Original Article

The Effect of Self-Efficacy on Diabetes Attitudes and Behaviours in Diabetes Melitus Patients

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Abstract

Aim: This research aimed to determine the effect of self-efficacy on diabetes attitudes and behaviours in Diabetes Melitus (DM) patients.
Methods: This descriptive study was carried out on 165 DM inpatients in the internal medicine clinic of a state hospital. Research data were collected using *"the Socio-Demographic Information Form," "the Diabetes Self-Efficacy Scale,"* and *"the Diabetes Attitude Scale (DAS)."*
Results: No relations were found between diabetes self-efficacy and the special training need subdimension of the DAS (r=.103; p>0.05), the attitude towards patient compliance subdimension of the DAS (r=.076; p>0.05), the blood glucose control and complications subdimension of the DAS (r=. 066; p>0.05), the effect of diabetes on patient life subdimension of the DAS (r=-.080; p>0.05), the attitude towards patient autonomy subdimension of the DAS (r=.023; p>0.05), and the attitude towards healthcare team subdimension of the DAS (r=-.032; p>0.05). Poor financial conditions of the participants, a high proportion of elderly in the sample, and the long DM duration affect the results.
Conclusion: The current study found a weak negative correlation between diabetes self-efficacy and the seriousness of type-2 diabetes subdimension of the DAS (r= -.199; p<0.05).

Keywords: Diabetes Mellitus, Attitude, Self-Efficacy**,** Nursing

Background

Affecting individuals of all ages worldwide, diabetes mellitus (DM) is a significant public health problem. It significantly increases mortality and morbidity and decreases life quality, especially in developed industrial countries, where risk factors such as unhealthy eating habits and obesity are more common (Zimmet et al., 2016). The International Diabetes Federation estimated that there were 451 million people with DM worldwide in 2017, and this number would reach 693 million by 2045. In addition, almost half of the individuals living with DM are thought not to be diagnosed (International Diabetes Federation, 2017). The diabetes prevalence has been progressively climbing. Between 2010 and 2030, the estimated number of adults with diabetes will increase by 20% in developed countries and 69% in developing countries (Shaw et al., 2010).

The progression of DM is associated with various complications, including vision loss, neuropathy, end-stage renal disease, cardiovascular disease, amputation, infections, and cognitive impairment (Vijan, 2015). In addition, studies report that diabetes can affect individuals' life quality and result in

psychosocial consequences such as depression, distress, and anxiety (Murata et al., 2003; Steed et al., 2003; Nicolucci et al., 2013). Individuals with DM may have difficulty following many complex behavioural daily actions, such as maintaining a continuous drug intake and regular meal plan and performing appropriate physical activity (Shrivastavaet al., 2013). Since this situation involves integrating many behavioural tasks into individuals' daily lives, it can frequently become problematic (Shrivastavaet al., 2013; Cheng et al., 2016).

Access to disease-related support systems and resources, the patients' disease-related attitudes and recovery efforts, comorbidities, disease duration, and the hypoglycemia risk can be considered the primary factors for poor glycaemic control (Inzucchi et al., 2015). Poor glycaemic control significantly increases medical costs, utilization of health resources, and mortality rates (Seuring et al., 2015). Age, gender, marital status, education level, occupation, and type of treatment often do not lead to changes in the attitude towards diabetes in individuals. However, the disease can be affected by patient knowledge, attitudes, and behaviours (Murata et al, 2003; Rodrigues et al., 2009). For individuals with DM, knowledge, skills, and confidence in making daily decisions appropriate for their disease, preferring positive behavioural changes, and coping with adverse situations make up the emotional aspects of their disease (Barlow et al., 2002). Self-management is the primary goal of diabetes initiatives because lowering the cost of treatment and care expenses, preventing complications, keeping glycated haemoglobin (A1C) levels below 7%, and achieving glycaemic control can only be assured with individual disease management (Cheng and Lau, 2013). Self-management of diabetes refers to all the activities that DM patients undertake to take care of their own disease, improve their health, and prevent the long- and short-term effects of DM (Adam et al., 2018). Individuals with DM can provide at least 99% of their own care through self-management (Funnell and Anderson, 2004). Despite better individual DM management, some incidences have poor nutritional habits and (or) inadequate exercise management (Rivellese et al., 2008; Jarvie et al., 2019).

Only one-third of individuals with DM can effectively manage their disease (ref). In addition, more than half of diabetic patients report significant distress about the illness and its management (Zimmet et al., 2016; Cosentino et al., 2019). Self-management denotes active participation in self-care activities to protect the individuals' well-being and develop healthy behaviours. The DM disease self-management program involves managing physical activities, blood sugar monitoring, meal patterns, regular diabetic medication use, and low and high blood sugar during illness (Carpenter et al., 2019).

The American Diabetes Association states that managing Type-2 diabetes has many challenges. This association recommends that all individuals diagnosed with Type-2 diabetes receive diabetes self-management training and self-management support when necessary. This training aims to increase the individuals' self-efficacy in the skill and behaviour needed in managing the diet, glucose monitoring, physical activities, stress, and disease (Powers et al., 2017). Lifestyle management is the basis of DM care. In addition to lifestyle change, self-management training and support given to the patient are essential for ensuring self-management (American Diabetes Association, 2017). Self-efficacy and attitudes and behaviours developed against the disease in DM patients are significant in disease management. This study investigates the effect of diabetic patients' self-efficacy on their diabetes attitudes and behaviours.

Method

This section covers the purpose, significance, limitations, method, universe and sample, hypotheses and models of the study, ethics committee approval, data analysis, and the results.

The aim of the research: A literature review related to the study has shown some previous theoretical and experimental studies on self-efficacy and attitudes in diabetic patients. The current study addressed diabetes self-efficacy and diabetes attitude issues together and examined the effect of diabetes self-efficacy on diabetic patient attitudes. This research aimed to determine the effect of self-efficacy on diabetes attitudes and behaviours in DM patients.

Population and Sample: The research population comprised diabetic patients who received inpatient treatment in the Bingol State Hospital Internal Medicine Clinic. This comprehensive research conducted with a broader perspective than the previous ones is thought to contribute to the literature significantly. The population refers to the whole group of units determined by specific objectives (Nakip, 2006: 196). The population of this study consisted of inpatients in the Bingol State Hospital Internal Medicine Clinic. In scientific studies, it is possible to reach the entire population or select a sample that can represent the whole population using particular methods (Karasar, 2005: 127). Sampling is a subgroup that best represents the whole population (Nakip, 2006: 196). Based on the power analysis, the study sample was determined as 165 DM patients with 0.5 effect size, 0.05 error level, and 80% power to represent the population. The data collection tool was a questionnaire consisting of three parts. The first part of the questionnaire included nine questions to measure the demographic characteristics of the patients. "Diabetes Self-Efficacy Scale" was covered in the second part of the questionnaire, and "Diabetes Attitude Scale (DAS)" in the third part.

Diabetes Self-Efficacy Scale: Developed by Lorig et al. (2009), the 8-item Diabetes Self-Efficacy Scale (DSES) is a 10-point Likert-type scale ranging from 1 (not at all confident) to 10 (full confident). The scale determines the self-efficacy of diabetic patients. The Cronbach's α coefficient of the scale developed by Lorig et al. is 0.89 (Lorig et al., 2009). Mankan et al. tested the validity and reliability of the scale (2017). The Cronbach α value of the scale developed by Mankan et al. is 0.86 (Mankan et al., 2017). The current study found the Cronbach's Alpha value of 0.827.

Diabetes Attitude Scale (DAS): Developed by the National Diabetes Commission in the United States in 1975, the scale determines the barriers and conveniences in compliance with the treatment regimen of diabetic patients (The Diabetes Control and Complications Trial Research Group, 1993). Ozcan tested the Turkish validity and reliability of this scale in 1999 (Özcan, 1999). The DAS scores are between 1 (strongly disagree) and 5 (strongly agree). Statements 5, 6, 12, 18, 23, and 24 of the scale are reverse-scored (1=strongly agree, 5=strongly disagree). Cronbach's Alpha values are between 0.61-0.93. The DAS scale comprises seven sub-dimensions as follows: **Special training needs:** Statements 1, 8, 9, 13, 26, 28, and 30 identify the training needs of the healthcare team providing home care to diabetes patients; **The attitude towards the patient compliance:** Statements 4, 15, 19, 22, 27, and 29 determine the diabetic patients' views towards the diabetes self-management, and their level of awareness of their responsibilities; **the seriousness of type-2 diabetes:** with the answers given to the 5th, 6th, and 12th statements, the negative attitude is determined; **blood glucose control and complications:** through 10th, 17th, 24th, 34th statements, the patients' blood glucose control is performed; **the effect of diabetes on the patient's life:** 2nd, 11th, 14th, 18th, 21st statements help understand the effect of diabetes on the patients' lives; **the attitude towards the patient's autonomy:** 3rd, 7th, 25th, 31st, 33rd statements help determine the patient's effectiveness in the management of his own treatment and his attitude in this direction; **attitude towards healthcare team:** 16th, 20th, 23rd, 32nd statements help reveal the patient's attitude towards being followed by the healthcare team. Scale expressions are evaluated with Likert-type scoring ranging from 1 to 5. A score of >3 denotes a positive attitude, whereas a score of <3 signifies a negative attitude. A score closer to 5 or closer to 1 strengthens the attitude in that direction. Individuals' attitude scores ranging from 1 to 5 are calculated by summing all scores in each DAS sub-dimension and dividing it by the number of sub-group items. The overall diabetes attitude score is calculated by totalling all item scores on the scale and dividing it by 34. The scale's total score is interpreted similarly to sub-dimension scores. If the scale score is >3, it is a positive attitude, but if the scale score is <3, it is a negative attitude. The increase or decrease of the score strengthens the attitude in that direction (Ozcan, 1999). In this study, the Cronbach's Alpha value was 0.806.

Ethic Approval: Before the study, ethics committee approval (09.12.2019-E.25024) was obtained from Bingol University Health Sciences Scientific Research and Publication Ethics Committee. Afterward, Bingol State

Hospital granted institutional permission. The inpatients were asked to fill out the questionnaires voluntarily. The participant identities were kept confidential. Research data were used purely for scientific purposes and not shared with third parties.

Research Model and Hypotheses: The study shows the effect of "diabetes self-efficacy" on "diabetes attitude" through the model in Figure 1. The relationships between "diabetes self-efficacy" and "diabetes attitude" were established in the following hypotheses:

H1: Diabetes Self-Efficacy positively affects the DAS sub-dimensions.

H1a: Diabetes Self-Efficacy positively affects the Special training needs, one of the DAS sub-dimensions.

H1b: Diabetes Self-Efficacy positively affects the attitude toward patient compliance, one of the DAS sub-dimensions.

H1c: Diabetes Self-Efficacy positively affects the seriousness of diabetes, one of the DAS sub-dimensions.

H1d: Diabetes Self-Efficacy positively affects blood glucose control and complications, one of the DAS sub-dimensions.

H1e: Diabetes Self-Efficacy positively affects the effect of diabetes on patients' lives, one of the DAS sub-dimensions.

H1f: Diabetes Self-Efficacy positively affects the attitude toward the patients' autonomy, one of the DAS sub-dimensions.

H1g: Diabetes Self-Efficacy positively affects the attitude towards the healthcare team, one of the DAS sub-dimensions.

Table 1. Question Numbers and Cronbach's Alpha Coefficients per Scales

Variables	Item number	Cronbach's Alpha Coefficients
Diabetes Self-Efficacy Scale	8	0.827
Diabetes Attitude Scale (DAS)	34	0.806
Special training needs	7	0.647
The attitude towards the patient compliance	6	0.821
The seriousness of Type-2 diabetes	3	0.607
Blood glucose control and complications	4	0.628
The effect of diabetes on the patient's life	5	0.657
The attitude towards the patient's autonomy	5	0.584
Attitude towards healthcare team	4	0.752

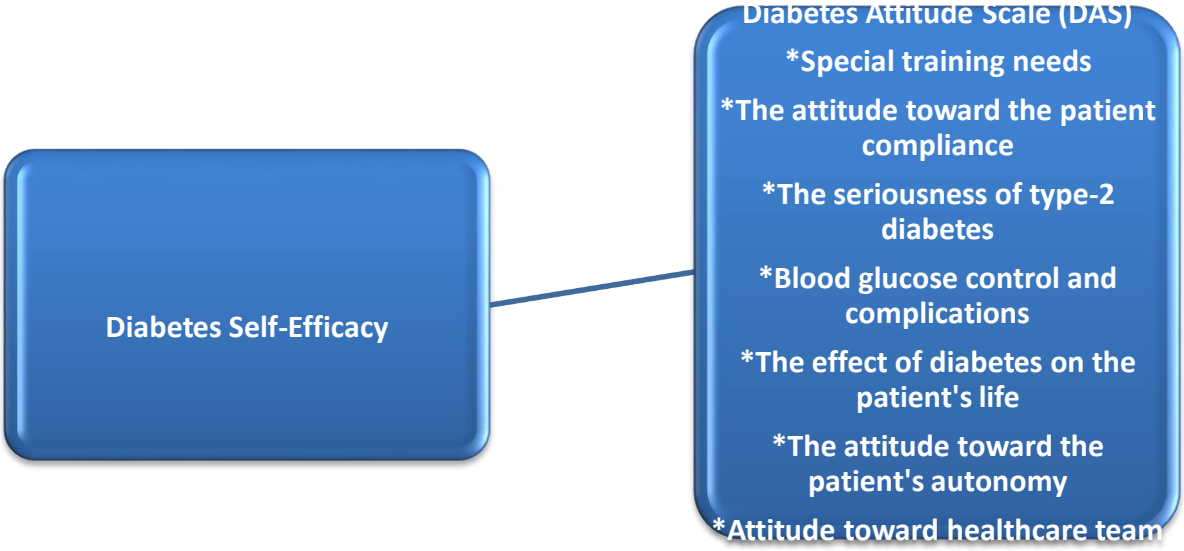

Figure 1: *Research model*

Analysis of Data: SPSS 23.0 software program was used to analyse the data of this study. The research data were first tested using frequency, reliability, correlation, and regression analysis, and then the results were interpreted.

Results

In this section, statistical analyses were made on the demographic and basic findings of the research and the analysis results were interpreted.

As seen in Table 1, according to the reliability analysis results, Cronbach's Alpha value for Diabetes Self-Efficacy Scale is 0.827, and Cronbach's Alpha value for Diabetes Attitude Scale is 0.806. In this study, scales and sub-dimension values are reliable **(Table 1).**

Frequency Analysis and Results

In the study, questions related to demographic characteristics (age, marital status, gender, education, income, diseases except for DM, duration of DM diagnosis, medication, and family history of DM) were tested with frequency analysis. Table 2 shows the results.

Table 2. Distribution of Patients by Demographic Characteristics

Gender	**Frequency**	**Percent**	**Your Income**	**Frequency**	**Percent**
Female	101	61.2	Poor	36	21.8
Male	64	38.8	Medium	126	76.4
Total	165	100	Good	3	1.8
Your age	**Frequency**	**Percent**	Total	165	100
19-30	29	17.6	**Do You Have Any Disease Other Than Diabetes?**	**Frequency**	**Percent**
31-40	9	5.5	None	63	38.2
41-50	36	21.8	Hypertension	50	30.3
51-60	45	27.3	Cholesterol	6	3.6
61+	46	27.9	Renal failure	3	1.8
Total	165	100	Heart failure	16	9.7
Marital Status	**Frequency**	**Percent**	Lung Disorder	14	8.5
Married	125	75.8	Other	13	7.9

Single	40	24.2	Total	165	100
Total	211	100	**Duration of Diabetes Diagnosis**	**Frequency**	**Percent**
Education	**Frequency**	**Percent**	1-5 Years	66	40.0
Illiterate	49	29.7	6-10 Years	37	22.4
Literate	29	17.6	11-15 Years	12	7.3
Primary education	32	19.4	16+ Years	40	39.4
Secondary education	23	13.9	**Type of Antidiabetic Drug Used**	**Frequency**	**Percent**
Tertiary education	32	19.4	Oral Antidiabetic	91	55.2
Total	165	100	Insulin	74	44.8
Is There a Family History of Diabetes?	**Frequency**	**Percent**	Total	165	100
Yes	88	53.3			
No	77	46.7			
Total	165	100			

Of the patients participating in the study, 101 (61.2%) were female, 64 (38.8%) were male, 125 (75.8%) were married, and 40 (24.2%) were single. While 46 participants (27.9%) aged 61 and older constitute the largest age range of the research sample, other participants' age ranges and numbers are as follows: 29 people were 19-30 (17.6%), 9 people were 31-40 (5.5%), 36 people 41-50 (21.8%), and 45 people 51-60 (27.3%). A total of 49 participants (29.7%) were illiterate and constituted the largest sample group in the study. Among the patients, 36 (21.8%) had a poor income, 126 (76.4%) had a medium income, and 3 (1.8%) had a good income. Of the patients who were asked about any disease other than diabetes, 63 (38.2%) answered as "none," 50 (30.3%) as "hypertension," 6 (3.6%) as "cholesterol," 3 (1.8%) as "renal failure," 16 (9.7%) as "heart failure," 14 (8.5%) as "lung disease" and 13 (7.9%) as "other diseases." The patients' duration of diabetes diagnosis were 1-5 years in 66 people (40.0%), 6-10 years in 37 (22.4%), 11-15 years in 12 (7.3%) and 16+ years in 40 (39.4%). 91 patients (55.2%) were using oral antidiabetic and 74 people (44.8%) insulin. While 88 people (53.3%) had a family history of diabetes, 77 people (46.7%) did not **(Table 2).**

The Main Results of The Research: The relationship between the Diabetes Self-Efficacy Scale and the DAS sub-dimensions in the study was determined using correlation analysis. Then regression analysis was performed to determine the effect and test the hypotheses. Table 3 shows the analysis results:

Table 3. The Results of Correlation Analysis of the Relationship Between Diabetes Self-Efficacy and Diabetes Attitude Scale (DAS)

Variables	Mean	SD	1	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7
Diabetes Self-Efficacy Scale (1)	5.3909	1.7712	1								
			165								
Diabetes Attitude Scale (DAS)(2)	4.0465	.26279	.000	1							
			.995	165							
Special training needs (2.1)	4.4797	.38674	.103	.661**	1						
			.187	.000	165						
The attitude toward the patient compliance (2.2)	3.8828	.48494	.076	.434**	.265**	1					
			.333	.000	.001	165					
The seriousness of Type-2 diabetes (2.3)	2.7556	.88048	-.191*	.073	-.136	-.358**	1				
			.014	.348	.081	.000	165				

Blood glucose control and complications (2.4)	4.1727	.72919	.066 .401	.437** .000	.179* .022	.106 .174	-.184* .018	1 165			
The effect of diabetes on the patient's life (2.5)	4.1685	.53872	-.080 .310	.602** .000	.356** .000	.039 .622	.073 .353	.230** .003	1 165		
The attitude towards the patient's autonomy (2.6)	4.1285	.75448	.023 .771	.534** .000	.206** .008	.175* .024	-.049 .536	-.057 .470	.106 .175	1 165	
The attitude towards healthcare team (2.7)	4.1212	.48813	-.032 .679	.399** .000	.273** .000	.060 .441	-.026 .736	.141 .071	.177* .023	-.033 .678	1 165

p<0.05p<0.01***p<0.001*

According to the correlation analysis results in Table 3, there was no correlation between Diabetes Self-Efficacy and the Special education needs subgroup of DAS (r=0.103; p>0.05), The Attitude toward patient compliance subgroup of DAS (r=0.076; p>0.05), Blood glucose control and complications subgroup of DAS (r=0.066; p>0.05), The effect of diabetes on patient life subgroup of DAS (r=-0.080; p>0.05), The Attitude towards patient autonomy subgroup of DAS (r=0.023; p>0.05) and The Attitude towards healthcare team subgroup of DAS (r=-0.032; p>0.05). However, there was a weak negative correlation between the severity of the Type-2 diabetes subgroup of DAS (r= -0.199; p<0.05) and Diabetes Self-Efficacy **(Table3).**

Regression Analysis Results: Regression analysis was performed to test the hypotheses of the study. Table 4 shows the analysis results.

Table 4. Regression Analysis Results for the Effect of Diabetes Self-Efficacy on DAS Sub-Dimensions

Independent variables	**Non-standardized Coefficients**		**Standardized Coefficients**	**T**	**P**	**F**	**R2**	**∆R2**
	B	**Standard error**	**Beta**					
Invariant	4.358	.096		45.165	.000			
Diabetes Self-Efficacy	.023	.017	.103	1.325	.187	1.756	.011	.005
Dependent variable: Special training needs *(*p<0.05**p<0.01***p<0.001)*								
Invariant	3.771	.121		31.088	.004			
Diabetes Self-Efficacy	.021	.021	.076	.971	.333	.943	.006	.000
Dependent variable: The attitude toward the patient compliance *(*p<0.05**p<0.01***p<0.001)*								
Invariant	3.268	.217		15.074	.000	6.184		
Diabetes Self-Efficacy	-.095	.038	-.191	-2.487	.014		.037	.031
Dependent variable: The seriousness of Type-2 diabetes *(*p<0.05**p<0.01***p<0.001)*								
Invariant	4.027	.183		22.061	.000	.710		
Diabetes Self-Efficacy	.027	.032	.066	.843	.401		.004	-.002
Dependent variable: Blood glucose control and complications *(*p<0.05**p<0.01***p<0.001)*								
Invariant	4.299	.135		31.912	.000	1.037		
Diabetes Self-Efficacy	-.024	.024	-.080	-1.018	.310		.006	.000

Dependent variable: The effect of diabetes on the patient's life *(*p<0.05**p<0.01***p<0.001)*								
Invariant	4.076	.189		21.542	.000			
Diabetes Self-Efficacy	.010	.033	.023	.292	.771	.085	.001	-.006
Dependent variable: The attitude toward the patient's autonomy *(*p<0.05**p<0.01***p<0.001)*								
Invariant	4.169	.122		34.069	.000	.172		
Diabetes Self-Efficacy	-.009	.022	-.032	-.414	.679		.001	-.005
Dependent variable: The attitude toward the healthcare team *(*p<0.05**p<0.01***p<0.001)*								

As seen in the results of the regression analysis in Table 4, Diabetes Self-Efficacy did not affect the Special training needs sub-dimension of the DAS (β=0.103; p>0.05), the Attitude toward the patient compliance sub-dimension of the DAS (β=0.076; p>0.05), the Blood glucose control and complications sub-dimension of the DAS (β=.066; p>0.05), the effect of diabetes on the patient's life sub-dimension of the DAS (β=-0.080; p>0.05), the Attitude towards patient autonomy sub-dimension of the DAS (β=0.023; p>0.05) and the Attitude towards healthcare team sub-dimension of the DAS (β=-0.032; p>0.05). However, it negatively affected the Seriousness of the Type-2 diabetes sub-dimension of the DAS (β=0.191; p>0.05). According to these results, the H1a, H1b, H1c, H1d, H1e, H1f and H1g hypotheses were rejected (Table 4).

Discussion

In the attempts to enhance self-management behaviours and reduce HbA1c levels, DM patients' self-efficacy should also be improved. The literature suggests that high self-efficacy is the key to adopting new behaviours (Lee et al., 2016). The research findings were discussed with the literature to obtain broader views.

The current study did not find a statistically significant difference between self-efficacy in diabetes and special training needs. While providing care to individuals with DM and similar chronic diseases, appropriate training and support should be given for self-management. Some literature studies determined that self-management strategies enhanced self-efficacy (Odgers-Jewell et al., 2017; Aquino et al., 2018; McGowan et al., 2019). Some randomized controlled trials have found that self-efficacy enhanced by diabetes self-management training improves diabetic patients' life qualities and clinical outcomes (blood pressure, body weight, lipid level, glycaemic control) and reduces their cardiovascular event risk (Berenguera et al., 2016; Essien et al., 2017; Kim Yeary et al., 2017; Azami et al., 2018). A study determined that low self-efficient DM patients less participated in solving possible problems and showed higher resistance to medication and healthy eating (Cheng et al., 2016). "Plans made to realize individual goals" and "Strategies to achieve behavioural change" can help ensure permanent diabetes self-efficacy in individuals (Cheng et al., 2016). In the current study, 66.7% of the participants were primary school graduates or illiterate. Low-educated patients might manifest a low perception of disease-related practices. This situation may lead to their low self-efficacy.

The current study found no significant difference between self-efficacy and Blood glucose control and complications. In individuals with DM, having sufficient knowledge about diabetes provides help in coping with the problems and strengthens the individual against the disease (Tol et al., 2013; Pulvirenti et al., 2014; Schmuhl et al., 2019). Many studies have determined that empowering the individual against illness can lower HbA1c levels, improve psychological state, support behavioural changes, and increase health literacy, self-care, and control over the disease (Pulvirenti et al., 2014; Lee et al., 2016; Ausili et al., 2017). Individuals included in health-related decisions can more clearly identify their own situations and needs. This situation may increase their commitment to treatment and care (Odgers-Jewell et al., 2017). A study determined that patients with sufficient knowledge about diet tended to make wise decisions in line with their health status, thus providing better

glycaemic control (Cheng et al., 2019). Chan et al. found that individual-centered practices related to the disease helped to decrease the HbA1c level and that glycaemic control was clinically significantly improved in these individuals (Chan et al., 2014).

Systematic reviews and studies have determined that training programs are effective for patients and help maintain a healthy glycemic level (Norris et al., 2001; Deakin et al., 2005; Sigurdardottir et al., 2007; Dorland et al., 2014). A study found that group education in diabetes was more effective in reducing A1c levels (Rickheim et al., 2002). The current study revealed that the income level of 21.8% of the participants was far behind in meeting their needs. Since access to all the requirements to cope with the disease, especially nutrition and better comfort levels, requires real economic power, these patients' self-efficacy in keeping the blood glucose level at an optimum level may remain insufficient.

The current study found no significant difference between the attitude towards patient autonomy and self-efficacy. Diabetes self-efficacy education has been recognized as the main factor in DM clinical management since the 1930s (Bartlett 1986). Successful self-management of DM requires the patients to have adequate knowledge and skills about their own condition and treatment (Odgers-Jewell et al., 2017). A study found that DM patients' self-care behaviours affected the HbA1c level. Motivating people to DM management and a lifestyle change is essential in achieving effective self-management (Lee et al., 2016). A study found that DM patients' self-efficacy was negatively affected by effects such as lack of motivation, low social support, and disease-related fatigue (Orgel and Mittelman, 2013). DM patients' physical and social living environments should also be considered, as well as their characteristics (Mackenbach et al., 2018).

In order for DM patients to receive better healthcare, education and support are crucial in ensuring self-efficacy. In self-management education (individual activity education) following should be considered: age, diabetes knowledge, medical history, health-related beliefs and attitudes, health literacy levels, physical limitations, family support, socio-economic status, and cultural factors (Bagnasco et al., 2014; Gopalan et al., 2018). The present study, where 61.2% of its participants were women, claims that the participants cannot allocate time for themselves individually in many respects due to the heavy workload and home responsibilities associated with the cultural structure, and thus, they do not have adequate autonomy over the disease.

The present study found no significant difference between the attitude towards the healthcare team and self-efficacy. In chronic diseases, there should be cooperation between patients and healthcare providers to facilitate the individuals' self-management. A study has determined that collaborative relationships and communication increase patient satisfaction and adherence to treatment, ultimately improving the patient's level of health (Heisler et al., 2002). Interactions between patients and healthcare providers are significant for providing and applying daily-life information. Using informational videos or posters in patient waiting rooms can be an impressive start. In addition, patients' hospital stay should be evaluated for developing the interaction between healthcare providers, DM patients, and their families (Go´ mez-Velasco et al., 2019). A study revealed that a person-centered, empowerment-based program could improve DM patients' life quality (Cheng et al., 2016). Individual care includes adherence behaviours such as dieting, exercise, self-monitoring of blood glucose, insulin injection, and insulin dose adjustment (Harvey and Lawson, 2009). DM patients' self-efficacy is significantly related to optimizing glycaemic control and preventing disease and associated complications. Training organized to increase the individuals' self-efficacy can facilitate the participants' diet management and blood sugar self-monitoring (Cheng et al., 2016; Wang et al., 2019). The ability of individuals to decide about themselves can help raise their awareness. In addition, it can create mutual trust between patients and health care providers. Increasing the DM patients' self-efficacy may improve self-care behaviours. The health conditions of DM patients who can actively participate in decisions might

improve (Tol et al., 2013). In this study, conducted on chronic DM patients with many complications that require complex and multifaceted care and treatment, more than half of the participants (55.2%) were 51 and above, and 39.4% had DM disease for a long time (16+ years). This situation might have negatively affected their attitudes towards team care and self-efficacy. Advanced age and long duration of diagnosis may lead to decreasing sensitivity in attitudes, behaviours, and self-efficacy.

Conclusion and Recommendations: DM is a complex chronic disease that requires a holistic and multifaceted approach to ensure adequate control and keep complications to a minimum. Training given to DM patients and their families should emphasize the factors related to self-efficacy and lifestyle. Education and nutritional counselling throughout the disease course are integral parts of DM's self-management therapeutic program. These practices provide information on safe monitoring and controlling an individual's blood sugar level.

Diabetes self-efficacy support and education are essential for the successful self-management of diabetes. Applications during the disease process should facilitate the relevant knowledge and skill improvements. In addition, there should be continuous cooperation between patients and health care providers. Interventions to improve DM patients' self-efficacy and attitude/behaviours should be individual-specific. These interventions should consider patients' needs, medical history, age, disease attitudes, health beliefs, diabetes knowledge, physical limitations, and family support. Eventually, self-efficacy is necessary for the person to develop treatment-related certain attitudes and behaviours and to perform disease-related practices successfully.

Self-efficacy can directly affect glycaemic control and HbA1c level through developing individual attitudes and behaviours associated with illness and care. Self-management of individuals can provide metabolic control, improve quality of life, and facilitate coping with complications. Reducing hospitalizations and mortality in DM patients can only be achieved by developing appropriate behaviours towards the disease and increasing self-efficacy. The current study recommends conducting similar studies with extensive sampling groups.

Limitations of the Research: As in every study, this study has some limitations. The COVID-19 pandemic, which affected the entire world, was the most significant limitation of the research. During the COVID-19 period, many hospitals were overcrowded, and usually, no contact with patients was possible. Therefore, this situation caused difficulties in reaching the required sample. Other limitations were the facts that the investigation was carried out only on the inpatients of the Bingol State Hospital Internal Medicine Clinic and that the perception degrees and sincerities of the patients in answering the questionnaire form were not clearly known.

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