

# Awareness of Non-Alcoholic Fatty Liver Disease Among Dieticians

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## Abstract

**Background:** Nutritional and lifestyle changes are the cornerstones of non-alcoholic fatty liver disease treatment. Therefore, dieticians play an important role in the treatment of non-alcoholic fatty liver disease. This study aimed to determine the awareness level of dieticians on non-alcoholic fatty liver disease. To the best of our knowledge, this is the first study in Türkiye on non-alcoholic fatty liver disease awareness among dieticians.

**Methods:** The study was performed between January and March 2019 with 100 dieticians working in private outpatient clinics or institutions in İstanbul who volunteered to participate. During face-to-face interviews, the dieticians were given a questionnaire covering work experience, number of clients diagnosed with non-alcoholic fatty liver disease and non-alcoholic fatty liver disease diagnosis, symptoms and nutritional treatment.

**Results:** The results revealed that 72% of the dieticians were seeing  $\leq 10$  patients with non-alcoholic fatty liver disease diagnosis per month and that the follow-up duration was  $\leq 6$  months for 89% of the dieticians. Less than half (45%) of the dieticians knew that non-alcoholic fatty liver disease is a serious disease that can progress to cirrhosis if left untreated. Only 3.6% of the dieticians who did not consider non-alcoholic fatty liver disease a serious disease followed up their patients for  $> 6$  months ( $P < .05$ ).

**Conclusion:** The results of this study show that non-alcoholic fatty liver disease awareness among the dieticians is low and that they do not have adequate knowledge about the importance of effective long-term follow-up in non-alcoholic fatty liver disease treatment. Hence, the dieticians should receive further training on non-alcoholic fatty liver disease to improve the prognosis of this disease, on which nutritional factors have significant effects.

**Keywords:** Awareness, dietician, non-alcoholic fatty liver disease, non-alcoholic steatohepatitis, nutritional therapy

## INTRODUCTION

The prevalence of non-alcoholic fatty liver disease (NAFLD) is steadily increasing, and the disease is becoming a significant global health threat.<sup>1</sup> There is no approved drug to treat this disease, which affects approximately a quarter of the adult population.<sup>2</sup> The high prevalence of NAFLD is fueled by an unhealthy and unbalanced diet, high energy intake, and low levels of physical activity.<sup>3-4</sup> Dietary and lifestyle changes and managing the underlying metabolic risk factors are the cornerstones of NAFLD treatment. Regular and non-rapid weight loss and nutritional therapy play a key role in preventing and reversing the disease.<sup>5</sup>

With the increase in obesity and type 2 diabetes mellitus (T2DM), the burden of NAFLD is expected to increase over the next decade.<sup>6</sup> A recent study examining the policies and strategies of 29 European countries showed that none of them had a national strategy specific to NAFLD. The disease was mentioned in less than half of all national strategies and clinical management guidelines for cardiovascular disease, obesity, and diabetes.<sup>7</sup> International health policies, including those sanctioned by World Health Organization and the United Nations, do not include NAFLD or non-alcoholic steatohepatitis (NASH) directly. In addition, NAFLD awareness was found to be low among the general population, at-risk populations, and healthcare providers who are not hepatic specialists.<sup>6</sup> Patients with NAFLD are often referred to dieticians by internal medicine physicians and gastroenterologists, who are the first point of contact.<sup>8</sup> To the best of our knowledge, there is no study in the literature examining NAFLD awareness among the dieticians. We believe that interventions aimed at assessing and enhancing the NAFLD awareness levels of dieticians will have significant effects on disease treatment. In light of this information, this study aimed to determine the awareness level of the dieticians on NAFLD.

## METHODS

This research was designed as a descriptive study to determine the awareness levels of dieticians on NAFLD. The study was planned in accordance with the ethical standards of the Helsinki Declaration and approved by the Ethics Committee of Bahçeşehir University (Approval Number: 2018-17/07, Date: 19.12.2018). After Ethics Committee approval was obtained, the research was conducted between January and March 2019 with 100 dieticians working in private outpatient clinics or institutions in İstanbul. Written informed consent was obtained from all participants. Dieticians with at least 1 year of work experience were included in the study. Dieticians who did not sign the consent form and did not accept to participate in the study and provided incomplete information were excluded. Research data were collected during face-to-face interviews. A questionnaire was designed by the researcher based on the relevant literature. The data collection form was prepared to evaluate how dieticians defined NAFLD and to assess their awareness levels of symptoms and nutritional therapy. It was assumed that the participants answered the questions truthfully, responded to the survey willingly, and answered the questionnaire correctly and fully.

**Statistical Analysis**

The research data were analyzed using SPSS (Statistical Package for Social Science Inc., version 20.0, Chicago, I11, USA) Package Program. Descriptive statistics were presented as numbers and percentages. Chi-squared test was used to investigate the relationship between categorical variables.  $P < .05$  was accepted as statistically significant in all analyses. Cronbach alpha reliability test was used to measure the internal consistency and reliability of the questionnaire. The accepted lower limit for Cronbach's alpha is 0.70. The Cronbach's alpha value was found to be 0.757 in this study; hence, the questionnaire was determined to be reliable.

**RESULTS**

Of the 100 dieticians included in the study, 47% had <3 years of experience and their average work experience was 1.7 years. Moreover, 72% of the dieticians were seeing  $\leq 10$  patients with a diagnosis of NAFLD per month, and the follow-up duration was  $\leq 6$  months for 89% of the dieticians (Table 1).

Table 2 shows the answers given by the dieticians to the NAFLD-related questions. It was found that 85% of the dieticians were questioned about NAFLD symptoms in obese patients. The results further revealed that 95% thought that nutritional therapy was important

**Table 1.** General Characteristics of Dieticians Participating in the Study

	n	%
Work experience (years)		
≤3	47	47.0
>3	53	53.0
Number of patients seen who were diagnosed with NAFLD (monthly)		
≤10	72	72.0
>10	28	28.0
Follow-up period for patients with NAFLD (months)		
≤6	89	89.0
>6	11	11.0

NAFLD, non-alcoholic fatty liver disease.

**Table 2.** Responses of the Dieticians to Questions on NAFLD

	Yes		No	
	n	%	n	%
Should NAFLD symptoms be questioned in obese patients?	85	85.0	15	15.0
Are the diseases accompanying NAFLD important?	89	89.0	11	11.0
Should nutrition therapy be applied to underweight individuals diagnosed with NAFLD?	93	93.0	7	7.0
Is nutritional therapy important in overweight/obese individuals with NAFLD?	95	95.0	5	5.0
Is gluten-free nutrition important in NAFLD?	30	30.0	70	70.0
Do probiotics have a place in NAFLD treatment?	65	65.0	35	35.0
Are herbal supplements important in NAFLD treatment?	56	56.0	44	44.0
Is there a relationship between T2DM and NAFLD?	90	90.0	10	10.0
Is the nutritional content as important as the caloric content in nutritional therapy for NAFLD?	87	87.0	13	13.0
Is cholesterol content important in nutritional treatment for NAFLD?	95	95.0	5	5.0
Do NAFLD patients need long-term follow-up?	57	57.0	43	43.0
Is NAFLD a disease that can lead to cirrhosis and liver cancer if left untreated?	45	45.0	55	55.0

NAFLD, non-alcoholic fatty liver disease; T2DM, type 2 diabetes mellitus.

in obese patients with NAFLD. Moreover, 93% of the participants emphasized the need to apply nutritional therapy in under- or normal-weight NAFLD patients as well. Questions on the content of nutritional therapy showed that 87% of the dieticians were of the opinion that the nutritional aspect of the therapy was just as important as the caloric aspect, whereas 95% stated that cholesterol content was important. Also, 45% of the dieticians stated that NAFLD was a serious disease that can progress to cirrhosis if left untreated and 57% emphasized the need for long-term follow-up in patients with NAFLD (Table 2).

Table 3 shows the dieticians' thoughts on NAFLD prognosis and the follow-up duration of the patients. Only 3.6% of the dieticians who did not consider NAFLD a serious disease and 20% of those who considered it a serious disease followed up their patients for >6 months ( $P < .05$ ).

Table 4 lists the data on knowledge of the relationship between T2DM and diseases accompanying NAFLD. It was observed that 91.2% of the dieticians who stated that there was a relationship between T2DM and NAFLD and 50% of those who opined that there was no relationship between the two questioned the patients about diseases accompanying NAFLD ( $P < .05$ ).

**DISCUSSION**

Non-alcoholic fatty liver disease is a histological syndrome with clinical manifestations ranging from simple steatosis to complex patterns with varying degrees of fibrosis, hepatocyte damage, and inflammatory lesions. Approximately 3%-15% of obese patients with NASH progress to cirrhosis, and approximately 4%-27% of patients with NASH who have cirrhosis progress to hepatocellular carcinoma.<sup>9-10</sup> In the present study, less than half (45%) of the dieticians were of the opinion that NAFLD is a disease that can progress to cirrhosis and liver cancer if left untreated and was unaware of the seriousness of the disease.

**Table 3.** Dieticians' Thoughts on NAFLD Prognosis and Follow-Up Duration of the Patients

	Follow-Up Duration		Total	$\chi^2$	P
	≤6 months	>6 months			
Thoughts on NAFLD prognosis				3.592	.048
NAFLD is not a serious disease.	53 (96.4%)	2 (3.6%)	55 (100%)		
If left untreated, it can progress to cirrhosis and liver cancer.	36 (80.0%)	9 (20.0%)	45 (100%)		

NAFLD, non-alcoholic fatty liver disease.

**Table 4.** Knowledge of the Relationship Between T2DM and NAFLD and Questioning the Patients About Diseases Accompanying NAFLD During Examination

Is there a relationship between T2DM and NAFLD?	Do You Question the Patient About the Diseases Accompanying NAFLD?			$\chi^2$	P
	Yes	No	Total		
Yes	82 (91.2%)	8 (8.8%)	90 (100%)		
No	5 (50.0%)	5 (50.0%)	10 (100%)	6.610	.010

NAFLD, non-alcoholic fatty liver disease; T2DM, type 2 diabetes mellitus.

Non-alcoholic fatty liver disease is closely related to obesity and T2DM.<sup>11</sup> Non-alcoholic fatty liver disease is diagnosed using imaging methods in obese patients exhibiting the characteristics of metabolic syndrome, and the prevalence of NAFLD in these patients is approximately 90%-95%. Furthermore, a third of these patients also have NASH,<sup>12</sup> which may be due to the fact that NAFLD is more associated with visceral adipose tissue than subcutaneous adipose tissue. When compared with subcutaneous fat, visceral adipose tissue is associated with higher insulin resistance and increased oscillation of pro-inflammatory and pro-fibrogenic mediators that increase the risk of NAFLD. These mechanisms explain why inflammatory visceral adipose tissue is one of the strongest risk factors for developing NAFLD.<sup>13</sup> In this context, it is important for the prognosis of the disease that dietitians and doctors question the presence of NAFLD in obese patients. In the present study, 85% of the dietitians stated that they examined NAFLD symptoms in obese patients and 95% stated that nutritional therapy was of great importance in obese patients with NAFLD. In addition, 91.2% of the dietitians who were aware of the relationship between T2DM and NAFLD questioned their patients about accompanying diseases, whereas this rate was only 50% among those who were not aware of the relationship ( $P < .05$ ).

Even though NAFLD is strongly associated with obesity and metabolic syndrome, a significant number of underweight individuals with NAFLD have been reported in the literature. In community screening studies, the prevalence of NAFLD among individuals with body mass index  $<25 \text{ kg/m}^2$  was found to be 8%-19%.<sup>14-15</sup> Dela Cruz et al (2014) reported that despite the lower severity of the disease, cumulative survival time was significantly shorter for the underweight patients with NAFLD.<sup>16</sup> In addition, various studies have emphasized that NAFLD without obesity is an important risk factor for T2DM, metabolic syndrome, and cardiovascular diseases when compared with the healthy population.<sup>17</sup> A study investigating the effects of medical nutrition therapy in underweight patients with NAFLD showed that 5% body weight loss resulted in comparable remissions in both obese and underweight patients.<sup>18</sup> In the present study, the vast majority of the dietitians (93%) stated that nutritional therapy was a necessary treatment modality for underweight patients with NAFLD as well.

It has been reported that different dietary components affect the progression and development of NAFLD.<sup>19</sup> While published guidelines on disease management emphasize the need for weight loss (7%-10%) to improve hepatic steatosis, fibrosis, and histological parameters, nutritional compositions are not clearly stated.<sup>20-21</sup> On the other hand, in a previous study on patients with NAFLD ( $n=106$ ), it was found that dietary cholesterol and saturated fatty acid intakes were significantly higher in patients with advanced fibrosis.<sup>4</sup> The vast majority of the dietitians supported the view that dietary components are just as important as the caloric component (87%) and that the cholesterol content affects disease prognosis (95%). In addition, 30% of the dietitians were of the view that gluten-free nutrition may be important in patients with NAFLD. However, there are limited studies on the effect of a gluten-free diet, which is a lifelong diet for patients with celiac disease, on NAFLD. Further research is needed before this diet can be used in patients with NAFLD.<sup>22</sup>

More than half of the dietitians in this study stated that in addition to nutritional therapy, probiotics (65%) and herbal products (56%) were important. Recent studies have shown that intestinal dysbiosis can have

an effect on NAFLD via various mechanisms such as increased lipopolysaccharides and inflammation, decreased choline production, and increased ethanol production and intestinal permeability.<sup>23</sup> Although dose and strain information have not been clearly determined, studies have shown that probiotic/prebiotic supplements have positive effects on liver enzymes, blood lipid levels, inflammation markers, and hepatic steatosis.<sup>24-25</sup> The use of herbal supplements is very popular in Eastern medicine, and it is becoming increasingly common in Western countries too. Various herbal supplements, especially thistle, have been shown to be possible therapeutic agents in the treatment of NAFLD owing to their antioxidant and anti-inflammatory effects. However, deficiencies in legal regulations on herbal supplements and possible drug interactions and side effects necessitate caution when using herbal supplements for NAFLD. Since natural herbs are converted into supplements, the final product may no longer be completely herbal and may contain trace metals that can become toxic when used excessively. In addition, it has been shown that some plants have hepatotoxic properties. Extensive research is required to test the safety of plants as therapeutic agents before they can be recommended for patients with NAFLD.<sup>26</sup>

Although the beneficial effects of weight loss in the treatment of NAFLD have been clearly demonstrated,<sup>27</sup> studies have shown that the patients tended to gain weight after long-term follow-up.<sup>28-29</sup> Scragg et al (2020) reported that the target weight loss of  $\geq 10\%$  can be achieved with a low-calorie diet and that weight loss can be maintained with a strict follow-up of 9 months.<sup>30</sup> A recent study conducted on patients with NAFLD ( $n=40$ ) found that there was no significant difference between the average weight of patients in the 36th month of follow-up and the baseline values ( $P = .563$ ). Strict follow-up through nutritional consultation and the cooperation of nutritionists and gastroenterologists are essential for long-term positive outcomes in patients with NAFLD.<sup>31</sup> In the present study, 57% of the dietitians emphasized the need for long-term follow-up; however, only 11% were following up their patients for  $>6$  months. Furthermore, only 3.4% of the dietitians who did not consider NAFLD a serious disease and 20% of those who considered NAFLD a serious disease were following up their patients for  $>6$  months ( $P < 0.05$ ).

There are certain limitations in this study. First, the study was limited to dietitians working in private outpatient clinics in Istanbul, Türkiye. The awareness level of the dietitians was determined based on a questionnaire created by the researchers. To overcome this limitation, the internal consistency of the questionnaire was calculated at the beginning of the study.

This study was conducted to determine the awareness level of the dietitians working in private clinics on NAFLD. Although the awareness level of clinicians and patients on NAFLD is improving day by day, the incidence of NAFLD continues to rise. Projections show that NAFLD can soon become the number one cause of hepatic cirrhosis and liver transplantation. Regulation of eating and living habits is very important for the prevention and treatment of the disease. Although the effect of weight loss in the treatment of these patients has been clearly demonstrated, low success rates in achieving long-term weight loss is a serious problem. As a solution to this problem, the awareness and knowledge levels of the dietitians, who play a significant role in the treatment of NAFLD, need to be increased. Dietitians should pay attention to the frequency and follow-up periods and embrace a multidisciplinary approach.

**Ethics Committee Approval:** Ethical Committee approval was received from the Ethics Committee of Bahçeşehir University (Approval Number: 2018-17/07, Date: 19.12.2018).

**Informed Consent:** Written informed consent was obtained from all patients who participated in this study.

**Peer-review:** Externally peer-reviewed.

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## REFERENCES

- Perdomo CM, Frühbeck G, Escalada J. Impact of nutritional changes on nonalcoholic fatty liver disease. *Nutrients*. 2019;11(3):677. [CrossRef]
- Younossi ZM, Koenig AB, Abdelatif D, Fazel Y, Henry L, Wymer M. Global epidemiology of nonalcoholic fatty liver disease—meta-analytic assessment of prevalence, incidence, and outcomes. *Hepatology*. 2016;64(1):73-84. [CrossRef]
- Younossi Z, Anstee QM, Marietti M, et al. Global burden of NAFLD and NASH: trends, predictions, risk factors and prevention. *Nat Rev Gastroenterol Hepatol*. 2018;15(1):11-20. [CrossRef]
- Guveli H, Kenger EB, Ozlu T, Kaya E, Yilmaz Y. Macro-and micronutrients in metabolic (dysfunction) associated fatty liver disease: association between advanced fibrosis and high dietary intake of cholesterol/saturated fatty acids. *Eur J Gastroenterol Hepatol*. 2021;33(1S):390-394. [CrossRef]
- Lanuza F, Sapunar J, Hofmann E. Management of non-alcoholic fatty liver disease. *Rev Med Chil*. 2018;146(8):894-901. [CrossRef]
- Lazarus JV, Mark HE, Villota-Rivas M, et al. The global NAFLD policy review and preparedness index: are countries ready to address this silent public health challenge? *J Hepatol*. 2022;76(4):771-780. [CrossRef]
- Lazarus JV, Ekstedt M, Marchesini G, et al. A cross-sectional study of the public health response to non-alcoholic fatty liver disease in Europe. *J Hepatol*. 2020;72(1):14-24. [CrossRef]
- Arora C, Malhotra A, Ranjan P, et al. Lifestyle intervention framework for obese patients with non-alcoholic fatty liver disease—a tool for health professionals in resource constraint settings. *Cureus*. 2019;11(10):e5999. [CrossRef]
- Bedossa P. Histological assessment of NAFLD. *Dig Dis Sci*. 2016;61(5):1348-1355. [CrossRef]
- Dhamija E, Paul SB, Kedia S. Non-alcoholic fatty liver disease associated with hepatocellular carcinoma: an increasing concern. *Indian J Med Res*. 2019;149(1):9-17. [CrossRef]
- Younossi ZM. Non alcoholic fatty liver disease - a global public health perspective. *J Hepatol*. 2019;70(3):531-544. [CrossRef]
- Lonardo A, Bellentani S, Argo CK, et al. Epidemiological modifiers of non-alcoholic fatty liver disease: focus on high-risk groups. *Dig Dis Sci*. 2015;47(12):997-1006. [CrossRef]
- Lonardo A, Mantovani A, Lugari S, Targher G. Epidemiology and pathophysiology of the association between NAFLD and metabolically healthy or metabolically unhealthy obesity. *Ann Hepatol*. 2020;19(4):359-366. [CrossRef]
- Nishioji K, Sumida Y, Kamaguchi M, et al. Prevalence of and risk factors for non-alcoholic fatty liver disease in a non-obese Japanese population, 2011-2012. *J Gastroenterol*. 2015;50(1):95-108. [CrossRef]
- Wei JL, Leung JCF, Loong TCW, et al. Prevalence and severity of non-alcoholic fatty liver disease in non-obese patients: a population study using proton-magnetic resonance spectroscopy. *Am J Gastroenterol*. 2015;110(9):1306-1315. [CrossRef]
- Dela Cruz AC, Bugianesi E, George J, et al. Characteristics and long-term prognosis of lean patients with nonalcoholic fatty liver disease. *Gastroenterology*. 2014;146:S-909. [CrossRef]
- Feng RN, Du SS, Wang C, et al. Leannon-alcoholic fatty liver disease increases risk for metabolic disorders in a normal weight Chinese population. *World J Gastroenterol*. 2014;20(47):17932-17940. [CrossRef]
- Hamurcu Varol P, Kaya E, Alphan E, Yilmaz Y. Role of intensive dietary and lifestyle interventions in the treatment of lean nonalcoholic fatty liver disease patients. *Eur J Gastroenterol Hepatol*. 2020;32(10):1352-1357. [CrossRef]
- Ullah R, Rauf N, Nabi G, et al. Role of nutrition in the pathogenesis and prevention of non-alcoholic fatty liver disease: recent updates. *Int J Biol Sci*. 2019;15(2):265-276. [CrossRef]
- Chalasanani 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. [CrossRef]
- European Association for the Study of the Liver (EASL), European Association for the Study of Diabetes (EASD), European Association for the Study of Obesity (EASO). EASL-EASD-EASO Clinical Practice Guidelines for the management of non-alcoholic fatty liver disease. *J Hepatol*. 2016;64(6):1388-1402. [CrossRef]
- Larussa T, Abenavoli L, Procopio AC, et al. The role of gluten-free diet in nonalcoholic fatty liver disease development. *Eur Rev Med Pharmacol Sci*. 2021;25(21):6613-6618. [CrossRef]
- Bashiardes S, Shapiro H, Rozin S, Shibolet O, Elinav E. Non-alcoholic fatty liver and the gut microbiota. *Mol Metab*. 2016;5(9):782-794. [CrossRef]
- Liu L, Li P, Liu Y, Zhang Y. Efficacy of probiotics and Synbiotics in patients with nonalcoholic fatty liver disease: a meta-analysis. *Dig Dis Sci*. 2019;64(12):3402-3412. [CrossRef]
- Koutnikova H, Genser B, Monteiro-Sepulveda M, et al. Impact of bacterial probiotics on obesity, diabetes and non-alcoholic fatty liver disease related variables: a systematic review and meta-analysis of randomised controlled trials. *BMJ Open*. 2019;9(3):e017995. [CrossRef]
- Perumpail BJ, Li AA, Iqbal U, et al. Potential therapeutic benefits of herbs and supplements in patients with NAFLD. *Diseases*. 2018;6(3):80. [CrossRef]
- Ozlu T, Yilmaz Y, Gunes FE. The effects of dietary intervention on fibrosis and biochemical parameters in metabolic-associated fatty liver disease. *Minerva Gastroenterol*. 2022;68(4):426-433. [CrossRef]
- Vilar-Gomez E, Martinez-Perez Y, Calzadilla-Bertot L, et al. Weight loss through lifestyle modification significantly reduces features of non-alcoholic steatohepatitis. *Gastroenterology*. 2015;149(2):367-378. [CrossRef]
- Jensen MD, Ryan DH, Apovian CM, et al. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the Obesity Society. *J Am Coll Cardiol*. 2014;63(25 Pt B):2985-3023. [CrossRef]
- Scragg J, Avery L, Cassidy S, et al. Feasibility of a very low calorie diet to achieve a sustainable 10% weight loss in patients with nonalcoholic fatty liver disease. *Clin Transl Gastroenterol*. 2020;11(9):e00231. [CrossRef]
- Guveli H, Ozlu T, Ersoy Tasar B, Batuhan Kenger EB, Kaya E. Sustainability of diet-based moderate calorie restriction among obese patients with metabolic-associated fatty liver disease. *Hepatol Forum*. 2021;2(3):97-101. [CrossRef]