Healthy Promoting Lifestyle among Patients with Fatty Liver

Gehad Ahmed Saber Abd El Rahman[1], Doaa Mohamed Sobhy Elsayed[2] and Walaa Kamal Shedeed[3]

(1) Demonstrator at the Technical Institute of Nursing, Al-Azhar University, Egypt, (2) Professor of Community Health Nursing, Faculty of Nursing, Benha University, Egypt and (3) Lecturer of Community Health Nursing, Faculty of Nursing, Benha University, Egypt.

Abstract

Background: Fatty liver disease has emerged as a leading cause of chronic liver disease worldwide. Adopting a healthy lifestyle plays a fundamental role in managing the condition and preventing progression to more serious liver diseases. **The aim** of this study was to assess healthy promoting lifestyle among patients with fatty liver. **Research design:** A descriptive research design was utilized. **Setting:** This study was conducted at Medical Outpatient Clinic in Benha University Hospital, Benha City, Egypt. **Sample:** Purposive sample of patients with fatty liver disease; the total sample included 100 patients. **Tools:** Two tools were used, **I):** A structured interviewing questionnaire which consisted of three parts to assess socio demographic characteristics of patients, medical history and knowledge about fatty liver disease, **II):** Scale to assess lifestyle pattern of patients with fatty liver. **Results:** 32.0% of studied patients aged 50-60 years old and 63.0% of them were female. 56.0% of studied patients had poor knowledge regarding fatty liver disease and 72.0% of them had unhealthy lifestyle regarding fatty liver disease. **Conclusion:** Less than fifth of studied patients had a good total knowledge level regarding fatty liver disease and less than a third of them had a healthy lifestyle regarding fatty liver disease. There were highly statistically significant relations between the studied patients' total knowledge regarding fatty liver disease and their age, marital status, educational level and their monthly income. There were highly statistically significant relations between the studied patients' total lifestyle and their educational level and residence. Also, there was a strong positive correlation between studied patients' total knowledge level and their total lifestyle level regarding fatty liver disease. **Recommendations:** Educational programs should be developed and implemented for patients with fatty liver disease to raise their awareness about management of fatty liver disease and proper lifestyle.

Keywords: Healthy promoting, lifestyle, fatty liver.

Introduction

Non-Alcoholic Fatty Liver Disease (NAFLD) is a chronic condition characterized by the accumulation of fat molecules (triglycerides) in the liver of individuals who consume little to no alcohol. NAFLD encompasses a spectrum of conditions ranging from simple steatosis (non-alcoholic fatty liver) to Non-Alcoholic Steato Hepatitis (NASH), which involves inflammation and tissue damage. While NAFLD usually presents as a benign condition that may or not progress to more severe liver disease, NASH is a progressive form with liver inflammation, damage, and fat accumulation that associated with complications such as cirrhosis, end stage chronic liver disease and Hepato- Cellular Carcinoma (HCC) (**Paulino et al., 2024; Huh et al., 2022).**

Non-alcoholic fatty liver disease has become the most common chronic liver disease worldwide and has been implying an unprecedented burden to health care systems.

The prevalence of NAFLD has exceeded 30% in developed countries. Considering the asymptomatic nature of undiagnosed NAFLD, the global prevalence of NAFLD has been increasing over time, with a recent meta-analysis estimating that 32% of the adult population is afflicted by NAFLD. This has occurred in tandem with global obesity and diabetes epidemics **(Teng et al., 2022; Golabi et al., 2023).**

The accumulation of fat in the liver in the context of the disease is in most cases due to a combination of eating more calories than the body needs and leading a more sedentary (inactive) lifestyle. Therefore, NAFLD occurs most commonly, but not always, in association with being overweight/ having obesity. Another group of people at risk are people living with diabetes, more often type 2 diabetes mellitus, or earlier stages of altered glucose handling in the body. Abnormal levels of blood lipids or high blood pressure (arterial hypertension) are also associated with an increased risk of having NAFLD. Abnormal levels of blood lipids can mean too many tri glycerides which can also mean unhealthy levels of cholesterol **(Francque et al., 2021).**

Most patients with NAFLD are asymptomatic, but some may experience nonspecific symptoms such as fatigue, malaise, or right upper quadrant abdominal pain. On physical examination hepatomegaly may be present. Diagnosis typically involves imaging studies like ultrasound, which may show increased liver echogenicity and laboratory tests to rule out other causes of liver disease. In selected cases a liver biopsy may be necessary to assess the presence of inflammation and fibrosis particularly when progression to NASH or cirrhosis suspected **(Eslam et al., 2020).**

The importance of promoting lifestyle in the development of NAFLD creates an opportunity to utilize healthy lifestyle modifications as the first-line treatment to slow down the increasing prevalence of NAFLD worldwide. Lifestyle modifications in patients with NAFLD include diet, physical activity, and weight loss. The Mediterranean diet is considered one of the most effective diets used for weight loss and decreased cardiometabolic risks associated with NAFLD. Macronutrients such as saturated fatty acids, trans fats, simple sugars, and animal proteins have detrimental effects on the liver. On the other hand, unsaturated fats, omega-3 fats, plant proteins, and dietary fiber are considered beneficial for the liver **(Zhang et al., 2022).**

Community Health Nurses (CHNs) play a pivotal role in managing patients with NAFLD. CHNs are strategically positioned to educate patients, caregivers, and families about the condition, emphasizing the importance of lifestyle modifications. Collaborating with healthcare team members across disciplines, CHNs assist in developing practical care plans that promote weight loss, informed dietary choices, and management of comorbidities such as diabetes. Key educational points include advising patients to avoid alcohol and substances that exacerbate liver disease, encouraging a diet rich in fruits, vegetables, and whole grains, and promoting regular physical activity aiming for at least 30 minutes of moderate exercise several times a week **(Allen et al., 2024).**

Significance of the study

Non-alcoholic fatty liver disease is the leading cause of chronic liver disease globally. The prevalence of NAFLD varies in research according to age, gender, ethnicity, and diagnostic methods. Globally, NAFLD prevalence averages 24.1%, ranging from 13.5% in Africa to 31.8% in the Middle East. Despite limited data on the extent of NAFLD **in Egypt**, the available data indicate a

prevalence of nearly 32% among Egyptians, compared to a global prevalence of 25% **(Hegazy et al., 2024).**

Aim of study:

The aim of the study was to assess healthy promoting lifestyle among patients with fatty liver.

Research questions:

1) What is the knowledge of patients regarding fatty liver disease?

2) What is the lifestyle pattern of patients with fatty liver disease?

3) Is there a relation between patients' knowledge and lifestyle pattern and their socio demographic characteristic?

4) Is there a relation between patient's knowledge regarding fatty liver disease and their lifestyle pattern?

Subjects and Method:

Research design:

A descriptive research design was utilized to conduct this study. A descriptive research design is a research design that describes the characteristics of the population that is being studied and focuses more on the (what) of the research subject rather than (why) of the research subject.

Setting:

The current study was conducted at Medical Outpatient Clinic affiliated to Benha University Hospital at Benha City which considers the main governmental hospital in Qalyubia Governorate where it provides health care services to a large and diverse population in Qalyubia Governorate and surrounding areas. This setting was chosen because of high patients flow and the availability of abdominal ultrasound imaging which facilitates the diagnosis of fatty liver disease.

Sample:

Purposive sample of patients with fatty liver disease who attended the previously mentioned setting for six months with the following criteria: Age of patients from 20-60 years old, diagnosed with non-alcoholic fatty liver disease and accepted to participate in the study. The total sample was 100 patients.

Tools of data collection:

Two tools were used to collect the data:

Tool I: A structured interview questionnaire was developed by researchers based on literature review of the current and past available national and international references related to literature about fatty liver and written in a simple Arabic language. It covered three parts:

First part: Was concerned with socio demographic characteristic of the studied patients with fatty liver included (age, sex, marital status, educational level, residence, occupation and monthly income).

Second part: Was concerned with medical history of the studied patients with fatty liver:

(A): Past medical history, which covered (onset of disease, rate of follow up in outpatient clinic, family history of fatty liver disease, the degree of kinship, history of smoking, causes of previous hospitalization, and suffer from any chronic diseases).

(B): Current medical history, which covered; (current signs& symptoms, medications, treatment commitment and complications).

Third part: Was concerned with knowledge of the studied patients regarding fatty liver disease which consisted of closed ended questions (MCQ) and included (meaning, causes, risk factors, signs& symptoms, routine investigations, treatment, foods should avoided, prevention, complications and source of knowledge about fatty liver disease).

Scoring system for knowledge:

The scoring system for patients' knowledge was calculated as follows; (2) score for correct and complete answer, (1) score for correct and incomplete answer, and (0) for don't know answer. For each area of knowledge, the score of the items was summed-up and the total divided by the number of the items, which converted into a percent score. The total knowledge scores =18 points which categorized as follows:

- **Good knowledge**→ if the total score of knowledge was ≥75% (≥14 points).
- **Average knowledge**→ if the total score of knowledge was 50% < 75% (9 < 14points).
- **Poor knowledge**→ if the total score of knowledge was < 50% (< 9 points).

N.B.: Source of knowledge was not included in scoring system.

Tool II: Was concerned with reported lifestyle of studied patients with fatty liver by using Fegerstrom Lifestyle scale adapted from **(Huang et al., 2008; Ahmadi Nezhad et al., 2022)** and included 5 categories which included: Nutrition (14 statements), physical exercise (4 statements), smoking pattern (3 statements), rest & sleep (4 statements), treatment and follow up (4 statements).

Scoring system for lifestyle:

The scoring system was graded according to the statements of questionnaire. The scoring system for studied patients' lifestyle was calculated as follows; (2) score for always answer, (1) score for sometimes answer, and (0) for never. The score of statements was summed-up and the total divided by the numbers of statements which converted into a percent scores. The total score of lifestyle =58 points, which further categorized: Healthy and unhealthy.

- **Healthy lifestyle**→ if the score of the total lifestyle was ≥ 60% (≥ 35 points).
- **Unhealthy lifestyle**→ if the score of the total lifestyle was < 60% (< 35 points).

Content validity of the tools:

Content validity of the tools was ascertained by three of Faculty Staff Nursing Experts from Community Health Nursing Specialties, Benha University who reviewed the tools for clarity, relevance, comprehensiveness, applicability, and easiness for implementation and according to their opinion minor modifications were made.

Reliability of the tools:

Reliability of the tools applied by the researchers for testing the internal consistency of the tools, by administration of the same tools to the same subjects under similar conditions. The reliability of the tools was done by Comparch Alpha coefficient test which revealed that each of the two tools consisted of relatively homogenous items as indicated by the moderate to high reliability of each tool. The internal consistency of knowledge was 0.82 and lifestyle was 0.89.

Ethical considerations:

Ethical approval was obtained from the Scientific Research Ethical Committee at the Faculty of Nursing, Benha University before starting the study at 23-11-2023 with code (REC-CHN-M15). All ethical issues were assured; oral consent has been obtained from each patient before conducting the interview and after giving a brief explanation to the purpose of the study to gain their trust and cooperation. They were also reassured that all information gathered would be kept confidentially and used only for the purpose of the study. Each patient had the right to withdraw from the study at any time without giving any reasons. The study didn't show any physical, social, or psychological risks. Also, ethics, values, and cultures were respected.

Pilot study:

The pilot study was carried out through two weeks and included 10 patients with fatty liver disease who represented 10% of the sample size. The pilot study was aimed at assessing the tools' feasibility, clarity, the time needed to fill each sheet, and to identify any obstacles that may hinder the data collection. No modifications were made, so the pilot study sample was included in the total sample.

Field work:

Data was collected at a period of 6 months which started from the beginning of March 2024 to the end of August 2024. The study was conducted by researchers for patients who visited the Medical Outpatient Clinic at Benha University Hospital in Benha city. The researchers attended two days/ week (Saturday & Wednesday) for six months from 9.00 a.m. to 12 p.m. to collect the data. Oral approval was obtained from each patient after the researchers introduced themselves and explained the purpose of the study. The average number of interviewed patients was 2-3 patients/day depending on their responses and understanding. Each patient took about 25 to 30 minutes to fill the sheet. Tools collected face to face by questionnaire, the researchers clarified any questions to the interviewed patients and checked each filled questionnaire to ensure its completion.

Statistical analysis:

All data collected were organized, tabulated and analyzed by using the Statistical Package for Social Science (SPSS) version 20, which was used frequencies and percentages for qualitative descriptive data, chi- square coefficient test (x^2) was used for relation tests, mean& standard deviation was used for quantitative data, Pearson correlation coefficient (r) was used for correlation analysis and degree of significance was identified (p-value).

Statistical significance as:

- Highly significant P ≤0.001**
- Significant P ≤0.05*
- No Significant P >0.05

Results:

Table (1): Shows that; 32.0% of studied patients aged from 50-60 years old with mean age was 50.3 ± 10.9, 63.0% of them were female and 56.0% of them were married. Regarding their educational level, 40.0% of studied patients had secondary and university education or more respectively. 72.0% of studied patients lived in rural areas, 53.0% of them were working and 48.0% of them didn't have enough monthly income.

Table (2): Clarifies that 44.0% of studied patients suffered from exhaustion. 70% of studied patients took cholesterol medications, and 72% of them took medications with commitment. The table also shows that 9.0% of the studied patients had complications from fatty liver disease and 44.4% of those had cardiovascular disease.

Figure (1): Clarifies that 56.0% of studied patients had poor total knowledge level regarding fatty liver disease, while 16.0% of them had good total knowledge level regarding fatty liver disease.

Figure (2): Reveals that; 72.0% of the studied patients had unhealthy total lifestyle level regarding fatty liver disease, while; 28.0% of them had healthy total lifestyle level.

Table (3): Clarifies that, there were highly statistically significant relations between studied patients' total knowledge level regarding fatty liver disease and their age, marital status, educational level and their monthly income, while there was a statistically significant relation between studied patients' total knowledge level and their sex. However; there were no statistically significant relations

between the studied patients' total knowledge level and their residence and occupation.

Table (4): Shows that; there were highly statistically significant relations between the total lifestyle level of the studied patients regarding fatty liver disease and their educational level and residence, while; there were statistically significant relations between the total lifestyle level of the studied patients and their age, marital status, occupation and their monthly income. However; there was no statistically significant relation between total lifestyle level of the studied patients and their sex.

Table (5): Shows that there was a strong positive correlation between the studied patients' total knowledge level and their total lifestyle level regarding fatty liver disease (p=0.000**).

Table (1): Distribution of the studied patients regarding their socio-demographic characteristics (n=100).

Socio-demographic characteristics	No.	%
Age /years		
30 > 20	24	24.0
40> 30	21	21.0
40> 50	23	23.0
50≥60	**32**	**32.0**
Min – Max	23-57	
Mean ± SD	50.3 ± 10.9	
Sex		
Male	37	37.0
Female	**63**	**63.0**
Marital status		
Single	16	16.0
Married	**56**	**56.0**
Widowed	20	20.0
Divorced	8	8.00
Educational level		
Cannot read or write	12	12.00
Basic education	8	8.00
Secondary education	**40**	**40.0**
University education or more	**40**	**40.0**
Residence		
Rural	**72**	**72.00**
Urban	28	28.00
Occupation		
Working	**53**	**53.00**
Not working	47	47.00
Monthly income		
Enough	28	28.00
Not enough	**48**	**48.00**
Enough and save	24	24.00

Table (2): Distribution of the studied patients regarding their current medical history (n=100).

Current medical history	No.	%
Current symptoms*		
Exhaustion	**44**	**44.0**
Fatigue	32	32.0
Pain in the right quadrant of the abdomen	24	24.0
Skin itching	23	23.0
Shortness of breath	26	26.0
Edema of extremities	26	26.0
Spider shape of circulation	22	22.0
Skin redness	22	22.0
Skin and eye jaundice	32	32.0
Medications *		
Cholesterol medication	**70**	**70.0**
Diabetes medication	49	49.0
Hypertension medication	47	47.0
Renal medications	13	13.0
Medication for anemia	32	32.0
Medication for cancer	1	1.0
Cardiac medication	11	11.0
Treatment commitment		
Yes	**72**	**72.0**
No	**28**	**28.0**
Having fatty liver complications		
Yes	9	9.0
No	**91**	**91.0**
If yes, what are the complications* (n=9)		
Liver cirrhosis	1	**11.1**
Liver cancer	1	11.1
Cardiovascular disease	4	44.4
Type 2 diabetes	3	3.33

***Results aren't mutually exclusive.**

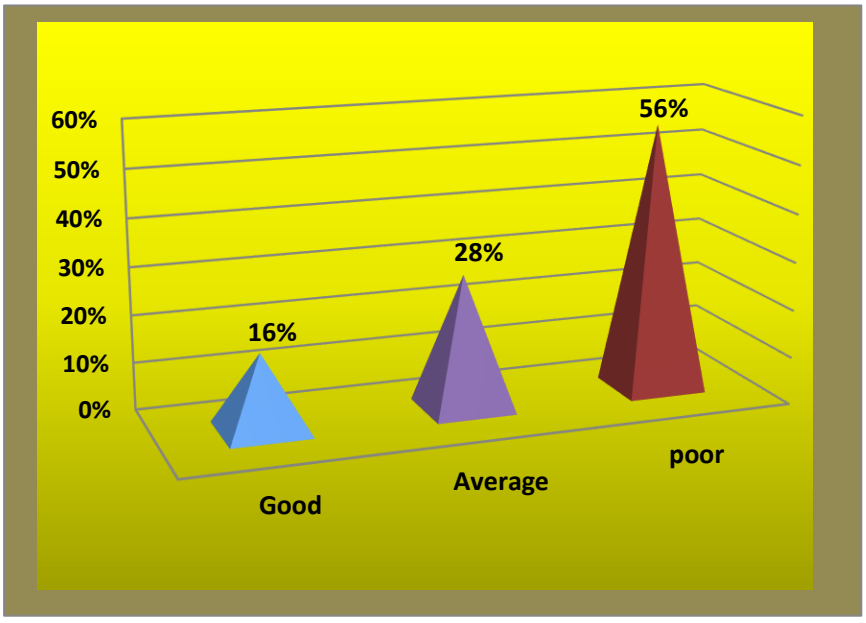

Figure (1): Distribution of the studied patients regarding their total knowledge level regarding fatty liver disease (n=100).

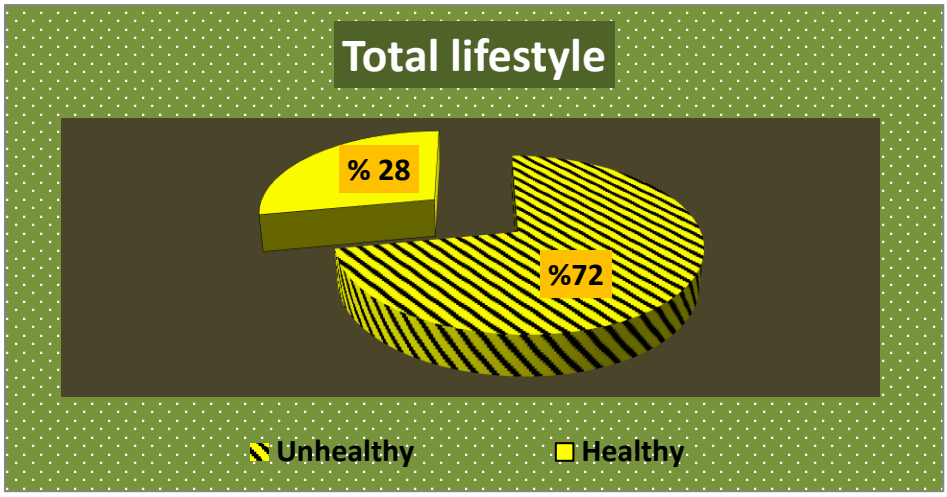

Figure (2): Distribution of the studied patients according to their total lifestyle level regarding fatty liver disease (n=100)

Table (3): Statistical relation between total knowledge level of studied patients regarding fatty liver disease and their socio-demographic characteristic (n=100).

Socio-demographic characteristics	Total patients' knowledge						Chi-square	P. value
	Good (n=16)		Average (n=28)		Poor (n=56)			
	No.	%	No.	%	No.	%		
Age/years								
30 > 20	12	75.0	0	0.00	12	21.4		.
40> 30	1	6.2	12	42.9	8	14.3	41.293	000**
40>50	3	18.8	8	28.6	12	21.4		
50≥60	0	0.00	8	28.6	24	42.9		
Sex								
Male	5	31.2	16	57.1	16	28.6	6.807	.033*
Female	11	68.8	12	42.9	40	71.4		
Marital status								
Single	8	50.0	4	14.3	4	7.1		
Married	8	50.0	12	42.9	36	64.3	33.724	.000**
Widowed	0	0.00	12	42.9	8	14.3		
Divorced	0	0.00	0	0.00	8	14.3		
Educational level								
Cannot read and write	0	0.00	4	14.3	8	14.3		
Basic education	0	0.00	8	28.6	0	0.00	25.714	.000**
Secondary education	8	50.0	8	28.6	24	42.9		
University education or more	8	50.0	8	28.6	24	42.9		
Residence								
Rural	12	75.0	20	71.4	40	71.4	0.085	.958
Urban	4	25.0	8	28.6	16	28.6		
Occupation								
Working	9	56.2	16	57.1	28	50.0	0.463	.793
Not working	7	43.8	12	42.9	28	50.0		
Monthly income								
Enough	4	25.0	12	42.9	12	21.4		
Not enough	0	0.00	4	14.3	44	78.6	63.265	.000**
Enough and save	12	75.0	12	42.9	0	0.00		

* statistically significant ** highly statistically significant

Table (4): Statistical relation between total lifestyle level of studied patients regarding fatty liver disease and their socio-demographic data (n=100).

Socio-demographic Characteristics	Total patient's lifestyle				Chi-square	P. value
	Healthy (n=28)		Unhealthy (n=72)			
	No.	%	No.	%		
Age /years						
20>30	12	42.9	12	16.7		
30>40	4	14.3	17	23.6	10.935	.012*
40 >50	8	28.6	15	20.8		
50≥60	4	14.3	28	38.9		
Sex						
Male	12	42.9	25	34.7	.449	.297
Female	16	57.1	47	65.3		
Marital status						
Single	8	28.6	8	11.1		
Married	16	57.1	40	55.6	7.569	.025*
Widowed	4	14.3	16	22.2		
Divorced	0	0.00	8	11.1		
Educational level						
Cannot read and write	0	0.00	12	16.7		
Basic education	8	28.6	0	0.00	26.587	.000**
Secondary education	8	28.6	32	44.4		
University education or more	12	42.9	28	38.9		
Residence						
Rural	12	42.9	60	83.3	16.383	.000**
Urban	16	57.1	12	16.7		
Occupation						
Working	20	71.4	33	45.8	5.302	.018*
Not working	8	28.6	39	54.2		
Monthly income						
Enough	12	42.9	16	22.2	6.463	.034*
Not enough	8	28.6	40	55.6		
Enough and save	8	28.6	16	22.2		

* statistically significant ** highly statistically significant

Table (5): Correlation between total knowledge level of studied patients' regarding fatty liver disease and their total lifestyle level (n=100).

Items	Total knowledge	
	r. test	p. value
Total lifestyle	.987	0.000**

** highly statistically significant p≤0.001 r. test : Spearman correlation test

Discussion:

Non-alcoholic fatty liver disease is a multifactorial condition characterized by the accumulation of fat in the liver. NAFLD is estimated to affect up to 32% of the global population and is associated with an increased risk of all-cause mortality. NAFLD is a complex phenotype that arises from dynamic interactions among diet, lifestyle, and genetic factors; multiple organs; and the intestinal microbiome. Comprehensive lifestyle change should involve simultaneous implementation of dietary changes to reduce energy intake, lifestyle and behavioural training, and an increase in physical activity. Changes should also include the avoidance of smoking, which has been associated with NAFLD, fibrosis progression, and hepatocellular carcinoma **(Zelber-Sagi et al., 2024).**

As regards the current medical history, the finding of the present study clarified that, minority of the studied patients had complications from fatty liver disease. This finding agreed with **Sabola et al. (2022),** who studied "Effect of a designed nursing intervention on knowledge and fatigue among patients with liver cirrhosis" and mentioned that the minority of the participants had complications from liver disease. On the other side, this finding was contradicted with **Cheng et al. (2023),** who studied "Metabolic associated fatty liver disease better identifying patients at risk of liver and cardiovascular complications" (n= 9,719) and revealed that the 79.7 % of the studied sample had complications from fatty liver disease. From the researchers` point of view this might be due to that more than three quarter of studied patients took medications commitmently.

The finding of the current study revealed that three quarters of the studied patients took cholesterol medications. This finding disagreed with **Galal et al. (2022),** who studied "Anthropometric measures as predictors of non-alcoholic fatty liver disease in adult asymptomatic Egyptians", (n=150) and clarified that 24% of the participants took medications for diabetes mellitus. Also, this finding was contraindicated with **Kasem et al. (2023),** who studied "The association between non-alcoholic fatty liver disease and chronic kidney disease in Egyptian patients" (n=430) and clarified that 34% of the participants took medications for diabetes mellitus.

In addition, the finding of the current study displayed that more than three quarter of studied patients took medications commitmently. From the researchers' point of view, this may be due to the studied patients' awareness and fear from occurring the potential complications associated with NAFLD such as liver cirrhosis, HCC, and liver failure. In addition to fatty liver disease is often asymptomatic in its early stages, which may contribute to its underdiagnosis until more noticeable health issues arise. This underscores the importance of routine screening, particularly for individuals with risk factors such as obesity, diabetes, or metabolic syndrome, to enable earlier diagnosis and intervention.

As regards to total knowledge about fatty liver disease, the finding of the present study demonstrated that more than half of studied patients had poor knowledge regarding fatty liver disease. This finding was compatible with **Singh et al. (2022),** who studied "Awareness and knowledge about non-alcoholic fatty liver disease (NAFLD) among patients with NAFLD" at India (n=313) and clarified that 49.85% of the studied patients had poor total knowledge about fatty liver disease.

From the researchers' point of view, limited knowledge may stem from inadequate health education, lack of public awareness campaigns, or insufficient patient-provider communication about fatty liver disease. Poor

knowledge can hinder patients from understanding the risk factors, recognizing symptoms, and adhering to recommended lifestyle changes, which are vital for preventing disease progression.

Concerning total lifestyle pattern regarding fatty liver disease, the finding of the present study illustrated that less than three quarters of the studied patients had unhealthy lifestyle pattern regarding fatty liver disease, while; more than one quarter of studied patients had healthy lifestyle. This finding disagreed with **Glass et al. (2022),** who studied "Disease knowledge, health-related quality of life, and lifestyle behaviour change in patients with non-alcoholic fatty liver disease: impact of an educational intervention" in USA (n=248) and mentioned that 22% of the participants had unhealthy lifestyle pattern regarding fatty liver disease. Also, this result disagreed with **Yu et al. (2022),** who studied "Healthy lifestyle is associated with reduced mortality in patients with non-alcoholic fatty liver disease "in China (n= 9771) and revealed that 14.81% of the participants had healthy lifestyle.

From the researchers` point of view, the studied patients that had unhealthy lifestyle had lack of the awareness or understanding about the importance of healthy behaviours in preventing and managing the disease.

Concerning statistical relation between the studied patients' total knowledge regarding fatty liver disease and their socio-demographic characteristics, the finding of the current study revealed that there was highly statistically significant relation between the studied patients' total knowledge regarding fatty liver disease and their monthly income. This finding was corroborated with **Sadeghianpour et al. (2023),** who studied "Non-alcoholic fatty liver disease and socioeconomic determinants in an Iranian cohort study" in Iran (n= 10,009) and signified that that were a statistically significant relations between studied patients' total knowledge regarding non-alcoholic fatty liver disease and the family income.

In addition, the finding of the current study revealed that there was highly statistically significant relation between the studied patients' total knowledge level regarding fatty liver disease and their age, marital status and educational level. From the researchers' point of view, the significant relation between age and knowledge may indicate that older patients are either more exposed to health-related information due to a higher likelihood of chronic conditions or have a greater motivation to seek knowledge about their health. Younger patients, conversely, may have limited exposure to educational materials or perceive themselves as less at risk. Also, married individuals might have better knowledge due to spousal influence or shared family responsibilities, which may encourage seeking health information and preventive care. Also, higher educational level of the studied patients play an important role in acquiring the knowledge about fatty liver disease.

Regarding statistical relation between total lifestyle of the studied patients regarding fatty liver disease and their socio-demographic data, the finding of the present study showed that; there was statistically significant relation between total lifestyle level of the studied patients and their marital status. However, there was no statistically significant relation between total lifestyle level of the studied patients and their sex. This result was consistent with **Jahromi et al. (2023),** who studied "The association of healthy lifestyle score and risk of non-alcoholic fatty liver disease" at the Metabolic Liver Disease Research Center affiliated with Isfahan University of Medical Sciences in Iran (n=

675) and demonstrated that there was statistically significant relation between total lifestyle pattern of the patients and their marital status. On the other hand, this result finding contraindicated with **Deng et al. (2021),** who studied "Higher healthy lifestyle score is associated with lower presence of non-alcoholic fatty liver disease in middle-aged and older Chinese adults: a community-based cross-sectional study" in China (n= 3389) and revealed that there was statistically significant relation between total lifestyle pattern of the patients and their sex.

From the researchers' opinion, younger individuals may engage in less healthy eating habits, sedentary behaviours, and higher consumption of processed foods, whereas older adults may adopt healthier habits due to medical advice or health concerns. Also, married individuals often adopt healthier dietary and physical activity habits due to family influence or shared meal patterns.

Concerning correlation between the studied patients' total knowledge and their total lifestyle pattern regarding fatty liver disease, the present finding of the current study showed that there was a strong positive correlation between studied patients' total knowledge and their total lifestyle regarding fatty liver disease. This result was compatible with **Benjamin, (2022),** who studied "Awareness and health promotional behaviour regarding non-alcoholic fatty liver disease" in Kannur District, Kerala, India (n= 149) and showed that there was a strong positive correlation between patients' total knowledge and their total lifestyle regarding fatty liver disease.

From the researchers` point of view, patients with higher knowledge about fatty liver disease are more likely to understand the importance of adopting healthier lifestyle practices, such as maintaining a balanced diet, engaging in regular physical activity, and avoiding risk factors like smoking or alcohol consumption. Knowledge empowers patients to manage their health. Also, awareness of the risks, consequences, and management strategies associated with fatty liver disease often motivates patients to implement lifestyle changes.

Conclusion:

More than half of studied patients had poor total knowledge level regarding fatty liver disease, while less than fifth of them had good total knowledge level regarding fatty liver disease. More than two thirds of studied patients had unhealthy lifestyle level regarding fatty liver disease, while less than third of them had healthy lifestyle level regarding fatty liver disease. There were highly statistically significant relations between studied patients' total knowledge level and their age, marital status, educational level and monthly income, while there was statistically significant relation between total lifestyle level of studied patients and their educational level and residence. Also, there was a strong positive correlation between the studied patients' total knowledge level and their total lifestyle level regarding fatty liver disease.

Recommendations:

- Educational programs should be developed and implemented for fatty liver patients to raise their awareness about fatty liver disease and its management.
- Booklets and brochures with practical lifestyle guidance should be available and distributed to all patients with fatty liver disease.
- Lifestyle counseling should be integrated into routine clinical visits. Regular screening for at risk individuals should be promoted in primary care setting.

- Application on a large probability sample from different geographical areas to attain more generalizable results.

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تعزيز نمط الحياة الصحي بين مرضى الكبد الدهني

جهاد أحمد صابر – دعاء محمد صبحي السيد – ولاء كمال شديد

يعد مرض الكبد الدهني غير الكحولي من أكثر أمراض الكبد شيوعًا في العالم، حيث يرتبط ارتباطًا وثيقًا بمعدلات الاعتلال والوفيات الناجمة عن تليف الكبد، وسرطان الخلايا الكبدية، وداء السكري، وأمراض القلب والأوعية الدموية. لذلك هدفت الدراسة إلى تقييم نمط الحياة الصحى بين مرضى الكبد الدهني. وقد تم استخدام تصميم بحث وصفي في إجراء هذه الدراسة. وقد أجريت الدراسة في عيادة الباطنة الخارجية بمستشفى بنها الجامعي بمدينة بنها على عينة غرضية من ١٠٠ مريض كبد دهني، و قد أسفرت النتائج على أن كان لدى ٥٦,٠٪ من المرضى مستوى ضعيف من المعلومات، بينما كان لدى ١٦,٠٪ منهم مستوى جيد فيما يخص مرض الكبد الدهني، كما كان لدى ٧٢,٠٪ من المرضى نمط حياة غير صحي ، و كان لدى ٢٨,٠٪ منهم نمط حياة صحي، كما كان هناك علاقه ايجابية ذات دلالة احصائية بين معلومات المرضى و نمط حياتهم فيما يتعلق بمرض الكبد الدهني. وقد أوصت الدراسة بتنفيذ و تطوير برامج التثقيف الصحى لمرضى الكبد الدهني بهدف رفع وعيهم حول المرض وكيفية التعامل معه.