

Cigarette Smoking and Non Alcoholic Fatty Liver Disease: A Cross-Sectional Study

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1. Introduction

The term "non-alcoholic fatty liver disease" refers to the condition in which NAFLD progresses to non-alcoholic steatohepatitis, cirrhosis, and liver failure (NAFLD). (1)

NAFLD is the most common chronic liver disease which includes a wide range of medical conditions from simple steatosis to hepatic fibrosis and hepatocellular carcinoma (HCC). (2, 3)

Several studies show that smoking is also associated with liver diseases such as neoplasm of liver and chronic liver disease.(4-6)

Basic and clinical research indicates that smoking affects some of the physiological pathways in the liver.(7)

However, The relationship between NAFLD and smoking continues to be a source of contention. A study reported that active smoking was related to fibrosis in patients with NAFLD (8), while another study expresses a lack of significant relationships between active smoking and NAFLD. (9)

Furthermore, due to the high prevalence of smoking in several groups as well as the impact of NAFLD in the progression of chronic liver disease, this study was conducted to investigate the association between smoking and NAFLD.

Objective

- 1) To estimate the proportion of smokers in Non-alcoholic fatty liver disease patients.
- 2) To determine the association of exposure of risk factors among smoker and non smoker Non-alcoholic fatty liver disease patients.

2. Research Methodology

Study design: Cross-sectional study

Study area: Department of medicine, Saraswathi Institute of Medical Sciences, Hapur.

Sampling Technique: Consecutive Sampling done for 6 month duration from April 2021 to September 2021 who fit under inclusion and exclusion criteria of the study.

Study population: Patients coming into the outpatient department of Medicine as well as patients admitted to the Medicine Wards or ICU with NAFLD.

Inclusion criteria:

Old as well as newly diagnosed confirmed case of Non-alcoholic fatty liver Disease patients with and without smoking habit.

Exclusion criteria:

Patients not willing to participate in the study.

Patients presenting with past or present history of taking alcohol.

*Diagnosis of NAFLD was made according to criteria proposed by the fatty liver and alcoholic liver disease study group of the Chinese Liver Disease Association.(11) NAFLD were confirmed by abdominal ultrasound or pathological report of liver biopsies.

Data regarding other risk factor like dyslipidemia, obesity were reported and compare in smoker and nonsmoker patients of nonalcoholic fatty liver disease patients.

*"current smoker" refers to those who had smoked in the 6 months prior to the study.

*Hypertriglyceridemia: Triglycerides ≥ 150 mg/dL , Low HDL < 40 mg/dL in men and < 50 mg/dL in women;

3. Result

Table 1: Baseline characteristics of smokers and nonsmokers NAFLD patients

NAFLD	Smoker (n=97)(49%)	Non Smoker (n=101) (51%)	test and p value
Female: Male	3:94	34:67	chi square=30.43 p<0.001*
Age	41.20±6.07	43.12 ± 11.27	t=1.50 p=0.267
BMI (kg/m ²)	27.3 ± 4.39	26.9 ± 4.06	t=0.66 p=0.51

This study included 198 patients with Non alcoholic fatty liver disease during 6 month. There were 97 (48.9%) smokers and 101 (51.1%) non-smokers in this group. The mean age of the total participants was 42.16±8.7 years, with age range from 27–69 years.

The smoking group had a significantly higher percentage of male patients than the non-smoking group (P <0.001).

Mean age of smoker is less than the non smoker group and BMI is high in smoker than the non smoker but The

difference in mean age and BMI was not statistically significant.

Table 2: Comparison of predictors of NAFLD in smokers and nonsmokers

NAFLD	Smoker	Non smoker	p value
High S. cholesterol	49 (50.5%)	39 (38.6%)	0.12
High LDL	48 (49.5%)	49 (48.5%)	0.2
Low HDL	59 (50.8%)	47 (46.5%)	0.02* (Odds=1.78)
High Triglycerides	53 (54.6%)	41 (40.6%)	0.02*(Odds=1.76)
ALT (UI/L)	31.4 ± 20.33	33.3 ± 26.8	0.57
AST (UI/L)	26.9 ± 10.05	28.9 ± 16.38	0.59

Table 2 shows predictors among smoker and non smoker non alcoholic fatty liver disease. Proportion of high serum cholesterol and high LDL level patient's minute high in smoker group of patients. However, the difference is not significant. Similarly there was no mean difference in ALT and AST value in both the groups.

Low level of HDL and High triglycerides were more commonly seen among non alcoholic fatty liver disease patients who smoke compare to non smoker.

4. Conclusion

Almost half of the non alcoholic fatty liver disease patients presented with history of smoking. Male gender is more commonly seen with smoking and more prevalent with group of NAFLD of smoker group otherwise the age and BMI is distribution is almost equal in both groups.

Dyslipdemia except low HDL and high triglyceride almost parallel in both the groups. Which lead to conclude that if the smoker is having high triglyceride and low HDL in blood it increase the risk of getting NAFLD compare to non smoker.

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