

# Fatty liver disease in hospital patients advised abdominal ultrasound in Gujrat, Pakistan

Warda Kiran, Sidra Younas, Akash John, Nosheen Arshad

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**Author Information**

*Ms. Warda Kiran*

Scholar, Medical Imaging Doctor, University Institute of Radiological and Medical Imaging Sciences, The University of Lahore, Gujrat Campus, Punjab, Pakistan (Corresponding Author)  
Email: wardakiran418@gmail.com

*Dr. Sidra Younas*

FCPS (Trainee)  
Ophthalmology, Khawaja Muhammad Safdar Medical College, Sialkot, Punjab, Pakistan

*Mr. Akash John*

Lecturer, University Institute of Radiological and Medical Imaging Sciences, The University of Lahore, Gujrat Campus, Punjab, Pakistan

*Ms. Nosheen Arshad*

Lecturer, University Institute of Radiological and Medical Imaging Sciences, The University of Lahore, Gujrat Campus, Punjab, Pakistan

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**ABSTRACT**

**Introduction:** The storing of excess fat in the liver results in the prevalent illness known as Fatty Liver Disease (FLD). The majority show no symptoms resulting in liver damage, however early diagnosis can provide a better cure.

**Objective:** To evaluate the fatty liver disease in the population of Gujrat, Pakistan using ultrasonography.

**Materials & Methods:** This cross sectional study was conducted from April 01, 2022, to June 30, 2022, in the Radiology Department of a Private Hospital of Gujrat, Pakistan on 104 patients advised for abdominal ultrasound. The data obtained were subjected to statistical analysis in SPSS version 22.

**Results:** Out of 104 patients, 69(66.3%) patients were diagnosed with fatty liver disease being more common in females, particularly patients who were overweight or obese. The most frequent age was 36 to 45 years. Most of the affected patients were diagnosed at a mild stage of Fatty Liver Disease.

**Conclusion:** Obesity can cause mild fatty liver disease/changes and is common in aged 36 to 45 years. Ultrasound is the best modality for early detection of excess accumulation of fat in the liver in asymptomatic patients.

**Keywords:** Hepatic Steatosis, Obesity, Fatty Liver Disease, Liver, Liver Texture.

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**INTRODUCTION**

The liver seems to be the body's biggest solid organ. It conducts hundreds of other crucial tasks, such as clearing contaminants from the blood supply, regulating blood clotting, and preserving healthy blood sugar levels.

It lies inside the right upper abdomen, below the rib cage. Liver normal size varies between 13 to 15 cm.<sup>1,2</sup> Liver contains left, right, and caudate lobes.<sup>3</sup> Liver is supplied by hepatic arteries and portal veins. 80% of the blood is supplied to the liver via the portal vein.<sup>4</sup>

Liver is responsible for fat metabolism, amino acids synthesis, bile production, detoxification of blood, etc.<sup>5</sup>

Some common pathologies of the liver can be Diffuse liver disease, Fatty liver disease, Hepatitis, Cysts, Hemangiomas, and Hepatomegaly.<sup>6</sup>

Fatty liver disease (FLD), also called Hepatic Steatosis<sup>7</sup> is an accumulation of fat in liver cells.<sup>8</sup> It can be alcoholic or non-alcoholic.<sup>9</sup> The prevalence of alcoholic fatty liver disease (AFLD) and non-alcoholic fatty liver condition (NAFLD), which affects 20.9% as well as 4.0% of both the population, respectively, was found to be high.<sup>10</sup> Nonalcoholic fatty liver disease is a kind of disease caused by a lack of alcohol consumption (NAFLD).<sup>11</sup> It can be symptomatic or asymptomatic. Some common symptoms are fatigue, malaise, and upper abdominal discomfort.

An increase in age, metabolic syndrome, diabetes mellitus Type II, obesity,<sup>12</sup> hyperlipidemia or high level of triglycerides in the blood, PCOS, and other health issues can cause Fatty Liver Disease.<sup>13,14</sup>

The best way to diagnose fatty liver disease is ultrasonography.<sup>11,15</sup> Patient should be at 6 hours fasting. The liver size can be measured in two ways: longitudinal and transverse views. The liver appears to be homogenous on ultrasound. It is slightly darker than the spleen and brighter than the kidneys.<sup>16,17</sup> The liver blood vessels and parenchyma are smooth.

Fatty Liver Disease is a very common disease that remains undiagnosed in many patients due to a lack of symptoms and lack of proper screening. It can be an incidental finding.<sup>18</sup> Fatty Liver Disease is divided into three types categorized as mild, moderate, and severe.

In mild FLD, a minimal increase in liver echogenicity is noted with normal diaphragm and blood vessels. In moderate FLD, a moderate diffuse increase in hepatic echogenicity is noted with slightly impaired diaphragm and blood vessels. In severe FLD, a significant increase in liver echogenicity is noted with poor visualization of the diaphragm as well as blood vessels.<sup>19,20</sup> Fatty liver disease can be of different types including inflammation, steatohepatitis, cirrhosis, and fibrosis. An increase in FLD is noted in adults with increased weight.<sup>21, 22</sup> If left untreated it can lead to cirrhosis and fibrosis.<sup>23</sup> Fatty liver disease prevalence is 25% worldwide. About 7.6% of children had fatty liver disease, comparable approximately 38% of obese individuals.<sup>24, 25</sup>

Fatty liver disease is very common in patients with obesity. Most of the patients are undiagnosed and unaware of proper screening for Fatty liver disease. Patients who are having risk factors for Fatty liver disease should go for an ultrasound for an evaluation of Fatty liver disease. Early detection of Fatty liver disease can save them from life-threatening issues like cirrhosis and fibrosis. Ultrasound is a cheap and easily available modality that can be used for the diagnosis of Fatty liver disease.

## MATERIALS & METHODS

This hospital-based cross sectional study was conducted for three months from April 01, 2022, to June 30, 2022, in the Radiology Department of a Private Hospital in Gujrat, Pakistan. A convenience sampling technique was used to determine a sample size of 104 patients, utilizing the mean from relevant previous publications.<sup>7,15,16</sup> Investigative data of patients were obtained through an Ultrasound machine (Xario-100) and a 3.5MHz convex probe after informed consent from the patients. Abdominal ultrasound of the patients was performed in the supine position. Patients advised for abdominal ultrasound were included while those for pelvic ultrasound were excluded. Ethical clearance was obtained from the institution. The data obtained were subjected to statistical analysis using SPSS 22.

## RESULTS

Table 1 shows the demographic data of patients; their ages ranged from 15 to 55 years, with the majority, 50(48.1%) being in the 36-45 years group. There were 43(41.3%) males and 61(58.7%) females.

**Table 1: Demographic data of patients (n=104).**

Variables	Frequency	Percent
<b>Age Groups (Years)</b>		
26-35	20	19.2
36-45	50	48.1
46-55	32	30.8
≥ 56	02	01.9
<b>Gender</b>		
Male	43	41.3
Female	61	58.7

Table 2 provides the clinical data of patients. The majority of patients 74(71.2%) had no past history of disease; diabetes mellitus (DM) was present in 13(12.5%), hypertension (HTN) in 11(10.6%), and both in 06(5.8%). Additionally, most of the patients were obese (65, 62.5%) than lean 39(37.5%).

**Table 2: Clinical data of patients (n=104).**

Clinical Variables	Frequency	Percent
<b>History of past diseases</b>		
Diabetes Mellitus (DM)	13	12.5
Hypertension (HTN)	11	10.6
Both DM & HTN	6	5.8
None	74	71.2
<b>History of Obesity</b>		
Obese	65	62.5
Lean	39	37.5

Table 3 provides the data of hepatic features on ultrasonography; most patients (69, 66.3%) were having a fatty texture of the liver. Ultrasound grading revealed the presence of different categories of fatty liver disease; most patients had mild fatty liver disease 47(45.2%), followed by moderate 11(10.6%), and severe 11(10.6%) while patients with normal liver texture were only 35(33.7%).

**Table 3: Hepatic features on Ultrasound (n=104).**

Hepatic features	Frequency	Percent
<b>Liver Texture</b>		
Fatty	69	66.3
Normal	35	33.7
<b>Ultrasound Grading</b>		
Mild	47	45.2
Moderate	11	10.6
Severe	11	10.6
None	35	33.7

## DISCUSSION

According to the results of the current study, 66.3% patients had fatty liver disease; moreover, those between the ages of 36 and 45 were more likely to have fatty liver disease. A study was done by Awadalla Adam in 2016, which also revealed that fatty liver disease is most commonly noted at the age of 35 to 45 years. In this study, 114 patients were taken in which patients with different age ranges from 18 to 74 years were taken, which showed that the disease is most commonly diagnosed at the age of 35 to 45 years.<sup>15</sup>

The current study concluded that fatty liver disease is more common in patients which are in the category of overweight. Obesity can be considered the major cause of fatty liver disease. According to a Rosa Divella research published in 2019, people with a fatty liver disease are much more likely to be obese.<sup>12</sup>

The current study concluded that ultrasound is a cheap, valuable, and reliable tool for diagnosing fatty liver disease in patients. Ultrasound can be performed in patients who are symptomatic and asymptomatic. A study done by Leila Kamali in 2019 also revealed that the sensitivity of ultrasound in diagnosing the fatty liver disease is 73% and specificity is 69%. It was also revealed that ultrasound can be considered a gold standard for detecting hepatic steatosis.<sup>16</sup>

## CONCLUSION

Obesity can cause mild fatty liver disease more commonly in those aged 36 to 45 years. Ultrasound is a useful modality for early detection of excess accumulation fat in the liver in asymptomatic patients.

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