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Research Article

Demographic and Clinical Characteristics of Non Alcoholic Fatty Liver (NAFL) Patients: An Exploratory Study in a Tertiary Care Hospital

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Abstract

Introduction: Non-alcoholic fatty liver disease (NLFD) is characterized by the accumulation of fat in the liver that exceeds 5% of hepatocytes, along with the development of progressive steatosis and related conditions such as hepatitis, cirrhosis, or hepatocellular carcinoma (HCC). Patients with non-alcoholic fatty liver disease (NAFLD) can display a diverse range of histological presentations, including simple accumulation of fat in the liver (steatosis), nonalcoholic fatty liver (NAFL), or nonalcoholic steatohepatitis (NASH). Non-alcoholic fatty liver disease (NAFLD) has a prevalence of 25%, impacting around 1 billion people globally. Objective: This study aimed to ascertain the demographic and clinical characteristics of non-alcoholic fatty liver disease (NAFLD). *Methodology:* This was a cross-sectional prospective study carried out in the Department of Radiology and imaging in IbnSina Hospital, Dhaka, Bangladesh during January, 2023 to June, 2023. A total of 189 confirmed non-alcoholic fatty liver cases by CT scan, aged above 18 years were enrolled in this study. The collected data were analyzed using Statistical Package for Social Sciences (SPSS) software, version 23.0. The ethical clearance of this study was obtained from the Ethics Committee of School of Public Health & Life Science, University of South Asia, and Dhaka, Bangladesh. *Results:* A total of 189 confirmed non-alcoholic fatty liver cases were enrolled in this study. According to age distribution, the maximum 113 (54.49%) patients were above 52 years and minimum 3 (1.58%) were between (18-22) years, and followed by 38 (20.10%) (43-52) years, 25 (13.22%), (33-42) years and 10 (5.29%) (22-32) years. The maximum 105 (55%) were male and 84 (45%) were female. The majority 132 (70%) were from urban area and 57 (30%) were from rural area. The majority 82 (43.38%) were involved in indoor job and followed by 50 (26.45%) outdoor job, 28 (14.81%) business, 20 (10.58%) not applicable and 9(4.76%) others. The BMI of the male patients was observed 132 (33.6 ±9.5) kg/m^2 and the BMI of the female was 57 (35.5 ± 8.7) kg/m^2 (p=0.157). The maximum of the patients 70 (89.94% had Diabetes mellitus (DM) and followed by 66 (87.83%) Hypertension (HTN), 9 (4.76%) Cirrhosis, 8 (4.23%) Hyperlipidemia and 45 (23.80%) had Thyroid. The patients were suffering from abdominal pain, Nausea-34 (17.98%) Abdominal pain, Vomiting- 27 (14.28%), Follow Up-36 (19.04%), U. Abdominal pain-56 (29.62%) U. Abdominal pain, Jaundice-31 (16.40%) and U. Abdominal pain, Nausea-5 (2.64%). *Conclusion:* This study investigated, the majority of the NLFD patients (54.49%) were >52 years. The maximum patients were male. The majority of the patients (70%) were from urban area. The maximum patients were involved in indoor jobs. 89.94% patients had diabetes (DM). The majority of the patients suffered from U, Abdominal pain, 56 (29.62%). The difference of BMI between male and female was not observed statistically significant but both male and female patients suffered from obesity.

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1. Introduction

Non-alcoholic fatty liver disease (NAFLD) refers to the excessive accumulation of fat in the liver in persons who drink minimal or no alcohol [1]. Non-alcoholic fatty liver disease refers to the accumulation of fat in the liver that exceeds 5% of hepatocytes, along with the development of progressive steatosis and related conditions such as hepatitis, cirrhosis, or hepatocellular carcinoma (HCC). Patients with non-alcoholic fatty liver disease (NAFLD) can display a diverse range of histological presentations, including simple steatosis, nonalcoholic fatty liver (NAFL), or nonalcoholic steatohepatitis (NASH) [2]. The global incidence of non-alcoholic fatty liver disease (NAFLD) is 25%, impacting approximately 1 billion people globally [3]. The global incidence of non-alcoholic fatty liver disease (NAFLD) has had a consistent rise, increasing from 15% in 2005 to 25% in 2010 [4]. The illness is expected to become the primary cause of liver failure in the near future. The user's text is "[4]." Cirrhosis and hepatocellular carcinoma (HCC) can result in liver-related illness and death. Non-alcoholic fatty liver disease (NAFLD) also heightens the susceptibility to cardiovascular illnesses, type 2 diabetes mellitus (T2DM), and chronic renal disease [5]. Non-alcoholic fatty liver disease (NAFLD) poses a risk for metabolic [6]. Moreover, obesity enhances the likelihood of experiencing problems associated with NAFLD [8]. Notably, non-alcoholic fatty liver disease (NAFLD) can also occur in persons who are not obese. These individuals typically exhibit distinct clinical features, including elevated levels of transaminases and insulin, along with reduced insulin sensitivity [8]. If non-alcoholic fatty liver disease (NAFLD) is not diagnosed early or managed properly, it can proceed and result in individuals experiencing severe liver problems such as fibrosis, cirrhosis, or HCC. This, in turn, leads to increased economic and clinical burdens on both patients and healthcare systems. Obesity and type 2 diabetes mellitus (T2DM), which are significant variables that increase the risk of non-alcoholic fatty liver disease (NAFLD), are highly prevalent in Bangladesh [9, 10]. Timely identification, surveillance, and control of non-alcoholic fatty liver disease (NAFLD) are of utmost significance to guarantee that recently diagnosed and high-risk patients undergo suitable interventions (such as anti-obesity medications or bariatric surgery, adoption of lifestyle modifications, and other weight reduction strategies) [11]. Nevertheless, medical associations have differing criteria for diagnosing and treating individuals with NAFLD, potentially because of variations in clinical features, lifestyles, and genetic origins among different ethnic groups within the population [12]. Consequently, the researcher has formulated this study. The objective of this study was to ascertain the demographic and clinical attributes of non-alcoholic fatty liver disease.

Objectives

General Objective

To determine the demographic and clinical characteristics of non-alcoholic fatty liver Disease (NLFD)

Specific Objectives

1) To know the demographic characteristics of the fatty liver patients.
2) To identify the clinical characteristics of the fatty liver patients.

2. Methodology

This was a cross-sectional prospective study carried out in the department of Radiology and imaging in IbnSina Hospital, Dhaka, Bangladesh during January, 2023 to June, 2023. The participants in this study were informed about the objectives, advantages, and potential hazards. They were provided with information in their native language and were required to give written consent. A total of 189 individuals, aged 18 years or older, who visited the hospital for an abdominal CT scan, were included in the study. This study employed a purposeful random sampling strategy. The data were gathered utilizing a pre-designed questionnaire. The gathered data underwent a process of cleansing, editing, and inputting into a computer system for analysis. The revised data were examined using Statistical Package for Social Sciences (SPSS) software, specifically version 23.0. Statistical analysis was conducted to make inferences, and the findings were displayed in tables and charts, showing the frequency and percentage. A two-sample independent t-test was used to compare the body mass index (BMI) of male and female patients. A significance level of $P<0.05$ was used, indicating a 95% confidence interval. The study received ethical clearance from the Ethics Committee of the School of Public Health & Life Science at the University of South Asia in Dhaka, Bangladesh. The formal permission was also taken from the director and registrar of IbnSina Hospital, Dhaka, Bangladesh. The inclusion and exclusion criteria of this study were as follows:

2.1. Inclusion Criteria

1) Confirmed cases by CT scan
2) Aged above 18 years
3) Willing to participate in the study
4) Non-alcoholic

2.2. Exclusion Criteria

1) Aged below 18 years
2) Unwilling to participate in the study.
3) Alcoholic

3. Results

Table 1. Age distribution of the study patients (n=189).

Age in years	Frequency	Percentage
18- 22	3	1.58
22-32	10	5.29
33-42	25	13.22
43-52	38	20.10
>52	113	54.49
Total	189	100

Table-1 shows that maximum 113 (54.49%) of the patients were above 52 years and minimum 3 (1.58%) were between (18-22) years, and followed by 38 (20.10%) (43-52) years, 25 (13.22%), (33-42) years and 10 (5.29%) (22-32) years.
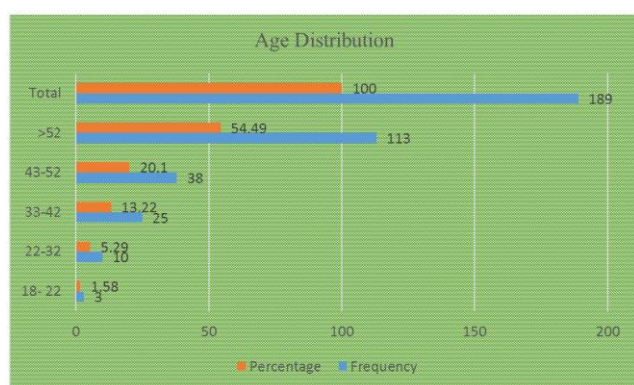

Figure 1. Shows the age distribution of the study patients (n=189).

Table 2. Occupation distribution of the study patients (n=189).

Occupation	Frequency	Percentage
Business	28	14.81
Indoor job	82	43.38
Outdoor job	50	26.45
Not applicable	20	10.58
Others	9	4.76
Total	189	100

Table 2 shows the occupation distribution of the study patients. Among the patients, The majority 82 (43.38%) were indoor job holders and followed by 50 (26.45%) outdoor job, 28 (14.81%) business, 20 (10.58%) not applicable and 9 (4.76%) others.
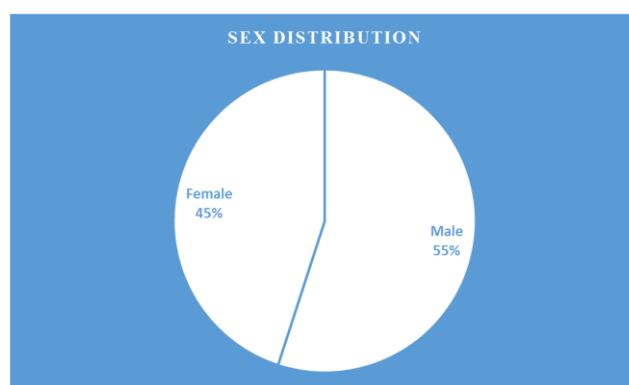

Figure 2. Shows the sex distribution of the study patients (n=189).

Figure 2 shows the sex distribution of the study patients. Among the patients, the maximum 105 (55%) were male and 84 (45%) were female.
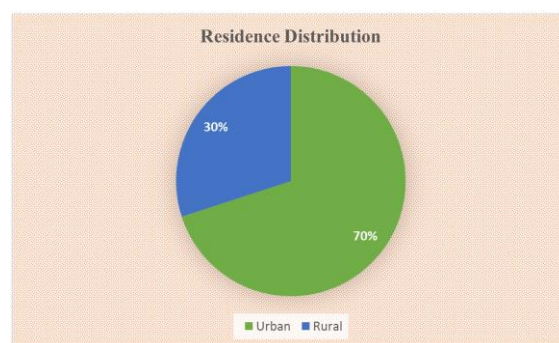

Figure 3. Shows the residence distribution of the study patients (n=189).

Figure 3 shows the residence distribution of the study patients. Among the patients, the majority 132 (70%) were from urban area and 57 (30%) were from rural area.

Table 3. BMI distribution of the study patients (n=189).

Respondents	Frequency	BMI (kg/m^2)	P-value
Male	105	(33.6 ±9.5)	0.157
Female	84	(35.5 ±8.7)	

Table 3 shows BMI distribution of the study patients. The BMI of the male patients was observed 132 (33.6 ±9.5) kg/m^2 and the BMI of the female was 57 (35.5 ± 8.7) kg/m^2 (p=0.157).

Table 4. Distribution of the study patients by comorbidities (n=189).

Comorbidities	Frequency	Percentage
Diabetes mellitus (DM)	170	89.94
Hypertension (HTN)	166	87.83
Cirrhosis	9	4.76
Hyperlipidemia	8	4.23
Thyroid	45	23.80

Table 4 shows the distribution of the study patients by comorbidities. The maximum of the patients 70 (89.94%) had Diabetes mellitus (DM) and followed by 66 (87.83%) Hypertension (HTN), 9 (4.76%) Cirrhosis, 8 (4.23%) Hyperlipidemia and 45 (23.80%) had Thyroid.

Table 5. Clinical characteristics of the study patients (n=189).

Clinical Presentations	Frequency	Percentage
Abdominal pain, Nausea	34	17.98
Abdominal pain, Vomiting	27	14.28
Follow Up	36	19.04
U. Abdominal pain	56	29.62
U. Abdominal pain, Jaundice	31	16.40
U. Abdominal pain, Nausea	5	2.64
Total	189	100

Table 5 shows the clinical characteristics of the study pa-

tients. The patients were suffering from Abdominal pain, Nausea-34 (17.98%) Abdominal pain, Vomiting- 27 (14.28%), Follow Up-36 (19.04%), U. Abdominal pain-56 (29.62%) U. Abdominal pain, Jaundice-31 (16.40%) and U. Abdominal pain, Nausea-5 (2.64%).
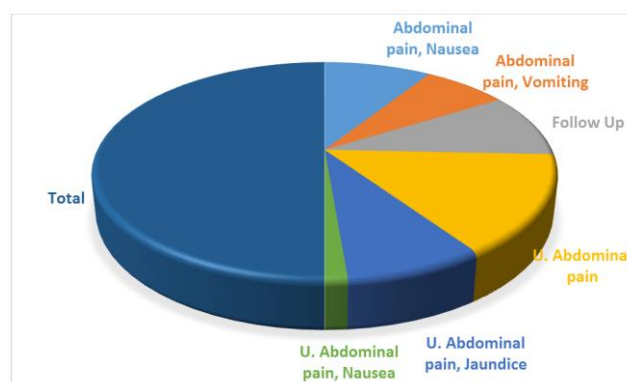

Figure 4. Shows the clinical characteristics of the study patients (n=189).

4. Discussion

Hepatic steatosis is a symptom of the liver that can arise from various medical conditions and the administration of specific medications [14]. The increasing worldwide obesity epidemic has led to a rise in the occurrence of fatty liver disease. Non-alcoholic fatty liver disease (NAFLD) is a specific condition characterized by the accumulation of triglyceride droplets in liver cells, without a substantial use of alcohol. NAFLD encompasses a variety of clinical disorders, beginning with simple accumulation of fat in the liver (steatosis) and potentially advancing to inflammation of the liver (steatohepatitis) [14]. Each of these occurrences entails the accumulation of adipose tissue in the liver [9]. Steatosis alone, which is a characteristic of non-alcoholic fatty liver disease (NAFLD), is a condition that is clinically inconsequential. However, its clinical significance is increased due to its association with cardiovascular disease. Non-alcoholic Steatohepatitis (NASH) is a specific kind of NAFLD that is identified by the presence of hepatocytes ballooning and necrosis, with or without Mallory's hyaline and fibrosis when examined under a microscope. NASH poses a potential danger of developing progressive liver disease and cirrhosis. NAFLD diagnosis is linked to reduced survival compared to a general population of similar age and gender. NAFLD has been demonstrated to be linked with insulin resistance and is regarded as a component of the metabolic syndrome [13]. The present study was carried out at the department of Radiology and Imaging in IbnSina Hospital, Dhaka Bangladesh The aim of this study was to determine the demographic and clinical characteristics of the non-alcoholic fatty liver disease (NFLD) and a total of 189 confirmed fatty liver disease cases by CT scan were enrolled in this study. This study observed the

maximum of the patients 105 (55%) were male and 84 (45%) were female. Among the patients, the maximum 113 (45.49%) were above 52 years and minimum 3 (1.58%) were between (18-22) years, and followed by 38 (20.10%) (43-52) years, 25 (13.22%), (33-42) years and 10 (5.29%) (22-32) years. The findings of our analysis are consistent with those of a previous study conducted in Saudi Arabia, which analyzed the demographic, clinical, and biochemical characteristics of patients with non-alcoholic fatty liver disease (NAFLD) [11]. This present study observed, the majority 82 (43.38%) were indoor job holders and followed by 50 (26.45%) outdoor job, 28 (14.81%) business 20 (10.58%) not applicable and 9 (4.76%) others and the majority 132 (70%) were from urban area and 57 (30%) were from rural area. Almost, the similar observation was noted in another study [12]. This present study observed the maximum of the patients 70 (89.94%) had Diabetes mellitus (DM) and followed by 66 (87.83%) Hypertension (HTN), 9 (4.76%) Cirrhosis, 8 (4.23%) Hyperlipidemia and 45 (23.80%) had Thyroid. These findings of our study are similar to the findings of another study by Al-Hamoudi and colleagues. The researchers noted that diabetes (34.2%), hyperlipidemia (29.7%), and hypertension (26.7%) were the most common comorbidities seen in individuals with NAFLD. Additionally, they provided prevalence estimates for high ALT levels in NAFLD patients [13]. This study prevailed, the study patients were suffering from abdominal pain, Nausea-34 (17.98%) Abdominal pain, Vomiting- 27 (14.28%), Follow Up-36 (19.04%), U. Abdominal pain-56 (29.62%) U. Abdominal pain, Jaundice-31(16.40%) and U. Abdominal pain, Nausea-5 (2.64%). The similar observation was noted in some other studies [14].

5. Conclusion

This study investigated, the majority of the NLFD patients (54.49%) were >52 years. The maximum patients were male. The majority of the patients (70%) were from urban area. The maximum patients were involved in indoor jobs. 89.94% patients had diabetes (DM). The majority of the patients suffered from U, Abdominal pain, 56 (29.62%). The difference of BMI between male and female was not observed statistically significant but both male and female patients suffered from obesity.

6. Limitations of the Study

This was a single center study with a limited purposive sample size and short study duration. So, the findings of this study may not reflect the whole country.

7. Recommendations of the Study

A further study may be conducted with a large statistical calculated sample size in multi-centers across the country to justify the epidemiology of fatty liver diseases in Bangladesh.

Ethical Approval

The ethical clearance of this study was obtained from the Ethics Committee of School of Public Health & Life Science, University of South Asia, and Dhaka, Bangladesh.

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] Chalasani N, Younossi Z, Lavine JE, et al. The diagnosis and management of nonalcoholic fatty liver disease: practice guidance from the American association for the study of liver diseases. Hepatology. 2018; 67(1): 328–357.

[2] Koch LK, Yeh MM. Nonalcoholic fatty liver disease (NAFLD): diagnosis, pitfalls, and staging. Ann Diagn Pathol. 2018; 37: 83–90. https://doi.org/10.1016/j.anndiagpath.2018.09.009

[3] Loomba R, Sanyal AJ. The global NAFLD epidemic. Nat Rev Gastroenterol Hepatol. 2013; 10(11): 686–690. https://doi.org/10.1038/ nrgastro.2013.171

[4] Mitra S, De A, Chowdhury A. Epidemiology of non-alcoholic and alcoholic fatty liver diseases. Transl Gastroenterol Hepatol. 2020; 5: 16. https://doi.org/10.21037/tgh.2019.09.08

[5] Byrne CD, Targher G. NAFLD: a multisystem disease. J Hepatol. 2015; 62(1 Suppl): S47–64.

[6] Bellentani S. The epidemiology of non-alcoholic fatty liver disease. Liver Int. 2017; 37(Suppl 1): 81–84. https://doi.org/10.1111/liv.13299

[7] Polyzos SA, Kountouras J, Mantzoros CS. Adipose tissue, obesity and non-alcoholic fatty liver disease. Minerva Endocrinol. 2017; 42(2): 92–108. https://doi.org/10.23736/S0391-1977.16.02563-3

[8] Alhowaish AK. Economic costs of diabetes in Saudi Arabia. J Family Community Med. 2013; 20(1): 1–7. https://doi.org/10.4103/2230-8229.108174

[9] Fauci AS, B E, Kasper DL, et al., editors. Harrison's Principles of Internal Medicine. 17. McGraw-Hill: Companies Inc.; 2008. Nonalcoholic Fatty Liver Disease; pp. 1982–83.

[10] Wanless IR, Lentz JS. Fatty liver hepatitis (steatohepatitis) and obesity: an autopsy study with analysis of risk factors. Hepatology. 1990; 12(5): 1106-10.

[11] Adler M, Schaffner F. Fatty liver hepatitis and cirrhosis in obese patients. Am J Med. 1979; 67(5): 811–6.

[12] Nasrallah SM, Wills CE, Jr, Galambos JT. Hepatic morphology in obesity. Dig Dis Sci. 1981; 26(4): 325–7.

[13] Milic S, Lulic D, Stimac D. Non-alcoholic fatty liver disease and obesity: biochemical, metabolic and clinical presentations. World J Gastroenterol. 2014; 20(28): 9330–9337. https://doi.org/10.3748/wjg.v20. i28.9330

[14] Al-hamoudi W, El-Sabbah M, Ali S, et al. Epidemiological, clinical, and biochemical characteristics of Saudi patients with nonalcoholic fatty liver disease: a hospital-based study. Ann Saudi Med. 2012; 32(3): 288–292. https://doi.org/10.5144/0256-4947.2012.288