E-ISSN: 2458-9176

ADIYAMAN ÜNİVERSİTESİ SAĞLIK BİLİMLERİ DERGİSİ
JOURNAL OF HEALTH SCIENCES OF ADIYAMAN UNIVERSITY

Research Article/Özgün Araştırma

The relationship of stigma level and healthy lifestyle behaviors in individuals with type 2 diabetes

Tip 2 diyabetli bireylerde stigma düzeyi ile sağlıklı yaşam tarzı davranışları arasındaki ilişkinin incelenmesi

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Abstract

Aim: This study is a descriptive research aiming to examine the relationship between the level of stigma and healthy lifestyle behaviors in patients with Type 2 diabetes.

Materials and Methods: This study was conducted with 142 patients who were admitted to a university hospital between October 1 and December 15, 2022. Data were obtained with the sociodemographic form, Stigma Assessment Scale (SAS) and Healthy Lifestyle Behaviors Scales (HLBS).

Results: The mean SAS score of the patients participating in the study was 43.66±12.09, and the mean HLBS score was 125.83±21.48. The highest scores were in physical activity and interpersonal relationships, HLBS was generally at a moderate level, and a statistically significant negative correlation was found between SAS and HLBS scores ($p<0.05$).

Conclusion: It was observed that the SAS and HLBS scores were at a moderate level in type 2 diabetes patients, education affected the level of stigma, gender and marital status affected the HLBS score, and healthy lifestyle scores significantly decreased as the level of stigma increased.

Keywords: Diabetes; Stigma; Lifestyle; Nursing.

Öz

Amaç: Bu çalışma, Tip 2 diyabet hastalarında damgalanma düzeyi ile sağlıklı yaşam tarzı davranışları arasındaki ilişkiyi incelemeyi amaçlayan tanımlayıcı bir araştırmadır.

Gereç ve Yöntem: Bu çalışma, 1 Ekim-15 Aralık 2022 tarihleri arasında bir üniversite hastanesine başvuran, 142 hasta ile gerçekleştirildi. Veriler, sosyodemografik form, Damgalanma Değerlendirme Ölçeği (DDÖ) ve Sağlıklı Yaşam Tarzı Davranışları Ölçekleri (SYTDÖ) ile elde edildi.

Bulgular: Araştırmaya katılan hastaların DDÖ puan ortalaması 43,66±12,09, SYTDÖ puan ortalaması 125,83±21,48'dir. En yüksek puanlar fiziksel aktivite ve kişilerarası ilişkilerdeydi, SYTDÖ genel olarak orta düzeyde ayrıca, DDÖ ile SYTDÖ puanları arasında istatistiksel olarak anlamlı bir negatif ilişki tespit edildi ($p<0.05$).

Sonuç: Tip 2 diyabet hastalarında DDÖ ve SYTDÖ puanlarının orta düzeyde olduğu, eğitimin damgalanma düzeyini etkilediği, cinsiyet ve medeni durumun SYTDÖ puanını etkilediği, ayrıca damgalanma düzeyi arttıkça sağlıklı yaşam tarzı puanlarının anlamlı düzeyde azaldığı görüldü.

Anahtar Kelimeler: Diyabet; Damgalanma; Yaşam Tarzı; Hemşirelik.

Introduction

Diabetes Mellitus (DM) is a chronic, broad-spectrum endocrine and metabolic disorder. The body cannot adequately utilize carbohydrates, fats, and proteins due to insulin deficiency or impairments in insulin action. It requires frequent medical follow-up and can lead to microvascular and macrovascular complications. The prevalence of diabetes mellitus is progressively increasing globally, emerging as a significant health concern. Additionally, diabetes mellitus leads to a range of mental, emotional, social, and psychological problems and conflicts. The presence of social and emotional issues related to diabetes is attributed to observable behaviors such as food choices, insulin injections or oral tablet use, and blood sugar measurements being part of daily life activities. During the struggle with diabetes mellitus, individuals tend to isolate themselves from social life while trying to cope with many complications related to the disease. Patients often feel irritable, angry, overwhelmed, or disheartened in the face of complex, difficult, and confusing care instructions. Social withdrawal and self-stigmatization, both the cause and the result of the problems patients experience, are frequently encountered situations. An increase in stigmatization and discrimination faced by diabetic individuals due to their conditions has been reported. In one study, it was reported that one out of every five people with diabetes experiences discrimination. Diabetes mellitus-related stigma has numerous negative effects. Stigma associated with diabetes also affects mental health and healthy lifestyle behaviors. Healthy lifestyle behaviors are defined as actions that serve to maintain and enhance individuals' well-being levels. These behaviors encompass adequate and balanced nutrition, stress management, regular physical activity, effective spiritual development, positive interpersonal relations, and taking responsibility for preserving and improving one's health. Particularly in preventable and controllable diseases like diabetes mellitus, which require lifestyle changes, healthy lifestyle behaviors play a crucial role in disease prognosis and effective cost management related to the disease. There are individual, societal, and environmental differences in the adoption and integration of healthy lifestyle behaviors into daily life activities among individuals with chronic illnesses. Patients diagnosed with diabetes may disrupt healthy lifestyle behaviors due to stigma, causing difficulties in maintaining and protecting health, which may lead to hospitalizations. Consequently, this may lead to an increase in health care costs and an increase in the workload of nurses. In this context, the objective of the study is to explore the relationship between stigma level and healthy lifestyle behaviors in individuals diagnosed with diabetes mellitus, which is becoming increasingly prevalent worldwide.

Materials and Methods

The sample size of the study

The study was carried out as a descriptive cross-sectional study. The study population comprised patients who sought medical attention at the Internal Medicine department, Endocrinology, and Metabolic Diseases outpatient clinics of the hospital where the research was conducted with a diagnosis of type 2 diabetes between October 1 and December 15, 2022. The research did not involve any sample selection, and all patients who met the inclusion criteria during the specified dates were included in the sample. The sample of the research was composed of 140 patients through power analysis with 0.05 error, 0.95 confidence interval and 0.95 representative power of the universe. A total of 142 patients who had been followed for at least one year with a type 2 diabetes diagnosis, could communicate verbally, had no neurological, mental, or sensory issues, and were willing to participate in the research constituted the study sample. The research data were obtained by having type 2 diabetes patients who agreed to participate in the study fill out data collection tools through face-to-face interviews conducted by the researcher.

Data collection tools

The research data were collected using a patient information form, Stigma Assessment Scale for Type 2 Diabetes, and a Healthy Lifestyle Behaviors Scale.

Sociodemographic Questionnaire: This is a form consisting of 7 questions covering participants' socio-demographic characteristics and disease-related features.

Type 2 Diabetes Stigma Assessment Scale (SDAS): The Turkish adaptation of the scale, which was developed by Browne et al.[8], was conducted by İnkaya and Karadağ. The scale consists of three sub-dimensions: Differential Treatment, Blaming and Judging and Self-stigma and 19 items in total. The lowest possible score is 19, and the highest score is 95, with an increase in the score indicating a higher level of stigmatization. The cronbach alpha value for the entire scale is expressed as 0.92.[9] In this study, the Cronbach alpha value of the scale was found to be 0.84.

Healthy Lifestyle Behaviors Scale (HLBS): Developed by Walker et al. (1987) and revised in 1996, the Turkish adaptation, validity, and reliability study of the Healthy Lifestyle Behaviors Scale-II was conducted by Bahar et al. 2008. The scale measures health-promoting behaviors associated with an individual's healthy lifestyle. The scale is a 4-point Likert-type scale consisting of 52 items and 6 sub-dimensions. The sub-dimensions of the scale are health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations and stress management. There are no negative items in the scale. The lowest score obtainable from the entire scale is 52, and the highest is 208. An increase in the scale score indicates better healthy lifestyle behaviors of individuals. The cronbach alpha value for the entire scale is expressed as 0.94.[6] In this study, the Cronbach alpha value of the scale was found to be 0.72.

Data analysis

The analyses were performed using SPSS 25.0 software. In the statistical analysis of the data, the Shapiro-Wilk normality test was used to assess the normal distribution of the data and the Levene test was used to evaluate the homogeneity of variances. In the analysis of the data, descriptive statistics such as percentage, mean, and standard deviation were used, along with Kruskal Wallis, Mann Whitney U and Pearson correlation analysis was used. Cronbach's alpha coefficient was calculated for the reliability of the scales. The significance level was accepted as *p<0.05* with a 95% confidence interval.

Ethics committee approval

Prior to commencing the research, written permission was obtained from the clinical research ethics committee (Date: 28.09.2022/Decision no: 2022/327), the relevant institution, and both written and verbal consent from the participants. The research was conducted in compliance with the Helsinki Declaration.

Results

The mean age of the type 2 individuals with diabetes participating in the study was determined as 62.92±14.06 years. It was found that 52.1% of the patients were female, 82.4% were married, 41.5% were illiterate, 31.0% had primary education, 45.1% had diabetes for 11 years or more, 40.8% received insulin therapy, 37.3% received oral anti-diabetic (OAD) and insulin therapy, and 56.3% had an additional chronic disease (Table 1).

It was determined that there was a significant difference between the DSAS mean scores, self-stigma and different behavior scores according to the educational status of the patients. (*p*<0.05) (Table 2).

It was determined that there was a significant difference between the average scores of the stress management subscale of HLBS according to the patients' gender and marital status. (*p*<0.05) (Table 3).

When the mean scores of the DSAS and its sub-dimensions were examined for the Type 2 diabetic individuals participating in the study, the different treatment sub-dimension was 13.90±5.01, the blame-judgment sub-dimension was 17.22±7.31, the self-stigma sub-dimension was 13.23±5.50, and the overall DSAS total mean score was 43.66±12.09. When examining the mean scores of HLBS and its sub-dimensions, the health responsibility sub-dimension was 21.98±7.28, the physical activity sub-dimension was 17.19±6.83, the nutrition sub-dimension was 24.27±7.79, the spiritual growth sub-dimension was 23.07±7.71, the interpersonal relations sub-dimension was

24.20±7.00, the stress management sub-dimension was 17.40±3.89, and the overall HLBS total mean score was 125.83±21.48. It was found that patients' highest scores were in the physical activity and interpersonal relations sub-dimensions and that their healthy lifestyle behaviors were at a moderate level (Table 4).

Table 1. Distribution of socio-demographic characteristics of patients (n=142)

		n	%
(Mean Age 62.92±14.06)			
Gender	Women	74	52.1
	Men	68	47.9
Marital Status	Married	117	82.4
	Unmarried	25	17.6
Education Status	Illiterate	59	41.5
	Primary education	44	31.0
	Secondary education	24	16.9
	High School	15	10.6
Working status	Yes	31	21.8
	No	111	78.2
Diabetes duration	1-5 years	36	25.4
	6-10 years	42	29.6
	11 year and over	64	45.1
Diabetes treatment	OAD	31	21.8
	İnsulin	58	40.8
	İnsulin+OAD	53	37.3
Do you have a chronic disease	Yes	80	56.3
	No	62	43.7
Total		142	100.0

Table 2. Comparison of the total and subscale score averages of DSAS according to the socio-demographic characteristics of individuals with Type 2 diabetes

		Different Behavior	Blaming and Judging	Self-stigma	DSAS Total
Gender	Women	13.90±5.82	17.66±9.27	13.01±6.28	43.22±12.53
	Men	13.91±3.98	16.75±4.26	13.48±4.54	44.14±11.67
	Z/p	-0.629/0.529	-0.090 / 0.928	-1.231 / 0.218	-0.731 / 0.465
Marital Status	Married	14.04±5.28	17.31±7.69	13.30±5.66	43.81 ±12.20
	Unmarried	13.28±3.48	16.80±5.23	12.92±4.76	43.00±11.77
	Z/p	-0.468 / 0.640	-0.290 / 0.772	-0.148 / 0.883	-0.284 / 0.776
Education Status	Illiterate	14.72±6.03	18.32±10.01	14.55±6.42	45.91±12.00
	Primary education	13.02±3.92	16.79±4.14	12.09.±4.55	41.90±11.47
	secondary education	15.12±4.54	17.04±5.17	14.20±4.49	46.37±13.29
	High School	11.33±2.41	14.46±3.50	9.86±3.46	35.66 ±8.31
	KW/p	**8.657 / 0.013**	3.028/0.220	**8.845 / 0.012**	**8.016 / 0.018**
Working status	Yes	13.12±4.10	16.48±4.98	12.58±5.08	42.19±12.64
	No	14.12±5.23	17.43±7.84	13.42±5.62	44.08±11.96
	Z/p	-0.910 / 0.363	-0.225 / 0.822	-0.805 / 0.421	-0.632 / 0.527
Diabetes duration	1-5 years	13.75±3.51	17.00±4.59	13.22±4.94	43.97±11.65
	6-10 years	14.61±7.23	19.21±11.62	14.38±7.58	45.83±14.90
	11 year and over	13.53±3.85	16.04±3.98	12.50±3.91	43.66±12.09
	KW/p	0.326 / 0.849	4.137 / 0.126	0.771 / 0.680	1.332 / 0.514
Diabetes treatment	OAD	13.87 ±3.88	17.32±4.40	14.74±4.97	45.93±11.74
	Insulin	13.34±3.37	16.43±3.94	12.77±4.17	42.55±10.15
	Insulin+OAD	14.54±6.79	18.03±10.73	12.86±6.86	43.66±12.09
	KW/p	0.234 / 0.890	0.382 / 0.826	3.986 / 0.136	1.377 / 0.502
Do you have a chronic disease	Yes	14.05±5.85	18.17±9.02	13.86±6.37	44.83±13.46
	No	13.72±3.69	16.00±3.92	12.43±4.03	42.16±9.96
	Z/p	-0.382 / 0.703	-1.861 / 0.063	-1.083 / 0.279	-0.934 / 0.350

*KW= Kruskal Wallis Test, **Z= Mann-Whitney U Test, p<.05. DSAS= Diabetes Stigma Assessment Scale

Table 3. Comparison of HLBS total and subscale score averages according to socio-demographic characteristics of individuals with Type 2 diabetes

		Health responsibility	Physical	Nutrition	Spiritual	İnterpersonal	Stress management	HLBS Total
Gender	Women	22.09±9.15	17.33±8.38	25.28±10.16	23.09±9.38	24.28±8.19	16.89±4.09	124.12±23.89
	Men	21.86±4.52	17.02±4.67	23.17±3.59	23.05±5.40	24.11±5.48	17.97±3.60	127.70±18.50
	Z/p	-0.659/0.510	-0.819/0.413	-0.803/0.422	-0.209/0.835	-0.289/0.773	**-2.090/0.037**	-0.958/0.338
Marital Status	Married	22.24±7.65	17.55±7.24	24.11±11.22	23.27±8.30	24.55±7.33	17.76±3.96	126.58±21.59
	Unmarried	20.76±5.18	15.48±4.17	25.00±4.76	22.16±3.90	22.56±5.00	15.76±3.09	122.32±21.03
	Z/p	-0.614/0.539	-1.500/0.133	-0.930/0.352	-0.349/0.727	-1.467/0.142	**-2.389/0.017**	-1.283/0.199
Educational status	Illiterate	20.86±5.66	16.32±6.45	24.96±7.09	22.50±4.51	23.88±5.05	17.72±4.15	126.59±21.44
	Primary education	21.79±7.53	16.56±4.29	23.43.±7.83	22.38±6.16	22.88±4.51	17.06±3.68	123.50±19.76
	Secondary education	24.83±10.85	19.62±11.21	25.00±10.81	25.33±14.67	26.83±13.25	17.62±3.62	125.12±25.15
	High School	22.40±3.79	18.53±4.30	22.86±3.97	23.73±5.66	25.13±4.35	16.80±4.07	130.86±21.36
	KW/p	2.129/0.345	2.403/0.301	0.495/0.781	1.663/0.435	3.990/0.136	0.951/0.621	2.129/0.345
Working status	Yes	22.54±8.28	17.09±4.51	23.96±8.52	23.16±6.81	23.51±4.9	17.16±3.41	125.96±19.37
	No	21.82±7.01	17.21±7.37	24.36±7.62	23.05±7.97	24.39±7.50	17.47±4.02	125.80±22.11
	Z/p	-0.045/0.964	-0.606/0.544	**-1.**237/0.216	-0.324/0.746	**-**0.354/0.723	-0.067/0.947	**-**0.138/0.890
Diabetes duration	1-5 years	22.97±8.09	17.55±4.74	24.52±9.50	23.02±6.70	23.00±4.67	17.27±4.24	128.13±23.12
	6-10 years	22.83±9.15	17.71±8.98	24.76±10.24	21.21±11.60	24.54±9.93	18.07±4.27	123.11±23.56
	11 years and over	20.87±5.05	16.64±6.24	23.81±4.15	22.35±4.37	24.65±5.69	17.04±3.41	126.32±19.14
	KW/p	0.228/0.633	0.687/0.407	0.049/0.825	0.049/0.825	0.004/0.948	0.561/0.454	0.228/0.633
Diabetes treatment	OAD	22.25 ±5.25	16.64±5.01	23.74±4.94	23.12±7.19	23.32±5.15	17.67±4.07	127.19±23.75
	İnsulin	21.46±8.27	17.53±9.05	25.17±10.04	23.96±10.05	24.89±9.15	17.43±3.41	124.82±21.61
	İnsulin+OAD	22.39±7.24	17.13±4.69	23.60±6.20	22.07±4.34	23.96±4.98	17.22±4.32	126.15±20.28
	KW/p	2.628/0.269	0.946/0.623	0.375/0.829	0.647/0.724	0.311/0.856	0.646/0.655	2.628/0.269
Do you have chronic disease	Yes	21.42 ±7.70	16.66±7.31	25.53±9.61	23.07±8.87	24.36±7.75	17.25±4.24	124.32±22.07
	No	22.70±6.70	17.87±6.16	22.64±3.99	23.08±5.96	24.00±5.96	17.61±3.41	127.79±20.70
	Z/p	-1.617/0.106	-1.727/0.084	-1.540/0.124	-0.200/0.841	-0.035/0.972	-1.207/0.227	-0.870/0.384

*KW= Kruskal Wallis Test, **Z= Mann-Whitney U Test, p<.05. HLBS= Healthy Lifestyle Behaviors Scale

Table 4. Score average distribution of DSAS and HLBS total scale and subscales

	X±SS	Minimum	Maximum
DSAS Total	**43.66±12.09**	**19.00**	**89.00**
Different Behaviors	13.90±5.01	6.00	51.00
Blame and Judgment	17.22±7.31	7.00	87.00
Self-Stigma	13.23±5.50	6.00	51.00
HLBS Total	**125.83±21.48**	**61**	**176**
Health Responsibility	21.98±7.28	11.00	71.00
Physical Activity	17.19±6.83	8.00	67.00
Nutrition	24.27±7.79	12.00	72.00
Spiritual Development	23.07±7.71	12.00	92.00

Interpersonal Relations	24.20±7.00	13.00	80.00
Stress Management	17.40±3.89	10.00	34.00

DSAS= Diabetes Stigma Assessment Scale, HLBS: Healthy Lifestyle Behavior Scale

In the study, a medium-level positive relationship was found between the healthy lifestyle scale and the sub-dimensions of health responsibility, physical activity, nutrition, spiritual development and interpersonal relations and a low-level positive relationship was found between stress management. It was found that there was a low-level negative relationship between the stigma scale and the sub-dimensions of the healthy lifestyle scale, namely health responsibility, physical activity, nutrition, spiritual development and interpersonal relations and it was not statistically significant. It was determined that there was a positive, moderately significant relationship between the stigma scale and spiritual development and stress management ($p<0.05$). A moderately positive, statistically significant relationship was found between the stigma scale and stress management, which is the sub-dimension of the healthy lifestyle scale. A statistically significant relationship was found between the mean scores of the stigma level and the Healthy Lifestyle Behaviors Scale score averages of the type 2 diabetic patients participating in the study (*p<0.05*). (Table 5).

Discussion

While the majority of studies conducted with individuals diagnosed with diabetes focus on medical methods and physical complications, there has been an increase in research on the psychosocial aspects of diabetes in recent years.[4] The psychosocial problems experienced by individuals diagnosed with diabetes affect the prognosis of the disease and their adherence to treatment approaches.[10] In this study, the relationship between stigma, which is among the psychosocial problems of diabetic individuals, and healthy lifestyle behaviors, an important concept for effective management of the disease process, was examined.

Table 5. The relationship between stigma levels and healthy lifestyle behaviors in individuals with Type 2 diabetes

		1	2	3	4	5	6	7	8
Health Responsibility (1)	r								
	p								
Physical Activity (2)	r	.653							
	p	.000							
Nutrition (3)	r	.427	.422						
	p	.000	.000						
Spiritual Development (4)	r	.553	.640	.479					
	p	.000	.000	.000					
Interpersonal Relations (5)	r	.606	.533	.604	.662				
	p	.000	.000	.000	.000				
Stress Management (6)	r	.211	.248	.276	.166	.188			
	p	.012	.003	.001	.049	.025			
HLBS Total (7)	r	.315	.347	.359	.214	.309	.481		
	p	.000	.000	.000	.011	.000	.000		
DSAS Total (8)	r	.006	-.104	.102	-.187	-.051	.514	-.039	
	p	.948	.216	.227	.025	.544	.000	.642	

r=correlation test, p<.05, HLBS: Healthy Lifestyle Behaviors Scale, DSAS: Diabetes Stigma Assessment Scale

Type 2 diabetes is reported to expose individuals to negative stigma due to the lifestyle changes it brings along.[11] Among the significant findings of this study are the level of diabetes-related stigma in individuals with type 2 diabetes in Turkish society and the variables that affect the stigma level. In this study, the stigma status in individuals with type 2 diabetes was found to be at a moderate level. There is a significant difference between the patients' stigma levels according to their educational level. This difference may be thought to be due to university graduate patients. In a study conducted by Zhang and colleagues with young and middle-aged individuals with diabetes in a Chinese sample, it was found that the participants' perceived stigma was moderate and the stigma levels of individuals with higher education levels were lower.[12] In another study conducted in a Swiss sample, it is reported that a large portion of individuals with diabetes experience type 2 related stigma.[13] In a study conducted in the Latin American sample, it was found that 16.4% of the participants experienced high levels of stigma, and the experienced stigma level was related to low socio-economic status.[14] In a study conducted with individuals diagnosed with type 1 diabetes in Iran, participants stated that "a person with type 1 diabetes is stigmatized as a miserable person, constantly sick, helpless, a reminder of death, and an unbearable burden, deprived of a normal life, captive to 'obligation', and devoid of pleasures and rejected".[14] In the literature, there are studies conducted with different ethnic groups in different geographical regions regarding diabetic individuals and perceived stigma level. This study was conducted in the Southeast region of Turkey, and it was found that the perceived stigma level of individuals diagnosed with type 2 diabetes living in this region is similar to the studies in the literature, and the level of education variable affects the stigma level. In addition, in this study, it was determined that male and married participants also had a higher perceived stigma level.

Adopting healthy lifestyle behaviors is crucial for achieving successful results in diabetes management. Healthy lifestyle behaviors are actions that contribute to the maintenance and improvement of individuals' well-being. These behaviors encompass maintaining a balanced and adequate nutrition, managing stress, engaging in regular physical activity, fostering effective spiritual development, nurturing positive interpersonal relationships, and taking responsibility for safeguarding and enhancing one's health.[6] In this study, the healthy lifestyle behaviors for individuals with type 2 diabetes were determined to be at an average level. It was determined that gender, marital status, and duration of illness did not make a difference in healthy lifestyle behaviors. However, it was determined that there was a statistically significant relationship between the gender status of the patients and their higher average stress score, which is the HLBS sub-dimension (*p*<0.05) and the stigma level of men was found to be higher than women. Zhang et al. In his study with individuals with diabetes, the stigmatization level of men was found to be high.[12] Men's working life outside, not being able to eat all meals at home in accordance with their diet, and having difficulty accessing foods suitable for their diet due to their working life may increase their stress situations. In Gezer and Ulusan's study, healthy lifestyle behaviors of individuals with diabetes were not found to be at a sufficient level.[15] Taşkın Yılmaz and colleagues' study reported that healthy lifestyle behaviors of individuals diagnosed with diabetes were at a low level.[6] The average score of middle-level healthy lifestyle behaviors obtained in this study is similar to the literature.

It is essential for individuals with type 2 diabetes to maintain high motivation levels during the disease process to sustain healthy lifestyle behaviors.[16] In this study, it was determined that healthy lifestyle behaviors increased as the level of perceived stigma decreased in individuals with type 2 diabetes. In a study, it was reported that the level of stigma in individuals diagnosed with diabetes acted as a barrier to self-care and treatment adherence skills.[17] In Cho and colleagues' study, it was found that an increase in the perceived stigma level of diabetic individuals was associated with a decrease in self-care behaviors.[18] In individuals with type 2

diabetes, it is stated that an increase in stigma level is related to a decrease in self-efficacy and self-esteem.[10] In Lin and colleagues' study, it was reported that self-stigmatization in diabetic individuals negatively affected glycemic control. No research was found in the literature on the relationship between stigma and healthy lifestyle behaviors in individuals with type 2 diabetes. In this study, it was found that as the stigma level increased in individuals with type 2 diabetes, healthy lifestyle behaviors decreased. It can be said that this situation negatively affects healthy lifestyle behaviors by disrupting compliance with nutrition and medication use, which are important elements in disease management, due to the concern of stigmatization.

Conclusion

The study found that individuals with type 2 diabetes perceived a moderate level of stigma and had insufficient healthy lifestyle behaviors. As the perceived stigma level of individuals with type 2 diabetes increased, their average healthy lifestyle behavior scores decreased. In this regard, it is suggested to investigate the stigma-related barriers to healthy lifestyle behaviors in the treatment and care processes of individuals with type 2 diabetes, to inform family members living with the individual about the disease and lifestyle behaviors, and to expand public awareness campaigns by health authorities through mass communication elements.

Ethics Committee Approval

Prior to commencing the research, written permission was obtained from the clinical research ethics committee (Date: 28.09.2022/Decision no: 2022/327), the relevant institution, and both written and verbal consent from the participants. The research was conducted in compliance with the Helsinki Declaration.

Author Contributions

Study concept/design, data collecting: EB., SMİ., data analysis and interpretation SMİ., NA., EB., literature review, writers: EB., AN., NA., SMİ., The final version of this article was read and approved by all authors.

Conflict of Interest

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

Financial Disclosure

Peer-review

Externally peer-reviewed

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