JERN Journal of Education and Research in Nursing

Original Article
DOI:10.14744/jern.2024.01033
J Educ Res Nurs. 2024;21(4):303-312

The Impact of Diabetes Obstacles on Disease Acceptance and Quality of Life in Patients with Type 2 Diabetes Mellitus: A Descriptive Study

Adile Neşe[1], Ercan Bakır[2], Sümeyra Mihrap İlter[3]

[1]Department of Nursing, Gaziantep University, Vocational School of Health Services, Gaziantep, Türkiye
[2]Department of Nursing, Adıyaman University, Faculty of Health Sciences, Adıyaman, Türkiye
[3]Department of Gerontology, Faculty of Health Sciences, Osmaniye Korkut Ata University, Osmaniye, Türkiye

Abstract

Background: Obstacles faced by patients with type 2 diabetes mellitus are significant for their acceptance of the disease and their quality of life.

Aim: This study examined the effects of diabetes obstacles on disease acceptance and quality of life among patients with type 2 diabetes mellitus.

Methods: Data for this descriptive study were collected from 150 patients diagnosed with type 2 diabetes mellitus who attended the Endocrinology and Metabolic Diseases outpatient clinics of a research and training hospital affiliated with a university in Türkiye and met the study criteria. The study was conducted from March 1 to June 15, 2022. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25.0, employing independent-sample t-tests, and one-way and two-way analyses of variance.

Results: The study found that 55.3% of participants were women, 66.7% were married, 28% had completed primary education, 55.3% were unemployed, and 50% had lived with type 2 diabetes mellitus for ten years or more. The total mean score on the Acceptance of Illness Scale was 23.93 ± 5.34, and the total mean score on the Diabetes Quality of Life Questionnaire was 2.59 ± 0.41. The mean score for the life change subscale on the Diabetes Obstacle Scale was 3.31 ± 9.54, indicating it was the most significant obstacle encountered by the patients.

Conclusion: The study found that the level of disease acceptance among patients with type 2 diabetes mellitus is moderate, while their quality of life is low. Life change was identified as the most frequent obstacle affecting these patients.

Keywords: Diabetes obstacles, disease acceptance, quality of life, type 2 diabetes

Introduction

Type 2 diabetes mellitus is a chronic disease that represents a significant global health problem, with its prevalence increasing daily.[1,2] As of 2021, about 537 million adults aged 20 to 79 worldwide are living with type 2 diabetes mellitus. Projections indicate that this number will rise to 643 million by 2030 and 783 million by 2045.[3] Described as a global epidemic, diabetes not only has a severe impact on individual and public health but also imposes a substantial economic burden and markedly diminishes quality of life.[2,4] When diabetes cannot be controlled with follow-up and treatment, it negatively affects the functioning of various organs and systems over the years. For these reasons, it is crucial to prevent diabetes and maintain blood glucose levels under control.[4-6]

Since diabetes is a chronic disease, it requires continuous care and management.[5,6] Healthy lifestyle behaviors recommended for managing and controlling diabetes place many responsibilities on patients with type 2 diabetes mellitus.[6,7] However, these patients may face obstacles in managing the disease individually.[2,8] These obstacles include experiencing hyperglycemia and hypoglycemia, social and personal factors, communication and interaction with the social environment, fear of the disease, worry, and barriers to treatment and medication management.[8-10] Such obstacles can delay the improvement of metabolic variables and exacerbate complications related to type 2 diabetes mellitus.[9,10] The medications used, accompanying diseases, stringent dietary practices, and both acute and chronic complications related to diabetes significantly impact the quality of life. Type 2 diabetes mellitus substantially decreases quality of life more than other chronic diseases.[11] The behaviors and attitudes of individuals with diabetes influence their treatment adherence. Patients with type 2 diabetes mellitus

Cite this article as: Neşe A, Bakır E, Mihrap İlter S. **The impact of diabetes obstacles on disease acceptance and quality of life in patients with type 2 diabetes mellitus:** A descriptive study. *J Educ Res Nurs.* 2024;21(4):303-312.

Corresponding author:
Adile Neşe
E-mail: acaparusagi@hotmail.com

Received: August 4, 2023
Accepted: September 9, 2024
Publication Date: December 1, 2024

should maintain a positive attitude to effectively manage the disease and enhance their quality of life.[12] In addition, acceptance of illness is of great importance for patients with type 2 diabetes mellitus in their ability to practice self-care, make necessary lifestyle changes, and overcome obstacles related to the disease.[13,14] It is stated that individuals who accept their illness can more easily continue their daily lives with the disease, overcome individual, family, occupational, and social problems caused by the illness, and develop optimistic attitudes toward life.[13] Moreover, the literature emphasizes that the level of acceptance of the illness significantly affects the quality of life and life satisfaction in patients with type 2 diabetes mellitus (T2DM).[13-15] Studies on type 2 diabetes obstacles have found that social, personal, and treatment barriers make diabetes difficult to control,[4] while other research indicates that diet compliance and lifestyle changes present difficulties in managing diabetes.[9] Research on diabetes obstacles is limited, but no studies have been found that examine the effects of these obstacles on both quality of life and acceptance of the illness. Therefore, with the expectation that this study will contribute to the literature, it aimed to examine the effects of diabetes obstacles on disease acceptance and quality of life in patients with type 2 diabetes mellitus. It is anticipated that this study, by identifying the obstacles in the management of the disease for diabetic patients, will aid nurses in planning patient care and education, enabling patients to effectively manage their condition.

Research Questions

- Do diabetes barriers perceived by patients with type 2 diabetes mellitus impact their quality of life?
- Do the diabetes barriers perceived by patients with type 2 diabetes mellitus affect their level of disease acceptance?

Materials and Methods

Study Design and Samples

This descriptive study was conducted with patients diagnosed with type 2 diabetes mellitus, who attended the Endocrinology and Metabolic Diseases Clinics of a university's research and training hospital between March 1 and June 15, 2022. Due to the undefined scope of the study population, a power analysis was conducted using G*Power (G*Power 3.1, Kiel, Germany) to determine the necessary sample size. This analysis indicated that at least 128 participants were needed to achieve 80% power at a significance level of alpha = 0.05. To enhance the study's power, the sample was increased to 150 patients. The inclusion criteria were as follows: patients diagnosed with type 2 diabetes mellitus for at least one year, able to communicate verbally, free from neurological, mental, or sensory impairments, and willing to participate in the study. The exclusion criteria included patients diagnosed with type 1 diabetes, those with communication and perception difficulties, and those unwilling to participate in the study.

Data Collection Tools

Data were collected using the Patient Information Form, Diabetes Obstacles Questionnaire, Acceptance of Illness Scale, and Diabetes Quality of Life Questionnaire.

Patient Information Form

The form consisted of 17 multiple-choice questions developed by the researchers, covering participants' socio-demographic characteristics (such as age, gender, marital status, education, smoking status, and employment status,) and disease-related characteristics (such as duration of diabetes, diet, and drug treatment).[4,8,9]

Diabetes Obstacles Questionnaire

The Diabetes Obstacles Questionnaire (DOQ), developed by Hearnshaw et al.[16] in 2007, evaluates obstacles to diabetes self-management. The questionnaire uses a 5-point Likert-type scale and consists of 77 items. It does not provide a total score but includes responses to the obstacles ranging from strongly agree, agree, undecided, disagree, to strongly disagree. The adaptation of the scale to Turkish was conducted by Kahraman et al.[8] in 2016. The adapted scale includes eight subscales: Medication, Self-Monitoring, Knowledge and Beliefs, Diagnosis, Relationships with Health-Care Professionals, Lifestyle Changes, Coping, Advice, and Support. Scores for each subscale range from +2 to −2, where negative scores indicate fewer perceived obstacles in the relevant subscale and positive scores indicate greater perceived obstacles. The Cronbach's alpha values for the original questionnaire ranged from 0.76 to 0.93, while those for the Turkish version ranged from 0.63 to 0.84. In this study, the Cronbach's alpha values for the scale were between 0.79 and 0.83.

Acceptance of Illness Scale

The validity and reliability study of the "Acceptance of Illness Scale (AIS)", developed by Felton and Revenson in 1984, was conducted to assess the level of illness acceptance. Each statement on the scale is scored on a 5-point Likert-type scale, ranging from 1 ("completely agree") to 5 ("completely disagree").[17] The validity and reliability of the scale were confirmed in Türkiye by Büyükkaya Besen and Esen in 2009, and it was adapted to suit individuals with diabetes in accordance with local culture. The scale consists of 8 items, with the lowest possible score being 8 and the highest being 40. High scores on the scale indicate a high level of illness acceptance, which correlates with greater adherence to therapy, less physical discomfort, absence of negative feelings about the disease, and a recognized acceptance of the illness. In the Turkish validity and reliability study of the scale, the Cronbach's alpha internal consistency coefficient was found to be 0.79.[18] In this study, the Cronbach's alpha internal consistency coefficient was 0.75.

Diabetes Quality of Life (DQOL) Questionnaire

The original version of the DQOL Questionnaire, used to evaluate the quality of life of patients with diabetes, was developed by Brislin in 1970. It includes four subscales: satisfaction, impact, diabetes worry, and social/vocational worry. These subscales consist of 15, 20, 4, and 7 questions, respectively, totaling 46 items. Each item uses a 5-point Likert-type scale.[19] The Turkish version of the DQOL Questionnaire, adapted to Turkish by Yıldırım et al.[20] in 2007, consists of 45 questions across the same four subscales (satisfaction, impact, diabetes worry, and social/vocational worry). The scoring ranges from 1 point, indicating ineffectiveness, lack of concern, or satisfaction, to 5 points, indicating significant impact, anxiety, or dissatisfaction. The Cronbach's alpha value for the adapted Turkish version was found to be 0.89. In this study, the Cronbach's alpha value of the DQOL Questionnaire was determined to be 0.78.

Collection of Data

Data collection involved administering scales and surveys face-to-face by the researcher in the rooms of hospitalized patients with T2DM at the internal medicine and endocrinology clinic of a university

hospital. These sessions were conducted during the day, outside of treatment and meal times, and lasted approximately 30 minutes.

Statistical Analysis of Data

The data obtained from this research were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25.0. The analyses performed to assess the suitability of the data for normal distribution found that all Skewness and Kurtosis values were between -1.5 and+1.5. Categorical variables were summarized using numbers and percentages, and continuous variables were summarized using means and standard deviations. An independent groups t-test was used to compare the variables, and one-way and two-way analyses of variance (ANOVA) were conducted to examine the interactions between categories. The reliability of the scales was assessed using Cronbach's alpha coefficient. The significance level was set at $P < 0.05$ with a 95% confidence interval.

Ethical Considerations

Before initiating the study, written permission was obtained from the Gaziantep University Clinical Research Ethics Committee (Approval Number: 2021/376, Date: 09.03.2022) at the hospital where the research was conducted, along with written and verbal consent from the participants. All methods were conducted in accordance with the guidelines and regulations of the Declaration of Helsinki. Written permission was also obtained from the original authors to use the scales in our study. Furthermore, patients participating in the study were informed, and their written consent was secured.

Results

Sociodemographic and Diabetes-Related Characteristics of Patients with Type 2 Diabetes Mellitus and Distribution of Total Mean Scores of the Acceptance of Illness Scale (AIS)

The study found that 55.3% of the participants were women, 66.7% were married, 28% had completed primary school, 55.3% were unemployed, and 50% had been living with diabetes for ten years or more. Additionally, 51.3% of the patients had developed diabetes-related complications, 37.4% used oral antidiabetics (OAD) and insulin therapy, 93.3% monitored their blood glucose, 77.3% had received diabetes education, 64.7% were educated by their nurses, and 59.3% had no additional chronic diseases (Table 1).

Statistically significant differences were observed in the AIS total mean scores (23.93 ± 5.34) relative to the participants' age, marital status, educational level, employment status, smoking habits, duration of diabetes, type of treatment, adherence to therapy, adherence to diet, exercise status, exercise frequency, development of diabetes-related complications, familial diabetes presence, and comorbidities ($P < 0.05$) (Table 1).

Sociodemographic and Diabetes-Related Characteristics of Patients with Type 2 Diabetes Mellitus and Distribution of Diabetes Quality of Life (DQOL) Questionnaire Mean Scores

When examining the sociodemographic characteristics and quality of life scale mean scores of patients with type 2 diabetes mellitus, a statistically significant difference was observed between marital status, income level, smoking habit, type of diabetes treatment, treatment adherence, frequency of blood glucose measurement, family history of diabetes, and the total mean score of the DQOL questionnaire ($P < 0.05$) (Table 2). The Post-Hoc Tukey's test revealed that significant differences in the quality of life scale were attributed to those who were married, had low income, had quit smoking, received oral antidiabetic treatment, measured their blood sugar daily, exhibited poor treatment compliance, and had a family history of diabetes, indicating these groups experienced lower quality of life (Table 2).

Sociodemographic and Diabetes-Related Characteristics of Patients with Type 2 Diabetes Mellitus and Diabetes Obstacles Scale (DOQ) Mean Score Distribution

A statistically significant difference was identified between age, education level, marital status, and the mean score of knowledge and belief, a sub-dimension of the DOQ scale ($P < 0.05$). The Post-Hoc Tukey's test indicated that the lower differences in knowledge and belief were predominantly among women, married individuals, and illiterate individuals (Table 3).

Furthermore, a statistically significant difference was observed between the duration of diabetes and the total mean scores of the DOQ subscales of self-monitoring, knowledge and beliefs, lifestyle changes, and advice and support among the participants ($P < 0.05$). Additionally, statistically significant differences were found between the presence of diabetes complications and the total mean scores of the DOQ subscales of self-monitoring, knowledge and beliefs, diagnosis, and coping ($P < 0.05$) (Table 3).

The average scores of the Diabetes Obstacles Scale subscales were found to be statistically significant in the following areas: patients' compliance with medical treatment related to drug use, relationships with healthcare professionals, and receiving advice and support; adherence to diet related to self-monitoring, lifestyle changes, and receiving advice and support; diabetes control frequency related to medication use; having a family member with diabetes related to self-monitoring; receiving diabetes education related to knowledge and beliefs; perceiving diabetes education as adequate related to relationships with healthcare professionals and receiving advice and support; and having an additional chronic disease related to self-monitoring ($P < 0.05$) (Table 3).

Total Average Score Mean Distribution of Scales and Subscales

Upon examining the mean scale scores of patients with type 2 diabetes who participated in the study, it was found that the mean score of the Disease Acceptance Scale was 23.93 ± 5.34 (range 8-40 points), indicating a moderate level of disease acceptance. The mean score of the Diabetes Quality of Life Scale was 2.59 ± 0.41 (range 1-5 points), indicating a low quality of life. The mean scores of its subscales were as follows: 2.81 ± 0.63 for satisfaction with treatment, 2.70 ± 0.41 for psychological effect, 2.74 ± 0.69 for diabetes anxiety, and 2.06 ± 0.76 for social/occupational anxiety. The mean scores for the Diabetes Obstacles Questionnaire subscales were: drug use -2.38 ± 6.95, self-monitoring 1.73 ± 4.54, knowledge and beliefs -2.36 ± 6.51, diagnosis 0.23 ± 3.43, relationships with health professionals -7.17 ± 13.41, lifestyle changes 3.31 ± 9.54, coping with diabetes 2.73 ± 6.19, and receiving suggestions and support -1.17 ± 5.49. The highest mean score (3.31 ± 9.54) on the Diabetes Obstacles Questionnaire was noted for lifestyle change barriers (Table 4).

The Relationship Between the Diabetes Obstacles Scale, Acceptance of Illness Scale (AIS), and the Diabetes Quality of Life (DQOL) Questionnaire

A statistically significant and negative correlation was found between the total mean scores of the Diabetes Obstacles Scale (DOQ) subscales of self-monitoring, medication, knowledge and beliefs, coping,

Table 1. Sociodemographic and Diabetes-Related Characteristics of Patients with Type 2 Diabetes Mellitus and the Distribution of Acceptance of Illness Scale (AIS) Total Mean Scores (n=150)

PBG ($\bar{X}$ ± SD: 170.34 ± 42.29) HbA1c ($\bar{X}$ ± SD: 7.65 ± 1.75)		n	%	AIS Total $\bar{X}$ ± SD	Significance Test
Gender	Female	83	55.3	23.90 ± 5.09	t=-0.076 P=0.094
	Male	67	44.7	23.97 ± 5.67	
Age, years	18-24	7	4.6	26.28 ± 4.30	**F=10.022** **P=0.000**
	25-35	25	16.7	27.48 ± 4.72	
	36-45	30	20.0	26.26 ± 4.95	
	46-55	33	22.0	23.87 ± 4.82	
	56-65	37	24.7	21.35 ± 4.30	
	66 or older	18	12.0	19.61 ± 4.79	
Marital Status	Married	100	66.7	24.27 ± 4.74	**F=9.291** **P=0.000**
	Single	17	11.3	27.41 ± 5.74	
	Divorcee	33	22.0	21.12 ± 5.65	
Educational Level	Illiterate	22	14.7	20.00 ± 4.98	**F=10.351** **P=0.000**
	Literate	27	18.0	23.88 ± 5.67	
	Primary School	42	28.0	22.14 ± 4.36	
	High School	35	23.3	26.20 ± 4.41	
	University or Higher	24	16.0	27.41 ± 4.69	
Employment Status	Employed	67	44.7	25.46 ± 4.94	**t=3.247** **P=0.001**
	Unemployed	83	55.3	22.69 ± 5.37	
Smoking	Present	54	36.0	25.64 ± 5.49	**F=5.207** **P=0.007**
	Absent	89	59.3	23.13 ± 5.00	
	Quitted	7	4.7	20.85 ± 5.39	
Alcohol Use	Present	20	13.3	26.35 ± 6.25	F=2.413 P=0.093
	Absent	106	70.7	23.59 ± 5.08	
	Quitted	24	16.0	23.41 ± 5.38	
Duration of Diabetes	1-4 years	34	22.7	27.70 ± 5.23	**F=14.430** **P=0.000**
	5-9 years	41	27.3	23.90 ± 4.15	
	10 years or more	75	50	22.24 ± 5.15	
Diabetes Complications	Present	77	51.3	22.51 ± 5.37	**t=-3.445** **P=0.001**
	Absent	73	48.7	25.42 ± 4.92	
Type of Diabetes Treatment	Diet	20	13.3	27.00 ± 4.62	**F=11.040** **P=0.000**
	Oral Antidiabetic (OAD)	32	21.3	26.00 ± 5.13	
	Insulin	42	28.0	24.64 ± 5.06	
	OAD + Insulin	56	37.4	21.12 ± 4.65	
Adherence to Therapy	High	48	32.0	25.72 ± 5.40	**F=4.874** **P=0.009**
	Moderate	86	57.3	23.34 ± 4.88	
	Low	16	10.7	23.93 ± 5.34	
	Absent	10	6.7	27.00 ± 5.57	

(*Continued*)

Table 1. Sociodemographic and Diabetes-Related Characteristics of Patients with Type 2 Diabetes Mellitus and the Distribution of Acceptance of Illness Scale (AIS) Total Mean Scores (n=150) (*Continued*)

PBG ($\bar{X}$ ± SD: 170.34 ± 42.29) HbA1c ($\bar{X}$ ± SD: 7.65 ± 1.75)		n	%	AIS Total $\bar{X}$ ± SD	Significance Test
Adherence to Diet	High	49	32.7	25.53 ± 5.45	**F=5.359 P=0.006**
	Moderate	82	54.7	23.64 ± 4.88	
	Low	19	12.7	21.05 ± 5.82	
Status of Doing Exercises	Yes	60	40.0	25.26 ± 5.61	**t=2.539 P=0.012**
	No	90	60.0	23.04 ± 4.99	
Frequency of Exercising	Regularly Every Day	11	18.3	28.45 ± 4.20	**F=4.519 P=0.015**
	1-2 Times a Week	28	46.7	25.89 ± 6.07	
	Irregular	21	35.0	22.76 ± 4.64	
	No Exercise	26	17.3	25.57 ± 6.36	
Who Has Diabetes in the Family?	Mother	50	40.3	23.46 ± 5.12	**F=3.045 P=0.031**
	Father	22	17.7	22.73 ± 4.21	
	Sibling	26	21.0	22.04 ± 4.62	
	Relative	26	21.0	26.00 ± 5.49	
	Absent	29	25.0	23.20 ± 5.17	
Presence of an Additional Chronic Disease	Present	61	40.7	22.14 ± 5.13	**t=-3.513 P=0.001**
	Absent	89	59.3	25.15 ± 5.16	

PBG: Preprandial Blood Glucose; OAD: Oral Antidiabetic; AIS: Acceptance of Illness Scale; SD: Standard Deviation; F: Analysis of Variance (ANOVA); t: Student's t-Test; P < 0.05.

relationships with healthcare professionals, and advice and support, and the total mean score of the Acceptance of Illness Scale (P < 0.05). A statistically significant and positive correlation was found between the total mean scores of the subscales of medication, knowledge and beliefs, and relationships with healthcare professionals, and the total mean score of the DQOL Questionnaire (P < 0.05) (Table 5).

Discussion

Managing diabetes involves medication, nutrition, exercise, and blood glucose monitoring. It is reported that controlled management of diabetes positively affects the quality of life of individuals with the disease.[4] However, environmental and personal factors in managing diabetes can impact one's perspective on the chronic disease and their quality of life. This study explored the effects of diabetes obstacles on illness acceptance and quality of life among patients with type 2 diabetes.

The ability of an individual to manage their diabetes significantly influences the prognosis. Family structure, the presence of other chronic diseases, socioeconomic levels, and health system factors can create barriers to effective diabetes management.[1,9] This study identified statistically significant differences between age, marital status, educational level, duration of diabetes, and the DOQ's subscale of Knowledge and Beliefs. Furthermore, the duration of diabetes, engagement in exercise, and adherence to diet were also associated with the DOQ's subscale of Lifestyle Changes. Research by Muz et al.[1] (2021) and Üstündağ and Dayapoğlu[9] (2021) found significant relationships between age and the DOQ's subscale of Medication, while Orhan and Karabacak[21] (2016) observed that the occupational and social activities of women were more adversely affected than those of men. The findings highlight that literature on the differences between diabetes barriers and individual differences is limited, suggesting that these demographic and diabetes-related factors may influence an individual's knowledge, beliefs, and lifestyle changes related to managing diabetes.

The definition of acceptance of diabetes is described in the literature as "the level of integrating the physiological and mental burden of diabetes and its psychosocial impact on life."[22,23] This definition emphasizes that acceptance involves not only recognizing the physical aspects of diabetes but also understanding and managing its emotional and social effects. It encompasses how well individuals can adapt to and cope with the challenges posed by the condition in various facets of their lives. It is critically important for patients with type 2 diabetes mellitus to engage in self-management practices and make significant lifestyle changes to manage the disease effectively and accept their illness in maintaining their treatment and care. In this study, the total mean score of the Acceptance of Illness Scale among the participants was found to be at a good level. Additionally, the level of acceptance of illness was statistically higher among singles, those with university or higher educational levels, smokers, those who had been diagnosed with the disease for 1-4 years, and those who managed their diabetes through diet. Yilmaz et al.[13] (2019) found that as the educational levels of diabetes patients increased, so did their level of

Table 2. Distribution of Sociodemographic and Diabetes-Related Characteristics of Patients with Type 2 Diabetes Mellitus, and Total Mean Scores of Diabetes Quality of Life (DQOL) Questionnaire's Subscales (n=150)

		Satisfaction $\bar{X}$ ± SD	Psychological Impact $\bar{X}$ ± SD	Diabetes Worry $\bar{X}$ ± SD	Social/Vocational Worry $\bar{X}$ ± SD	DQOL Total Mean Score $\bar{X}$ ± SD
Gender	Female	2.84 ± 0.62	2.73 ± 0.40	2.80 ± 0.73	2.12 ± 1.16	2.62 ± 0.43
	Male	2.79 ± 0.64	2.66 ± 0.41	2.67 ± 0.63	2.078 ± 0.75	2.55 ± 0.37
t/p		0.453/0.651	1.074/0.285	1.133/0.259	0.292/0.771	1.099/0.274
Marital Status	Married	2.77 ± 0.56	2.70 ± 0.41	2.71 ± 0.63	1.97 ± 0.69	2.54 ± 0.36
	Single	2.63 ± 0.64	2.54 ± 0.28	2.47 ± 0.74	2.68 ± 0.87	2.58 ± 0.36
	Divorcee	3.03 ± 0.76	2.78 ± 0.43	2.99 ± 0.76	2.20 ± 1.59	2.75 ± 0.51
F/p		2.925/0.057	1.967/0.144	**3.669/0.028**	**3.961/0.021**	**3.486/0.033**
Income Level	Income less than expenses	2.95 ± 0.74	2.82 ± 0.40	2.86 ± 0.70	2.28 ± 1.35	2.73 ± 0.43
	Income equal to expenses	2.81 ± 0.55	2.64 ± 0.39	2.68 ± 0.71	1.99 ± 0.75	2.53 ± 0.39
	Income more than expenses	2.45 ± 0.47	2.58 ± 0.43	2.63 ± 0.52	2.07 ± 0.56	2.43 ± 0.27
F/p		**4.388/0.014**	**4.089/0.019**	1.298/0.276	1.391/0.252	**5.470/0.005**
Smoking	Present	2.70 ± 0.55	2.65 ± 0.36	2.76 ± 0.53	2.17 ± 0.70	2.57 ± 0.31
	Absent	2.82 ± 0.62	2.71 ± 0.43	2.67 ± 0.65	2.08 ± 1.16	2.57 ± 0.45
	Quitted	3.68 ± 0.58	2.95 ± 0.35	3.50 ± 0.45	1.87 ± 0.63	3.00 ± 0.23
F/p		**8.187/0.000**	1.661/0.194	**4.835/0.009**	0.339/0.713	**3.798/0.025**
Type of Diabetes Treatment	Diet	2.47 ± 0.56	2.72 ± 0.42	2.76 ± 0.71	2.67 ± 0.88	2.65 ± 0.31
	Oral Antidiabetic (OAD)	2.81 ± 0.46	2.77 ± 0.35	2.89 ± 0.64	2.52 ± 1.48	2.75 ± 0.44
	Insulin	2.68 ± 0.56	2.54 ± 0.39	2.66 ± 0.54	2.09 ± 0.67	2.49 ± 0.34
	OAD + Insulin	3.04 ± 0.70	2.77 ± 0.42	2.71 ± 0.80	1.68 ± 0.67	2.55 ± 0.44
F/p		**5.527/0.001**	**3.053/0.030**	0.738/0.531	**8.461/0.000**	**2.814/0.041**
Adherence to Treatment	High	2.68 ± 0.59	2.68 ± 0.43	2.61 ± 0.69	2.13 ± 0.86	2.53 ± 0.42
	Moderate	2.81 ± 0.61	2.69 ± 0.40	2.70 ± 0.64	2.12 ± 1.11	2.58 ± 0.39
	Low	3.23 ± 0.67	2.78 ± 0.39	3.35 ± 0.65	1.91 ± 0.65	2.82 ± 0.38
F/p		**4.807/0.010**	0.339/0.713	**7.941/0.001**	0.317/0.729	**3.177/0.045**
Frequency of Blood Glucose Measurements	Every day	2.80 ± 0.72	2.66 ± 0.40	2.59 ± 0.71	1.87 ± 0.79	2.48 ± 0.42
	Once a week	2.78 ± 0.58	2.71 ± 0.42	2.87 ± 0.62	2.06 ± 0.62	2.61 ± 0.29
	Once a month	3.01 ± 0.56	2.95 ± 0.33	3.02 ± 0.61	2.75 ± 2.03	2.93 ± 0.53
F/p		0.878/0.418	**3.405/0.036**	**4.224/0.017**	**5.525/0.005**	**9.122/0.000**
Is There a Family History of Diabetes?	Yes	2.86 ± 0.61	2.72 ± 0.41	2.80 ± 0.66	2.13 ± 1.09	2.62 ± 0.39
	No	2.61 ± 0.66	2.62 ± 0.36	2.48 ± 0.75	1.99 ± 0.85	2.42 ± 0.43
t/p		1.799/0.074	1.126/0.262	2.178/0.031	0.633/0.528	**2.293/0.023**

OAD: Oral Antidiabetic; DQOL: Diabetes Quality of Life; SD: Standard Deviation; F: Analysis of Variance (ANOVA); t: Student's t-Test; P < 0.05.

illness acceptance. Similarly, Şireci and Yılmaz Karabulutlu[14] (2017) observed that patients recently diagnosed with diabetes had higher levels of acceptance of illness, and İlaslan et al.[24] (2021) noted that individuals with a high school education had higher levels of acceptance. These findings suggest that certain demographic and health-related factors may influence how individuals perceive and accept their illness. This information could be valuable for healthcare professionals in tailoring support and interventions to enhance acceptance and, consequently, self-management practices among individuals with diabetes.

Barriers to diabetes self-management practices include difficulty adjusting to lifestyle changes after being diagnosed with diabetes, a lack of knowledge, a lack of culturally relevant knowledge, and not

Table 3. The Sociodemographic and Diabetes-Related Characteristics of Patients with Type 2 Diabetes Mellitus and the Distribution of Total Mean Scores of the Diabetes Obstacles Questionnaire (DOQ) Subscales (n=150)

		Medication $\bar{X}$ ± SD	Self-Monitoring $\bar{X}$ ± SD	Knowledge and Beliefs $\bar{X}$ ± SD	Diagnosis $\bar{X}$ ± SD	Relationships with Healthcare Professionals $\bar{X}$ ± SD	Lifestyle Changes $\bar{X}$ ± SD	Coping $\bar{X}$ ± SD	Advice and Support $\bar{X}$ ± SD
Gender	Female	-2.28 ± 6.84	1.86 ± 4.62	-2.85 ± 5.83	0.51 ± 3.36	-6.27 ± 13.03	3.33 ± 9.19	2.20 ± 6.46	-1.53 ± 5.31
	Male	-2.50 ± 7.14	1.56 ± 4.45	-1.76 ± 7.28	-0.11 ± 3.51	-8.28 ± 13.89	3.28 ± 10.03	3.38 ± 5.83	-0.73 ± 5.73
t/p		0.190/0.849	0.401/0.689	-1.022/0.308	1.131/0.260	0.910/0.364	0.034/0.973	-1.164/0.246	-0.884/0.378
Age	18-24	-0.28 ± 5.46	2.71 ± 2.81	-3.28 ± 4.23	-0.71 ± 3.19	-6.00 ± 13.62	0.28 ± 4.95	0.71 ± 4.15	-0.28 ± 5.37
	25-35	-2.36 ± 7.34	0.64 ± 4.66	-4.44 ± 6.77	-0.72 ± 4.28	-8.84 ± 14.16	1.16 ± 8.77	2.72 ± 5.03	-1.16 ± 6.14
	36-45	-2.80 ± 6.86	0.73± 4.49	-3.93 ± 5.31	0.60 ± 3.23	-5.90 ± 11.96	3.00 ± 9.24	2.56 ± 6.97	-1.23 ± 4.98
	46-55	-4.15 ± 6.23	1.06 ± 4.59	-3.63 ± 6.50	0.51 ± 3.31	-10.12 ± 13.82	3.42 ± 9.15	2.39 ± 5.98	-1.84 ± 5.60
	56-65	-1.94 ± 7.58	2.67 ± 4.55	-0.02 ± 6.48	0.10 ± 3.11	-7.18 ± 13.70	4.18 ± 10.31	2.97 ± 6.70	-1.43 ± 5.59
	66 or older	-0.22 ± 6.96	3.83 ± 4.21	1.00 ± 6.80	1.05 ± 3.45	-2.00 ± 13.22	6.00 ± 11.48	3.94 ± 6.75	0.33 ± 5.48
F/p		0.951/0.450	1.938/0.092	**3.277/0.008**	0.815/0.541	0.996/0.423	0.744/0.592	0.314/0.904	0.415/0.838
Marital Status	Married	-3.21 ± 6.12	1.84 ± 4.59	-2.89 ± 6.26	0.07 ± 3.63	-8.56 ± 13.15	2.98 ± 9.05	2.21 ± 5.90	-1.42 ± 5.41
	Single	-1.58 ± 8.81	1.00 ± 4.51	-4.29 ± 6.84	0.35 ± 3.49	-6.76 ± 15.31	2.41 ± 8.57	3.41 ± 5.18	-0.35 ± 5.91
	Divorcee	-0.30 ± 7.96	1.78 ± 4.48	0.21 ± 6.58	0.66 ± 2.79	-3.18 ± 12.75	4.78 ± 11.44	3.96 ± 7.41	-0.84 ± 5.65
F/p		2.335/0.100	0.249/0.780	**3.784/0.025**	0.383/0.683	2.030/0.135	0.527/0.591	1.116/0.330	0.344/0.709
Educational Level	Illiterate	0.40 ± 8.15	3.22 ± 4.56	1.31 ± 6.67	1.04 ± 3.28	-5.86 ± 16.92	6.68 ± 10.49	4.13 ± 6.98	-1.00 ± 6.41
	Literate	-3.07 ± 6.75	3.11 ± 4.63	-2.37 ± 6.27	0.29 ± 3.97	-5.00 ± 13.75	2.33 ± 9.14	0.85 ± 7.03	-1.44 ± 5.91
	Primary School	-2.61 ± 6.45	1.14 ± 4.29	-2.57 ± 6.55	-0.02 ± 2.69	-9.11 ± 12.50	2.23 ± 9.97	3.40 ± 4.82	-0.71 ± 5.58
	High School	-4.14 ± 5.91	0.42 ± 4.62	-4.22 ± 5.75	0.22 ± 3.36	-8.88 ± 11.82	4.00 ± 8.47	2.57 ± 6.74	-1.80 ± 4.41
	University or Higher	-1.20 ± 7.79	1.75 ± 4.25	-2.66 ± 6.78	-0.12 ± 4.26	-4.91 ± 13.46	2.20 ± 9.76	2.62 ± 5.72	-0.91 ± 5.76
F/p		1.730/0.147	2.183/0.074	**2.602/0.038**	0.427/0.789	0.758/0.555	1.015/0.402	1.036/0.391	0.217/0.929
Duration of Diabetes	1-4 years	-4.44 ± 6.59	-0.70 ± 4.26	-5.50 ± 5.61	-0.41 ± 3.84	-10.55 ± 11.40	0.00 ± 7.86	1.79 ± 6.12	-2.64 ± 4.85
	5-9 years	-1.70 ± 7.07	2.34 ± 3.73	-1.97 ± 6.49	0.92 ± 3.11	-4.53 ± 12.15	5.24 ± 7.78	3.14 ± 5.93	0.56 ± 5.04
	10 years or more	-1.82 ± 6.96	2.50 ± 4.72	-1.16 ± 6.52	0.14 ± 3.38	-7.08 ± 14.67	3.76 ± 10.76	2.93 ± 6.40	-1.45 ± 5.82
F/p		1.947/0.146	**6.859/0.001**	**5.614/0.004**	1.468/0.234	1.898/0.153	**3.051/0.050**	0.517/0.597	**3.469/0.034**
Diabetes Complications	Present	-1.89 ± 7.54	2.67 ± 4.30	-1.05 ± 7.09	0.83 ± 3.51	-5.71 ± 14.75	4.76 ± 10.26	4.03 ± 6.44	-0.81 ± 5.89
	Absent	-2.90 ± 6.28	2.71 ± 0.41	-3.75 ± 5.56	-0.39 ± 3.25	-8.71 ± 11.75	1.78 ± 8.52	1.35 ± 5.64	-1.54 ± 5.06
t/p		0.887/0.377	**2.662/0.009**	**2.585/0.011**	**2.217/0.028**	1.372/0.172	1.932/0.055	**2.705/0.008**	0.811/0.418

(*Continued*)

Table 3. The Sociodemographic and Diabetes-Related Characteristics of Patients with Type 2 Diabetes Mellitus and the Distribution of Total Mean Scores of the Diabetes Obstacles Questionnaire (DOQ) Subscales (n=150) (*Continued*)

		Medication $\bar{X}$ ± SD	Self-Monitoring $\bar{X}$ ± SD	Knowledge and Beliefs $\bar{X}$ ± SD	Diagnosis $\bar{X}$ ± SD	Relationships with Healthcare Professionals $\bar{X}$ ± SD	Lifestyle Changes $\bar{X}$ ± SD	Coping $\bar{X}$ ± SD	Advice and Support $\bar{X}$ ± SD
Adherence to Therapy	High	-5.25 ± 6.11	0.89 ± 4.60	-4.12 ± 6.76	-0.60 ± 3.49	-11.87 ± 12.64	0.72 ± 10.23	2.22 ± 5.21	-3.08 ± 5.23
	Moderate	-0.93 ± 6.67	2.41 ± 4.27	-1.58 ± 6.20	0.75 ± 3.34	-5.06 ± 13.14	4.51 ± 8.85	2.90 ± 6.15	-0.30 ± 5.28
	Low	-1.62 ± 8.48	0.56 ± 5.32	-1.31 ± 6.76	-0.06 ± 3.37	-4.37 ± 14.28	4.62 ± 10.05	3.31 ± 8.97	-0.12 ± 6.28
F/p		**6.495/0.002**	2.370/0.097	2.636/0.075	2.531/0.083	**4.560/0.012**	2.645/0.074	0.260/0.772	**4.463/0.013**
Adherence to Diet	High	-3.36 ± 6.84	0.61 ± 4.42	-3.46 ± 6.52	-0.06 ± 3.86	-10.30 ± 13.13	0.38 ± 10.31	2.91 ± 5.06	-2.61 ± 5.63
	Moderate	-2.30 ± 6.93	2.59 ± 4.39	-2.17 ± 6.39	0.36 ± 3.27	-6.42 ± 13.32	4.75 ± 8.68	2.37 ± 6.45	-0.76 ± 5.19
	Low	-0.21 ± 7.16	0.89 ± 4.89	-0.36 ± 6.78	0.42 ± 3.04	-2.31 ± 13.29	4.63 ± 9.82	3.78 ± 7.74	0.78 ± 5.81
F/p		1431/0.242	**3.408/0.036**	1.645/0.197	0.267/0.766	2.772/0.066	**3.536/0.032**	0.429/0.652	**3.202/0.044**
Status of Doing Exercises	Yes	-2.16 ± 7.01	1.21 ± 4.10	-2.98 ± 6.48	-0.51 ± 3.76	-6.85 ± 13.24	1.26 ± 8.87	2.73 ± 5.70	-1.01 ± 5.56
	No	-2.53 ± 6.94	2.07 ± 4.80	-1.95 ± 6.54	0.73 ± 3.12	-7.38 ± 13.59	4.67 ± 9.77	2.73 ± 6.53	-1.27 ± 5.48
t/p		0.315/0.753	-1.139/0.257	-0.946/0.346	**-2.211/0.029**	0.240/0.810	**-2.171/0.032**	0.000/1.000	0.284/0.777
Frequency of Diabetes Controls	Once a month	-2.82 ± 5.78	1.51 ± 3.52	-2.42 ± 6.33	-0.28 ± 2.91	-7.94 ± 12.59	2.94 ± 7.14	2.51 ± 5.37	-0.45 ± 4.60
	Once in two months	1.94 ± 7.05	3.36 ± 4.17	-0.84 ± 6.52	1.26 ± 3.89	-3.47 ± 14.36	1.94 ± 9.53	3.05 ± 6.00	-0.31 ± 7.21
	Once in three months	-5.50 ± 6.38	1.82 ± 4.69	-3.91 ± 5.66	0.17 ± 3.65	-9.05 ± 11.61	2.76 ± 9.56	2.55 ± 6.84	-2.55 ± 4.87
	Once in six months	-2.45 ± 7.06	1.30 ± 5.18	-2.10 ± 7.10	0.12 ± 3.41	-6.92 ± 14.63	5.95 ± 9.27	3.05 ± 7.14	-1.12 ± 5.62
	Once a year	-0.50 ± 7.27	1.31 ± 4.86	-1.68 ± 7.00	0.45 ± 3.58	-6.68 ± 14.62	1.13 ± 12.72	2.50 ± 5.11	-1.00 ± 5.89
F/p		**4.347/0.002**	0.772/0.545	0.812/0.520	0.655/0.624	0.562/0.691	1.194/0.316	0.063/0.993	0.806/0.524
Who Has Diabetes in the Family?	Mother	-1.44 ± 7.25	1.54 ± 4.82	-1.86 ± 6.37	0.08 ± 3.13	-6.22 ± 13.93	3.12 ± 9.47	1.94 ± 5.60	-0.44 ± 5.26
	Father	-2.03 ± 6.04	2.42 ± 3.30	-1.88 ± 5.67	1.26 ± 3.21	-8.42 ± 13.59	3.92 ± 9.35	2.46 ± 5.90	-0.50 ± 6.21
	Sibling	0.00 ± 6.24	4.18 ± 3.15	-1.22 ± 5.74	-0.22 ± 3.46	-1.18 ± 10.87	5.13 ± 9.37	4.22 ± 6.07	-0.68 ± 5.23
	Relative	-4.65 ± 6.07	-0.11 ± 5.30	-4.23 ± 6.15	0.53 ± 3.54	-9.73 ± 10.88	3.69 ± 9.63	2.80 ± 8.06	-2.69 ± 5.06
F/p		2.191/0.093	**4.012/0.009**	1.226/0.303	1.035/0.380	2.030/0.113	0.234/0.872	0.677/0.568	1.115/0.346
Status of Receiving Diabetes Education	Present	-2.75 ± 6.59	1.68 ± 4.55	-3.04 ± 6.35	0.24 ± 3.60	-7.70 ± 13.01	3.66 ± 9.20	2.92 ± 6.55	-1.48 ± 5.37
	Absent	-1.11 ± 8.03	1.88 ± 4.57	-0.05 ± 6.64	0.20 ± 2.84	-5.35 ± 14.75	2.11 ± 10.69	2.08 ± 4.81	-0.11 ± 5.85
t/p		-1.212/0.228	-0.217/0.829	**-2.384/0.018**	0.053/0.958	-0.899/0.370	0.830/0.408	0.689/0.492	-1.276/0.204
Status of Finding Diabetes Education Sufficient	Present	-3.27 ± 6.50	1.66 ± 4.74	-3.55 ± 6.16	-0.09 ± 3.69	-9.22 ± 12.77	3.18 ± 9.04	2.77 ± 6.46	-2.10 ± 5.31
	Absent	-1.20 ± 6.74	1.75 ± 3.97	-1.51 ± 6.75	1.24 ± 3.13	-3.13 ± 12.89	5.10 ± 9.66	3.37 ± 6.90	0.37 ± 5.22
t/p		-1.470/0.140	-0.094/0.925	-1.502/0.136	-1.742/0.084	**-2.219/0.028**	-0973/0.333	-0.432/0.667	**-2.188/0.031**
Presence of an Additional Chronic Disease	Present	-2.27 ± 6.67	2.72 ± 4.41	-1.85 ± 6.18	0.09 ± 3.48	-6.85 ± 12.71	4.67 ± 10.25	3.14 ± 6.46	-1.29 ± 5.67
	Absent	-2.46 ± 7.17	1.05 ± 4.52	-2.71 ± 6.74	0.32 ± 3.41	-7.39 ± 13.94	2.38 ± 8.96	2.44 ± 6.03	-1.08 ± 5.40
t/p		0.157/0.876	**2.235/0.027**	0.799/0.426	-0.397/0.692	0.242/0.809	1.449/0.150	0.676/0.500	-0.224/0.823

DOQ: Diabetes Obstacles Questionnaire; **SD:** Standard Deviation; **F:** Analysis of Variance (ANOVA); **t:** Student's t-Test; P < 0.05.

Table 4. Scales and Their Subscales' Total Mean Scores

	N	Minimum	Maximum	$\bar{X}$ ± SD
AIS Total	**150**	**12.00**	**36.00**	**23.93 ± 5.34**
DOQ - Medication	150	-18.00	14.00	-2.38 ± 6.95
DOQ - Self-Monitoring	150	-8.00	8.00	1.73 ± 4.54
DOQ - Knowledge and Beliefs	150	-16.00	15.00	-2.36 ± 6.51
DOQ - Diagnosis	150	-8.00	7.00	0.23 ± 3.43
DOQ - Relationships with Healthcare Professionals	150	-34.00	26.00	-7.17 ± 13.41
DOQ - Lifestyle Changes	150	-20.00	22.00	3.31 ± 9.54
DOQ - Coping	150	-12.00	14.00	2.73 ± 6.19
DQOL Questionnaire - Satisfaction	150	1.40	5.27	2.81 ± 0.63
DQOL Questionnaire - Impact	150	1.79	3.63	2.70 ± 0.41
DQOL Questionnaire - Diabetes Worry	150	1.00	4.75	2.74 ± 0.69
DQOL Questionnaire - Social/Vocational Worry	150	1.00	4.14	2.06 ± 0.76
DQOL Questionnaire - Total	**150**	**1.74**	**4.46**	**2.59 ± 0.41**

DQOL: Diabetes Quality of Life; DOQ: Diabetes Obstacles Questionnaire; AIS: Acceptance of Illness Scale.

recognizing the importance of self-management practices. Additionally, communication obstacles exist from both the individuals with diabetes and healthcare providers.[25] In this study, the DOQ subscale of Lifestyle Changes was identified as the area where individuals with diabetes experienced the most challenges, while the subscale of Relationships with Healthcare Professionals was where they experienced the least challenges. In the study by Muz et al.[1] in 2021, the most significant obstacles were found in the subscales of Coping and Diagnosis. Saghir et al.[26] in 2019 observed that participants encountered obstacles in the subscales of Lifestyle Changes and Self-Monitoring, such as diet, exercise, and blood sugar control. Çelik et al.[27] in 2017 identified that among individuals with type 2 diabetes mellitus, the barriers to blood glucose measurement management and adaptation primarily involved lifestyle issues, a lack of knowledge, and a lack of motivation. In the study by Fidan et al.[28] in 2020, the total mean score of the Coping subscale was found to be high in diabetes management. Another study conducted in England determined that the most common problems in diabetes management were a lack of motivation and a lack of self-efficacy as diabetes barriers.[29] It is important for healthcare providers to address these challenges in lifestyle modifications while maintaining and potentially enhancing the positive experiences individuals have in their interactions with healthcare professionals, as this support can significantly impact diabetes management and overall well-being.

Table 5. Relationship Between Diabetes Obstacles Scale (DOQ), Acceptance of Illness Scale (AIS), and Diabetes Quality of Life (DQOL) Questionnaire

Scales/Subscales	AIS r p	DQOL Questionnaire r p
DOQ - Self-Monitoring	-0.245 0.003	0.042 0.157
DOQ - Medication	-0.279 0.001	0.166 0.042
DOQ - Lifestyle Changes	-0.179 0.078	0.087 0.291
DOQ - Knowledge and Beliefs	-0.480 0.000	0.200 0.014
DOQ - Diagnosis	-0.338 0.000	0.332 0.000
DOQ - Relationships with Healthcare Professionals	-0.249 0.002	0.176 0.032
DOQ - Coping	-0.254 0.002	0.135 0.101
DOQ - Advice and Support	-0.306 0.000	0.125 0.129
DQOL Questionnaire	0.206 0.011	

r: Correlations; P < 0.05. DQOL: Diabetes Quality of Life; DOQ: Diabetes Obstacles Questionnaire; AIS: Acceptance of Illness Scale.

This study showed that diabetes obstacles such as self-monitoring, medication, diagnosis, knowledge and beliefs, relationships with health professionals, coping, advice and support are associated with acceptance of the disease. This indicates that as the difficulties or challenges reported in these aspects such as medication adherence, self-monitoring, and coping strategies increased, the overall acceptance of the illness decreased among participants. Conversely, there was a statistically significant and positive correlation between the total mean scores of the DOQ's subscales of Medication, Lifestyle Changes, Knowledge and Beliefs, Diagnosis, Relationships with Healthcare Professionals, and the total mean score of the Diabetes Quality of Life (DQOL) Questionnaire. This suggests that as satisfaction or positive experiences in these areas increased (such as better medication management, lifestyle adjustments, knowledge, and positive relationships with healthcare professionals), the overall quality of life related to diabetes also improved among the participants. Understanding scale correlations can be beneficial in identifying specific areas that significantly impact an individual's acceptance of their illness and their overall quality of life concerning diabetes management. This information can guide healthcare professionals in targeting interventions or support strategies to enhance acceptance, improve specific aspects of diabetes management, and ultimately improve the quality of life for individuals dealing with diabetes.

Limitations of the Study

This study is descriptive, and the results may not be generalizable to the entire population. The limitation of the study is that more than one scale was applied, the scale items are lengthy, and the patient spends more time on this. To generalize the study results, it is recommended to conduct similar studies with larger samples in private or public hospitals and to revise the Diabetes Obstacles Scale, which consists of 77 items, and develop a shorter form.

Conclusion

It has been determined that patients with type 2 diabetes mellitus often experience obstacles in the subscales of Coping and Lifestyle Changes; the subscale of Knowledge and Beliefs is affected by

the variables of age and educational level; the subscales of Self-Monitoring and Lifestyle Changes are influenced by the duration of diabetes. These results provide insight into the experiences and challenges faced by individuals managing diabetes. This situation demonstrates the need for personalized support and interventions that consider various factors such as age, educational level, duration of diabetes, and the interplay between acceptance of illness and specific aspects of diabetes management. Personalized approaches can effectively address challenges and improve the overall quality of life for individuals dealing with diabetes. Studies on diabetes obstacles and acceptance of the disease can significantly improve disease management and patient outcomes. Research in these areas can help develop innovative approaches and solutions for managing diabetes, contributing to better diabetes management at both individual and societal levels, and improving the quality of life for patients.

Ethics Committee Approval: Ethics committee approval was obtained from the Gaziantep University Clinical Research Ethics Committee (Approval Number: 2021/376, Date: 09.03.2022).

Informed Consent: Written and verbal consent was obtained from the participants.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – A.N., E.B., S.M.İ.; Design – A.N., E.B., S.M.İ.; Supervision – A.N.; Materials – A.N., E.B.; Data Collection and/or Processing - A.N., E.B.; Analysis and/or Interpretation - A.N., S.M.İ.; Literature Review – A.N., E.B.; Writing – A.N., S.M.İ.; Critical Review – A.N., E.B., S.M.İ.

Declaration of Interests: The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding: The authors declared that this study received no financial support.

References

1. Muz G, Erdoğan Yüce GE, Yıldırım C, Dağdelen M. Determining the obstacles faced by individuals diagnosed with type 2 diabetes in diabetes management. J Educ Res Nurs. 2021;18(4):389-395. [CrossRef]
2. Saeedi P, Petersohn I, Salpea P, et al. Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045: results from the International Diabetes Federation Diabetes Atlas, 9th edition. Diabetes Res Clin Pract. 2019;157:107843. [CrossRef]
3. International Diabetes Federation. The IDF diabetes Atlas (2021). International Diabetes Federation. 2021. Accessed September 17, 2024.https://idf.org/about-diabetes/diabetes-facts-figures
4. Üren Y, Yılmaz Karabulutlu E. Investigating the factors that complicate diabetes control in patients with type 2 diabetes. Arch Health Sci Res. 2018;5(3):376-386. [CrossRef]
5. Yılmaz MB, Kılıçkap M, Abacı A, et al. Temporal changes in the epidemiology of diabetes mellitus in Turkey: a systematic review and meta-analysis. Turk Kardiyol Dern Ars. 2018;46(7):546-555. [CrossRef]
6. Chen R, Ji L, Chen L, et al. Glycemic control rate of T2 DM outpatients in China: a multi-center survey. Med Sci Monit. 2015;21:1440-1446. [CrossRef]
7. Kartal A, Altuğ Özsoy S. Tip 2 diyabetli hastalarda planlı eğitim programının sağlık inancına ve metabolik kontrole etkisi. Hacettepe Univ Hemşirelik Fak Derg. 2014;1(2):1-15.
8. Kahraman G, Tavsanli N, Baydur H, Özmen D, Özmen E. Validity and reliability of the Diabetes Obstacles Questionnaire in type-2 diabetic patients. Anadolu Psikiyatri Derg. 2016;17(1):33-34. [CrossRef]
9. Üstündağ Ş, Dayapoğlu N. Evaluation of the obstacles encountered by the patients with type 2 diabetes in disease management. J Adnan Menderes Univ Health Sci Fac. 2021;5(3):514-533. [CrossRef]
10. Byers D, Garth K, Manley D, Chlebowy D. Facilitators and barriers to type 2 diabetes self-management among rural African American adults. J Health Disparities Res Pract. 2015;9(1):1-11.
11. Bayrak M, Çadırcı K. Evaluation of quality of life in geriatric diabetic patients. J Ankara Univ Fac Med. 2019;72(3):320-327.[CrossRef]
12. Rashidi M, Genç A. Evaluation of diabetes attitudes in patients with tip 1 and tip 2 diabetes. Istanb Gelisim Univ J Health Sci. 2020;10:34-49. [CrossRef]
13. Yılmaz Taşkın F, Şahin AD, Türesin AK. Relationship with glycemic control and acceptance of illness in type 2 diabetic individuals. Cukurova Med J. 2019;44(4):1284-1291. [CrossRef]
14. Şireci E, Yılmaz Karabulutlu E. Diabetes mellitus type 2 patients' acceptance of ıllness and determination of self efficacy levels for their care. Anatol J Nurs Health Sci. 2017;20(1):48-55.
15. Rogon I, Kasprzak Z, Szcześniak Ł. Perceived quality of life and acceptance of illness in people with type 2 diabetes mellitus. Menopause Review. 2017;16(3):79-85. [CrossRef]
16. Hearnshaw H, Wright K, Dale J, Sturt J, Vermeire E, van Royen P. Development and validation of the Diabetes Obstacles Questionnaire (DOQ) to assess obstacles in living with type 2 diabetes. Diabet Med. 2007;24(8):878-882. [CrossRef]
17. Felton BJ, Revenson TA, Hinrichsen GA. Stress and coping in the explanation of psychological adjustment among chronically ill adults. Soc Sci Med. 1984;18(10):889-898. [CrossRef]
18. Besen D, Esen A. The adaptation of the acceptance of illness scale to the diabetic patients in Turkish society. TAF Prev Med Bull. 2011;10(2):155-164. [CrossRef]
19. Brislin RW. Back translation for cross-cultural research. J Cross Cult Psychol. 1970;1(3):185-216. [CrossRef]
20. Yıldırım A, Akıncı F, Gozu H, Sargin H, Orbay E, Sargin M. Translation, cultural adaptation, Cross- Validation of the Turkish Diabetas Quality-Of-Life (DQOL) Measure. Qual Life Res. 2007;16(5):873-879. [CrossRef]
21. Orhan B, Karabacak BG. Association between cognitive and social factors and metabolic control parameters in patients with type 2 diabetes. Clin Exp Health Sci. 2016;6(1):1-8. [CrossRef]
22. Schmitt A, Reimer A, Kulzer B, Haak T, Gahr A, Hermanns N. Assessment of diabetes acceptance can help identify patients with ineffective diabetes self-care and poor diabetes control. Diabet Med. 2014;31(11):1446-1451. [CrossRef]
23. Gregg JA, Callaghan GM, Hayes SC. The Diabetes Lifestyle Book: Facing Your Fears and Making Changes for a Long and Healthy Life. Oakland: New Harbinger Publications; 2007:10-44.
24. İlaslan E, Dalkıran Ş, Özer Canlı Z, Balcı MK. Level of acceptance of ıllness by persons with type 2 diabetes and burden on caregivers. Contin Med Educ. 2021;30(2):84-95. [CrossRef]
25. Adhikari M, Devkota HR, Cesuroglu T. Barriers to and facilitators of diabetes self-management practices in Rupandehi, Nepal- multiple stakeholders' perspective. BMC Public Health. 2021;21(1):1269. [CrossRef]
26. Saghir SA, Alhariri AE, Alkubat SA, Almiamn AA, Aladaileh SH, Alyousefi NA. Factors associated with poor glycemic control among type-2 diabetes mellitus patients in Yemen. Trop J Pharm Res. 2019;18(7):1539-1546. [CrossRef]
27. Çelik S, Kelleci M, Satman İ. Barriers on management and compliance of self-monitoring of blood glucose in type 2 diabetes on basal-bolus insulin therapy. Beslenme Diyet Derg. 2017;45(1):20-27.
28. Fİdan Ö, Takmak Ş, Zeyrek AŞ, Kartal A. Patients with type 2 diabetes mellitus: obstacles in coping. J Nurs Res. 2020;28(4):e105. [CrossRef]
29. Harwood E, Bunn C, Caton S, Simmons D. Addressing barriers to diabetes care and self-care in general practice: a new framework for practice nurses. J Diabetes Nurs. 2013;17(5):186-191.