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Assessment of Perceived Food Literacy among Individuals with Diabetes: A Cross-Sectional Study

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Abstract

Introduction: Food literacy plays a crucial role in the nutritional behaviors and self-management capacities of individuals with chronic diseases such as diabetes, helping them to manage their conditions and maintain a healthy lifestyle. Understanding the factors influencing food literacy can contribute to more effective interventions. This study aimed to evaluate the perceived food literacy levels of individuals diagnosed with type 1 or type 2 diabetes, examining their associations with sociodemographic and anthropometric characteristics.

Methods: A cross-sectional study was conducted with individuals aged 18–64 years and living in Istanbul, Türkiye, who had been diagnosed with type 1 or type 2 diabetes. Data were collected through an online questionnaire, which included a Sociodemographic and General Information Form (9 items) and the 29-item perceived food literacy scale (PFLS). The results of the study were analyzed using the Statistical Package for the Social Sciences version 20, with a significance level of p<0.05.

Results: The study was completed with 412 individuals. Perceived food literacy levels were significantly higher among women, single participants, and individuals with a university education. Negative correlations were observed between age, body mass index (BMI), and several PFLS subdimensions. In addition, individuals with type 1 diabetes had significantly higher food literacy scores than those with type 2 diabetes.

Discussion and Conclusion: Sociodemographic and anthropometric factors such as BMI, sex, age, education level, and diabetes type are important determinants of food literacy. Tailored nutrition education interventions could improve food literacy and support diabetes self-management. Further research is needed to explore causal relationships and long-term outcomes.

Keywords: Food literacy; Nutrition; Type 1 diabetes; Type 2 diabetes

Diabetes mellitus is a group of metabolic disorders characterized by elevated blood glucose levels (hyperglycemia) due to impaired carbohydrate metabolism, resulting from inadequate utilization of glucose for energy and irregularities in gluconeogenesis and glycogenolysis processes.[1] Clinically, diabetes is classified into several subtypes, including type 1 diabetes, type 2 diabetes, gestational diabetes, and other specific forms caused by distinct underlying factors.[2]

According to the 2025 Diabetes Atlas report by the International Diabetes Federation (IDF), 11.1% of the global adult population aged 20–79, approximately one in

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every nine individuals, are currently living with diabetes. Alarmingly, over 40% of these individuals are unaware of their condition. Projections by IDF estimate that by 2050, one in every eight adults will be diagnosed with diabetes.[3]

Nutrition plays a central role in the prevention and management of diabetes, particularly in regulating blood glucose levels. The type and amount of carbohydrates consumed, as well as the overall macronutrient balance, directly impact glycemic control and long-term metabolic health.[4,5] In this context, food literacy has emerged as a critical factor influencing dietary behavior. Food literacy empowers individuals to make informed decisions regarding food and nutrition, thereby contributing to better public health outcomes and supporting sustainability goals.[6,7] It encompasses the knowledge, skills, and behaviors necessary to maintain a healthy dietary pattern and make responsible food choices that benefit both personal and planetary health.[8,9]

Competence in planning, selecting, preparing, and consuming healthy foods is particularly important for individuals with diabetes, as these skills play a vital role in glycemic regulation. Higher levels of food literacy have been associated with improved blood glucose control and healthier eating habits.[10] Several factors have been shown to influence food literacy, including age, sex, education level, and environmental, social, economic, and cultural conditions.[11,12]

Although food literacy has received more attention in recent years, the number of studies investigating its relationship with diabetes in Türkiye is still limited. Unlike previous studies in Türkiye that primarily focused on individuals with type 2 diabetes, the present study included both type 1 and type 2 diabetes patients, providing a broader understanding of food literacy among people with diabetes. Furthermore, most existing studies focus on either the general population or specific dietary behaviors, with very few examining how food literacy differs between individuals with type 1 and type 2 diabetes.[13,14] Given the cultural and dietary diversity across regions, examining this topic in the Turkish context is particularly important. Istanbul, Türkiye's largest city, is a valuable setting for such research, as it has a diverse population with a wide range of lifestyles that reflect both traditional and modern dietary habits. In light of these considerations, the present study aimed to examine the relationship between sociodemographic characteristics and perceived food literacy levels among individuals diagnosed with different types of diabetes.

Materials and Methods

Study Place and Design

This research was conducted as a descriptive, cross-sectional study. Study was conducted in Istanbul, Türkiye, between January and May 2023. The research was carried out online through Google Forms among adults diagnosed with type 1 or type 2 diabetes to evaluate their perceived food literacy levels and related factors.

Population

The target population was defined as adults with type 1 or type 2 diabetes living in Istanbul. A total of 412 individuals who met the inclusion criteria completed the survey.

In addition, a post hoc power analysis was conducted to assess whether the sample sizes of type 1 and type 2 diabetes participants were sufficient.

Questionnaire

The data collection tool consisted of an online questionnaire composed of two main sections. The first section is the Sociodemographic and General Information Form. The second section comprised the perceived food literacy scale (PFLS).

Data Collection

All data were collected using an online questionnaire hosted on Google Forms. Access to the survey remained open during the data collection period. Only individuals who gave informed consent through the "Voluntary Participation Information Form" were permitted to proceed to the survey. The following tools were used for data collection:

Sociodemographic and General Information Form

This form was developed by researchers and includes questions regarding age, sex, marital status, height, weight, education level, income level, and prior nutrition education status.

PFLS

This scale was developed by Poelman et al.[15] and adapted to Turkish by Selçuk et al.[16] in 2020. It consists of 29 items across 8 subdimensions: Food preparation skills, resistance and self-control, healthy snack types, social and mindful eating, reading food labels, daily meal planning, spending on healthy food, and availability of healthy food at home. The items are rated on a 5-point Likert scale ranging from 1 "never" to 5 "always." Higher scores indicate higher food literacy levels.[16]

Calculation of Body Mass Index (BMI)

The BMI (kg/m^2) value was obtained by dividing body weight by height squared. Individuals' BMI values were evaluated according to the World Health Organization classification.[17]

Statistical Analysis

The analytical framework of the present study was structured to address the main research question: To describe the level of food literacy among adults with Type 1 and Type 2 diabetes, to identify its associations with sociodemographic and anthropometric variables, and to determine its independent predictors. An independent samples t-test was used to assess group differences between individuals with Type 1 and Type 2 diabetes. Correlation analyses were conducted to examine the relationships between food literacy and quantitative variables. In addition, a regression model was employed to identify the key variables that independently predicted food literacy.

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 20 (SPSS Inc., Chicago, IL, USA) statistical software. Descriptive statistics such as frequency (n) and percentage (%) were used. For group comparisons, Student's t-test was used for normally distributed variables. Pearson correlation was used for normally distributed variables, while Spearman correlation was used for non-normally distributed variables. Shapiro–Wilk and Kolmogorov–Smirnov tests were conducted to assess the normality of the data, and the skewness and kurtosis values (between −1.5 and +1.5) indicated that the data were normally distributed.

To control for multiple comparisons, the Benjamini–Hochberg false discovery rate correction was applied. Effect sizes for between-group comparisons were calculated using Cohen's d.

To test whether diabetes type independently predicted food literacy outcomes, multiple linear regression analyses were performed after adjusting for age, sex, education level, and BMI. The regression results were expressed as unstandardized coefficients (B), standard errors, 95% confidence intervals (CI), and p-values. Statistical significance was set at $p<0.05$.

Ethical Approval

The study was approved by the Ethics Committee of Istanbul Gedik University (Meeting dated February 08, 2022, decision number: 2022/2, approval number: 301) and was conducted in accordance with the principles of the Declaration of Helsinki. Participants provided informed consent before completing the online questionnaire. All responses were collected anonymously through a secure Google Forms platform, and no personally identifiable information was recorded or stored.

Results

A total of 433 people participated in the study on the specified dates, and the study was conducted with 412 people who were diagnosed with Type 1 or Type 2 diabetes. To evaluate the adequacy of the sample size, a post hoc power analysis was conducted for the PFLS scores comparison between Type 1 and Type 2 diabetes participants. With an observed effect size of Cohen's d=0.46 and group sizes of 234 and 178, the achieved power was 0.99 at $\alpha=0.05$ (two-tailed), indicating that the sample size was sufficient to detect the observed group difference. In this study, the post hoc power analysis was used solely to assess feasibility due to the convenience sampling; it does not provide a basis for statistical inference or representativeness.

The mean age of participants was 39.4±13.3 years. The majority of participants were female (63.1%) and classified as overweight according to BMI (47.8%). More than half of the participants (55.3%) had previously participated in at least one form of educational activity related to nutrition, such as a seminar, workshop, or conference (Table 1).

The relationship between participants' PFLS scores and anthropometric measurements such as age, weight, and BMI was examined, and several statistically significant correlations were found ($p<0.05$), as shown in Table 2. Food preparation skills were weakly and negatively correlated with age (r=-0.217), body weight (r=-0.199), and BMI (r=-0.147). Resilience and resistance showed a weak-positive correlation with age (r=0.098) and weak-negative correlations with weight and BMI. Healthy snack styles demonstrated weak-negative associations with all three anthropometric variables. Social and conscious eating showed no significant correlations ($p>0.05$). Examining food labels displayed weak-to-moderate negative correlations with age (r=-0.318), body weight (r=-0.299), and BMI (r=-0.327). Daily food planning showed weak-negative correlations with these variables. Healthy budgeting was moderately and negatively correlated with age and weakly with weight and BMI. In contrast, healthy food stockpiling had weak-to-moderate positive correlations with age, weight, and BMI. Finally, the PFLS total score showed weak

Table 1. General characteristics of participants (n=412)

Age (Min–Max/Mean±SD)	18–62/39.4±13.3	
Height (Min–Max/Mean±SD)	1.51–1.90/1.67±8.1	
Body weight (Min–Max/Mean±SD)	46.1–120/71.5±16.2	
PFLS total point (Min-Max/Mean±SD)	58–134/103.6±18.7	
	n	**%**
Gender		
Male	152	36.9
Female	260	63.1
Marital status		
Married	252	61.2
Single	160	38.8
Type of diabetes		
Type 1	234	56.8
Type 2	178	43.2
BMI classification		
Underweight	12	2.9
Normal weight	184	44.6
Overweight	197	47.8
Obese	19	4.7
Education level		
Primary school	32	7.8
Secondary school	36	8.7
High school	124	30.1
University	184	44.7
Master's degree/doctorate	36	8.7
Income level		
Less than expenditure	128	31.1
Equal to expenditure	188	45.6
More than expenditure	96	23.3
Any nutrition training received		
Yes	228	55.3
No	184	44.7
Total	412	100.0

PFLS: Perceived food literacy scale; Min-Max: Minimum-Maximum; SD: Standard deviation; BMI: Body mass index.

but significant negative correlations with age (r=-0.186), body weight (r=-0.185), and BMI (r=-0.176).

Significant differences in the PFLS total score were observed by sex, education level, and marital status, with higher scores among females, individuals with higher education, and single participants (p<0.05), as presented in Table 3.

Participants with type 1 diabetes had significantly higher scores than those with type 2 diabetes in food preparation skills, healthy snack styles, daily food planning, healthy food stockpiling, and total PFLS score (p<0.05) (Table 4). The effect sizes for these subscales ranged from small to moderate (Cohen's d=0.42–0.49) for Food preparation skills, Daily food planning, and PFLS total score, to large (d=0.70) for Healthy snack styles.

After adjusting for age, sex, education level, marital status, and BMI, multiple linear regression analyses were conducted to examine whether diabetes type predicted food literacy outcomes (Table 5). In this study, a multivariable logistic regression analysis was conducted to identify the sociodemographic and eating behavior variables predicting diabetes type (coded as Type 1 diabetes=0, Type 2 diabetes=1). The overall model was statistically significant (χ^2=254.686; p<0.001) and explained a substantial proportion of the variance in diabetes type (Nagelkerke R2=0.619). The classification accuracy of the model was 85.4%, correctly predicting 87.6% of individuals with type 1 diabetes and 82.6% of those with type 2 diabetes. Although the Hosmer–Lemeshow test was significant (p=0.003), indicating some miscalibration across probability deciles, the model's discriminative ability and the direction of the coefficients remained interpretable.

According to the results, age and body weight were among the strongest predictors of type 2 diabetes. Each 1-year increase in age increased the likelihood of type 2 diabetes by approximately 11% (OR=1.112; 95% CI: 1.072–1.153; p<0.001). Likewise, higher body weight was significantly associated with increased odds of type 2 diabetes (OR=1.133; 95% CI: 1.068–1.203; p<0.001).

Sex was also a significant determinant. Males had markedly lower odds of type 2 diabetes compared with females (OR=0.115; 95% CI: 0.042–0.321; p<0.001), indicating a higher prevalence of type 2 diabetes among women in this sample. Educational level was another significant predictor; individuals with a university-level education or higher had significantly lower odds of type 2 diabetes compared with those with a high-school education or less (OR=0.328; 95% CI: 0.172–0.625; p=0.001).

Regarding eating behavior variables, healthy snack styles and daily food planning were found to have protective effects against type 2 diabetes. Higher scores in healthy snack styles reduced the likelihood of type 2 diabetes by approximately 20% (OR=0.795; 95% CI: 0.714–0.885; p<0.001). Similarly, higher levels of daily food planning were inversely associated with type 2 diabetes (OR=0.708; 95% CI: 0.575–0.872; p=0.001).

Conversely, examining food labels was positively associated with the likelihood of type 2 diabetes (OR=1.402; 95%

Table 2. Relationship between participants' PFLS and anthropometric measurements

	Age		Height		Body weight		BMI (kg/m²)	
	r	p	r	p	r	p	r	p
Food preparation skills	-0.217**	<0.001**	-0.063	0.293	-0.199*	0.002*	-0.147*	0.003*
Resilience and resistance	0.098*	0.047*	0.016	0.957	-0.146*	0.003*	-0.186	0.06
Healthy snack styles	-0.292**	0.001**	-0.049	0.063	-0.206**	<0.001*	-0.229**	<0.001**
Social and conscious eating	-0.046	0.352	-0.043	0.063	0.015	0.757	0.032	0.515
Examining food labels	-0.318**	0.001**	-0.058	0.081	-0.299**	0.001**	-0.327**	<0.001**
Daily food planning	-0.158**	0.001	-0.037	0.675	-0.197**	0.001**	-0.157	0.054
Healthy budgeting	-0.359**	<0.001**	-0.031	0.495	-0.127*	0.011*	-0.141	0.005
Healthy food stockpiling	0.258**	0.001**	0.034	0.721	0.258**	<0.001**	0.282**	0.018*
PFLS total score	-0.186**	0.001**	-0.093	0.477	-0.185**	<0.001**	-0.176**	0.120

*: Statistical significance at p<0.05; **: Statistical significance at p<0.01. BMI: Body mass index; PFLS: Perceived food literacy scale.

CI: 1.186–1.658; p<0.001). Likewise, higher scores on the behavior of "making a special effort for healthy foods" were associated with increased odds of type 2 diabetes (OR=1.256; 95% CI: 1.025–1.539; p=0.028).

Food literacy was statistically significant (B=-0.028; p<0.001). The negative coefficient indicates that higher food literacy decreased the likelihood of type 2 diabetes. The odds ratio (OR=0.972) suggests that each one-point increase in food literacy score reduced the odds of type 2 diabetes by approximately 2.8%. The narrow CI (0.959–0.985) supports the robustness and stability of this effect.

BMI, marital status, food preparation skills, resilience and resistance, healthy food stockpiling, and social and conscious eating were not significant independent predictors in the model (p>0.05).

Discussion

In this study, the perceived food literacy levels of individuals diagnosed with Type 1 or Type 2 diabetes were evaluated in relation to their sociodemographic and anthropometric characteristics.

Most people diagnosed with Type 1 or Type 2 diabetes in this study were female (63.1%). Recent epidemiological data from Türkiye also show a higher prevalence of diagnosed diabetes in women than in men in 2020, suggesting that the gender patterns observed here reflect broader national trends.[18] Potential explanations for this include sex-specific healthcare-seeking behaviors and greater participation of women in surveys.

Over half of the samples (55.3%) reported attending at least one nutrition-related educational activity, such as a workshop or seminar. While this suggests reasonable public health outreach, approximately half of the participants had no such exposure. A study on this subject found that 58% of individuals with diabetes were aware of the condition.[19] It is currently believed that education in general will be important in increasing diabetes awareness.

In this study, several significant correlations were found between participants' anthropometric characteristics (such as age, body weight, and BMI) and various dimensions of PFLS. Age was negatively associated with food preparation skills, healthy snack choices, label reading, and healthy budgeting (p<0.05). These findings are in line with previous literature suggesting that food-related cognitive and behavioral skills may decline with age due to factors such as reduced exposure to updated nutrition information or digital access limitations.[20] In addition, older adults may rely more on traditional eating patterns, which might not align with current nutrition education messages, thereby lowering their self-perceived competence in areas such as healthy snack choices or reading food labels.

Body weight and BMI also demonstrated several inverse correlations with food literacy components. Higher body weight was associated with lower scores in food preparation, snack choices, and label reading (p<0.05). Individuals with lower food literacy tend to have poorer dietary habits, use food labels less frequently, and have lower awareness of nutritional quality, which contributes to weight gain and an increased risk of obesity.[21]

In this study, female participants exhibited significantly higher PFLS total scores compared to male participants (p<0.05). This finding is consistent with numerous studies showing that women tend to have greater health consciousness, are more likely to seek nutrition-related information, and often take the lead in household food planning and preparation.[22,23] These gender-based

Table 3. PFLS score according to participants' sociodemographic characteristics

	Food preparation skills Mean±SD	Resilience and resistance Mean±SD	Healthy snack styles Mean±SD	Social and conscious eating Mean±SD	Examining food labels Mean±SD	Daily food planning Mean±SD	Healthy budgeting Mean±SD	Healthy food stockpiling Mean±SD	PFLS total score Mean±SD
Gender									
Male	18.8±5.2	18.2±3.9	12.6±4.2	10.5±2.6	6.1±2.6	5.9±2.2	6.7±2.4	16.9±3.5	96.1±15.8
Female	23.3±4.6	19.3±4.2	15.0±2.9	11.6±2.4	7.3±2.2	7.0±1.7	8.1±1.8	16.0±3.4	107.9±13.8
p	<0.001*	0.222	0.003*	0.038*	0.013*	0.007*	0.005*	0.232	<0.001*
Effect size	0.932	0.269	0.698	0.444	0.51	0.579	0.686	-0.262	0.81
Education level									
High school and below	20.1±5.3	19.0±5.0	13.2±4.1	10.9±3.1	6.0±2.8	6.1±2.2	7.0±2.5	16.4±3.6	98.8±18.5
University and above	22.9±4.9	18.8±3.3	14.9±3.0	11.5±1.9	7.6±1.8	7.0±1.6	8.1±1.7	16.4±3.36	107.4±11.6
p	0.007*	0.837	0.022*	0.239	0.002*	0.021*	0.018*	0.989	0.008*
Effect size	0.55	-0.048	0.478	0.237	0.69	0.473	0.521	0.1	0.565
Marital status									
Married	21.1±5.7	18.7±4.3	13.3±4.1	11.4±2.5	6.1±2.6	6.0±2.1	7.0±2.2	16.8±3.2	100.7±16.9
Single	22.5±4.4	19.2±3.9	15.4±2.1	11.0±2.6	8.1±1.5	7.5±1.4	8.5±1.7	15.6±3.8	108.1±12.0
p	0.178	0.560	0.001*	0.506	<0.001*	<0.001*	<0.001*	0.079	0.010*
Effect size	0.267	0.12	0.606	–0.158	0.893	0.806	0.742	-0.348	0.487
Income level									
Less than expenditure 1	21.2±5.8	18.5±4.5	13.0±4.5	11.1±3.0	6.1±2.6	6.3±2.3	6.6±2.6	16.5±3.4	99.6±19.2
Equal to expenditure 2	22.0±5.1	18.7±4.1	14.8±3.2	11.1±2.5	7.3±2.2	6.7±2.0	7.8±1.8	16.4±3.6	105.1±14.3
More than expenditure 3	21.5±5.0	19.6±3.7	14.3±2.7	11.6±2.0	7.0±2.4	6.7±1.2	8.5±1.5	16.1±3.3	105.7±11.8
p	0.784	0.603	0.091	0.731	0.097	0.596	0.003*	0.924	0.232
Pairwise comparison	–	–	–	–	–	–	3>1	–	–
q (FDR)	0.882	0.765	0.291	0.835	0.230	0.880	0.027*	0.920	0.522
Effect size	0.004	0.01	0.007	0.046	0.190	0.113	0.560	0.265	0.290
Any nutrition training received									
Yes	21.8±5.6	18.3±3.7	14.3±3.6	11.1±2.7	7.0±2.4	6.6±1.9	7.6±2.2	16.4±3.4	103.5±16.1
No	21.2±4.4	20.0±4.9	13.5±3.7	11.6±2.1	6.5±2.5	6.4±2.1	7.6±2.1	16.2±3.6	103.3±14.5
p	0.576	0.067	0.324	0.313	0.308	0.662	0.946	0.859	0.970
Effect size	-0.118	0.397	-0.219	0.204	-0.246	-0.1	0.01	0.057	0.130

*: Statistical significance at p<0.05. PFLS: Perceived food literacy scale; SD: Standard deviation; FDR: Benjamini–Hochberg false discovery rate.

differences in food-related roles and attitudes may explain why women reported higher competence in food literacy dimensions.

Educational status was also a significant determinant of food literacy. Participants with university-level or higher education reported higher PFLS scores compared to those with high school education or below ($p<0.05$). This result aligns with previous research indicating that higher educational attainment is positively associated with nutritional knowledge, food label use, and healthy food practices.[24,25] Educational background likely enhances one's ability to access, interpret, and apply nutrition information effectively, contributing to better food literacy outcomes.

Marital status emerged as a factor influencing food literacy: Single participants had significantly higher PFLS scores than their married counterparts ($p<0.05$). When evaluating the literature data, different results are noteworthy. One study has shown that marriage may be associated with health-promoting behaviors.[26] Similar to the results of this study, another study showed that couples often encourage unhealthy behaviors because they tend to engage in shared activities such as eating and watching television together.[27]

Table 4. Participants' PFLS score according to the type of diabetes

	Type 1 diabetes Mean±SD	Type 2 diabetes Mean±SD	p	Cohen's d
Food preparation skills	22.4±4.7	20.2±5.7	0.036*	0.42
Resilience and resistance	19.0±4.1	18.4±4.3	0.446	0.14
Healthy snack styles	15.1±3.0	12.7±3.8	<0.001*	0.70
Social and conscious eating	11.2±2.4	11.1±2.8	0.901	0.04
Examining food labels	7.3±2.2	6.5±2.6	0.067	0.33
Daily food planning	7.1±1.7	6.1±2.1	0.016*	0.52
Healthy budgeting	8.0±2.0	7.2±2.8	0.057	0.33
Healthy food stockpiling	15.7±3.7	17.2±3.1	0.033*	-0.44
PFLS total score	106.2±14.5	99.5±15.9	0.035*	0.44

*: Statistical significance at $p<0.05$. PFLS: Perceived food literacy scale; SD: Standard deviation.

Table 5. The relationship between diabetes type and PFLS score, adjusted for age, sex, marital status, education level, and body mass index

	B	SE	Wald	Sig.	Exp(B)	95% CI for EXP(B)	
						Lower	Upper
Age	0.106	0.018	32.772	<0.001	1.112	1.072	1.153
Body weight	0.125	0.03	17.131	<0.001	1.133	1.068	1.203
Sex (1)	-2.16	0.522	17.142	<0.001	0.115	0.042	0.321
Education level (1)	-1.114	0.329	11.49	0.001	0.328	0.172	0.625
Healthy snack styles	-0.229	0.055	17.49	<0.001	0.795	0.714	0.885
Examining food labels	0.338	0.085	15.626	<0.001	1.402	1.186	1.658
Daily food planning	-0.345	0.106	10.544	0.001	0.708	0.575	0.872
Healthy budgeting	0.228	0.103	4.852	0.028	1.256	1.025	1.539
PFLS total score	-0.028	0.007	17.354	<0.001	0.972	0.959	0.985

B: B coefficient; SE: Standard error; CI: Confidence interval; PFLS: Perceived food literacy scale; Sig: Significance; Binary logistic regression, EXP(B)=Odds ratio. Reference categories (1): Type 2 diabetes for diabetes type, female for sex, high school and below for education level, single for marital status.

The results of this study revealed that individuals with Type 1 diabetes had significantly higher PFLS scores than those with Type 2 diabetes, both in total score and in several subdimensions, including food preparation skills, healthy snack choices, daily food planning, and healthy food stockpiling. These differences may be attributed to the distinct characteristics of diabetes management between the two groups. Type 1 diabetes, often diagnosed at a younger age and requiring intensive insulin therapy, typically demands continuous nutritional education and self-care engagement from early on.[28] Patients are usually encouraged to monitor carbohydrate intake, read food labels, and plan meals more meticulously, which may contribute to higher food literacy over time.[29] In addition, the treatment process for individuals with Type 1 diabetes is often carried out with the support of a multidisciplinary team. This facilitates individuals' regular access to accurate information about nutrition and health and encourages knowledge-based behavioral change. In contrast, Type 2 diabetes usually develops at an older age and is often linked to lifestyle factors, so awareness and knowledge levels regarding nutrition may be lower in these individuals. Therefore, it is recommended that individual education in diabetes management be structured to increase food literacy, particularly in individuals with Type 2 diabetes, and that intervention programs be developed to teach patients skills such as label interpretation, portion control, and healthy meal planning. It is thought that such education could positively influence the course of the disease and strengthen self-management skills.

Furthermore, it was observed that each one-unit increase in the PFLS score reduced the likelihood of having Type 2 diabetes by 0.972 times. This finding suggests that food literacy may play an important role in diabetes management and prevention. The reduction in the likelihood of developing Type 2 diabetes associated with an increase in PFLS scores suggests that promoting nutritional awareness and healthy lifestyle behaviors may be effective in reducing the risk of Type 2 diabetes.

This study has some limitations. The fact that the study is based on individuals' personal responses, and that the study was conducted with a limited number of people are among the limitations of the study. The study was conducted only among individuals with Type 1 and Type 2 diabetes living in Istanbul, which represents an important limitation of the research. Because the exact number of individuals diagnosed with type 1 and type 2 diabetes in Istanbul was unknown, this represented one of the key limitations of the study when determining the sample size. Another major limitation of the study is the absence of data on the duration of diabetes diagnosis, which may influence participants' food literacy levels and their ability to manage the disease. Finally, data were collected online through Google Forms, which may have introduced a selection bias toward younger, digitally literate, and more health-conscious individuals. In addition, since the study was conducted only in Istanbul, the findings may not be fully generalizable to the entire population of Türkiye.

Conclusion

This study demonstrated that perceived food literacy levels among individuals with Type 1 or Type 2 diabetes are influenced by key sociodemographic and anthropometric factors such as sex, education level, marital status, age, and BMI. These findings emphasize the need for targeted nutrition education strategies that consider individual differences to enhance food literacy and support better diabetes self-management outcomes. Further research is needed to explore causal relationships and to assess the effectiveness of tailored interventions aimed at improving food literacy in diabetic populations.

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