

Knowledge levels and attitudes of diabetic patients about their disease

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ABSTRACT

Objective: Diabetes is a serious health problem worldwide that leads to high morbidity and mortality rates. The current study was conducted to determine the knowledge levels and attitudes of diabetic patients about their disease.

Methods: The population of this cross-sectional study comprised type 1 and type 2 diabetic patients who presented to the out-patient internal disease polyclinic of a public hospital. No sampling was done, and 335 diabetic patients who volunteered to participate and were able to communicate were included. Data were gathered using a personal information form that contained questions on the descriptive characteristics of the patients and disease features, using the Diabetes Attitude Scale (DAS), and using the face-to-face interview technique. To analyze data, percentages and arithmetic means were calculated and Mann-Whitney U and Kruskal-Wallis tests were performed.

Results: When the knowledge levels of the patients about the disease were investigated, 70.4% of the patients did not know the organ that caused the disease and 37% did not know how often they should wash and control their foot. The mean DAS score of the patients was 3.58±0.30, and the patients developed a positive attitude about their disease. Further, there were significant differences between regular medicine use and the need for special training to provide diabetes care, blood glucose control and complications, patient autonomy, team care, and the DAS total score.

Conclusion: The knowledge levels of the patients about the disease were not satisfactory, but the patients developed a positive attitude about the disease.

Keywords: Diabetes mellitus, knowledge levels, attitude

INTRODUCTION

Diabetes is a serious health problem growing worldwide and leading to significant morbidity and mortality (1). According to the World Health Organization (2012), more than 346 million people worldwide are estimated to have diabetes. It is stated that this figure will be more than double in 2030 if no action is taken (2, 3). In addition, type 1 and type 2 diabetes are the most prevalent among non-infectious diseases in the world (4). When the prevalence of diabetes in our country is examined, it is seen that 13.7% of the Turkish adult population over the age of 20 have diabetes according to the Turkish Diabetes Epidemiology Study (TURDEPII) (5, 6). It is estimated that there are around 10 million diabetic people in Turkey (4).

Attitude is a concept referring to positive/negative behaviors which the individual learns through experience and which requires continuity and regularity of interaction between the individual and the object (7). The way individuals perceive their disease and their attitudes towards the disease have an important influence on how they deal with it. The more accurate and realistic the attitudes and perceptions towards diabetes, the more successful individual and social attempts at fighting diabetes will be.

Altering false perceptions and attitudes toward diabetes must be an integral part of prevention and intervention efforts (4). This will help patients develop positive attitudes towards their disease. Patients with diabetes think that their problem is irresolvable due to lack of knowledge and awareness, causing them to lose faith and feel unhappy. The majority of studies evaluating long-term treatment compliance in long-term diseases report that success rates for treatment compliance do not exceed 50% after six months. Today, it has been understood that the path to success in the treatment of chronic diseases is closely related to educating patients and their relatives (8). It has also been determined that training activities conducted with patients with diabetes lead to increased awareness and more positive attitudes among diabetic patients (9-13). In order for training to be provided, patients' level of knowledge about their diseases firstly needs to be determined. Nurses, those who interact and communicate with patients the most, have important responsibilities and duties to assume in this regard.

A study on the awareness level and attitudes of diabetic patients found that patients' level of knowledge about the disease is very low and that society in return also has very poor

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attitudes against diabetes (14). In another study with diabetic patients, it was determined that the majority of patients had little information about diabetes, such as the conditions which cause diabetes, its complications, prevention and management (15). In addition, it has been found in a study of attitudes with diabetic patients that individuals with a negative attitude towards diabetes as regards its impact on life experience more barriers in diabetes care (16, 17). Studies conducted on disease awareness and attitudes have shown that half of the patients have knowledge of diabetes and still show a positive attitude (18-20). Patients need to have a positive attitude be able to manage diabetes and have a better quality of life. Nurses have an important role to play in order for this positive attitude to be nurtured in society.

This is because diabetes is a common disease in society and nurses take active roles in primary, secondary, and tertiary protection (such as in outpatient clinics, hospitals, family health centers), encountering susceptible and sick individuals in all parts of society (21). When monitoring the patient, there should be good communication between the diabetes specialist health team including physicians, diabetes training nurses, dietitians and the patient care provider (22). Nurses have important responsibilities in informing diabetic patients about their disease and helping them develop positive attitudes. Patients can also develop positive attitudes towards their lives by paying attention to their lifestyle and becoming more knowledgeable about their disease. In light of this information, this study has been conducted to determine diabetic patients' level of awareness regarding their disease and their attitudes towards it.

METHODS

This cross-sectional study consisted of patients with type 1 and type 2 diabetes who presented themselves to the internal medicine outpatient clinic of a state hospital between May and November 2012. 335 diabetic patients with no communication or hearing problems who had been diagnosed with diabetes for at least six months, have no diagnosed psychiatric disorders, and who volunteered to participate were included in the study, for which no samples have been chosen. The characteristics of the patients and of their disease constitute the independent variables, whereas their attitudes towards diabetes and levels of knowledge constitute the dependent variables. Data has been collected through face-to-face interviews using the Diabetes Attitude Scale (DAS), and a personal information questionnaire containing information about the characteristics of the patients and information about the disease put together by the investigators.

Data Collection Tools

The Patient Characteristics Questionnaire: The questionnaire consists of 21 questions about the characteristics of the patients and their diseases (11 questions regarding age, gender, educational background, occupation, any received training on the disease, presence of other diseases, duration of disease, blood glucose checks, presence of a diabetes history in the family, medications taken regularly and the disease itself).

Diabetes Attitude Scale (DAS): The validity and reliability of the Diabetes Attitude Scale (DAS) developed by the USA's National Diabetes Commission in Turkey was examined by Özcan in 1999. The Diabetes Attitude Scale consists of seven subgroups. These are; attitudes towards special training requirements, attitudes towards patient compliance, the severity of non-insulin-dependent diabetes, blood glucose checks and complications, the impact of diabetes on the patient's life, attitudes towards patient autonomy and team care. The number of items in the subgroups of the DAS varies from three to seven. The scale items were scored using Likert scoring ranging from 1-5. A scoring system of 5,4,3,2,1 was used for positive items in the scale, while a scoring system of 1,2,3,4,5 was used for negative items. When evaluating the items, items numbered 5,6,12,18,23,24 should be considered negative, while other items should be considered positive. A score > 3 refers to a positive attitude and a score ≤ 3 refers to a negative attitude, with the strength of either attitude dependent on the increasing or decreasing of the score. A scale score moving upwards towards 5 represents positive attitudes, while its movement in the opposite direction represents negative attitudes. The scale, which can be applied to both diabetic patients and the diabetes care team, provides an assessment of the attitudes of these two groups. The alpha internal consistency coefficient of the scale was 0.61-0.93 (17). In this study, Cronbach's alpha internal consistency coefficient of the DAS was 0.73.

Application

Study data was collected by means of face-to-face interviews using a Patient Characteristics Questionnaire and the DAS. Filling in the forms took about 25-30 minutes on average.

Statistical Analysis

Statistical analyses were used to evaluate the data obtained from the study. The statistical analyzes were performed on SPSS (Statistical Package for Social Sciences) 15.0 package program (SPSS Inc.; Chicago, IL, USA). Descriptive statistics were given in numbers, percentages and averages. A Shapiro-Wilk analysis was performed to see if the data fit the normal distribution and it was decided to apply non-parametric analysis because it was seen that the data did not fit the normal distribution. These analyzes were determined as the Mann Whitney U and Kruskal Wallis tests. The level of significance was accepted as $p < 0.05$.

Ethical Principles

This study was carried out in cooperation with a state hospital in the scope of the "Let's Stop Diabetes Project" launched by the President's Office of the Republic of Turkey. Before starting the study, a letter was written by the head physician's office addressed to the internal medicine clinics in order for the study to be conducted and the patients were directed to the stand established near the outpatient clinics. The purpose and method of the study was explained to the patients, their verbal approvals were obtained and the principle of confidentiality was observed at all times. The survey was conducted in accordance with the Helsinki Declaration. The principle of informed consent was respected throughout the entire study. The verbal consent of volunteering participants was sought before involving them in the study.

RESULTS

Of the patients, 29.9% were in the 50-59 year age range, 66% were women, 32.2% had been diabetic for 1-5 years, 66% had regular blood glucose checks, 68.1% had another disease other than diabetes, 86% regularly used medication, and 74.3% were trained about their disease.

There was a statistically significant difference ($p < 0.05$) between the DAS subset scores relating to the impact of diabetes on the patient's quality of life and the gender of the patients, while the difference between the mean scores of age, education level and occupation were not statistically significant ($p > 0.05$) (Table 1).

According to Table 2, a statistically significant difference was found between the mean scores from the subsets of prior training on the disease, special training requirements, the severity of non-insulin-dependent diabetes and the impact of diabetes on the patients' life ($p < 0.05$, $p < 0.001$). It was determined that there was a statistically significant difference between patients' regular blood glucose checks and the subsets of special training requirements ($p < 0.05$), severity of non-insulin-dependent diabetes ($p < 0.01$) and the DAS total score ($p < 0.05$). It was also determined that there was a significant difference between the subsets of taking regular medications and special training requirements ($p < 0.001$), blood glucose checks and complications ($p < 0.001$), attitudes towards patient autonomy ($p < 0.05$), attitudes toward team care ($p < 0.01$) ($p < 0.001$), the DAS total score ($p < 0.001$), the mean subset scores of presence of diabetes in the family history and the severity of the non-insulin dependent diabetes.

It was determined that the DAS total score average of the patients was 3.58 ± 0.30 and that they had developed a positive attitude towards diabetes. When the average scores from the subsets of the scale are examined, it is seen that it varies between 2.77 ± 0.93 at its lowest and 3.90 ± 0.53 at its highest. The strongest positive attitude was found in the "special training requirements" sub-set (3.90 ± 0.53), while the weakest positive attitude was found in the sub-set of "non-insulin dependent diabetes" (2.77 ± 0.93) (Table 3).

When the level of information about the disease was examined, it was seen that 70.4% of the patients did not know the organ from whence the disease originates, 43.3% of the patients were not familiar with symptoms of falling blood sugar levels, 52.8% of the patients did not know about the organs affected by diabetes, 45.1% of the patients did not know how to clip their nails, 44.8% of the patients did not know the things one should pay attention to while wearing shoes and 37% did not know the frequency at which they should wash their feet and check them (Table 4).

DISCUSSION

Diabetes is a chronic disease that can be seen in any age group. Of the world's diabetes patients, 113 million are in the 40-59 age group and 70% of them live in industrialized countries (4). It is also seen that the prevalence of diabetes increases with age (6). This figure is expected to be 166 million by 2025, considering the ageing world population. In addition, the number of diabetic patients aged 60-79 years is calculated to be 165 million (4). In this

study, 49.6% of the patients were in the 40-59 age group. While the mean DAS score of patients in the 60-69 age range is higher than that of other age groups, the mean scores from the subsets vary. Also, it was determined that age did not affect the attitudes of the patients towards diabetes ($p > 0.05$). A study conducted by Kartal et al. (19) involving diabetic patients found that age did not affect attitudes towards care and treatment. In a study conducted with diabetic patients, it was determined that those under 35 years of age had a more positive attitude than those aged 65 years or older (23).

It was determined that the gender of the patients involved in the study had a positive impact on the subset "the impact of diabetes on the patient's life" ($p < 0.05$), while it had no impact on the average score of the total DAS and other subset scores ($p > 0.05$). It was determined that the subsets of the female patients, namely special training requirements, attitudes towards patient compliance, the impact of diabetes on the patient's life, attitudes toward patient autonomy, attitudes toward team care, as well as their total DAS score averages, were higher than those of the male patients. Studies conducted with patients with diabetes have found no significant link between gender and the attitudes towards diabetes treatment (23, 24).

No statistically significant difference was found between the educational level of the patients and the average scores of attitude towards diabetes ($p > 0.05$). The scores attained by literate patients who are primary school graduates in the subsets of special training requirements, attitude towards patient compliance, the severity of non-insulin-dependent diabetes and the impact of diabetes on the patient's life, as well as their DAS score averages, were found to be higher than individuals with a different educational background. Studies conducted with patients with diabetes have found no significant difference between educational status and attitudes towards diabetes (19, 23, 24).

No statistically significant difference was found between the occupation of diabetes patients and the average scores of attitude towards diabetes ($p > 0.05$). It is also important to take into account the socioeconomic status and lifestyle of patients and whether they have access to healthcare support when planning for a diabetes treatment (22). Employed diabetic patients can be anticipated to have a positive attitude considering their socioeconomic status and the fact that they have social security. Whereas what may lie beneath the positive attitude of unemployed patients may be due to their lifestyles, the fact that they have more time on their hands for disease management, and that they have access to healthcare support.

Patients who have had the disease for 6-10 years had a higher mean attitude score than the other groups, but there was no significant difference between the DAS for the duration of disease and the subsets ($p > 0.05$). Studies on patients with diabetes did not find a significant difference between the duration of diabetes and the DAS score (17, 19, 24). It was determined that the mean scores of patients who had had the disease for less than one year in the subsets of special training requirements, the impact of diabetes on the patient's life, and the attitude towards

Table 1. Distribution of Diabetic Attitude Scale scores according to patient characteristics (n=335)

Patient Characteristics	Number (%)	Diabetes Attitude Scale							Total scale
		Special training requirement	Attitude towards patient compliance	Severity of the non-insulin-dependent diabetes	Blood glucose control and complications	Impact of diabetes on the patient's life	Attitude towards patient autonomy	Attitude towards team care	
Age									
39 and under	27 (8.1)	4.23±0.64	3.73±0.61	2.78±0.95	3.85±0.69	3.82±0.48	3.89±0.54	3.76±0.73	3.80±0.37
40–49	66 (19.7)	4.26±0.55	3.81±0.56	2.84±0.90	3.79±0.63	3.97±0.53	4.08±0.48	3.76±0.70	3.87±0.37
50–59	100 (29.9)	4.27±0.42	3.82±0.47	2.84±0.96	3.90±0.47	3.85±0.50	4.02±0.50	3.86±0.66	3.87±0.28
60–69	71 (21.2)	4.30±0.44	3.91±0.44	3.11±1.01	4.01±0.48	3.81±0.52	4.05±0.45	4.00±0.62	3.95±0.29
70 and above	71 (21.2)	4.31±0.50	3.93±0.48	2.69±0.95	3.94±0.45	3.79±0.57	4.15±0.49	3.92±0.60	3.91±0.30
KW, p		1.154 .886	4.537 .338	7.189 .126	4.035 .401	4.558 .336	7.951 .093	5.496 .240	4.169 .384
Sex									
Female	221 (66.0)	4.29±0.50	3.87±0.46	2.81±0.98	3.89±0.54	3.90±0.51	4.06±0.47	3.90±0.66	3.90±0.30
Male	114 (34.0)	4.26±0.47	3.81±0.56	2.96±0.92	3.95±0.49	3.76±0.55	4.05±0.52	3.82±0.65	3.87±0.34
M-WU, p		12104.000 .555	11782.000 .329	11335.000 .131	11941.500 .430	10953.000 .049	12552.500 .957	11856.500 .374	11784.000 .333
Educational Level									
Illiterate	111 (33.1)	4.25±0.51	3.85±0.48	2.72±0.91	3.91±0.49	3.80±0.50	4.10±0.49	3.91±0.64	3.88±0.30
Literate Primary school	150 (44.8)	4.31±0.46	3.91±0.43	2.90±1.01	3.89±0.54	3.91±0.57	4.05±0.46	3.89±0.65	3.92±0.29
Secondary school graduate	27 (8.1)	4.24±0.47	3.89±0.50	2.89±0.50	3.98±0.43	3.90±0.40	4.10±0.46	3.76±0.64	3.90±0.31
High school graduate	47(14.0)	4.25±0.54	3.65±0.66	3.65±0.66	3.93±0.62	3.75±0.48	3.94±0.59	3.78±0.75	3.83±0.41
KW, p		.568 .904	6.754 .080	4.502 .212	1.172 .760	4.490 .213	2.700 .440	2.285 .515	2.851 .415
Profession									
Employed	93 (27.8)	4.27±0.49	3.82±0.56	2.94±0.92	3.88±0.55	3.84±0.53	4.06±0.49	3.80±0.66	3.88±0.36
Unemployed	242 (72.2)	4.28±0.49	3.86±0.47	2.83±0.98	3.92±0.51	3.86±0.52	4.05±0.49	3.90±0.65	3.90±0.30
M-WU, p		11177.000 .923	10877.000 .634	10344.500 .250	10808.500 .571	11093.500 .840	11186.500 .932	10346.500 .250	10915.500 .671

KW: Kruskal Wallis; M-WU: Mann-Whitney U

patient autonomy were higher than those of other groups. This can be explained by the fact that such patients have just been diagnosed with the disease and thus pay more attention to managing their condition and have not yet developed chronic complications.

Diabetes is a life-long disease, and education should be considered an integral part of prevention, treatment, care and follow-up. In no other disease does the education of the individual play as important a role as it does in diabetes. More than 90% of diabetes care is carried out by the diabetic patients themselves.

In this respect, the patient needs to learn self-care and how to conduct monitoring and evaluation, that is, take on the management of his/her own disease by gaining more awareness and acquiring the necessary skills. Patients who are able to manage the disease themselves get more positive outcomes from treatment and pay much less (4). A statistically significant difference was found between the mean scores in the subsets of prior training on the disease, special training requirements, the severity of non-insulin dependent diabetes and the impact of diabetes on the patients' life ($p < 0.05$, $p < 0.001$). Studies conducted on patients with diabetes indicate that attitudes of patients receiving

Table 2. Distribution of Diabetic Attitude Scale scores according to the disease characteristics of the patients (n = 335)

Patient Characteristics	Number (%)	Diabetes Attitude Scale							Total scale
		Special training requirement	Attitude towards patient compliance	Severity of the non-insulin-dependent diabetes	Blood glucose control and complications	Impact of diabetes on the patient's life	Attitude towards patient autonomy	Attitude towards team care	
Duration of disease 1 <									
1-5 years	54 (16.1)	4.33±0.49	3.89±0.51	2.67±0.91	3.97±0.50	3.90±0.50	4.08±0.53	3.86±0.66	3.91±0.31
6-10 years	108 (32.2)	4.25±0.47	3.75±0.48	2.99±0.95	3.85±0.55	3.85±0.51	4.03±0.51	3.81±0.65	3.86±0.32
11 years or more	89 (26.6)	4.30±0.47	3.95±0.51	2.79±0.92	3.88±0.48	3.90±0.47	4.06±0.50	3.90±0.63	3.92±0.30
KW,p	84 (25.1)	4.26±0.52 2.079 .556	3.86±0.48 10.121 .054	2.89±1.04 5.252 .154	3.97±0.56 3.308 .347	3.76±0.60 3.609 .307	4.05±0.43 .686 .876	3.93±0.69 1.660 .646	3.89±0.33 1.315 .726
Educated about their disease									
Yes	249 (74.3)	4.24±0.51	3.83±0.51	2.98±0.95	3.91±0.55	3.78±0.53	4.05±0.49	3.86±0.67	3.88±0.34
No	86 (25.7)	4.40±0.40	3.93±0.44	2.51±0.93	3.90±0.46	4.05±0.47	4.07±0.49	3.92±0.62	3.93±0.24
M-WU, p		8924.500 .021	9652.500 .170	7675.000 p<0.001	10166.500 .480	7466.500 p<0.001	10622.500 .912	10290.000 .587	10332.000 .628
Presence of another disease									
Yes	228 (68.1)	4.27±0.48	3.83±0.50	2.83±0.95	3.91±0.52	3.85±0.54	4.03±0.48	3.82±0.66	3.87±0.31
No	107 (31.9)	4.29±0.51	3.90±0.50	2.93±0.99	3.89±0.55	3.86±0.49	4.11±0.51	3.99±0.64	3.93±0.32
M-WU, p		11718.000 .559	10899.500 .114	11493.000 .391	11872.000 .690	11882.500 .700	10578.500 .051	10322.500 .022	10753.500 .080
Taking regular medication									
Yes	288 (86.0)	4.32±0.45	3.83±0.50	2.83±0.95	3.91±0.52	3.85±0.54	4.03±0.48	3.82±0.66	3.87±0.31
No	47 (14.0)	4.02±0.62	3.90±0.50	2.93±0.99	3.89±0.55	3.86±0.49	4.11±0.51	3.99±0.64	3.93±0.32
M-WU,p		4818.500 p<0.001	5932.000 .172	6646.000 .842	4636.500 p<0.001	6731.500 .952	5714.500 .049	4652.500 .001	5000.500 p<0.001
Family history of diabetes									
Yes	170 (50.7)	4.30±0.48	3.84±0.44	2.68±0.84	3.86±0.54	3.90±0.54	4.02±0.52	3.83±0.71	3.87±0.32
No	165 (49.3)	4.26±0.49	3.86±0.55	3.04±1.04	3.95±0.50	3.80±0.51	4.09±0.45	3.92±0.60	3.91±0.31
M-WU, p		12435.500 .494	12152.000 .306	9781.500 .001	11565.000 .082	11433.000 .059	12212.500 .339	12311.500 .404	11336.500 .052
Has blood sugar levels regularly checked									
Yes	221 (66.0)	4.32±0.45	3.86±0.49	2.97±1.02	3.93±0.54	3.85±0.54	4.07±0.47	3.92±0.65	3.92±0.30
No	114 (34.0)	4.20±0.55	3.83±0.51	2.65±0.81	3.87±0.50	3.85±0.50	4.03±0.54	3.78±0.66	3.83±0.34
M-WU, p		11199.500 .046	12353.500 .770	10132.000 .003	11720.000 .291	12332.500 .751	12559.500 .964	11228.000 .101	10923.500 .046

KW: Kruskal Wallis; M-WU: Mann-Whitney U

education about their disease change positively as their awareness of the disease and readiness to manage the disease increase (9, 11, 13, 25).

It was determined that there was a significant difference between the presence of diseases other than diabetes and the sub-

set of attitude towards team care (p<0.05). 68.1% of the patients were found to have another chronic disease other than diabetes. Mollaoğlu et al. (11) also found that 81.7% of patients had other diseases besides diabetes. Estimates of prospective diabetes prevalence are predicted to increase along with the prevalence of diseases associated with diabetes (4) against the backdrop of

an ageing world population. The results of the study are similar to those in the literature.

It was determined that there was a statistically significant difference between the use of regular medication among diabetic patients and special training requirements, blood glucose checks and complications, attitudes towards patient autonomy, attitudes towards team care and total DAS average scores ($p < 0.001$, $p < 0.001$, $p < 0.05$, $p < 0.01$, $p < 0.001$). Kartal et al. (19) found that there was a significant difference between patient compliance with treatment and DAS average scores.

It was found that there was a significant difference between the subsets of the presence of a family history of diabetes and the severity of the non-insulin-dependent diabetes ($p < 0.001$). 50.7% of the patients indicated that they had a family history of diabetes. The study results are similar to those of Kartal et al. (19) and Inkaya and Karadağ (24).

It was found that there was a significant difference ($p < 0.05$) be-

tween the subsets of regular blood glucose checks and the special training requirements, the severity of the non-insulin-dependent diabetes and the total DAS score averages ($p < 0.05$). Average attitude scores of patients who regularly have their blood sugar levels checked show a positive attitude in the positive direction. A study by Kara and Çınar (26) shows that the fasting blood glucose decreases as the patient’s positive attitude towards diabetes increases. 66% of patients indicated that they have their blood sugar levels regularly checked. Kartal et al. (19) found that 95.5% of patients had their blood sugar levels measured and that 52.7% of patients had it measured irregularly. The main purpose of diabetes care and treatment is to provide glycemic control (27). This study also showed that more than half of the patients had their blood sugar levels regularly checked.

It was determined that the DAS total score average of the patients was 3.58 ± 0.30 and that they had developed a positive attitude towards diabetes. The highest positive attitude seems to be in the subset of special training requirements (3.90 ± 0.53). Studies on patient attitudes have also shown that patients generally display positive attitudes (9, 18-20, 24).

When patients’ level of knowledge about managing the disease was examined, it was seen that 70.4% of the patients did not know the organ from which the disease originates, 65.1% of the patients did not know how to store the insulin pen, 52.8% of the patients did not know about the organs affected by diabetes and that 20.9% of the patients did not know about the benefits of exercise. Maina et al. (14) reported that the level of knowledge among diabetic patients was very poor. Another study conducted by Foma et al. (15) with diabetic patients found that the majority of patients had little information about diabetes, such as its causes, complications, prevention and management (15). Danquah et al. (28) found that patients maintained a diet high in carbohydrates, sodium, and fat and that physical activity was generally low, and another study found that type 2 diabetes patients’ awareness of oral health was inadequate (29). Dündar et al. (20)

Table 3. Distribution of Diabetes Attitude Scale (DAS) sub-score and total score averages (n=335)

Diabetes Attitude Sub-Sets	Mean±SD
Special Training Requirement	3.90±0.53
Attitude Towards Patient Compliance	3.54±0.52
Severity of the Non-Insulin-Dependent Diabetes	2.77±0.93
Blood Glucose Control and Complications	3.58±0.62
Impact of Diabetes on the Patient’s Life	3.61±0.54
Attitude Towards Patient Autonomy	3.69±0.56
Attitude Towards Team Care	3.55±0.69
Total Scale	3.58±0.30

SD: standard deviation

Table 4. Distribution of the disease-related knowledge levels of the patients (n = 335)

Disease Characteristics	Accurately informed		Misinformed		Does not know	
	Number	%	Number	%	Number	%
Organ from whence the diabetes originates	69	20.6	30	9.0	236	70.4
Symptoms of falling blood sugar levels	156	46.6	34	10.1	145	43.3
Organs damaged by diabetes	125	37.3	33	9.9	177	52.8
How to clip his or her nails	112	33.4	72	21.5	151	45.1
What to pay attention to while wearing shoes	123	36.7	62	18.5	150	44.8
The frequency of foot washing and checks	154	46.0	57	17.0	124	37.0
How to store the insulin pen	69	20.6	48	14.3	218	65.1
Dietary needs of a diabetic	233	69.6	48	14.3	54	16.1
Number of meals a diabetic should eat	214	63.9	61	18.2	60	17.9
Benefits of exercise	237	70.7	28	8.4	70	20.9
Knowledge that smoking should be avoided	276	82.4	14	4.2	45	13.4

reported that half of diabetic patients have adequate knowledge about diabetes. Another study found that 33% of patients had a good grasp of diabetes, its symptoms and complications (30). A study by Batkin and Çetinkaya (31) found that diabetic patients had inadequate knowledge about foot care and how diabetes affects the feet, and had low behavior scores. This study's results are similar to results in other study papers.

CONCLUSION

In this study conducted with diabetics, it was determined that the age of patients, educational status and profession did not affect the attitudes towards diabetes, and gender only positively affected the DAS subset on the impact of diabetes on the patient's life. It was determined that the duration of the disease did not affect attitudes toward diabetes, while regular use of medication and regular control of blood sugar levels positively affected the attitude towards diabetes. Patients were seen to have a positive attitude towards diabetes, but their level of knowledge about the disease was inadequate. In light of these results, it can be recommended to identify missing information and negative attitudes towards diabetes, to organize training programs to improve knowledge and attitudes, and to increase patient awareness of attitudes, considering the individual characteristics of the patients.

Ethics Committee Approval: Authors declared that the research was conducted according to the principles of the World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects", (amended in October 2013).

Informed Consent: Verbal informed consent was obtained from patients who participated in this study.

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