

ARAŞTIRMA / RESEARCH

The Effect of Social Support on Treatment Adherence and Self-Efficacy in Adult Patients with Type 2 Diabetes

Tip 2 Diyabeti Olan Yetişkin Hastalarda Sosyal Desteğin Tedaviye Uyum ve Öz Yeterliliğe Etkisi

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Abstract

Objective: To determine the effect of social support on adherence to treatment and self-efficacy in adult patients with type 2 diabetes.

Material and Method: This cross-sectional study was conducted in at a university hospital's inpatient diabetes clinic between January 2022-April 2022. The sample size of the study was determined as 431 as a result of the power analysis. In the study, Descriptive Characteristics Questionnaire, Multidimensional Scale of Perceived Social Support, Adherence Scale to Type 2 Diabetes Mellitus (DM) Treatment and Diabetes Management Self-Efficacy Scale for Patients with Type 2 DM were used as the data collection tools.

Results: It was determined that social support had positive effects on self-efficacy ($p < 0.05$). It was determined that social support had positive effects on treatment adherence ($p < 0.05$). Education level, complication, glycated haemoglobin A1c and body mass index were effective on self-efficacy of the patients. Education level, and complication were effective on treatment adherence of the patients ($p < 0.05$).

Conclusion: The results showed that social support had a positive effect on the self-efficacy and treatment adherence of the patients. It may be asserted that improving social support of the patients after they were diagnosed with diabetes was beneficial during the disorder and may enhance self-efficacy and treatment adherence levels of the patients.

Keywords: Self-efficacy, social support, treatment adherence, type 2 diabetes.

Öz

Amaç: Tip 2 diyabetli yetişkin hastalarda sosyal desteğin tedaviye uyum ve öz yeterlilik üzerine etkisini belirlemektir.

Gereç ve Yöntem: Kesitsel tipteki bu çalışma, Ocak 2022-Nisan 2022 tarihleri arasında bir üniversite hastanesinin diyabet kliniğinde yürütülmüştür. Güç analizi sonucunda çalışmanın örneklem büyüklüğü 431 olarak belirlenmiştir. Araştırmada veri toplama aracı olarak Tanımlayıcı Özellikler Anketi, Çok Boyutlu Algılanan Sosyal Destek Ölçeği, Tip 2 Diabetes Mellitus (DM) Tedavisine Uyum Ölçeği ve Tip 2 DM Hastaları için Diyabet Yönetimi Öz Yeterlilik Ölçeği kullanılmıştır.

Bulgular: Sosyal desteğin öz yeterlik üzerinde olumlu etkisinin olduğu belirlenmiştir ($p < 0,05$). Sosyal desteğin tedaviye uyumu olumlu yönde etkilediği belirlendi ($p < 0,05$). Eğitim düzeyi, komplikasyon, glikolize hemoglobin A1c ve beden kütle indeksi hastaların öz-yeterliliği üzerinde etkiliydi. Eğitim düzeyi ve komplikasyon, hastaların tedaviye uyumunda etkiliydi ($p < 0,05$).

Sonuç: Sonuçlar, sosyal desteğin hastaların öz-yeterlilik ve tedaviye uyumları üzerinde olumlu bir etkiye sahip olduğunu göstermiştir. Hastalara diyabet tanısı konulduktan sonra sosyal desteğinin artırılmasının hastalık süresince yararlı olduğu ve hastaların öz-yeterlilik ve tedaviye uyum düzeylerini arttırabileceği söylenebilir.

Anahtar Kelimeler: Öz-yeterlilik, sosyal destek, tedaviye uyum, tip 2 diyabet.

1. Introduction

Diabetes is a chronic disorder with an increasing prevalence all over the world (1,2). It is a disease that lasts for a lifetime, threatens individuals of all ages, has huge

economic burden, limits daily activities of individuals, and shortens the life expectancy. Today, especially the prevalence of type 2 diabetes mellitus (type 2 DM) has been increasing in developed and developing countries (3).

According to the International Diabetes Federation (IDF), the number of diabetic patients, which was 536 million in 2021, is expected to increase to 642 million in 2030 and 783 million in 2045. It was seen that there were approximately seven million deaths due to diabetes in 2021 (4). WHO states that diabetes will be the 7th cause of death in 2030 (5). In Turkey, this condition had an increase of 90% in between 1998 and 2010, and its prevalence increased from 7.7% to 13.7% (6).

Diabetes is a chronic disorder requiring obeying daily treatment and medication, diet and exercise program. Failure to follow these programs indicates insufficient self-care and uncontrolled blood sugar levels may lead to complications that can result in conditions such as blindness, renal impairment, nerve injury, and leg amputation. At this point, social support plays a crucial role in diabetes and ensures a successful management of the disease (7).

Social support is a complicated and dynamic process that involves individuals and their social lives and is required for them to meet their needs and to cope with new circumstances they face. Within this process, families and healthcare professionals are the major role players in the lives of individuals (8). But, the role of social support which could be provided by the family and other units in the care of diabetes has not been given much importance. Though social support has a vital importance for the individual with diabetes to ensure self-care, to adapt changes of lifestyle, to improve outcomes of diabetes treatment, and to increase personal independence (8,9). Four categories of diabetes-related social support are shown: instrumental, emotional, informative, and evaluative. It includes instrumental or tangible social support, tangible assistance for diabetes care, financial assistance, and the provision of goods and services. Emotional support defines providing love, empathy, trust, appreciation and attention. Information support includes the provision of advice, information, guidance and advice on health problems in patients with diabetes. Evaluation support is to provide constructive feedback and validation (10). The studies have indicated that social support increases treatment adherence for patients with diabetes. Approximately half of the individuals with diabetes do not take their medication as instructed and most of them changes their dose of medication without consulting a clinician (11). Social support may play an important role in the disease management of patients with T2DM. It has positive effects on self-efficacy, adherence to medication and diet, and glycemic control (10).

Diabetes is a disorder requiring compliance with a complicated and long-term treatment program that creates important physical and emotional effects in individuals (12). The treatment options include changes of lifestyle (diet, exercise, etc.) and medication (13). It was proven numerous times that compliance to the treatment program was extremely critical to maintain glycemic control and to reduce risks of complications (2). One of the barriers for an effective medication is non-adherence to the treatment of the patient (13). Individuals with diabetes show lesser adherence to their treatment compared to individuals with other chronic disorder unless they encounter with severe complications (12). Treatment non-adherence and increased number of hospitalization among the patients

with chronic diseases result in a significant clinical and economic burden on mortality rate and healthcare system (14). One of the critical points in this process is the self-efficacy of the patient which considerably affects the adherence to the treatment of diabetes and outcomes and it is described as the belief and confidence of the patient for ensuring personal management (2).

The term of self-efficacy is defined as "confidence of the individual to act". It affects the patient to display health behaviors. Self-efficacy concept for the individuals with diabetes indicates their self-sufficiency and their confidence to manage their medication, exercises and dietary controls (9). Self-efficacy will increase the motivation of patients with diabetes, increase their diabetes self-management and prevent them from experiencing serious complications (15). Individuals with diabetes are expected to have self-efficacy enough to cope with complex care and treatment programs (16). Individuals with a good self-efficacy have been observed to ensure better glycemic control (9). High HbA1c and low self-efficacy have been shown to predict high diabetes distress (17).

Because a sufficient number of studies was not obtained upon the literature review, the present study was conducted to determine the effect of social support on adherence to treatment and self-efficacy in adult patients with type 2 DM. The information to be obtained in this context will provide information on the development of interventions for healthcare providers to reduce the negative health consequences experienced by individuals with diabetes.

1.1. Aims

The primary aim of this study is to examine the effect of sociodemographic characteristics of patients with T2DM on their social support, treatment adherence and self-efficacy levels. In addition, the secondary aim of the study is to determine whether social support has an effect on adherence to treatment and self-efficacy in patients with type 2 diabetes mellitus.

2. Material and Method

2.1. Study Design

The study was designed a cross-sectional, correlational and descriptive study.

2.2. Setting and Sample

This cross-sectional study was conducted at a university hospital's diabetes clinic between January and April in 2022. The sample size determination of this study was based on multiple linear regression; assuming the medium effect size as 0.6, significance level of 0.05, and confidence interval as 0.95 by using power analysis, the estimated sample size was 431.

Inclusion criteria:

- Having no communication problem
- Being voluntary to participate in the study

Exclusion criteria:

- Having communication problems

2.3. Data Collection Tools

2.3.1. Descriptive Characteristics Questionnaire

This form prepared upon the literature review has 13 items including socio-demographic and health-illness characteristics of the patients.

2.3.2. Multidimensional Scale of Perceived Social Support

The scale was developed in 1988 and aims to determine the factors of social support perceived by individuals. Its validity and reliability was conducted by Eker et al., in 1995 in Turkey. The scale consists of 12 questions in total and it is a 7-point likert scale ranging from "Very Strongly Disagree" and "Very Strongly Agree". The scale has three subscales consisting of four items to determine the support of family, friend, and significant other. The minimum score to be obtained from subscales is 4 and the maximum score is 28. The minimum score to be obtained from the overall scale is 12 and the maximum score is 84. Higher score signifies that perceived social support is high. Factor structure, reliability, and construct validity of Turkish version of Multidimensional Scale of Perceived Social Support were generally found to be appropriate, Cronbach's alpha coefficient was determined to be 0.78-0.92 (18).

2.3.3. Adherence Scale to Type 2 DM Treatment

This scale was developed by Demirtaş and Akbayrak (2017) in order to determine adherence of patients with type 2 DM to treatment. The researchers carried out internal consistency analysis of Adherence Scale to type 2 DM Treatment to evaluate its item analysis and reliability and Cronbach's alpha was calculated as 0.770. Questions of the scale consists of 30 items. Each item is rated via a 5-point likert type scale as follows: Strongly Agree: 1, Agree: 2, Moderately Agree: 3, Disagree: 4, and Strongly Disagree: 5. The minimum score of the scale is 30 and the maximum score is 150. Lower scores indicate a good adherence of the patients with type 2 DM to their treatment. Total scores of the scale are used to evaluate the scores obtained from the scale. In the interpretation of the scale scores, the scores in the percentile of 0-20% (30-54) are rated as "good adherence to treatment", the scores in the percentile of 20-80% (55-125) as "moderate adherence to treatment", and the scores in the percentile of 80-100% (126-150) as "poor adherence to treatment". The maximum score of the scale is 150 and the minimum score is 30 (19).

2.3.4. Diabetes Management Self-Efficacy Scale for Patients with Type 2 DM

Turkish reliability and validity of the scale was conducted by Usta Yeşilbalkan (2001). The scale consists of 20 questions. Items of the scale is scored with likert type scoring ranging from 1 to 5. (1=Always, 2=Frequently, 3=Sometimes, 4=Rarely, 5=Never). The minimum score of the scale is 20 and its maximum score is 100. The Self Efficacy Scale has four subscales including 'specific nutrition and weight (items 6, 13, 14, 15, 16)', 'physical exercise (items 8, 11, 12)', 'blood glucose (items 1, 2, 3)', and 'general diet and medical treatment control (items 4, 5, 7, 9, 10, 17, 18, 19, 20)'. Cronbach's alpha internal consistency coefficient of the scale was found to be 0.89. Based on the overall mean score from the evaluation of the scale, it is stated that individuals have low/moderate/high self-efficacy and self-efficacy is considered to be higher as the score increases (20).

2.4. Data Collection

Data of the study were collected by the researchers using face to face interview method by ensuring a silent environment in patients' room between January and April in 2022. It took about 20-25 minutes to complete interviews with each patient.

2.5. Data Analysis

The SPSS 21.0 package program was used for data analysis. Kurtosis and skewness coefficients (-2,+2) and Shapiro Wilk test were used to analyze the normality distribution of the data. The significance level was accepted as $p < .05$. In the analysis of descriptive characteristics of individuals with diabetes, number, percentage distribution, mean score, and standard deviation were used. Cronbach's alpha reliability coefficient was used to calculate internal consistency of the scales. Linear regression analysis was used to identify the effect of independent variables on dependent variables.

3. Results

Table 1 shows that of the patients, 53.5% were female, 90.5% were married, 47.8% had primary school education, 70.1% reported their perceived level of income as moderate, 78.8% were unemployed, 41.5% were taking oral tablets for diabetes, 52.7% were suffering from complications of diabetes, 78.4% received education for diabetes, and 40.8% had a body mass index of 28.5-24.99 kg/m². In addition, it was determined that mean age of the patients was 54.59±13.1 years, the duration of diagnosis was 7.79±6.7 years, and fasting blood glucose level was 162.44±48.5 mg/dl, and glycated hemoglobin A1c (HbA1c) was 7.57±2.0 (%).

Table 1. Descriptive Characteristics of the Patients (n:431)

Characteristics	S	%
Gender		
Male	200	46.4
Female	231	53.5
Marital Status		
Married	390	90.5
Single	41	9.5
Education		
Literate	111	25.8
Primary School	206	47.8
High School	94	21.8
University	20	4.6
Perceived Level of Income		
High	99	23.0
Moderate	302	70.1
Low	30	7.0
Employment		
Yes	113	26.2
No	318	73.8
Diabetic treatment		
Oral tablet	179	41.5
Insulin	103	23.9
Oral tb+ Insulin	149	34.6

Table 1. (continues) Descriptive Characteristics of the Patients (n:431)

Complications		
Yes	204	47.3
No	227	52.7
Education for Diabetes		
Yes	338	78.4
No	93	21.6
BMI (kg/m²)		
Under 18.5	-	-
18.5-24.99	103	23.9
25-29.99	176	40.8
30-34.99	88	20.4
35-39.99	52	12.1
≥40.00	12	2.8
	X±SD	
Age	54.59±13.1	
Time of Diagnosis	7.79±6.7	
FBG (mg/dl)	162.44±48.5	
HbA1c (%)	7.57±2.0	

The effect of descriptive characteristics and social support on self-efficacy was evaluated in Table 2. The effect of characteristics related to qualitative data on self-efficacy of the patients with diabetes was determined and found as $R = 0.602$ and $R^2 = 0.363$, it was determined that 36.3% of the total variance in dependent variable of self-efficacy

were explained by these variables and also the result was statistically significant ($p < 0.001$). Social support, education level, complication, HbA1c and Body Mass Index (BMI) were found to be effective on self-efficacy of the patients with diabetes ($p < 0.05$). It was determined that social support and education level had positive effects (0.475, 2.674) on self-efficacy. Complication, HbA1c and BMI had negative (-2.786, -0.813, -0.349) effects on self-efficacy of the patients with diabetes. Age, gender, marital status, employment status, level of income, duration of diagnosis, type of treatment, status of receiving education for diabetes, and fasting blood sugar (FBG) did not have any effect on self-efficacy in patients with diabetes ($p > 0.05$).

Table 3 evaluates the effect of descriptive characteristics and social support on adherence to treatment. Characteristics related to qualitative data had an effect on treatment adherence of patients with diabetes and it was found as $R = 0.478$ and $R^2 = 0.229$, it was determined that 22.9% of the total variance in the dependent variable of treatment adherence was explained by these variables and the result was statistically significant ($p < 0.001$). Social support, education level, and complication were effective on treatment adherence of the patients with diabetes ($p < 0.05$). Social support and education level had positive (-0.614, -2.591) effects on treatment adherence. Having complication had a positive (5.187) effect on treatment adherence. Age, gender, marital status, employment status, level of income, duration of diagnosis, type of treatment, status of receiving education for diabetes, BMI, HbA1c, and FBG did not have any effect on treatment adherence in patients with diabetes ($p > 0.05$).

Table 2. Explanation of Factors Affecting Patients' Self Efficacy with Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients			95.0%	
	B	Std. Error	Beta	t	Sig.	Lower	Upper
(Constant)	42.680	8.136		5.246	0.000	26.688	58.672
Social support	0.475	0.041	0.499	11.595	0.000	0.395	0.556
Age	0.068	0.057	0.065	1.198	0.232	-0.043	0.179
Gender	0.676	1.169	0.025	0.578	0.563	-1.621	2.974
Marital status	-2.411	1.930	-0.052	-1.249	0.212	-6.205	1.383
Education Level	2.674	0.779	0.159	3.432	0.001	1.142	4.205
Income	-0.156	1.116	-0.006	-0.139	0.889	-2.349	2.038
Employment	-0.331	0.868	-0.018	-0.381	0.703	-2.037	1.375
Time of Diagnosis	0.097	0.098	0.048	0.989	0.323	-0.095	0.289
Type of treatment	1.130	0.728	0.072	1.552	0.121	-0.301	2.561
Complication	-2.786	1.239	-0.102	-2.249	0.025	-5.222	-0.351
Education for DM	-.158	1.466	-0.005	-0.108	0.914	-3.040	2.724
FBG	0.017	0.013	0.061	1.362	0.174	-0.008	0.042
HbA1c	-0.813	0.314	-0.124	-2.590	0.010	-1.431	-0.196
BMI	-0.349	0.129	-0.122	-2.696	0.007	0.395	0.55
	R	R Square	F	P			
	0.602	0.363	16.918	0.000			

Dependent variable: Self-efficacy

4. Discussion

The results of the study conducted to determine the effect of social support on adherence to treatment and self-efficacy in adult patients with type 2 DM were discussed in the light of the literature.

Linear regression analysis was carried out in the study to investigate the effect of descriptive characteristics and social support on treatment adherence of the patients with diabetes. Social support, education level, and complications were found to have a positive effect on treatment adherence of the patients with diabetes. Accordingly, it was determined that when social support and education level of the patients increased, their treatment adherence had a positive effect. In addition, patients' having complication caused a negative effect on treatment adherence. In their study, Shao et al., classified treatment adherence in three major titles as adaptation to medication, diet, and lifestyle changes (2). Social support plays a role in increasing trust of the patients in diabetic medications (9). Education level did not affect treatment adherence in the study on Ranjbaran et al., (21). In their study, Gu et al., revealed that social support had a strong positive effect on treatment adherence, patients with high treatment adherence experienced lesser complications, and education level did not have any effect on treatment adherence (22). In the study of Osborn et al., type 2 diabetes patients with low social support were found to have a low level of adherence to treatment (23). The result of the present study is mostly similar to the literature. It may be asserted that mentioned similarities were caused by the socio-demographic characteristics of the participants.

In this study, linear regression analysis was made to investigate the effect of descriptive characteristics and social support on self-efficacy. Social support, education level, complication, HbA1c and BMI were effective on self-efficacy of the patients with diabetes. Social support and education level had positive effects on self-efficacy. Accordingly, it was observed that self-efficacy of the patients increased as social support and education levels increased. Having complication, HbA1c, and BMI negatively affected self-efficacy of the patients with diabetes. Accordingly, patients' having diabetes-related complications and increased HbA1c and BMI decreased in their self-efficacy. In the study of Küçük et al., it was found that there was a significant relationship between age, gender, BMI, duration of diagnosis in diabetes and self-efficacy (15). In the study of Chan et al. with patients with diabetes, social support was found to have significant effects on self-efficacy (24). In their study, Gao et al., determined that social support and HbA1c affected self-efficacy (25). Al-Dwaikat et al., also found that patients with type 2 DM having high self-efficacy had a higher social support (26). Rashid et al., found a strong correlation between social support and self-efficacy. The study revealed that higher social support led to higher levels of self-efficacy (9). Shao et al., reported in their study that social support had a positive effect on self-efficacy of the patients with diabetes, whereas HbA1c had a negative effect on their self-efficacy (2). The results of the present study are similar to the results of the studies in the literature. It is likely to speculate that social support is considerably important for self-efficacy of the individuals with diabetes and individuals with diabetes receiving high levels of social support also had higher levels of self-efficacy.

5. Conclusion

The results showed that social support had a positive effect on the self-efficacy of the patients. Furthermore, some socio-demographic characteristics (education level, HbA1c, BMI) of the patients and their disease complications were effective on their treatment adherence and self-efficacy in the study.

It may be asserted that improving social support of the patients after they were diagnosed with diabetes was beneficial during the disorder and can enhance self-efficacy levels of the patients. Additionally, social support was observed to have a positive effect on treatment adherence. The literature includes studies with different results about this issue. Further studies are recommended for better understanding of this topic.

This research has some limitations. Initially, research data were collected through self-report scales, so the possibility of widespread method biases should be considered. Secondly, a cross-sectional design aiming to determine the cause-effect relationships was used in the study. Therefore, experimental and longitudinal studies are recommended for future research to investigate the relationships between these variables. Third, the research was conducted at a single center. It would be better to carry out similar studies in other centers.

Contribution to the Field

The research findings will increase the social support levels of individuals with type 2 DM, contribute to their level of adherence to treatment and self-efficacy, and raise awareness about focusing on patients' coping with the disease. It is thought that this study will contribute to the science of nursing.

Ethical Aspect of the Research

In order to conduct the study, approval was taken from ethics committee (Decision No: 2021/11-24, Date: 04.11.2021). Every individual participating in the study was informed about the study and their consents were obtained.

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Conflict of Interest

This article did not receive any financial fund. There is no conflict of interest regarding any person and/or institution.

Authorship Contribution

Concept: GD; **Design:** ÜA; **Supervision:** ÜA; **Funding:** GD; **Materials:** ÜA; **Data Collection/Processing:** GD; **Analysis/ Interpretation:** GD; **Literature Review:** GD; **Manuscript Writing:** ÜA; **Critical Review:** ÜA.

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