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AN OBSEVATIONAL PROSPECTIVE STUDY ON INCIDENCE, PREVALENCE AND EXTENT OF RISK FACTORS IN CAUSING HEPATIC DISEASES IN TERITIARY CARE TEACHING HOSPITAL

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Abstract

Background: In present times Liver diseases are increasingly more predominant, round about 2 million people are demising from liver diseases widely every year. Inclusively 1 million people due to complication of cirrhosis and 1 million due to viral hepatitis, etc. An observational prospective study was conducted to find out the risk actor bring about liver disease. A hospital based coordinated prospective study cases were focused among CLD cases from October 2022 to march 2023. A total 240 subjects are taken in this study from general medicine department in tertiary care hospital. Data on patient's demographics, occupation, past medical history and consumption of Ayurveda medicine was collected using a structured questionnaire after getting informed written consent.

Results: A total of 240 patients were screened to include the subjects in the study. The results of the present study include demographic distribution of patients, the role of a clinical pharmacist in lifestyle modification and disease outcome. Statistical analysis was done and proved the influence of clinical pharmacist role on disease outcome reduce the risk of hepatic diseases in people. It was found that among all subjects (240) most of the subjects are seen in 41-50 years group with 88 subjects (36.66%) are higher among all age groups were observed. Followed by 51-60 years age group with 57 subjects (23.75%) were observed.

Conclusion: From this study we can conclude that the highest effect on liver was found by the consumption of ayurvedic medicine for greater than 2 months from their past medical history, out of 240 subjects 90 subject (37.5%) were on Ayurvedic medicine. The most effected subjects are of alcoholic liver disease. Also patient's with occupational factors exposed to stress diagnosed with liver diseases are mostly seen in daily wage workers with 77 subjects (32.80%).

Keywords:

Background:

The liver being the second largest organ in the body performs functions such as hormone regulation, body detoxification, controlling blood sugars and cholesterol levels and blood clot prevention. Alcoholic liver disease, hepatitis, drug induced liver injury are some of the diseases caused to liver injury due to the incidence of the risk factors which can lead to liver failure, fatty liver and cirrhosis. 18.3% o deaths occur in India due to liver related issues.

Alcoholic liver disease – This condition arises when alcohol is consumed in excess that the ability of the liver to break it down. This to paramount liver damage.

Alcoholicfatty liver or steatosis –Fatty substances get accumulated in the liver parenchymal cells leading to swelling of the liver.

Alcoholic hepatitis – Further consumption of alcohol on fatty liver leads to this condition that leads to the inflammation of the liver cells. The rate of inflammation depends on the amount of alcohol being consumed. Severe cases lead to liver failure

Alcoholic cirrhosis –Liver damage at this stage is irreversible and leads to complications of cirrhosis and portal hypertension.

Ayurvedic medicine –Liver disease is a condition the negatively effects the normal, healthy performance of the liver that aids more than 5000 internal processes. Most common types are alcoholic liver disease (ALD), Non-alcoholic fatty liver disease (NAFLD), viral hepatitis and drug-induced liver injury (DILI). A count of prescription drugs taken by humans, also include but not limited to antibiotics and antiviral agents, antihypertensive and analgesics, have doubtlessly increased the quality of life and helped to cure many chronic disease.

Fictional reports of the complexity of drugs and infirmity of allopathic drugs have triggered fallacious and inconstant confidence in the well-being and puissance of complementary and alternative medicine (CAM) worldwide. The conception that these amalgam are natural and safe and therefore robbed of the side effects has come up with their vogue and universal use. Ayurvedic herbal medication (AHM) can cause liver damage that ranging from an asymptomatic elevation of liver enzymes to cirrhosis and portal hypertension. Patient who develop AHM- related liver injury have a history of consumption of complex polyherbal formulations.

Occupational factors –Workers in healthcare and solids waste management are at increased risk in hepatitis B virus and hepatitis C virus infections. Occupational exposure to swine is associated with liver diseases. More than 100 industrial chemicals can acutely hepatotoxic in experimental animal or humans. Metabolic reactions may affect the hepatotoxicity of chemicals. Occupational exposure to organic solvents can cause toxic hepatitis associated with fatty liver disease as well as a form of non-cirrhotic portal hypertension.

Methodology –

This study was conducted in the General medicine department of Government General Hospital, Guntur, India. The data was collected from all the wards such as MM1,2,3,4,5,6 and FM1,2,3,4,5,6 with the help of data collection form and consent form. Which, served as the study materials. The data collected was statistically analyzed using Graphs pad prisms and is a Non-Experimental Observational Prospective study which was conducted over a duration of six months i.e. from 1st October 2022 to 1st March 2023.

The liver condition of the patient was diagnosed based on various diagnostic techniques such as an Ultrasound abdomen, Complete Blood Picture and Liver Function Tests. Any patient with an abnormality found, which was considered an aid to liver damage, were included into the study. Along with the diagnostic techniques patient habits such as smoking, drinking, and medication consumption along with past medical history were taken into consideration which alter the liver physiology and cause damage to the hepatic cells.

Inclusion criteria comprised of patient with liver complication and other comorbidities, willing to participate in study and patient between age of 14 to 80 years of any sex whilst exclusion criteria comprehend pregnant and lactating women, refusal to participate in study and psychologically disabled patients.

240 patients were included into the study who have met within the inclusion criteria which includes both males and females. Consent was collected from the before commencement of the study and the patients were followed up on a daily basis for the duration of study to observe if any chances. The complete information collected was oriented and tabulated for analyzing statistically and graphically using Microsoft Excel, ANOVA and Chi-square test.

Results:

During the study, we interviewed 240 patients who have been diagnosed with liver diseases. The demographic details of the patients can be observed in the figures 1 and 2. Among the 240 subjects 117 (74%) were males and 63 (26%) were females and majority of the subjects suffering from liver diseases are between the age groups of 41-50 years with 88 (36.66%) subjects. It is observed that most of the patients are in the overweight category regarding the BMI classification with 95 (39.58%) subjects which can be seen in table 1 and figure 3

Figure 1: distribution of subjects based on gender.

S.NO	GENDER	NO. OF SUBJECTS (N=240)	PERCENTAGE (%)
1.	Male	177	74
2.	Female	63	26

From the above Table 2 and Figure25 it was found that from all the subjects (240) most of the subjects are male as 177 (74%) of the observed subjects are male. Only 63 (26) female subjects were observed to be suffering with hepatic diseases. As we can see clearly male are more prone to the hepatic diseases.

Figure 2: distribution of subjects based on age

S.NO	AGE GROUPS	NO. OF PATIENTS (N=240)	PERCENTAGE (%)
1	19-30 yrs	14	5.83
2	31- 40 yrs	45	18.75
3	41-50 yrs	88	36.66
4	51-60 yrs	57	23.75
5	61-70 yrs	23	9.58
6	71-80 yrs	13	5.41

From the above table 1 and figure 24it was found that among all subjects (240) most of the subjects are seen in 41-50 years group with 88 subjects (36.66%) are higher among all age groups were observed. Followed by 51-60 years age group with 57 subjects (23.75%) were observed. In the age group between 31-40 years 45 subjects (18.75%) were observed. And within the 61-70 years age group 23 subjects (9.58) were observed. Between the age group of 19-30 and 71-80 years 14 (5.83%) and 13 (5.41%) subjects were observed respectively. The mean age group is 48.31 years and the standard deviation (SD) is 17.32.

Table 1: distribution of subjects based on BMI

S.NO	BMI CATEGORIES	BMI CLASSIFICATION	NO. OF SUBJECTS (N=240)	PERCENTAGE (%)
1.	16.5-18.4	Under weight	2	0.83%
2.	18.5-24.99	Normal weight	74	30.83%
3.	25-29.99	Over weight	95	39.58%
4.	30-34.99	Obesity class I	51	21.25%
5.	35-39.99	Obesity class II	18	7.5%

The **table 2** and **figure 3** it shows that most of the sample falls under the occupation of daily wage workers with 77 (32.08%) subjects. 38 (15.83%) subjects are homemakers and 28 (11.66%) are drivers. The people in agriculture field are 26 (10.83%) subjects. And a total of 71 (29.53) subjects are in other occupations. From the **Table 3** and **Figure 4** we can observe that majority of the subjects i.e., 119 individuals do not administer any medications on a daily basis and among these subjects 61 individuals have been diagnosed with alcoholic liver disease, 26 individuals with non-alcoholic liver disease, 16 subjects with liver abscess, 14 subjects with hepatitis and the remaining 2 individuals have been diagnosed with drug induced liver injury. There are 98 subjects who have been using NSAID's on a regular basis and among them 35 individuals have been diagnosed with alcoholic liver disease, 16 individuals with non-alcoholic liver disease and liver abscess respectively, 14 subjects have been diagnosed with hepatitis and the remaining 17 subjects have been diagnosed with drug induced liver injury. There are 46 subjects who have been using PPI's on a regular basis and among them 19 subjects have been diagnosed with alcoholic liver disease, 7 subjects have been diagnosed with non-alcoholic liver disease and hepatitis respectively, 8 subjects have been diagnosed with liver abscess and the remaining 5 individuals have been diagnosed with drug induced liver injury. A total of 8 individuals have been using other medications on a regular basis.

Table: 2 distribution of subjects based on occupation

S.No	Occupation	No. of subjects (N= 240)	Percentage (%)
1.	Agriculture	26	10.83
2.	Driver	28	11.66
3.	Daily wage worker	77	32.08
4.	Home maker	38	15.83
5.	Others	71	29.53

Table 3: distribution of subjects based on use of medications

S.No	Diagnosis	No medications	NSAID's	PPI's	Others
1.	Alcoholic liver disease	61	35	19	02
2.	Non-alcoholic liver disease	26	16	07	03
3.	Liver abscess	16	16	08	01

4.	Hepatitis	14	14	07	0
5.	Drug induced liver injury	02	17	05	02
	Total	119	98	46	8

Figure 3: distribution of subjects based on occupation

Figure 5 & Table 4: distribution of subjects based on other substance consumption

S.No	Diagnosis	Ayurvedic medicine	Tobacco products	Others	NIL
1.	Alcoholic liver disease	26	10	13	58
2.	Nonalcoholic liver disease	18	07	04	16
3.	Liver abscess	17	07	02	10
4.	Hepatitis	16	03	03	09
5.	Drug induced liver injury	13	02	01	05
	Total	90(37.5%)	29(12.08%)	23(9.58%)	98(40.83%)

From the **Table 4** and **Figure 5** we can observe that out of the 240 (100%) subjects majority of them with 90 (37.5%) subjects have been found to be using ayurvedic medicine and among them 26 individuals have been diagnosed with alcoholic liver disease, 18 subjects with non-alcoholic liver disease, 17 subjects with liver abscess, 16 individuals with hepatitis and the remaining 13 subjects have been diagnosed with drug induced liver injury. 29 (12.08%) of the individuals have been using tobacco containing products and among them 10 individuals have been diagnosed with alcoholic liver disease, 7 individuals have been diagnosed with non-alcoholic liver disease and liver abscess each, 3 individuals have been suffering with hepatitis and the remaining 2 individuals have been diagnosed with drug induced liver injury. 23 (9.58%) of the subjects reported that they have been using other substances such as the homeopathy medicine, bushel seeds etc. 98 (40.83%) subjects have reported that they have not been using any other substances or medications. Among them 58 subjects have been diagnosed with alcoholic liver disease, 16 subjects with non-alcoholic liver disease, 10 individuals with liver abscess, 9 individuals have been diagnosed with hepatitis and the remaining 5 subjects have been suffering with drug induced liver injury.

From the **TABLE: 5** and **FIGURE: 6** we can observe that most of the subjects i.e., 113 individuals have a past history of diabetes mellitus among which 43 individuals have been diagnosed with alcoholic liver disease, 23 subjects with non-alcoholic liver disease, 17 subjects with liver abscess, 19 subjects have been suffering from hepatitis and the remaining 11 individuals have been diagnosed with drug induced liver injury. Followed by 62 subjects have been suffering from past history of hypertension, among which 31 subjects have been diagnosed with alcoholic liver disease, 10 subjects with non-alcoholic liver disease and liver abscess each respectively, 6 individuals have been diagnosed with hepatitis and the remaining 5 individuals have been suffering from drug induced liver injury. 17 subjects have a previous history of hepatic diseases and 37 subjects have other comorbidities such as tuberculosis, pneumonia etc,. 59 of the subjects do not have any comorbidities or previous medical history.

Table 5 & Figure 6: distribution of subjects based on previous medical history

S.No	Diagnosis	Hypertension	Diabetes mellitus	Hepatic diseases	Other comorbidities	NIL
1.	Alcoholic liver disease	31	43	06	15	29
2.	Non-alcoholic liver disease	10	23	03	08	10
3.	Liver abscess	10	17	05	06	07
4.	Hepatitis	06	19	02	05	08
5.	Drug induced liver injury	05	11	01	03	05
	Total	62	113	17	37	59

Discussion:

Liver disease is a collection of conditions, diseases, and infections that effects the cells, tissues, structures, or functions of the liver. Hepatic diseases effect a significant number of patients in various parts of the world and pose a serious threat to the health and their economic status. The pattern of liver diseases varies geographically, with different practices and time period. The major causes of hepatic diseases are alcohol, infections, genetics, inflammation, drugs and other comorbidities. In a study conducted by **Mishra A K et al., on "pattern of liver diseases"** in 130 patients the mean age group is 41.9 years with a standard deviation of 14.8 and the majority of subjects were in the age group of 41-50 years of age. In a study conducted by **Shashank Banait et al., "Risk factors for chronic liver disease in population of Central India: a case-control study from rural India"** in 200 patients the mean age group is 58.5 ± 11.8 years with majority of the subjects in the age group of 41-65 years. In our study we observed that the mean age group is 48.31 (SD-17.32) years as shown in the table 1 and majority of the subjects are in the age group of 41-50 years followed by the subjects in the age group of 51-60 years of age. The result observed in our study was similar to that of the results observed in the study conducted by Mishra A K et al., and Shashank Banait et al.

In a study conducted by **Shashank Banait et al., on "Risk factors for chronic liver disease in population of Central India: a case-control study from rural India"** in 200 subjects majority of the subjects are males with 150 (75%) and only 50 (25%) of the subjects were females. In a study conducted by **Mishra A K et al., on "pattern of liver diseases"** in 130 patients among which 91 (70%) of the subjects are males and 39 (30%) of the subjects were females. In our study we observed that out of 240 subjects 177 (74%) were males and the remaining 63 (26%) were females which was depicted in table 2. The observed result was similar to that of the previously mentioned studies.

In the occupation distribution of subjects, most of the subjects are daily wage workers with 77 (32.08%) individuals. In a study conducted by **Shashank Banait et al., "Risk factors for chronic liver disease in population of Central India: a case-control study from rural India"** in 200 individuals it was observed that BMI > 25 kg/m^2 were at a higher risk of developing hepatic diseases. In our study we observed in BMI distribution of subjects, most of them are in overweight BMI (25-29.9 kg/m^2) i.e., with 95 subjects and the mean BMI is 27.40kg/m^2 (SD-7.18) which was shown in the table 3. significant association between the BMI and the hepatic diseases have been found with the p value of 0.003 ($p<0.05$).

In a study conducted by **Shashank Banait et al., "Risk factors for chronic liver disease in population of Central India: a case-control study from rural India"** in 200 subjects found that among the

recreational substance use alcohol, smoking, and ayurvedic medicine use have found to have statistically significant association with CLD. Similar results were found by a study conducted by **Lin et al., on "Combined effects of chronic hepatitis virus infections and substance-use habits on chronic liver diseases in Taiwanese aborigines"** in their study.

In a study conducted by **Dr. Hershel Jick et al., on "Liver Disease Associated with Diclofenac, Naproxen, and Piroxicam."** in 102,644 patients it was observed that the use of certain medications like the ayurvedic treatment have found to have a statistically significant association towards development of hepatic diseases. In a study conducted by **Shashank Banait et al., "Risk factors for chronic liver disease in population of Central India: a case-control study from rural India"**in 200 subjects it was found that chewing of tobacco as a risk factor for the development of hepatic diseases. In our study we observed that among the 240 subjects 90 (37.5%) of the individuals have been using ayurvedic medicine mainly for the treatment of jaundice which precipitated into causing further serious complications. 29 (12.08%) of the subjects have reported the usage of oral tobacco or tobacco containing products on a regular basis (table 12). The association between the use of these substances and the development of hepatic diseases have been found to be statistically significant with p value of 0.015 ($p < 0.05$).

Conclusion:

Based on the results obtained, we conclude our study that males are more predominant to than females. Hepatitic diseases are seen between the age groups of 41-50 years of age which indicates there is a large disease burden in the community. The top three observed hepatic diseases in our study were alcoholic liver disease followed by non-alcoholic liver disease and finally liver abscess. The subjects who are overweight have greater tendency to develop hepatic diseases when compared to other BMI categories. Majority of the subjects included in the study are daily wage workers. Individuals who have been using NSAID's on a regular basis for various OTC purposes have an increased risk of development of hepatic diseases. We can conclude that the use of ayurvedic medicine for treatment of various comorbidities have found to be at a greater risk of developing a hepatic condition.

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