



ORIGINAL RESEARCH PAPER

Community Medicine

A HOSPITAL BASED CASE CONTROL STUDY TO FIND OUT THE RISK FACTORS FOR FATTY LIVER AND NON FATTY LIVER PATIENTS ADMITTED IN TERTIARY CARE HOSPITAL, CHENNAI

KEY WORDS: Fatty liver/Non fatty liver/Diet/life style.

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ABSTRACT

INTRODUCTION: Fatty liver disease has today emerged as the leading cause of liver disorder. There is scanty data on risk factors associated with fatty liver and non fatty liver disease existed from India (1). The present study was conducted to identify the risk factors associated with fatty liver patients and non fatty liver patients.

OBJECTIVE OF THE STUDY: To find out the risk factors of fatty liver patients and non fatty liver patients on their dietary habits and life style changes contributing to it.

METHODOLOGY: A hospital based case control study was done among 25 cases and 25 control patients admitted during the month of august 2018 in tertiary care hospital chennai, the cases and controls were matched as per gender. The contributing risk factors were identified among both groups.

RESULTS: Out of 25 cases of fatty liver and 25 controls of non fatty liver patients was taken based on ultrasonography findings of Radiology department SRU and equal matching of 25 controls was selected of those who do not have fatty liver in ultrasonographic reports, age group ranged between 21-83 years and mean age was found to be 51 years and standard deviation was found to be 16 years.[51±16]. 30[60%] were found to be male participants and 20[40%] were found to be female participants, more number of fatty liver patients were reported to have Type II Diabetic Mellitus which contributed 15[65.2%] compared to non diabetic individuals. This difference of observation was found to have statistical significance where $p < 0.05$; which shows that Type II Diabetic Mellitus is one of the risk factor for Fatty Liver. Similarly, among hypertensive individuals the majority of study participants 8[72.7%] were found to have Fatty Liver compared to normotensives. This difference of observation was found to have statistical significance where $p < 0.05$ which shows that hypertensive's are prone to develop Fatty Liver, among people who take less vegetables and junk foods were found to have Fatty Liver compared to non fatty liver individuals. And difference of observation was found to have statistical significance where $p < 0.05$.

CONCLUSION: The risk factors associated with fatty liver are sedentary lifestyle, obesity, frequent intake of junk foods and less vegetables intake and participants who are diabetics and hypertensive have been exclusively as associated risk factors for fatty liver. Hence the study concludes with appropriate health education and dietary modification is needed for the high risk group individuals.

INTRODUCTION:

Fatty liver/hepatic steatosis has been emerged as common cause of chronic liver disorders. Liver is the second largest organ in the body which has wide variety of functions. Fatty liver is accumulation of triglycerides and other fats in the liver. Incidence is 10 per 1000 person years. It has worldwide prevalence of 25%, mostly prevalent in Western countries (1,2). In the US it affects 25-30% of general population. In Asians it is 5-18%. In India it affects 16-32% of general population with higher incidence in obese and diabetic patients. A Study showed that, in Asians even people at normal body mass index as NAFLD. Women are more susceptible to hepatic injury, although majority of patients are men. It commonly increases with age most cases being reported at 40-65 years, but a study showed pediatric obese children even at 8 years are at risk of NAFLD. A Short term ingestion of 80g ethanol per day can cause fatty liver. Heavy drinkers has 90-100% chance of fatty liver and 10-20% develop alcoholic liver disease. Two entities of fatty liver disease are Alcoholic fatty liver disease and Non Alcoholic fatty liver disease(NAFLD). Alcoholic fatty liver is early and reversible consequence of excessive alcohol consumption. NAFLD is associated with Metabolic Syndrome[insulin resistance, obesity, diabetes mellitus, hypertension, dyslipidemias]. The natural history of disease is hepatic steatosis, steatohepatitis (steato=fat+hepar=liver+itis=inflammation) and cirrhosis which is fibrosis, scarring and hardening of liver which can lead to complications like ascites, esophageal varices, hepatic encephalopathy, hepatocellular carcinoma. Steatosis at early stages is usually asymptomatic, signs and symptoms occur only at later stages. There is mild elevation of serum transaminases but is however normal in some patients and has no significance with disease progression. It is accidentally diagnosed in imaging studies. There is no definitive pharmacologic therapy which has been approved for treatment. Hence management should involve treating the

associated conditions like Type Diabetes Mellitus, Obesity and the associated risk factors of fatty liver. In alcoholic steatosis simple fatty change is reversible with complete abstinence of alcohol and histological changes becomes to normal in 2-4 weeks. Hence a Hospital based Case control study is done to assess the risk factors associated with fatty liver.



METHODOLOGY:

Study design. A hospital based case control study in patients admitted in tertiary care hospital. It is a type of analytical study to determine disease and suspected factor and strength of association of factor with disease. It is a retrospective study to test causal hypothesis. It is comparison studies. In this study both exposure and disease have occurred before the start of study; proceeds backwards from effect to cause; uses a control or comparison group to support reference. This study involves two population cases[fatty liver] and controls[normal population-disease free]. Cases and controls were compared with confounding factors such as age, occupation, social status. The was undertaken after getting permission from higher authority.

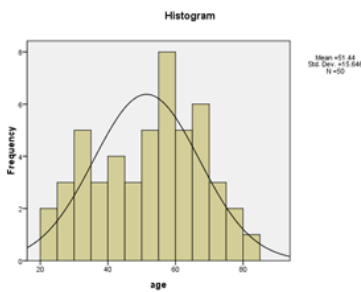
The following steps were involved in case control study; A group of 25 cases of fatty liver from SRMC was selected and 25 controls free from disease was selected in the same hospital. Cases and controls were selected based on ultrasonography findings. The cases were selected from radiology department and controls were selected from two sources-from the radiology department SRMC and from the ward randomly, to avoid selection bias. Matching was performed among cases and controls based on confounding

factors like age, occupation, social status. Group matching was performed. Information about exposure was obtained precisely in same manner in both cases and control by a set of questions asked to them about risk factors of fatty liver disease and exposure. Finally data was analysed to find out exposure rates among cases and controls and estimation of disease risk associated with exposure.

RESULTS:

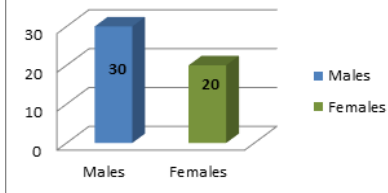
A hospital based case control study was performed in the month of July and August 2018 to assess the risk factors of fatty liver. A sum of 25 cases of fatty liver was taken based on ultrasonography findings of Radiology department SRU and equal matching of 25 controls was selected of those who do not have fatty liver in ultrasonography reports. Group Matching was performed among cases and controls. This study is to find out associated risk factors among fatty liver and non fatty liver patients.

In this study the age group ranged between 21-83 years and mean age was found to be 51 years and standard deviation was found to be 16 years.[51±16].and the study followed a normal distribution pattern is given in below figure of histogram with normal curve.



In this study 30[60%] were found to be male participants and 20[40%]were found to be female participants.

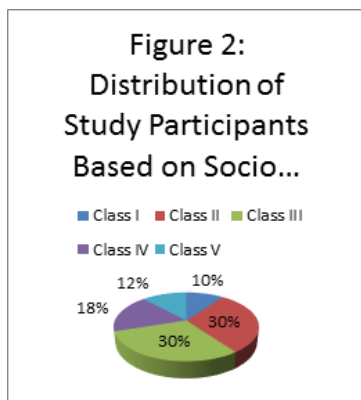
Figure 1: Shows the description of study participants among both sexes



In this study majority of participants belonged to Socioeconomic Class II and Class III which contributed 30%. Class I had least participants.

The description of this class was shown in figure 2 below:

Figure 2: Distribution of Study Participants Based on Socio...



The Per capita income of study participants ranged between Rs 0-13,333. Mean PCI of the study population is Rs 3351.

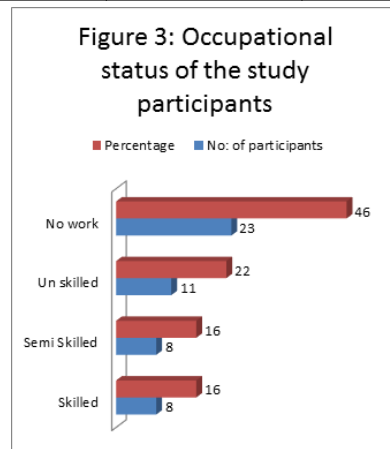
In this study majority of study participants had level of education upto secondary level of education which contributed around 21[42%].And one third of study population was illiterates11[22%], very few of study participants were HSS and Professionals. By this we can conclude that illiteracy has some amount of role in health.

In this study majority of study participants had no job which contributed around 23[46%].The detailed description is given in Table 1:

TABLE 1: Occupation status of the study participants

Occupation status	No: of participants	Percentage
Skilled	8	16
Semi Skilled	8	16
Un skilled	11	22
No work	23	46

Figure 3: Occupational status of the study participants



In this study, among normal weight people 9 persons[32.1%] had fatty liver; among over weight people 8 persons[61.5%] had fatty liver; among class I obesity people 5 persons[83.3%] had fatty liver; among class II obesity people [100%] had fatty liver.

This difference of observation was found to have statistical significance p<0.019.The detailed description is shown in Table 2:

TABLE 2: Association of obesity in relationship to fatty liver

Obesity classification	Fatty Liver Individuals	Non Fatty Liver Individuals	Chi square	P value
Normal weight	9	19	9.9	0.019 (signt)
Over weight	8	5		
Obese class I	5	1		
Obese Class II	3	0		
Total	25	25		

Figure:3 Description of obesity among study participants with fatty and non fatty liver

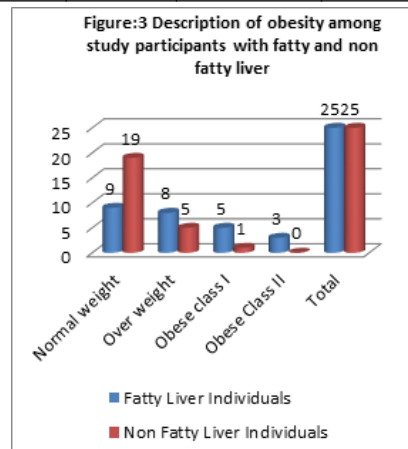


TABLE 3: shows association of risk factors among fatty liver and non fatty liver patients

Risk factor	Fatty Liver	Non Fatty Liver	Chi square test	P value
Typell Diabetic Mellitus	15	8	3.94	0.044 (sig)
Non Diabetic	10	17		
Hypertension	8	3	2.91	0.085 (sig)
Normotensive	17	22		
Frequent intake of junk foods	9	4	2.5	0.098 (sig)
No frequent intake of junk food	16	21		
Less Vegetables	8	3	2.94	0.085 (sig)
Frequent intake of vegetables	17	22		

From the above table 3; It was found that more number of fatty liver patients were reported to have Type II Diabetic Mellitus which contributed 15[65.2%] compared to non diabetic individuals. This difference of observation was found to have statistical significance where $p < 0.05$; which shows that Type II Diabetic Mellitus is one of the risk factor for Fatty Liver.

Similarly, among hypertensive individuals the majority of study participants 8[72.7%] were found to have Fatty Liver compared to normotensives. This difference of observation was found to have statistical significance where $p < 0.05$ which shows that hypertensives are prone to develop Fatty Liver. Also; among people who take less vegetables and junk foods were found to have Fatty Liver compared to non fatty liver individuals. And difference of observation was found to have statistical significance where $p < 0.05$. The detailed description is given in Table 3. The remaining risk factors does not have significant role on Fatty Liver. In this study there were no significant risk factor for level of education, occupation, type of diet, oily diet, skipping in between meals, frequent history of non veg, less fiber diet, less fruit intake, sleeping after meals, physical activity, alcohol, smoking, tobacco, stress depression and anxiety were not significant in this study.

DISCUSSION: when compared to other related studies shows; In NAFLD, Type II Diabetes Mellitus is found to have 13-30% risk and Insulin Resistance has 66-83% of developing NAFLD. In Type II Diabetes Mellitus; liver fat content is 80% higher which accounts to higher prevalence of fatty liver, Similarly our study also showed the same results and it had also proved the level of significance that people who are diabetics are prone as risk factor for development of fatty liver. In relationship to Diet as an independent risk factor for NAFLD, dietary modifications can reduce metabolic syndrome and other complications like liver failure and heart diseases [2]. Similarly Hypertension has 36-70% risk of developing fatty liver from the available related studies. [4] and the current trend shows Hypertension has 70% association with NAFLD than Type II Diabetes Mellitus has 40-50% association with fatty liver. [5] In this study results was Type II Diabetes Mellitus is also associated with 65.2% risk of fatty liver and Hypertension is associated with 72.7% risk of fatty liver and Diet (1) frequent consumption of junk food has risk of 69.2% risk of fatty liver less amount of vegetables has risk of 72.7% of fatty liver which is similar to other related studies. In this study, majority of study population belonged to mean age group 51 years, ranging in 21-83 years belonging to socioeconomic class II and class III with mean PCI Rs 3351 and common in illiterates. The significant risk factors in this study are Type II Diabetes Mellitus, Hypertension, frequent intake of junk food, less intake of vegetables which was all of statistical importance $p < 0.05$. The non significant risk factors in this study are occupation, type of diet like excess oil foods, spicy foods, skipping meals, frequent history of non vegetarian diet, less fibers in diet, less fruit intake, sleeping immediately after food, physical activity (3,4,5).

Fatty Liver was once considered entirely benign, but it is now clear this is not always the case. The most important aspect of treatment is abstinence from alcohol. Abstinence of alcohol improves

histology and decreases portal hypertension but does not eliminate development of cirrhosis. Nutrition and lifestyle modification are mainstays of therapy. Management includes treatment of associated factors like obesity, hyperlipidemia, Type II Diabetes Mellitus, insulin resistance, hypertension, limiting alcoholic beverages, weight loss to slow the progress of disease. 2018 guidelines from American Association For Study Of Liver Diseases (AASLD) includes the following recommendation regarding treatment of NAFLD; weight loss 3-5% of body weight decreases hepatic steatosis; decrease in calorie intake with moderate intensity exercise and modification of cardiovascular risk factors; pharmacologic treatment only for biopsy proven NASH and fibrosis which includes Vitamin E 800IU/day, omega-3 fatty acids, pioglitazone etc (3,4,5).

CONCLUSION: Hence the study concludes risk factors associated with fatty liver are sedentary lifestyle, obesity, frequent intake of junk foods and less vegetables intake and participants who are diabetics and hypertensive have been exclusively as associated risk factors for fatty liver. Hence the study recommends with appropriate health education and dietary modification is needed for the high risk group individuals to prevent the progress of fatty liver and to lead a healthy and productive life.

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