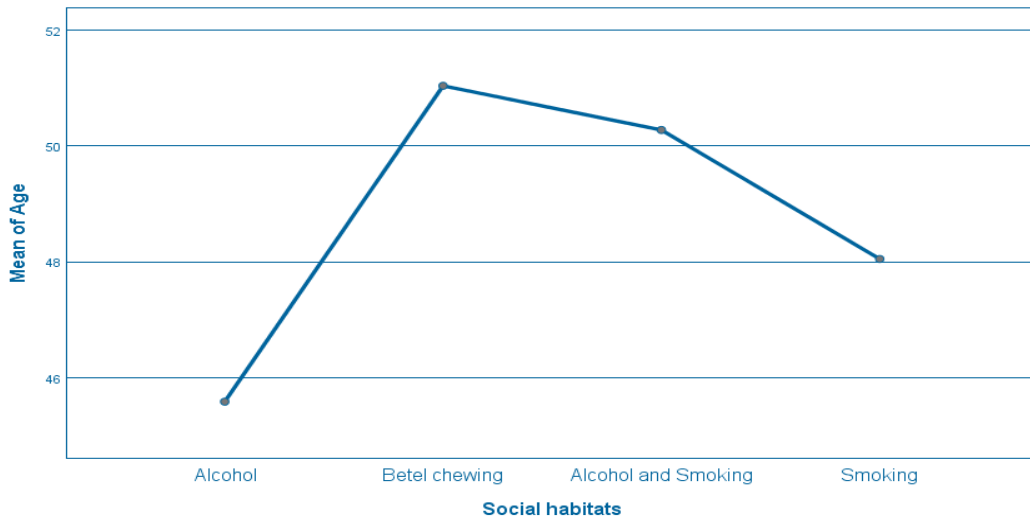


Figure 5:

Table 4: Co morbidities

S.no	Co morbidities	No of patients	Percentage
1	HTN	76	51.00
2	Diabetes	58	38.92
3	Cellulitis	29	19.46
4	Anaemia	19	12.75
5	Thrombocytopenia	12	8.05
6	AKI	5	3.35

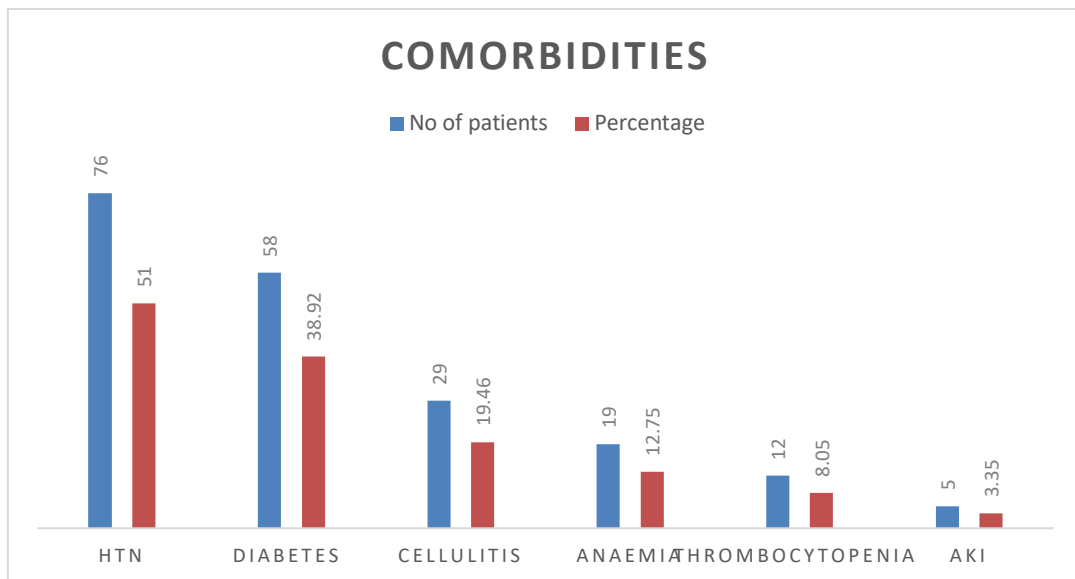


Figure 6:

Out of the 149 liver disease patients, majority of the patients had Hypertension contributing to 76 (51.00%) patients, followed by diabetes contributing to 58 (38.92%) patients, cellulitis contributing 29 (19.46%) patients, anaemia contributing 19 (12.75%) patients, thrombocytopenia contributing 12 (8.25%) patients and a minority of the patients had AKI contributing 5 (3.35%) patients.

Table 5: Various liver disorders

S.no	Liver disorder	No of patients	Percentage
1	Acute liver disease	23	15.43
2	Chronic liver disease	32	21.47
3	Hepatitis	18	12.08
4	Alcohol liver disease	20	31.42

5	Liver abscesses	14	9.39
6	DCLD	27	18.12
7	Jaundice	7	4.69
8	Cholelithiasis	8	5.36

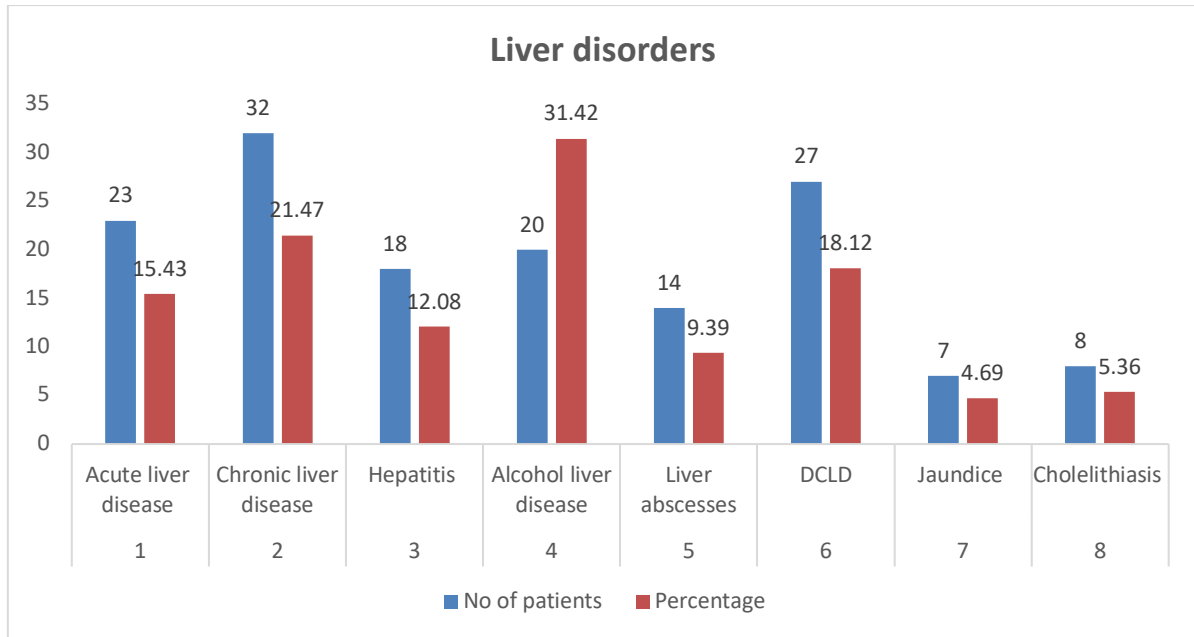


Figure 7:

In our study many of the liver disorder patients includes acute liver disease with 23 patients (15.43%), followed by chronic liver disease with 32 (21.47%), followed by hepatitis with 18 patients (12.08%), followed by alcohol liver disease with 20

patients (31.42%), followed by liver abscesses with 14 patients (9.39%), followed by DCLD with 27 patients (18.12%), followed by cholelithiasis with 8 patients (5.36%), followed by jaundice with 7 patients (4.69%).

Table 6: Complications

S.no	Complications	No of patients	Percentage
1	Ascites	79	53.02
2	Hepatic encephalopathy	45	30.20
3	Infection	15	10.06
4	Liver malignancy	9	6.04
5	No complications	10	6.71

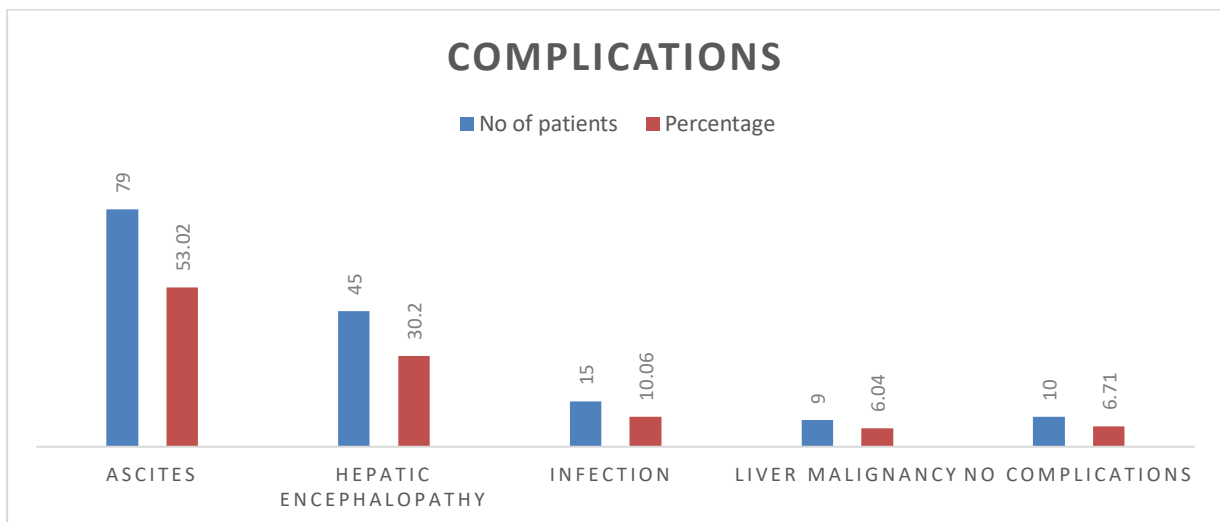


Figure 8:

Out of 149 patient's complications are seen in 79 patients in which ascites (53.02%) are mostly seen followed by hepatic encephalopathy infections (30.20%), liver malignancy (6.04 %), no complications (6.71%), respectively.

Table 7: Types of drugs prescribed among patients

S.no	Classes	No of patients	Percentage
1	Antibiotics	146	97.9
2	Diuretics	70	47.9
3	Hepatoprotectants	139	93.2
4	Laxatives	69	46.3
5	PPI	122	81.8
6	Anti HTN	72	48.3
7	Antacids	17	11.4
8	Anti-diabetics	50	33.4
9	Vitamin supplements	137	91.9
10	Anti-emetics	33	22.1
11	Antihistamines	7	4.6
12	Analgesics	9	6.0
13	Anti-hyper lipidemic	6	4.0

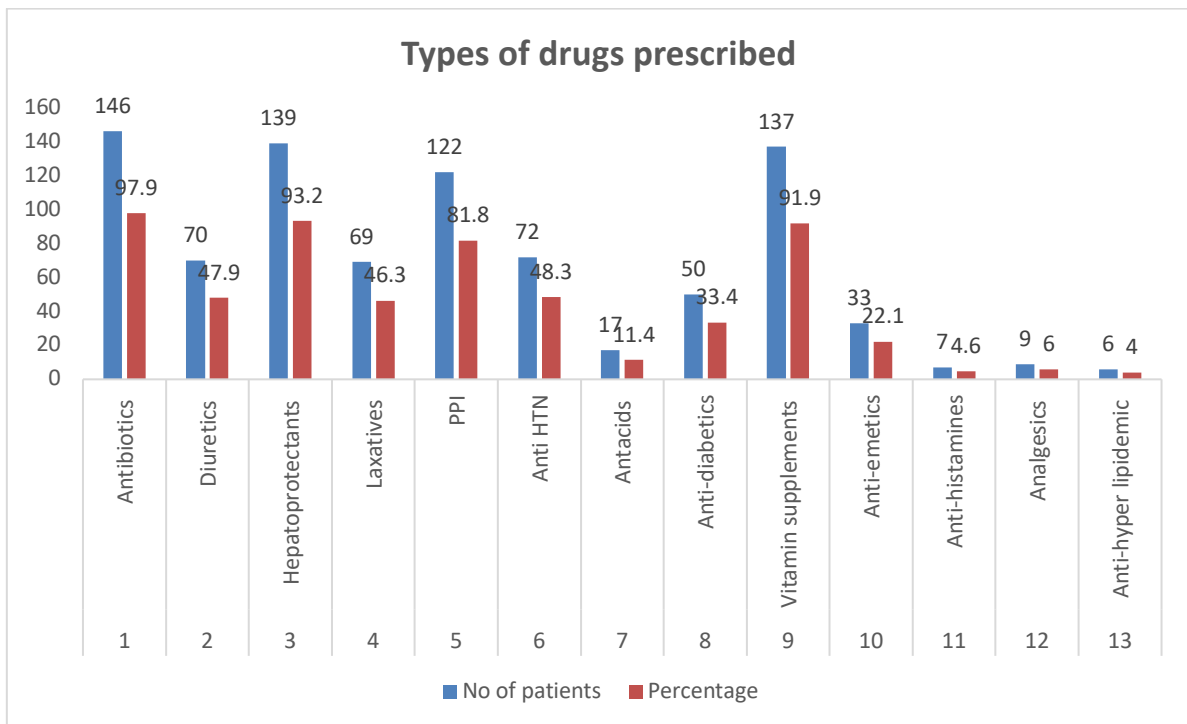


Figure 9:

Out of 149 patient's antibiotics 146 (97.9%) are highly prescribed followed by hepatoprotectants 139(93.2%), followed by vitamin supplements 137 (91.9%), PPI 122 (%) and other drugs respectively.

Table 8: Types of antibiotics prescribed

Drugs	No of patients	Percentage
Ceftriaxone	47	31.54
Cefixime	18	12.08
Cefotaxime	52	34.89
Cefoperazone + sulbactam	18	12.08
Piper TZ	21	14.09
Meropenem	3	2.01
Metronidazole	14	9.39
Rifagut	94	63.08

Augmentin	9	6.34
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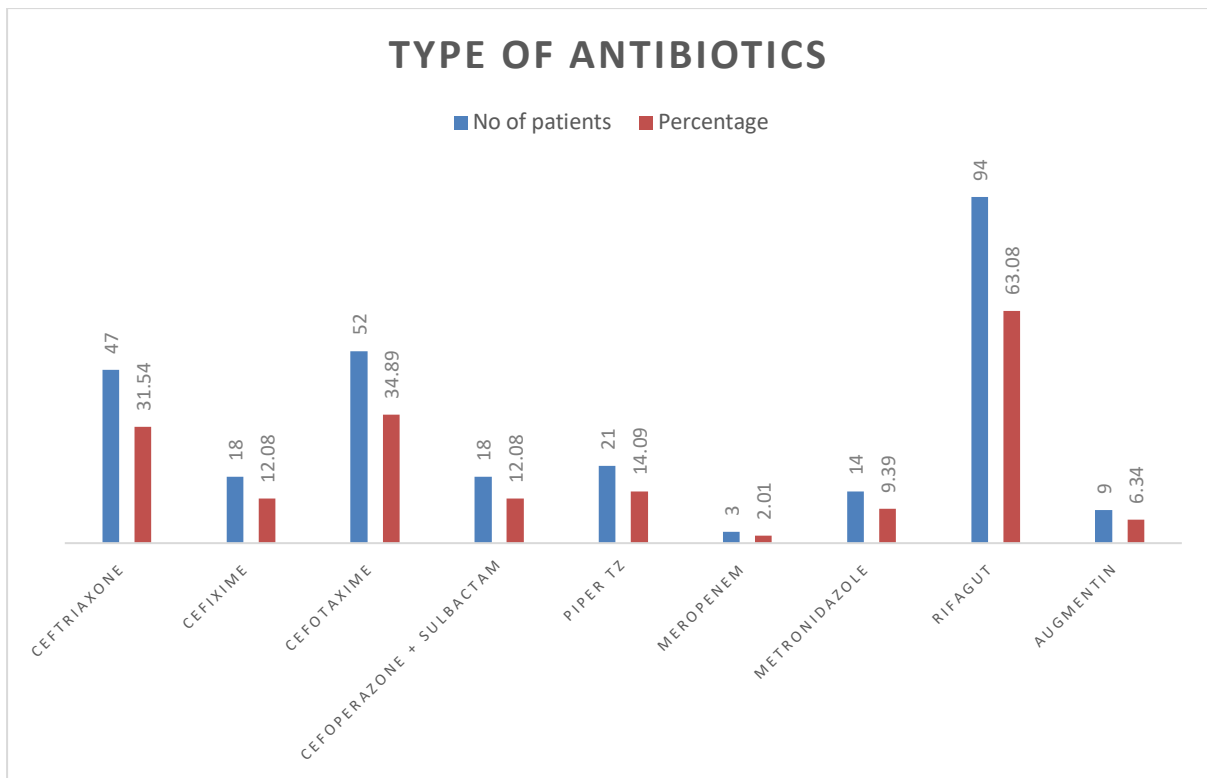


Figure 10:

Out of 149 patients 144 patients are prescribed with antibiotics in which rifagut (63.08%) is mostly prescribed followed by cefotaxime (34.89%) ceftriaxone (31.54%) piper TZ (14.09%) cefixime (12.08%) metronidazole (9.39 %) Augmentin (6.34%) meropenem (2.01%).

Table 9: Types of hepatoprotectives agents prescribed

S.no	Drugs	No of patients	Percentage
1	Udiliv	103	69.12
2	Hepamerz	28	18.79

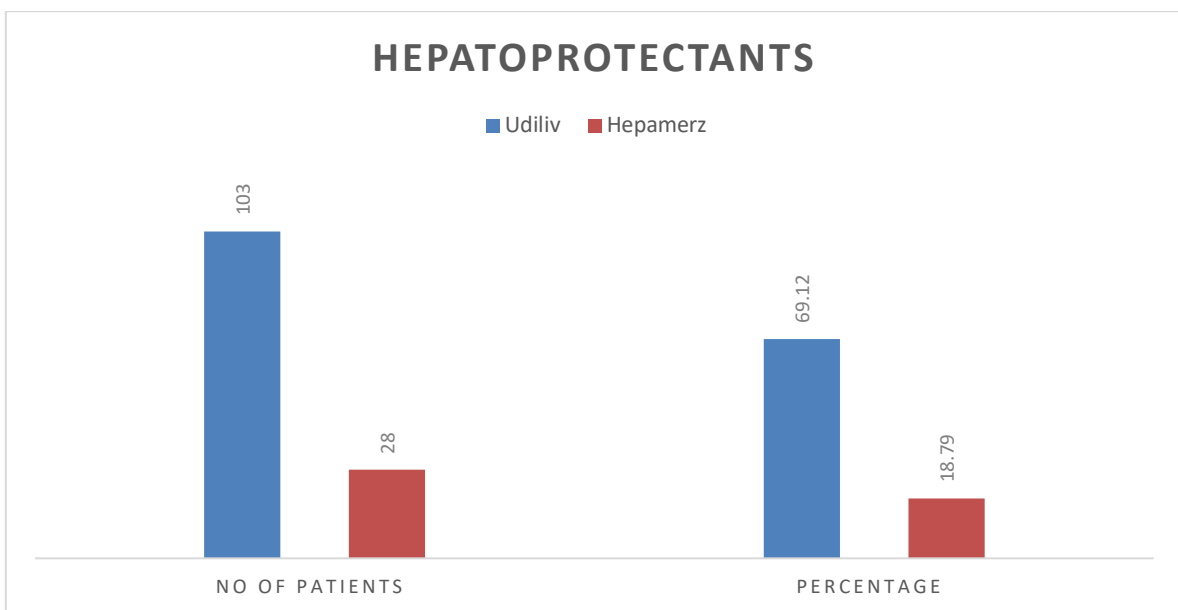


Figure 11:

Out of 149 patients 131 patients are prescribed with hepatoprotectants in which udiliv 103 (69.12%) are mostly prescribed followed by hepamerz 28 (18.79%) respectively.

Table 10: Supportive therapy

S.no	Drugs	No of patients	Percentage
1	Calcium	39	26.17
2	Zinc	27	18.12
3	Furosemide	72	48.32
4	Spirolactone	32	21.47
5	B complex	87	58.39
6	Vit C	34	22.81
7	Vit E	28	18.79
8	Cap A and D	57	38.25
9	IFA	21	14.09
10	Human albumin	20	13.42
11	Pantoprazole	100	67.11
12	Octreotide	30	20.13
13	Vit K	76	51
14	Ondansetron	39	26.17
15	Atorvastatin	12	8.05
16	Paracetamol	7	4.69

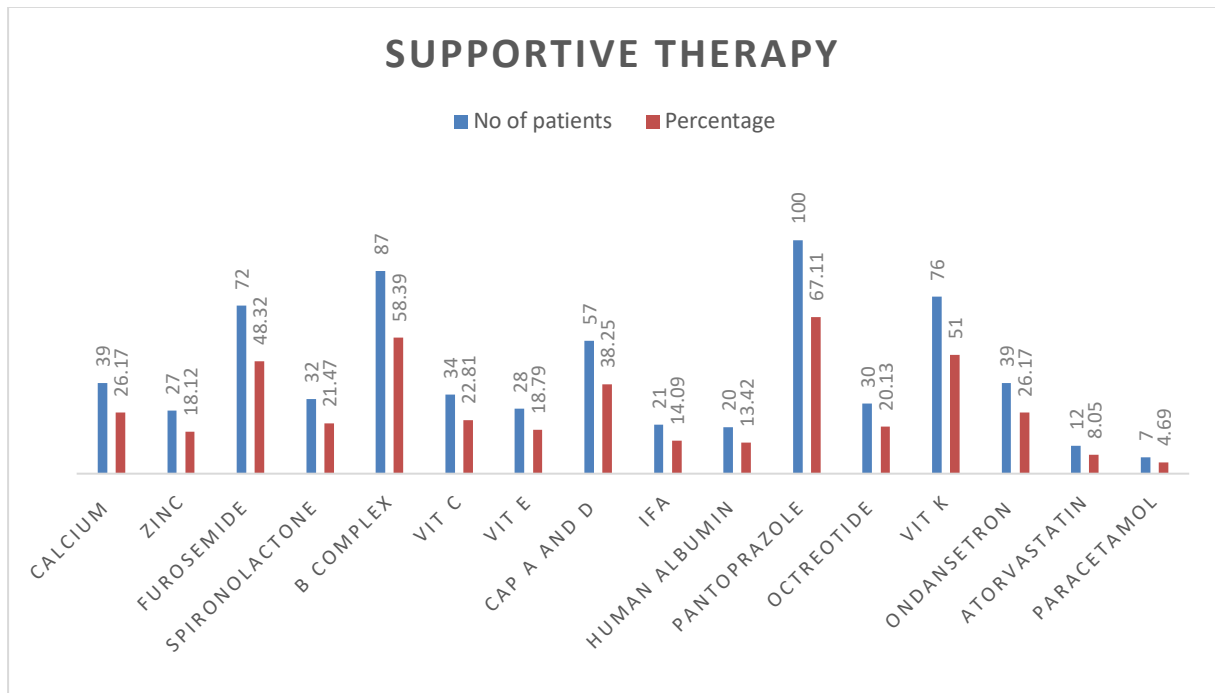


Figure 12:

Out of 149 patients, 100 members were given with pantoprazole (67.11%), followed by 87 members with B complex (58.39%), followed by 72 members with furosemide (48.32%) respectively.

Table 11: Laboratory profile

Lab	No of patients	Mean	Std deviation
SGOT	148	60.72	14.881
SGPT	149	60.31	12.514
Creatinine	149	1.752	7.8726
Bilirubin	149	1.007	0.3108

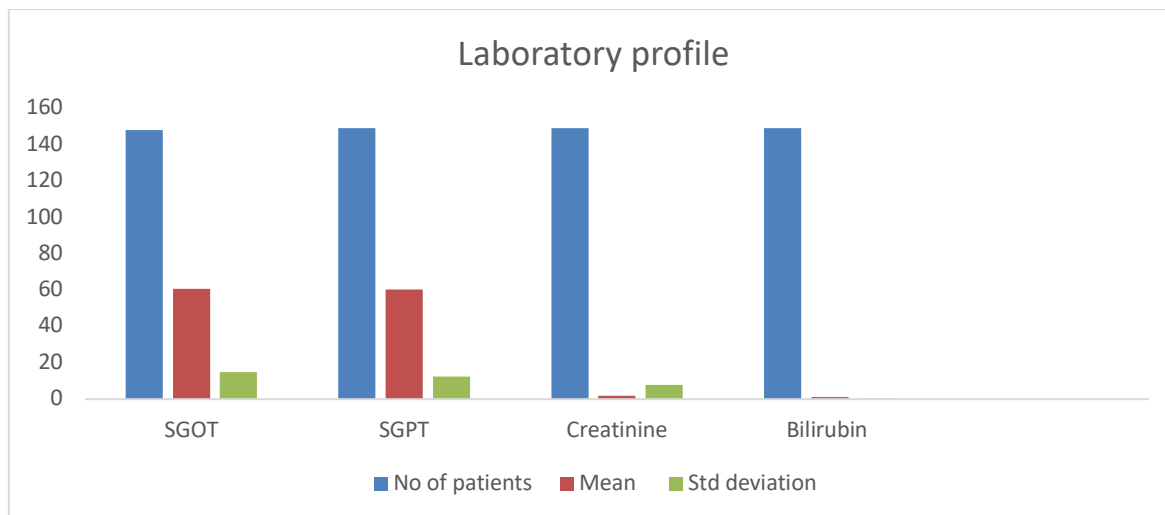


Figure 13:

Mean and standard deviation was calculated for laboratory profile contributing for SGOT was (60.72, 14.881), SGPT was (60.31, 12.514), Creatinine was (1.752, 7.8726), Bilirubin was (1.007, 0.3108).

Discussion:

Hepatic diseases were more prevalent in males 75.83% than in females 24.16%, generally, males will expose more to the risk factors like alcohol, smoking and etc and same was concluded in the study conducted by Meenu Vijayan [2] et al. in 2014. The occurrence of the disease is more (38.25%) in the age group 46-55 years but Hemang Suthar [3] et al. Studies on the Clinical profile of cases of the alcoholic liver disease, revealed that 15.43 % patients belonged. It may be due to that, in the study area 44 people were addicted to the alcoholism and smoking than another group. We have observed a significant occurrence of hepatic diseases in the early age group, which alarms the health care system to monitor and prevent/minimize the prevalence of hepatic disease in this age group people with modifiable/reversible risk factors. Generally, hepatic disease patients will develop co-morbidities diseases like Alcoholic liver disease, chronic liver disease, acute liver disease, HTN, etc. if they were untreated.

We found that some of the patients (51%) were suffering from HTN, which is supported by Keith G. Tolman [4] et al., a study in that 38.92% was found to have Diabetes related to hepatic impairment. We have also found that 30% of the patients were suffering from other diseases which are not related to the hepatic diseases i.e., chronic liver disease (21.47%) was the most common followed by HTN. According to our study, most of the patients were suffering from chronic liver disease (21.47%), this is due to the overuse of alcohol in our region which is supported by Hemang Suthar [3] et al. We have also observed

very few cases of Wilson's disease, cholelithiasis, liver cancer and hepatic encephalopathy (2% each). A total of 13 types of drugs were prescribed in 149 patients during the study period at an average of 4 drugs per prescription. Most of the patients were treated with combinational drug therapy (73 %), in that two-drug therapy was found to be more (26 %).

Majorly 28% of patients were prescribed with the combination of diuretics and hepatoprotectants. We have also observed the usage of laxatives in combination with diuretics (16 %), with hepatoprotectants (13 %) and with antihypertensive agents (9%), which is supported by Deepak N. Amarpurkar [5] et al., study on Prescribing Medications in Patients with Decompensated Liver Cirrhosis. This study indicates that the subjects were not developed any complications and responded well to the 2-drug regimen than other therapies. Monotherapy also most useful at specific case conditions, 10 supported by Justiniano Santos [6] et al. study, they conclude that spironolactone alone seems to be as safe and effective than spironolactone associated with furosemide. Since spironolactone alone requires less dose adjustment, it would be more suitable for treating ascites on an outpatient basis. However, mono and combination therapies are most useful to treat the specific case conditions, for the patient's better health outcomes. Antibiotics were used more (97.9 %) when compared to other drugs, usage of hepatic protectants was little i.e., 93.2%, vitamin supplements were 91.9%, PPI was 81.8%, Anti HTN was 48.3%.

Conclusion:

We derive the conclusion that despite many patients receiving monotherapy, those who received a two-drug regimen i.e., antibiotics and hepatoprotectants responded effectively, and multidrug therapy was only given to a small

number of patients because it is ineffective. All the drugs were prescribed in generic names, whereas none of the drugs prescribed out of respective hospital formulary and all the drugs prescribed were mentioned in the essential drug list. Antibiotics are the most frequently prescribed drugs, followed by vitamins, hepatoprotectives agents, and antiulcer therapies.

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