International Journal Dental and Medical Sciences Research
Volume 3, Issue 1, Jan-Feb 2021 pp 1001-1013 www.ijdmsrjournal.com ISSN: 2582-6018

Etiological Factors and Laboratory Changes in Hepatic Conditions

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Submitted: 02-02-2021 Revised: 18-02-2021 Accepted: 20-02-2021

ABSTRACT: Goals: To evaluate the Etiology, drinking patterns and monitoring of liver enzymes in hepatic failure conditions before and after treatment and its medication adherence.

Background: Liver disease accounts for more deaths per year worldwide. Alcohol is habituated by most of the people and are at the risk of alcohol associated liver diseases.

Methodology: A prospective observational study was conducted for 6 months in hospitals located at Warangal area. In this study hepatic conditions of 200 disease patients was examined. The data was analyzed and results were expressed as percentages and Anova.

Results: Among these population 80.5% were male and 19.5% were female. Most of the hepatic problems were observed between the age group of 30-50 years. Most of the conditions were caused by alcohol consumption (63.5%), viral hepatitis (24.5%). Increased levels of SGOT,SGPT,ALP and TB before treatment are 50.5%,42%,50.5%,59% respectively. Normal levels of SGOT,SGPT,ALP and TB after treatment are 47.5%,56%,47%,37% respectively. In our sixth months study period patients were curued in first month(42%),second month(16.5%). Patients who are following exercise, having awareness 37.5%,45% respectively.

Conclusion: In our study we concluded most of the hepatic conditions were caused by alcohol consumption, viral**.** Comparing between most of the hepatic conditions SGOT, Total bilirubin is increased in all hepatic conditions, but SGPT, ALP are increased mostly in hepatitis. Patients who were following their medication, stopped alcohol consumption were cured mostly in first three months and patients who are addicted to alcohol, not adhering to their medication is enhancing their severity.

KEYWORDS: Alcohol, Biomarkers, Addiction, Life style, Patient awareness.

I. INTRODUCTION:

The liver is the largest organ in the body weighing 1200 – 1400gms in the female and 1400 – 1600gms in the male. The liver performs many functions like manufacture of several major plasma proteins such as fibrinogen, pro thrombin, and albumin. Metabolism of proteins, carbohydrates, and lipids. Detoxification of toxic substances like alcohol and drugs. Manufacture and excretion of bile. Storage of vitamins (A, D and B12) and iron. Based on multiplicity and complexity of the liver functions, that no single test can establish the disturbance in liver function. Group of liver function tests are employed for diagnosis, to assess the severity of damage, to judge prognosis and to evaluate therapy. Mostly occurring liver diseases are alcoholic liver diseases (fatty liver, ASH, cirrhosis) viral hepatitis, chronic liver disease, jaundice and hepatocellular carcinoma. Due to the complication of cirrhosis ascites, portal hypertensions are observed. These diseases are commonly caused due to the alcohol consumption, viruses, sedentary life style, and family history.

Liver function test reflects the severity of hepatic dysfunction, but rarely provides the diagnostic information on individual diseases. The common useful tests of liver function are total bilirubin, Direct bilirubin and indirect bilirubin, coagulation time and plasma concentration. Low serum albumin indicates severity of liver disease, whereas abnormal coagulation indicates significant hepatic dysfunction either acute or chronic. SGPT, SGOT, GGT, total protein, endoscopy, cholesterol, hepatobiliary and renal ultrasound and liver biopsy. These tests measure enzymes that liver releases in response to damage or disease. Having abnormal

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results on any of these liver tests typivally requires follow up to determine the cause of the abnormalities. Even mildly elevated results can be associated with it liver disease. However, these enzymes can also be found in other places besides the liver. Alcohol related liver disease is caused by damage to the liver from years of excessive drinking. Years of alcohol abuse can cause the liver to become inflamed and swollen. This damage can also cause scarring known as cirrhosis. It is the final stage of liver disease. Proper quality of life should be maintained by intake of sufficient nutrients, avoid alcohol consumption and physical fitness.

II. MATERIALS AND METHODS:

This is a prospective observational study to evaluate the etiological factors and laboratory changes in hepatic conditions. The present study was conducted at sandeep gastro and liver clinic, Balasamudram, Hanamkonda. This was conducted for a period of 6months in 200 patients. Inclusion Criteria- Age of 10 to 80 years, Patients with gastric and hepatic problems, Both males and females, Alcohol addicted people. Exclusion Criteria-Age > 10 years, Psychiatric patients, pregnant woman, neuro, and cardiac patients.

Study procedure: Subjects with hepatic diseases are selected based on inclusion, and exclusion criteria, Demographic data was collected from patient case reports, Patient drinking patterns and their lifestyle was collected by interviewing them, The data collected throughout six months from 200 patients is analyzed. Monitored liver enzymes before and after treatment then compared for increased normal levels in all hepatic conditions. By collecting information regarding their life style, exercise and patient awareness were evaluated.

III. RESULTS:

Demographic analysis of this study revealed that, out of 200 patients: 161(80.5%) were males and 39 (19.5%) were females.

According to our study, usages of alcohol about 44.5 % of people were regular alcoholic, 33.5 % were occasional and 22 % were Non alcoholic.

Table 01 and Figure 01shows the causes of hepatic diseases like alcohol consumption (63.5%), Viral (24.5%), Sedentary (11.5%), family history (0.5%).

Table 02 and Figure 02 shows the SGOT Levels before treatment: In all types of hepatic conditions these levels are increased mostly in cirrhosis, hepatitis and slightly increased in CLD.

Table 03 and Figure 03 shows the SGOT levels after treatment: After following their medication in most of the conditions these levels became normal.

Table 04 and Figure 04 shows the SGPT levels before treatment: SGPT levels are increased in hepatitis and slightly in ASH compared to other diseases.

Table 05 and Figure 05 shows the SGPT levels became normal in all conditions after treatment.

Table 06 and Figure 06 shows the ALP levels before treatment: These levels mostly increased in ASH, CLD, Hepatitis. In other conditions ALP levels slightly increased.

Table 07 and Figure 07 shows ALP after treatment: After following Medication ALP levels became normal in all conditions.

Table 08 and Figure 08 shows total Bilirubin before treatment: Levels are mostly increased in Hepatitis Jaundice, CLD when compared to others.

Table 09 and Figure 09 shows total Bilirubin after treatment: These levels slightly decreased in Hepatitis, in other conditions TB became normal.

Table 10 and Figure 10 shows the Duration of treatment: The Patient who were following their medication and stopped consuming alcohol are cured mostly in 1st month (42 %), 2nd month (16.5%) then who were not following are cured slowly.But,except in the cirrhosis (2%),cirrhosis with ascitis with PHTN (11%),ascitis (3.5%),were not cured because of their severity.

Table 11 and Figure 11 shows the patient who were following exercise about 37.5 % and 62.5 % were not following.

Table 12 and Figure 12 shows the Patient awareness: About 45% of people were having awareness regarding their condition and 55% were not having awareness.

Table 13 shows stastistical analysis of laboratory parameters before and after treatment: By calculating mean,standard deviation and varience then using anova obtained p values.

TABLE 1: CAUSES

Disease	Male	Female	Total percentage
Alcohol	118	9	63.5%
Viral	38	11	24.5%
Sedentary	5	18	11.5%

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Family history	0	1	0.5%

Table 2: **SGOT BEFORE TREATMENT.**

Diseases	Increase	Normal
Ascites	3	8
ASH	4	3
Cirrhosis	7	4
Cirrhosis with PHTN with Ascites	16	11
CLD	12	8
Fatty Liver	23	40
Hepatitis	30	20
Jaundice	6	5

TABLE 3: SGOT AFTER TREATMENT

Diseases	Increase	Decrease	Normal
Ascites	1	2	8
ASH	0	3	4
Cirrhosis	4	4	3
Cirrhosis with PHTN with Ascites	3	13	11
CLD	2	10	8
Fatty Liver	3	22	38
Hepatitis	12	20	18
Jaundice	1	5	5

TABLE 4: SGPT BEFORE TREATMENT

Diseases	Increase	Normal
Ascites	2	9
ASH	4	3
Cirrhosis	3	8
Cirrhosis with PHTN with Ascites	9	18
CLD	6	14
Fatty Liver	21	42
Hepatitis	34	16
Jaundice	5	6

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TABLE 5: SGPT LEVELS AFTER TREATMENT

Diseases	Increase	Decrease	Normal
Ascites	2	1	8
ASH	0	4	3
Cirrhosis	3	0	38
Cirrhosis with PHTN with Ascites	3	6	18
CLD	0	6	14
Fatty Liver	3	19	41
Hepatitis	14	22	14
Jaundice	1	4	6

TABLE 6: ALP BEFORE TREATMENT

Diseases	**Increase**	**Normal**
Ascites	5	6
ASH	5	2
Cirrhosis	7	4
Cirrhosis with PHTN with Ascites	11	16
CLD	14	6
Fatty Liver	23	40
Hepatitis	31	19
Jaundice	5	6

TABLE 7: ALP AFTER TREATMENT

Diseases	**Increase**	**Decrease**	**Normal**
Ascites	1	4	6
ASH	0	5	2
Cirrhosis	4	3	4
Cirrhosis with PHTN with Ascites	3	8	16
CLD	1	13	6
Fatty Liver	6	19	38
Hepatitis	12	21	17
Jaundice	1	5	5

TABLE 08: TOTAL BILIRUBIN BEFORE TREATMENT

Diseases	Increase	Normal
Ascites	4	7

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ASH	5	2
Cirrhosis	6	5
Cirrhosis with PHTN with Ascites	18	9
CLD	13	7
Fatty Liver	33	30
Hepatitis	35	15
Jaundice	10	1

TABLE 09: TOTAL BILIRUBIN AFTER TREATMENT

Diseases	Increase	Decrease	Normal
Ascites	1	0	10
ASH	0	5	2
Cirrhosis	2	4	5
Cirrhosis with PHTN with Ascites	8	11	8
CLD	3	11	6
Fatty Liver	10	23	30
Hepatitis	21	17	12
Jaundice	4	6	1

TABLE 10: DURATION OF TREATMENT

Diseases	1 months	2 months	3 months	4 months	5 months	6 months
ASCITIES	0	0	0	0	1	2
ASH	4	2	0	0	1	0
CIRRHOSIS	0	0	0	2	2	3
CIRRHOSIS WITH PHTN WITH ASCITIES	0	0	0	1	2	2
CLD	1	2	4	1	1	2
FATTY LIVER	33	21	7	0	0	2
HEPATITIES	39	7	2	0	0	2
JAUNDIES	7	1	1	2	0	0
Total	84(42%)	33(16%)	14(7%)	6(3%)	7(3.5%)	13(6.5%)

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TABLE 11: NO OF PATIENTS FOLLOWED EXCERCISE

Exercise followed	No of patients
Yes	75(37.5%)
No	125(62.5%)

TABLE 12: PATIENT AWARENESS

Patient Awareness	No of patients
Yes	90(45%)
No	110(55%)

Statistical analysis of laboratory parameters before and after treatment:
By calculating mean, standard deviation, and variance then using anova method the obtained p values are listed below table.

TABLE 13: P values before and after treatment

Enzymes	INCREASE	NORMAL
SGOT	6.44	0.006
SGPT	1.72	0.0068
ALP	6.08	0.0105
TOTAL BILIRUBIN	2.63	0.005

FIGURE 1 CAUSES

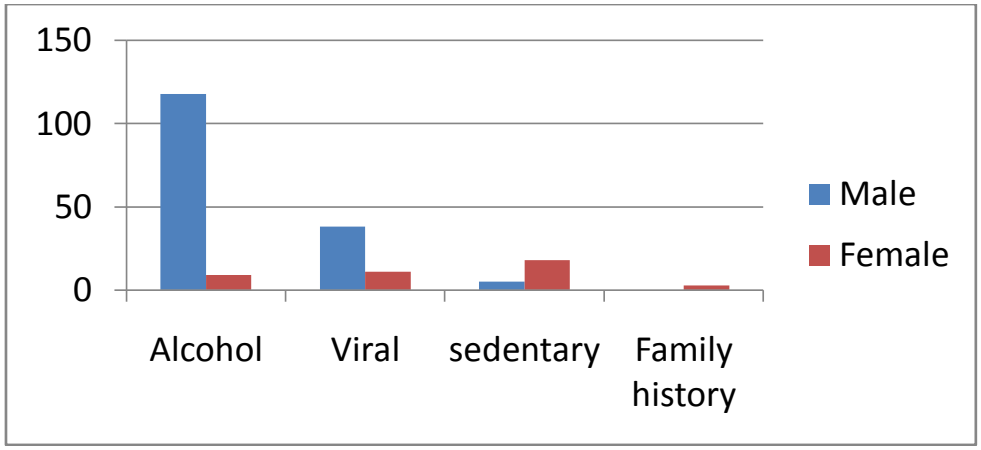

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FIGURE 2 SGOT LEVELS BEFORE TREATMENT

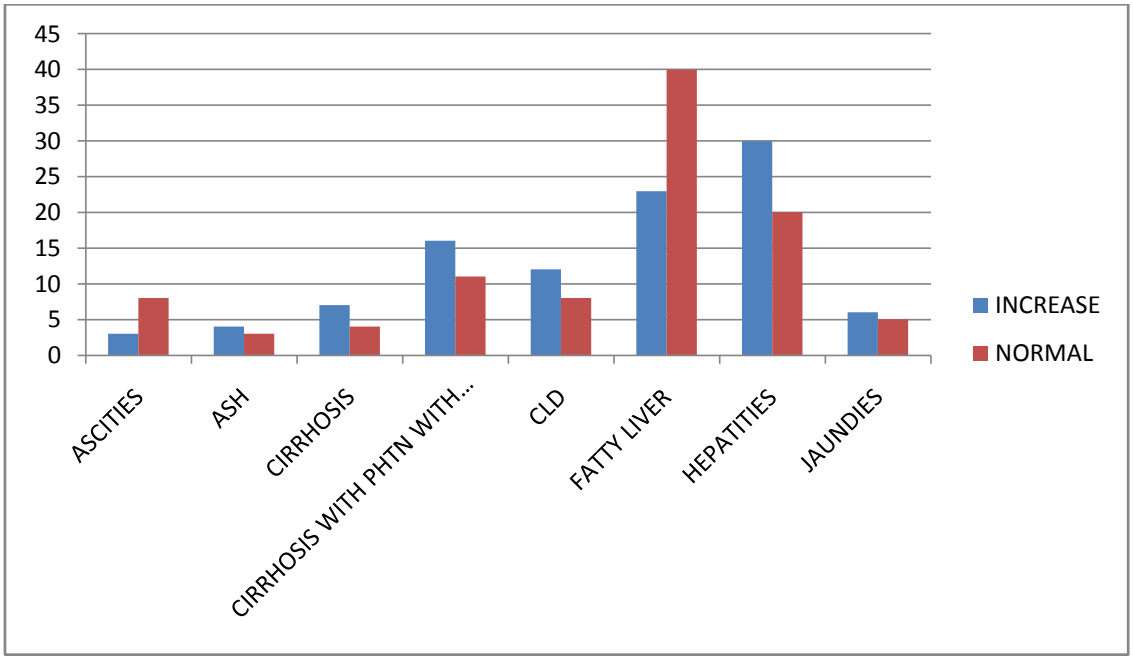

FIGURE 3: SGOT LEVELS AFTER TREATMENT

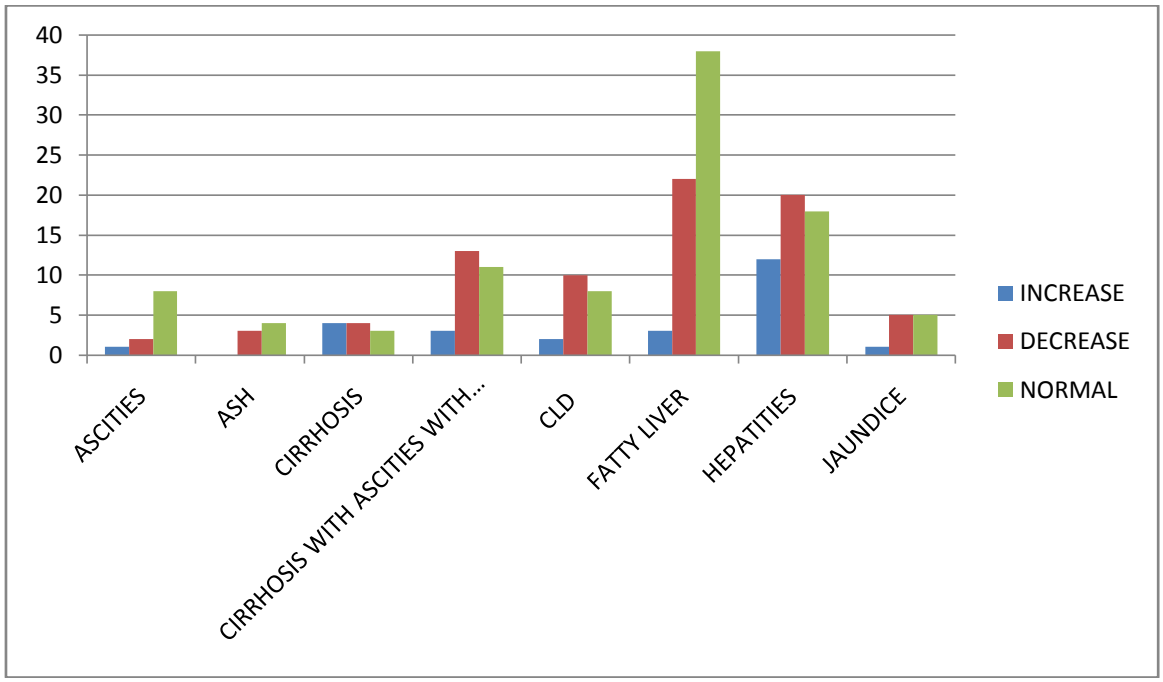

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FIGURE 4: SGPT BEFORE TREATMENT

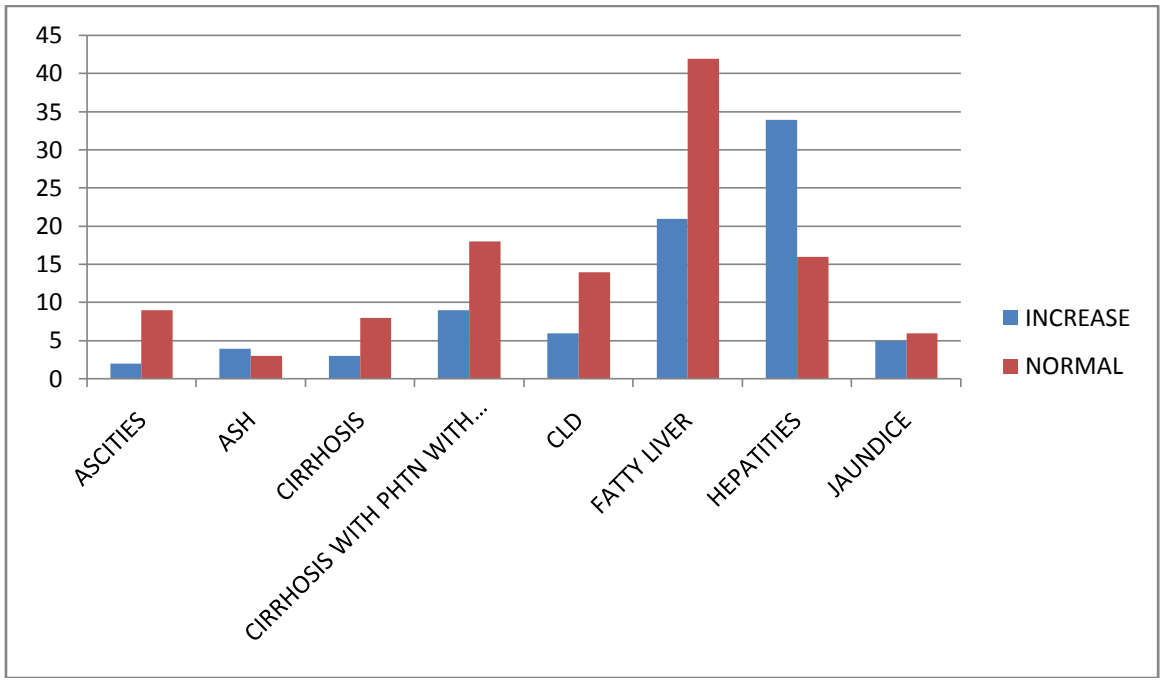

FIGURE 5: SGPT AFTER TREATMENT

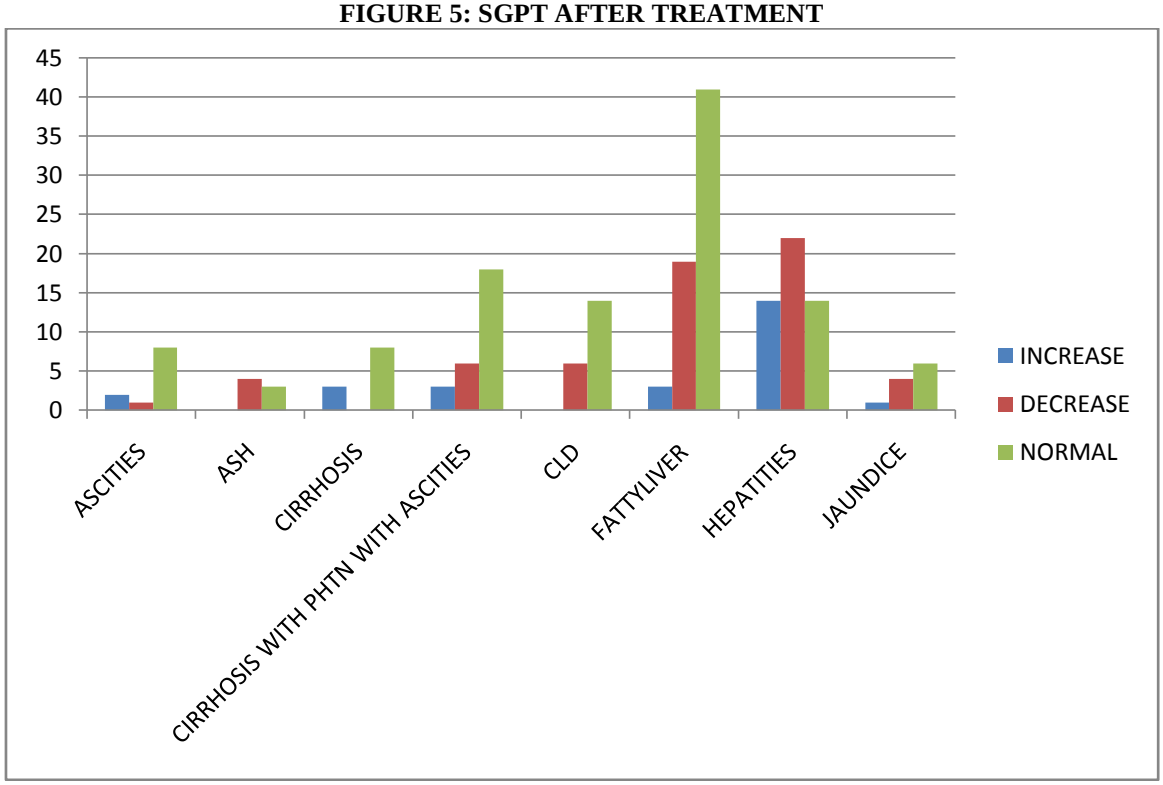

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FIGURE 6: ALP BEFORE TREATMENT

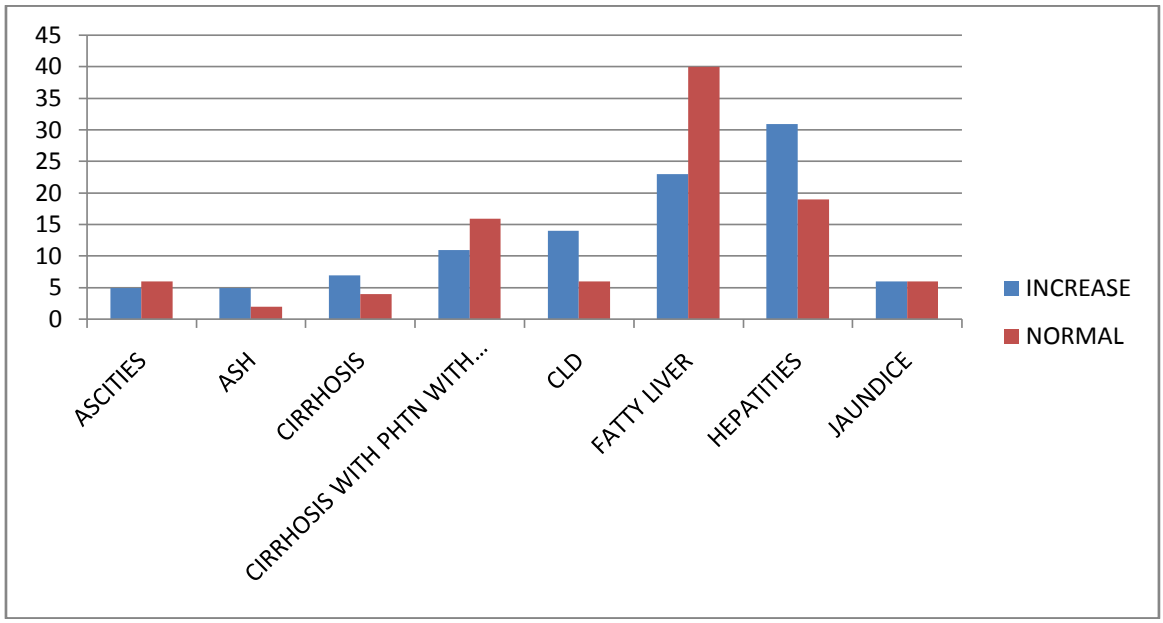

FIGURE 7: ALP AFTER TREATMENT

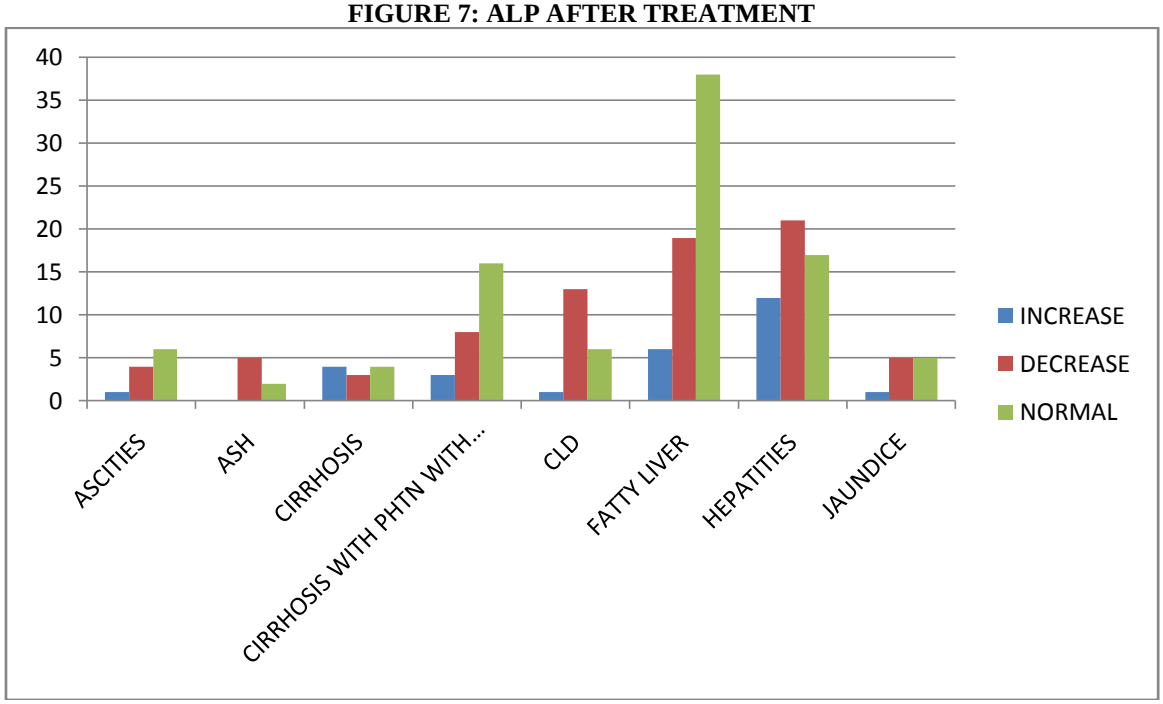

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FIGURE 8: TOTAL BILIRUBIN BEFORE TREATMENT

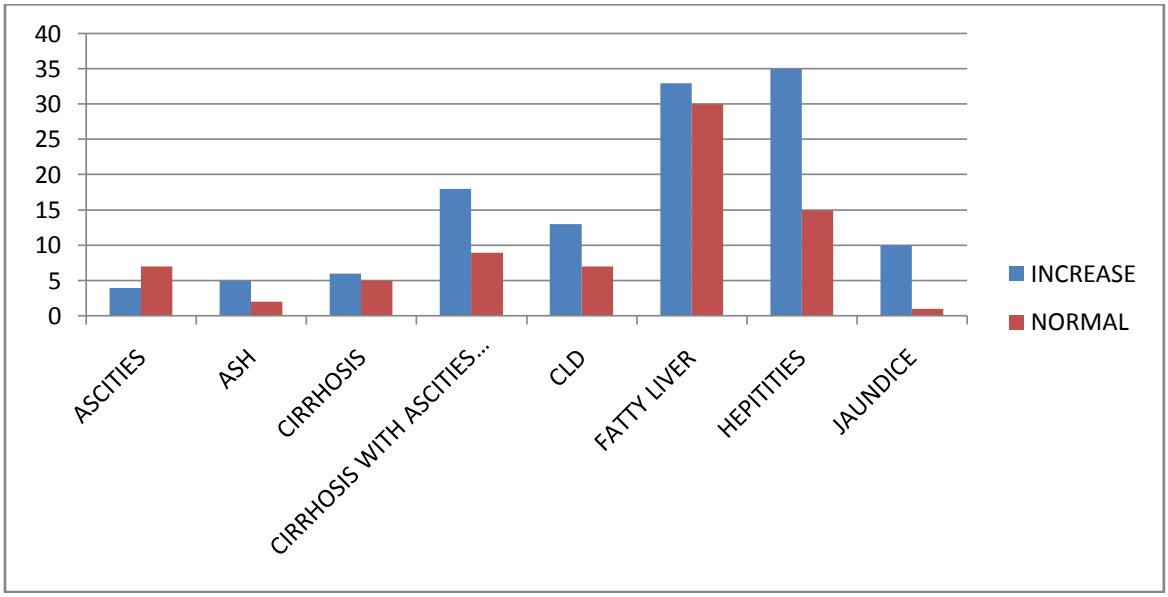

FIGURE 9: TOTAL BILIRUBIN AFTER TREATMENT

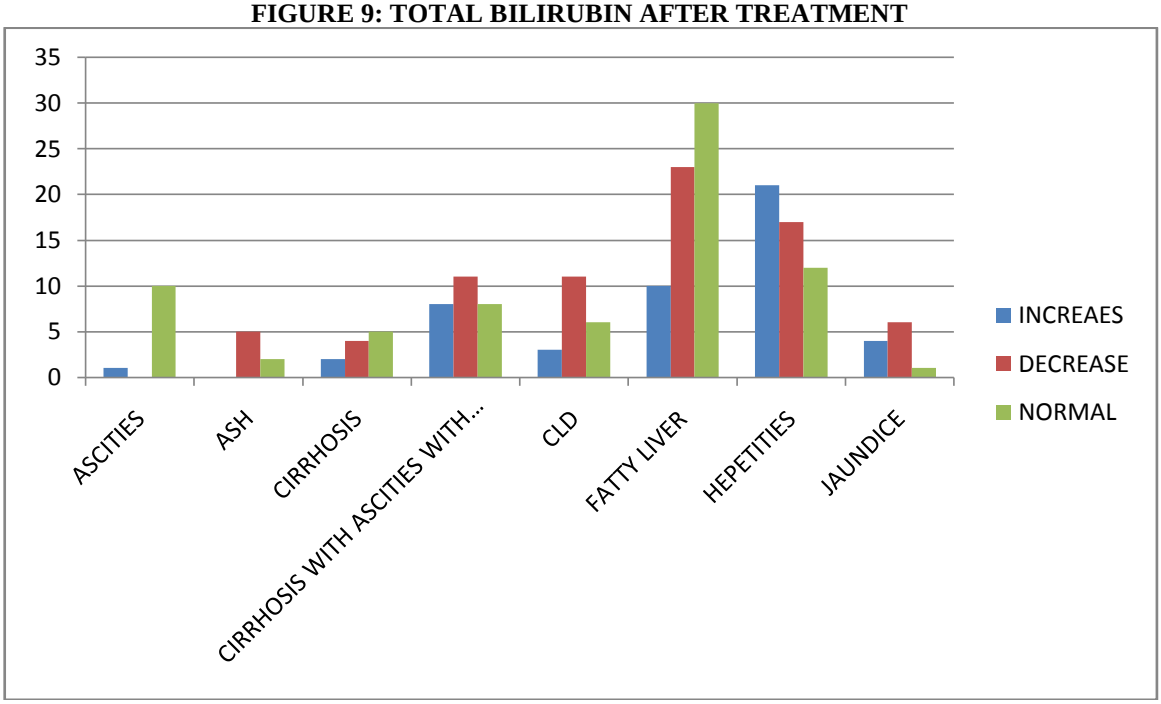

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FIGURE 10: DURATION OF TREATMENT

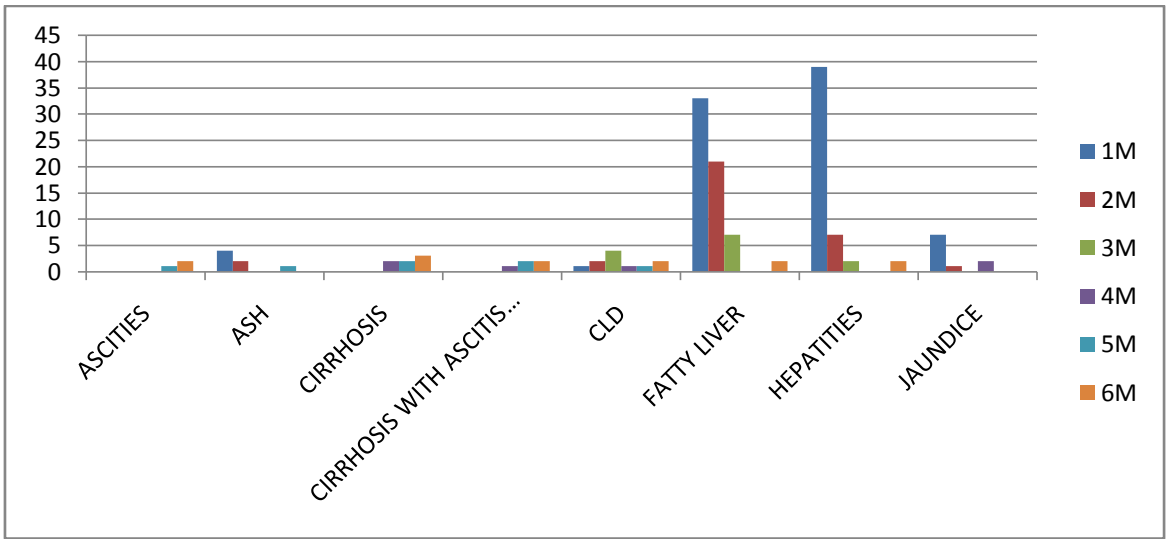

FIGURE 11: PATIENT EXERCISE

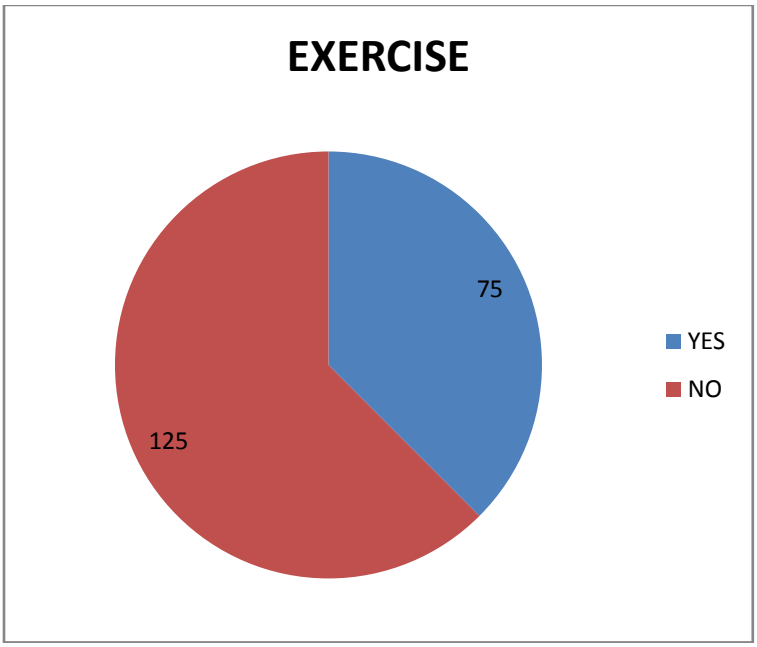

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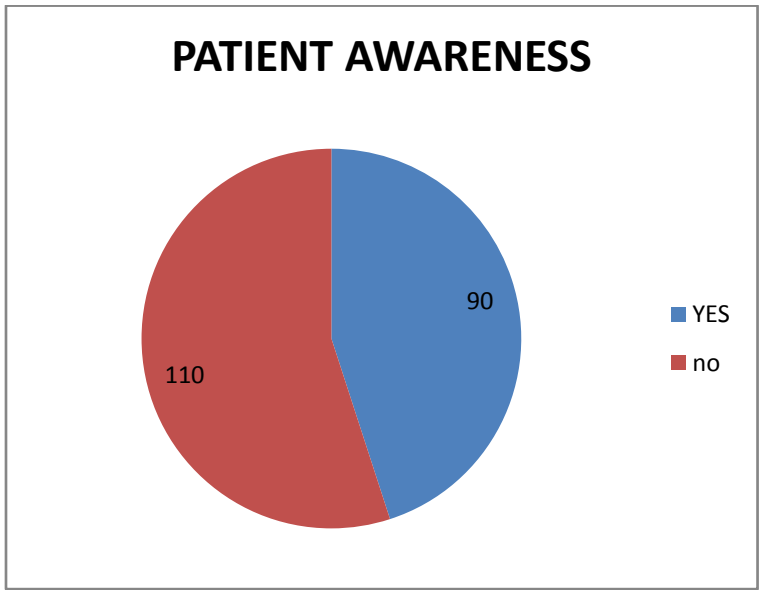
FIGURE 12: PATIENT AWARENESS



IV. DISCUSSION:

- This study provides the etiology, laboratory parameters before and after treatment, medication adherence and patient awareness regarding their condition that is taken into consideration. In 6, months study laboratory findings before and after treatment, and medication adherence were analyzed based on the patient's response among 200 samples. In our study we included most commonly caused hepatic conditions like ALD (fatty liver, ASH, cirrhosis), ascitis, hepatitis, portal hypertension, jaundice. In our study hepatic conditions are most commonly caused by alcohol, hepatitis, sedentary, and family history.
- Laboratory parameters like SGOT, SGPT, ALP, Total bilirubin are important biomarkers for hepatic function. Patients who are addicted to alcohol were did not recover and worsen their condition. In our study we analyzed SGOT, ALP, and Total bilirubin are mostly in all types of hepatic conditions but TB levels are especially increased in jaundice. Based on their duration of treatment, lifestyle modifications these levels were decreased became normal according to their severity Patient awareness is also an important factor for their recovery, about 45% of people were having awareness regarding their condition and 55% were not. By analyzing all these conditions, within 200 sample 78.5% of patients were cured due to the following of medications, proper diet, prohibition of alcohol. 21.5%were not because of their severity, negligence, and addiction.

ACKNOWLEDGEMENTS:

I would like to express my special thanks of gratitude to our guide **Dr. ch. Tejaswi** for their able guidance and support in completing my project. I would also like to extend my gratitude to **Dr.J.Sandeep reddy** for providing me with all the facility that was required. Then I would like to thank my friend who have helped me with their valuable suggestions and guidance has been helpful in various phases of the completion of the process.

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Volume 3, Issue 1, Jan-Feb 2021 pp 1001-1013 www.ijdmsrjournal.com ISSN: 2582-6018

ABBREVATIONS

SGOT	Serum glutamic oxaloacetic transaminase
SGPT	Serum glutamic pyruvic transaminase
ALT	Alanine aminotransferase
AST	Aspartate aminotransferase
ALP	Alkaline phosphatase
TB	Total Bilirubin.
PHTN	Portal hypertension
ASH	Alcoholic steatohepatities

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