

Original Research Article

Assesment of Association of Fatty Liver Disease in Young Healthy Adults with Hyperlipidemias

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Received: 05.05.2021

Accepted: 10.06.2021

Published: 14.06.2021

Journal homepage:<https://www.easpublisher.com>**Quick Response Code**

Abstract: Background: Nonalcoholic fatty liver disease (NAFLD) is becoming the most common cause of chronic liver disease in the developing world, found in 17-30% of the population in Western countries and 2-4% worldwide, and has been recognized as a major health burden. The prevalence of NAFLD has grown proportionally with the rise in obesity, sedentary lifestyle, and unhealthy dietary pattern, and metabolic syndrome, hyperlipidemia. Currently, there is no drug therapy that can be formulated for treating NAFLD. A combination of dietary modifications and increased physical activity remains the main stay of NAFLD management. Thus, the results of this study may help to assess the association between nonalcoholic fatty liver disease and hyperlipidemia therefore we can prevent the progression and complication of disease through early detection and by the help of life style modification and pharmacological management. **Aim:** The present study aims to assess association of fatty liver disease in young healthy adults with hyperlipidemia. **Materials and Methods:** The present cross-sectional study was conducted at a Tertiary Care Hospital, Kharian from December 2020 to March 2021. It included individuals with age range of 20-30 of either gender. In total 500 patients were screened for presence of fat liver disease and hyperlipidemia. Demographics for patients was noted and descriptive analysis was conducted by SPSS version17. **Results:** Total 500 participants were selected to perform this study. Their age was 20 to 31. 53% participants were male and 47% were female. Regarding the presence of hyperlipidemia 53% of the participants responded with yes and 46% of the participant responded with no. Regarding the presence of liver disease, 51% of the participants responded with yes and 49% of the participants responded with no. **Conclusion:** There is an association of hyperlipidemia and NFLD. There was diverse dyslipidemia in patients with NAFLD associated with hyperlipidemia, MetS dyslipidemia, and hypertriglyceridemia were strongly and independently associated with increased risk of NAFLD. The individuals with NAFLD had a higher ratio of Hyperlipidemia as it had the strongest positive association with NAFLD.

Key words: NAFLD, Nonalcoholic fatty liver disease, Hyperlipidemia.

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INTRODUCTION

The illness incidence owing to excess fat is growing daily in the liver and blood vessels. Non-alcoholic steatohepatitis, which is a subgroup of fatty liver diseases, has become a big problem since liver cirrhosis is known to develop [1, 14].

The major risk factors for nonalcoholic steatohepatitis include obesity and diabetes mellitus. However, fatty liver is also found in people who are not obese and not diabetic. In the case of unusually high quantities of fats (lipids), hyperlipidemia is a medical word, however. Triglycerides and cholesterol are the

two main forms of lipids present in the blood. Triglycerides are produced when the additional calories your body does not require for energy are stored [2-4]. Fatty liver and hyperlipidemia disease epidemiology vary slightly in various nations, particularly when different illnesses are more frequent.

Non-alcoholic liver fatty (NAFLD) disease affects up to one-third of the global population and may impose an elevated cardiometabolic risk, resulting in unfavorable cardiovascular outcomes regardless of conventional cardiovascular risk and metabolism syndrome [5]. It is virtually uniformly characterized by resistance to insulin and strongly linked to Type 2

diabetes and obesity. Non-alcoholic fatty liver disease is a signal to ectopic fat pathologies and persistent low inflammatory conditions. The outcome is several harmful processes, including aberrant glucose, fatty acid, and metabolism of lipoproteins, increased oxidative stress, adipokine disorder, hyperactivity, endothelial dysfunction, and the acceleration of atherosclerosis [6]. Finally, it causes cardiovascular mortality to be the primary method of premature death in NAFLD in a dysfunctional cardiometabolic phenotype.

Hyperlipidemia is a complicated collection of disorders that, depending on their source, can be termed both primary and secondary. Primarily hyperlipidemias may or may be produced by a mix of genetic and environmental factors, as a consequence of a single inherited gene abnormality [7]. Secondary hyperlipidemias develop from wider metabolic conditions like diabetes mellitus, high ingestion of alcohol, hypothyroidism, or primary bile cirrhosis [8]. Six kinds of hyperlipidemia are distinguished from lipid types that are increased in the blood [9].

One or more imaging tests may be used by a physician to look for extra fat or other liver problems: Examination includes CT, MRI scanner and ultra sound or ultra-sonography [10, 11].

In adults with coronary artery disorders, blood lipids include high-density lipoprotein Cholesterol, HDL-C, and apolipoprotein B. The fatty liver has an excellent predictor of serum triglyceride concentrations of greater than 130 mg per dL [30]. The concentration of serum triglyceride is connected favorably to the fatty liver level. Furthermore, liver disease is an independent correlation of older coronary risk factors. The purpose of this discussion to assess the association between the seriousness of fatty liver and the formulation of hyperlipidemia to help people with the fatty liver to identify the risk factors for cardiovascular disease [12, 11, 8].

Male gender, hyperlipidemia, smoking, hypertensive, DM, low HDL C, serious obesity, family history, and personal history of brain vascular illness are frequently acknowledged for atherosclerosis and coronary artery disease [13].

Mixed hyperlipidemia and hypertriglyceridemia may play a role in the etiology of fatty liver in young adults. Adults with fatty liver may have greater difficulties than those without, but there are no variations in consequences across the various phenotypes of hyperlipidemia.

Thus, the present study aims to assess association of fatty liver disease in young healthy adults with hyperlipidemia, so the findings of this study may help to evaluate the correlation between nonalcoholic

fatty liver disease and hyperlipidemia therefore we can prevent the progression and complication of disease through early detection and by the help of life style modification and pharmacological management.

MATERIALS AND METHOD

This was a cross sectional study in which 500 participants were included. The Convenient Sampling technique was used and study was completed in 4 months i.e., from December 2020- March 2021. For the Evaluation, Ultrasound Machine with convex probe was used.

The frequencies of the quantitative variables such as Age, Gender was simply analyzed through descriptive statistics. The frequency tables summarized the data. The data were analyzed in SPSS (Statistical Package for social sciences) version 17.

Inclusion Criteria

- Individuals with age range of 20-30.
- Those who are willing to participate in the study.
- Suspected cases of NAFLD
- Both males and female were selected.

Exclusion Criteria

- The adults with any other disorder, under use of corticosteroids or ant epilepsy medication were excluded from the study.
- Non suspected cases.

RESULTS

In this survey, Total 500 participant were selected to perform this study. 15% participant's age was 20, 10% participants age was 21, 10% participants age was 22, 10% participants age was 23, 14.8 participants age was 24, 10.4% participants age was 25, 9.8% participant age was 26, 5.0% participants age was 27, 5% participants age was 28, 5% participants age was 29, 4.8% participant age was 30, .2% participants age was 31 as shown in table 1.

Table-1: Age Distribution

Age	Frequency	Percent
20	75	15
21	50	10
22	50	10
23	50	10
24	74	14.8
25	52	10.4
26	49	9.8
27	25	5
28	25	5
29	25	5
30	24	4.8
31	1	0.2
Total	500	100

In this survey, 53% participants were male and 47% were female as shown in figure 1.

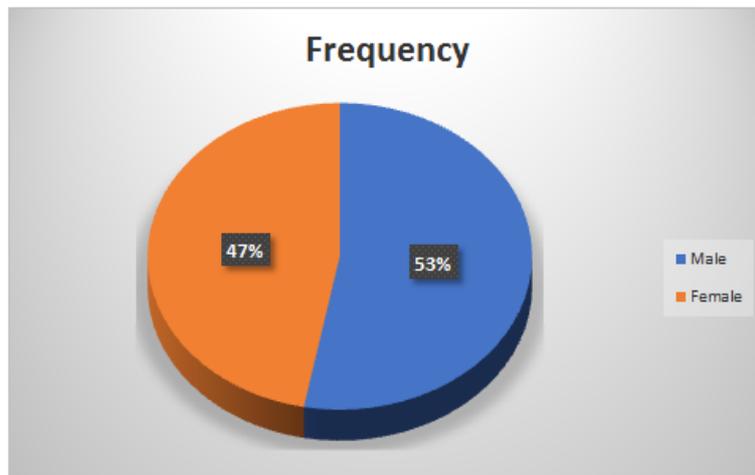


Fig-1: Gender Distribution

Regarding the presence of hyperlipidemia and fatty liver disease findings were positive in 53% and 51 % respectively as shown in table 2.

Table-2: Frequency table for presence of Hyperlipidemia and Fatty Liver Disease

Disease	Frequency	Percentage
Hyperlipidemia	269	53.80%
Fatty Liver Disease	255	51%

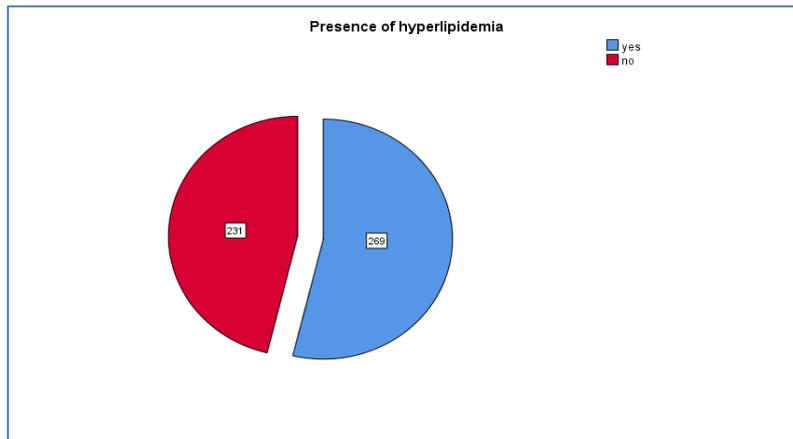


Fig-2: Presence of Hyperlipidemia

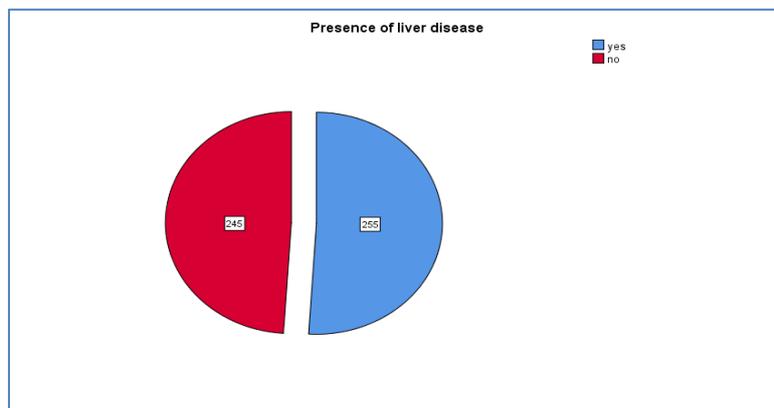


Fig-3: Presence of Liver Disease

Regarding the gender related presence of hyperlipidemia Crosstabulation, it is observed that among male group, 48.0% of the participants responded with yes and 58.9% of the participants responded with

no, whereas among female group, 52% of the participants responded with yes and 41.1% of the participants responded with no as shown in table 3.

Table-3: Gender * Presence of hyperlipidemia Crosstabulation

Gender	Hyperlipidemia	Hyperlipidemia.	Total
	yes	no	
Male	129	136	265
	48.00%	58.90%	53.00%
Female	140	95	235
	52.00%	41.10%	47.00%
Total	269	231	500
	100.00%	100.00%	100.00%

Regarding the gender related presence of liver disease Crosstabulation, it is observed that among male group, 45.5% of the participants responded with yes and 60.8% of the participants responded with no, whereas

among female group, 54.5% of the participants responded with yes and 39.2% of the participants responded with no as shown in table 4.

Table-4: Gender * Presence of liver disease Crosstabulation

Gender	Count	FLD	FLD.	Total
		yes	no	
Male	Count	116	149	265
	% within Present	45.50%	60.80%	53.00%
Female	Count	139	96	235
	% within Present	54.50%	39.20%	47.00%
Total	Count	255	245	500
	% within Present	100.00%	100.00%	100.00%

DISCUSSION

Nonalcoholic fatty liver disease (NAFLD) is becoming the most common cause of chronic liver disease in the developing world, found in 17-30% of the population in Western countries and 2-4% worldwide, and has been recognized as a major health burden. The prevalence of NAFLD has grown proportionally with the rise in obesity, sedentary lifestyle, and unhealthy dietary pattern, and metabolic syndrome, hyperlipidemia. Currently, there is no drug therapy that can be formulated for treating NAFLD. A combination of dietary modifications and increased physical activity remains the main stay of NAFLD management.

The present cross-sectional study was conducted at Kharian, from December 2020 to March 2021. It included individuals with age range of 20-31 of either gender. In total 500 patients were screened for presence of fat liver disease and hyperlipidemia. Demographics for patients were noted and descriptive analysis was conducted by SPSS version 17. Total 500 participants were selected to perform this study. Their age was 20 to 31. 53% participants were male and 47% were female. Regarding the presence of hyperlipidemia 53% of the participants responded with yes and 46% of the participant responded with no. Regarding the presence of liver disease, 51% of the participants

responded with yes and 49% of the participants responded with no.

The associations of carotid intima-media thickness and coronary artery calcium with dyslipidemia phenotypes shown in one study may indicate that the dyslipidemia phenotypes observed in subjects with NAFLD may confer increased CVD risk. Given that CVD is the most common cause of death in patients with NAFLD, it is essential to detect and manage dyslipidemia phenotypes in those with NAFLD. Indeed, treatment of dyslipidemia using statins or ezetimibe in patients with NAFLD is demonstrated to be effective in reducing CVD morbidity as well as improving liver tests and hepatic histology. Current guidelines specify the reduction of LDL-C as the primary therapeutic targets for initiating pharmaceutical therapy. Yet, despite best medical treatment, with LDL-C at target cut points, there is still a high residual CVD risk.

According to one study accumulating evidence indicates the role of postprandial lipemia as risk factors for CVD. Compared with controls, patients with NAFLD are more likely to consume a diet richer in saturated fatty acids and poorer in polyunsaturated fatty acids. Interestingly, postprandial lipemia is reported to be significantly higher following an oral fat meal in

patients with NAFLD compared with controls, An impaired postprandial lipemia response in those with NAFLD may pose a higher CVD risk and promote TG accumulation in the liver in several ways, such as an induction of inflammation and lipotoxicity as well as abnormal adipokine (such as leptin and adiponectin) production, Hence, postprandial lipemia and hyperlipidemia may also contribute to residual CVD risk. (64)

CONCLUSION

There is an association of hyperlipidemia and NFLD. There was diverse dyslipidemia in patients with NAFLD associated with hyperlipidemia, Mets dyslipidemia, and hypertriglyceridemia were strongly and independently associated with increased risk of NAFLD. The individuals with NAFLD had a higher ratio of Hyperlipidemia as it had the strongest positive association with NAFLD.

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Cite This Article: Anum Shahzadi *et al* (2021). Assesment of Association of Fatty Liver Disease in Young Healthy Adults with Hyperlipidemias. *EAS J Radiol Imaging Technol*, 3(3), 210-214.