New Trends and Issues Proceedings on Humanities and Social Sciences

Volume 10, Issue 2, (2023) 01-14

www.prosoc.eu

Selected Papers of 7th International Congress on Nursing (ICON 2023) June 22-24, 2023
Novotel Athens, Athens, Greece

Correlation between health perception and attitude in diabetic patients

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Suggested Citation:

Çimen, M., Erdoğan, T. K., Sağlam, Z. & Koç, Z. (2023). Correlation between health perception and attitude in diabetic patients. *New Trends and Issues Proceedings on Humanities and Social Sciences. 10(2),* 01-14 https://doi.org/10.18844/prosoc.v10i2.9096

Received from July 15, 2023; revised from August 10, 2023; accepted from September 05, 2023.
Selection and peer review under the responsibility of Prof. Dr. Nilgun Sarp, International Final University, Faculty of Health Sciences, North Cyprus

Abstract

Diabetes mellitus is one of the most common health issues in society that is caused by population growth and urbanization, has an ever-growing prevalence depending on lifestyle changes, obesity, and sedentary lifestyle, and causes morbidity and early mortality. This study was conducted as a descriptive correlational study to determine the correlation between the health perception of individuals diagnosed with diabetes mellitus and their attitudes toward diabetes. The study was carried out with the participation of 242 diabetes mellitus patients receiving treatment in a university hospital in Samsun province between 1 August 2017 and 1 February 2018. In the study, the data were collected via a survey form. In the evaluation of the data, percentage calculation, independent samples t-test, one-way analysis of variance, Kruskal-Wallis Test, and Mann-Whitney U Test were used. In line with the findings obtained, it was determined that the individuals diagnosed with diabetes had a moderate level of health perception and positive attitudes toward diabetes.

Keywords: Attitude; diabetes mellitus; health; perception.

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1. Introduction

Diabetes mellitus is a chronic and metabolic disease that manifests. as a result of insufficient control of blood glucose levels. Diabetes mellitus is one of the most common health issues in society, with high cost due to the risk of morbidity and early mortality, that has an ever-growing prevalence depending on population growth, urbanization, lifestyle changes, obesity, and sedentary lifestyle [1]. It was reported in the 2021 data of the International Diabetes Federation (IDF) that there are approximately 537 million diabetic patients in the world between the ages of 20-79 and this figure is estimated to increase to 643 million by 2030 and to 783 million by 2045. It was further reported in the same report that 13,4 million people between 20-79 years of age were diagnosed with diabetes in our country.

An individual who is faced with a chronic disease such as diabetes should make changes in their lifestyle and provide effective diabetes management and control to prolong their life and improve their quality of life. Effective diabetes management and control depends on the individual's behaviors as well as the beliefs and attitudes towards the disease [2, 3]. Attitudes are long-term emotions, beliefs, and behavioral tendencies. However, individuals may be observed when they reflect their attitudes on their behavior. Positive attitudes and behaviors of individuals constitute the basis of diabetes treatment. Before training is provided to individuals with diabetes, the individual's attitudes and wrong habits should be evaluated and wrong beliefs should be corrected before they turn into behavior [4].

The effectiveness and success of diabetes management are closely related to the health perceptions of patients [5, 6]. Health perception is the sum of the individual's feelings, thoughts, and expectations about health. Positive health perception helps individuals acquire health-promoting behaviors, transform these behaviors into a lifestyle, and improve their well-being and personal development [7-9].

It is extremely important to determine the diabetes attitudes and health perceptions of individuals diagnosed with diabetes, for these individuals to adapt to treatment, cope with the treatment and/or complications, have high life satisfaction and quality, and be able to do self-care and diabetes self-management [10]. Determining the needs of sick individuals to provide holistic nursing care along with planning and implementing care in this direction will also contribute to the improvement of the quality of nursing care [11] .

1.1. Purpose of the study

This study was conducted as a descriptive correlational study to determine the correlation between the health perception of the patients hospitalized in the internal clinics of a university hospital and diagnosed with diabetes mellitus and their attitudes toward diabetes. The study mainly sought answers to the following questions:

- What are the socio-demographic and clinical characteristics of patients diagnosed with diabetes?
- What is the level of health perception of patients diagnosed with diabetes?
- What are the attitudes of patients diagnosed with diabetes towards diabetes?
- Is there a correlation between the health perception of patients diagnosed with diabetes and their attitudes towards diabetes?

2. Materials and Methods

This descriptive and correlational study was conducted with patients diagnosed with diabetes who were hospitalized in the internal clinics of a university hospital located in the Central Black Sea Region in northern Turkey.

2.1. Participants and sample

The research was conducted with the participation of 242 patients, determined by the non-probability sampling method, who were hospitalized in the internal clinics where the research was

conducted. Patients who were diagnosed with diabetes had no psychological or mental problems, were able to communicate verbally, and volunteered to participate in the study were included in the research. Patients who refused to participate in the study (n=10) were excluded. The dependent variables of the study are the patients' health perception and their attitude toward diabetes. Independent variables thereof are the socio-demographic and clinical characteristics of the patients.

2.2. Data collection tools

Research data were collected via a survey form that had 29 questions aimed at determining the socio-demographic and clinic characteristics of the patients in addition to the Perception of Health Scale (PHS) and the Diabetes Attitude Scale. The survey was tested via a pilot scheme conducted within a group of 10 people. Patients who participated in the pilot scheme were not included in the research sample. The patients included in the study were explained that the decision about whether or not to participate in the study was entirely their own free will and that the data collected from this study would be used exclusively for the study. Thereafter their verbal informed consent was obtained.

2.2.1. The perception of health scale (PHS)

The Perception of Health Scale (PHS) is a five-point Likert scale developed by Diamond et al. [12] to determine individuals' health perceptions, chronic disease management methods, and beliefs. The validity and reliability of the scale in Turkish was confirmed by Kadıoğlu and Yıldız [8]. The scale consists of a total of 15 items and 4 sub-dimensions, namely, "Center of Control", "Self-Awareness", "Certainty" and "Importance of Health". The scores to be obtained in the scale range between 15 and 75. The Cronbach Alpha reliability coefficient of the scale used by Kadıoğlu and Yıldız [8] was determined as 0.77 whereas the Cronbach Alpha reliability coefficient of the scale used in this study was found to be 0.51.

2.2.2. The diabetes attitude scale

The attitudes of health care professionals about diabetes are often inappropriate and these attitudes cause undesirable consequences for the patient. Therefore, the Diabetes Attitude Scale (DAS) is a five-point Likert scale developed by the National Diabetes Commission in 1975, in the United States to identify the facilitations and barriers to adherence to the treatment regimen of the person diagnosed with diabetes. The validity and reliability of the scale in Turkish was confirmed by Özcan [13]. The Scale with a total of 34 items consisted of 7 sub-dimensions, namely, "The Need for Special Training to Provide Diabetes Care", "Attitudes Towards Patient's Compliance", "Severity of Type-2 Diabetes", "Blood Glucose Level Control and Associated Complications", "The Impact of Diabetes on Patient Life", "Attitudes Towards Patient's Autonomy" and "Attitudes Towards Team Care". The overall Diabetes Attitude Score is calculated by summing the scores of all scale items and dividing by 34. A total mean DAS score greater than 3 indicates a positive attitude whereas a score of 3 and below indicates a negative attitude. The Cronbach Alpha reliability coefficient of the scale used by Özcan [13] was determined as 0.70. The Cronbach Alpha reliability coefficient of the scale used in this study was found to be 0.82.

2.3. Data collection procedure and ethics

Research data were collected by face-to-face interviews conducted by the researchers with the patients. The patients participating in the study were first informed about the study, and permission was sought. Thereafter a questionnaire and scales were applied to them. The patients were further informed that the decision about whether or not to participate in the study was entirely their own free will, that the names of the patients would be anonymized, and that the data collected from this study would be used exclusively for the study. Data collection took approximately 15 minutes.

2.4. Data analysis

The data of the patients included in the study were analyzed digitally using the SPSS 21.0 software. Kolmogorov Smirnov test was performed to determine whether quantitative data meet acceptable levels of normality. t-test and ANOVA were used in the further analysis of normally

distributed data. Kruskal Wallis test and Mann Whitney U tests were used in the analysis of data that did not show a normal distribution. The results were presented as frequency, percentage, median, minimum maximum. The correlation between the scales and their sub-dimensions was examined by Spearman correlation analysis. The significance level was taken as $p<0.05$.

3. Results

The distribution of socio-demographic characteristics of the patients participating in the study was presented in Table 1. It was determined that 59,5% of the patients were women, 40,5% were male, 83,9% were married, 40,9% were secondary school graduates, 95,5% had social security insurance, 46,3% lived in the district and 57,4% of them had income equal to their expenses (Table I).

TABLE I
DISTRIBUTION OF THE SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PATIENTS (N=242)

		n	%
Age Groups Mean Age 63,0 (21-88)	21-37 years of age	15	6,2
	38-54 years of age	47	19,4
	55-71 years of age	123	50,8
	72-88 years of age	57	23,6
Gender	Female	144	59,5
	Male	98	40,5
Marital Status	Married	203	83,9
	Single	39	16,1
Social Security Insurance	Yes	231	95,5
	No	11	4,5
Education	Literate	40	16,5
	Primary School	20	8,3
	Secondary School	99	40,9
	High School	33	13,6
	University	50	20,7
Profession	Housewife	129	53,3
	Public official	16	6,6
	Retired	58	24,0
	Self-employed	39	16,1
Place of residence	City	93	38,4
	District	112	46,3
	Village	37	15,3
Socioeconomic Status	Income below the expenses	38	15,7
	Income equal to the expenses	139	57,4
	Income above the expenses	65	26,9

n: number of the patients, %: percentage

The clinical characteristics of the patients and the distribution of their health habits are presented in Table II. It was determined that 96.7% of the patients were diagnosed with Type-2 Diabetes, 77.7% had a chronic disease other than diabetes, 36.4% suffered a diabetes-related health problem, 44.6% received oral anti-diabetic medication and 33.5% received insulin therapy. It was further determined that 74% of the patients included in the research received prior training on diabetes, 90.9% used their medications regularly, 21.1% regularly did exercises, 17.4% smoked, and 7% consumed alcohol.

TABLE II
CLINICAL CHARACTERISTICS AND HEALTH HABITS OF THE PATIENTS

		n	%
Type of Diabetes	Type-1 Diabetes	8	3,3
	Type-II Diabetes	234	96,7
How long have they been diagnosed with Diabetes?	1-10 yrs	122	50,4
	11-20 yrs	77	31,8
	21-30 yrs	37	15,3
	31-40 yrs	6	2,5
Any Disease other than Diabetes	Yes	188	77,7
	No	54	22,3
Accompanying Diseases other than Diabetes*	Cardiovascular System Diseases	221	91.3
	Renal Diseases	42	17,4
	Respiratory System Diseases	9	3,7
	Cancers	6	2,5
	Musculoskeletal/Joint Disorders	15	6,2
Diabetes Treatment	Oral Anti-diabetics	108	44,6
	Insulin	81	33,5
	Both Insulin and Oral Anti-diabetics	45	18,6
Diabetes-related Health Problems	Yes	88	36,4
	No	154	63,6
If yes, please indicate Diabetes-related Health Problems*	Diabetic Foot	24	27,3
	Retinopathy	28	31,8
	Nephropathy	27	30,7
	Neuropathy	8	9,1
	Hypoglycemic Attack	1	1,1
Using the Medication Regularly?	Yes	220	90,9
	No	22	9,1
Prior Diabetes Training	Yes	179	74,0
	No	63	26,0
Health Perception	Good	103	42,6
	Moderate	115	47,5
	Poor	24	9,9
Status of Regular Health Check-up	Disrupts Health Checks	70	28,9
	Once every three months	91	37,6
	Once every six months	55	22,7
	Once a year	26	10,7
Smoking	Yes	42	17,4
	No	200	82,6
Alcohol Consumption	Yes	17	7,0
	No	225	93,0
Regular Exercise	Yes	51	21,1
	No	191	78,9

*More than one option is marked.

The median total score of the patients on the Perception of Health Scale (PHS) was 50 (30-71). Median scores of the patients in the “Center of Control”, “Self-Awareness”, “Certainty” and “Importance of Health” sub-dimensions were determined as 17(5-25), 11(3-15), 12(4-20) and 13(3-15)

respectively. The median total score of the patients on the Diabetes Attitude Scale (DAS) was determined as 4,1 (3-5) (Table III).

TABLE III
MEDIAN TOTAL SCORES AND CRONBACH ALPHA RELIABILITY COEFFICIENTS OF THE DIABETES ATTITUDE SCALE AND THE PERCEPTION OF HEALTH SCALE (PHS)

Scales	**Med (Min-Max)**	**Cronbach Alpha Reliability Coefficients**
The Diabetes Attitude Scale	4,1 (3 - 5)	0,826
The Perception of Health Scale (PHS)	50,0 (30-71)	0,514
Center of Control sub-dimension of PHS	17,0 (5-25)	0,809
Self-Awareness sub-dimension of PHS	11,0 (3-15)	0,688
Certainty sub-dimension of PHS	12,0 (4-20)	0,824
Importance of Health sub-dimension of PHS	13,0 (3-15)	0,716

Med: Median, Min: Minimum, Max: Maximum

Socio-demographic characteristics of the patients participating in the study and their median total scores on the Diabetes Attitude Scale were compared in Table 4. Median total scores of the patients on the Diabetes Attitude Scale were found to differ according to their marital status (p=0,043, U=3149) (p<0,05) (Table IV).

TABLE IV
COMPARISON OF THE SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PATIENTS WITH THEIR MEDIAN TOTAL SCORES IN THE DIABETES ATTITUDE SCALE

		Med (Min-Max) W. A ± S. D	**p Value Test Value**
Age Groups	21-37 years of age	4,1 (3 - 5)	p= 0,952 χ^2= 0,343
	38-54 years of age	4 (3 - 5)	
	55-71 years of age	4,1 (3 - 5)	
	72-88 years of age	4,1 (3 - 5)	
Gender	Female	4,1 (3 - 5)	p= 0,181 U= 6340,5
	Male	4 (3 - 5)	
Education	Literate	4,1 ± 0,5	p= 0,902 F= 0,263
	Primary School	4 ± 0,4	
	Secondary School	4 ± 0,4	
	High School	4,1 ± 0,4	
	University	4,1 ± 0,4	
Profession	Housewife	4,1 (3 - 5)	p= 0,263 χ^2= 3,990
	Public official	4,1 (4 - 5)	
	Retired	4,1 (3 - 5)	
	Self-employed	4 (3 - 5)	
Marital Status	Married	4,1 (3 - 5)	**p= 0,043 U= 3149**
	Single	4,3 (3 - 5)	
Socioeconomic Status	Income below the expenses	4,3 (3 - 5)	p= 0,442 χ^2= 10,888
	Income equal to the expenses	4 (3 - 5)	

	Income above the expenses	4,2 (3 - 5)	
Social Security Insurance	Yes	4,1 ± 0,4	p= 0,486 t= 0,352
	No	4 ± 0,5	
Place of residence	City	4,2 (3 - 5)	p= 0,204 χ^2= 3,182
	District	4 (3 - 5)	
	Village	4 (3 - 5)	

W.A ± S.D Weighted Average ± Standard Deviation, χ^2:Kruskal Wallis Test Statistics, U: Mann Whitney U test Statistics, F: One Way ANOVA Test Statistics, t: Independent sample t-test Statistics.

Clinical characteristics of the patients participating in the study and their median total scores on the Diabetes Attitude Scale were compared in Table 5. Median total scores of the patients on the Diabetes Attitude Scale were found to differ according to their status of using the medication regularly (p=0,048, U=1800,5) and whether they had prior training on Diabetes (p<0,001, t=4,138) (p<0,05) (Table V).

TABLE V
COMPARISON OF THE CLINICAL CHARACTERISTICS OF THE PATIENTS WITH THEIR MEDIAN TOTAL SCORES IN THE DIABETES ATTITUDE SCALE

		Med (Min-Max) W.A ± S.D	**p Value Test Value**
Type of diabetes	Type-1 Diabetes	4,1 (4 - 5)	p= 0,702 U= 761,5
	Type-II Diabetes	4,1 (3 - 5)	
Any disease other than diabetes mellitus	Yes	4,1 (3 - 5)	p=0,204 U=4500
	No	4 (3 - 5)	
How long have they been diagnosed with diabetes mellitus?	1-10 yrs	4,1 (3 - 5)	p= 0,552 χ^2= 32,291
	11-20 yrs	4,1 (3 - 5)	
	21-30 yrs	3,9 (3 - 5)	
	31-40 yrs	4 (4 - 5)	
Using the medication regularly?	Yes	4,1 (3 - 5)	**p= 0,048 U= 1800,5**
	No	3,8 (3 - 5)	
Diabetes-related health problems	Yes	4,1 (3 - 5)	p= 0,347 U= 6284
	No	4 (3 - 5)	
Prior diabetes mellitus training	Yes	4,1 ± 0,4	**p< 0,001 t= 4,138**
	No	3,9 ± 0,4	
Health Perception	Good	4,1 (3 - 5)	p= 0,051 χ^2= 5,934
	Moderate	4 (3 - 5)	
	Poor	4,4 (3 - 5)	
Smoking	Yes	4 (3 - 5)	p= 0,134 χ^2= 3582
	No	4,1 (3 - 5)	
Alcohol consumption	Yes	3,9 (3 - 5)	p=0,222 U= 1572,5
	No	4,1 (3 - 5)	
Regular exercise	Yes	4,1 (3 - 5)	p= 0,060 U= 4036
	No	4 (3 - 5)	

W.A ± S.D Weighted Average ± Standard Deviation, U: Mann Whitney U test Statistics, t: Independent sample t-test Statistics, χ^2:Kruskal Wallis Test Statistics, F: One Way ANOVA Test Statistics

Socio-demographic characteristics of the patients and their median total scores in the Perception of Health Scale (PHS) and its sub-dimensions were compared in Table 6. No significant differences were observed in the median total scores of the patients in the Perception of Health Scale

(PHS) and the Importance of Health sub-dimension by their socio-demographic characteristics (p>0,05). It was determined, however, that the median scores of the patients in the "Control Center" sub-dimension of the Perception of Health Scale differed by their socioeconomic status (χ^2=10,677, p<0,05); their median scores in the "Self-Awareness" sub-dimension differed by their socioeconomic status (χ^2=17,382, p<0,01) and the availability of the social security insurance (U=498,5, p<0,01). It was further determined that the median scores of the patients in the "Certainty" sub-dimension differed by their gender (U=5131, p<0,01), profession (χ^2=25,439, p<0,01), and socioeconomic status (χ^2=18,452, p<0,01) (Table VI).

TABLE VI

COMPARISON OF THE SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PATIENTS WITH THEIR MEDIAN SCORES IN THE SUB-DIMENSIONS OF THE PERCEPTION OF HEALTH SCALE (PHS)

Characteristics	**Control Center**	**Self-Awareness**	**Certainty**	**Importance of Health**	**Total PHS Score**
	Med (Min-Max)	Med (Min-Max)	Med (Min-Max)	Med (Min-Max)	Med (Min-Max)
Age Groups					
21-37 years of age	13,0 (8-25)	12,0 (3-15)	12,0 (7-15)	13,0 (8-15)	49,0 (44-62)
38-54 years of age	16,0 (8-24)	11,0 (4-15)	12,0 (4-19)	13,0 (7-15)	49,0 (37-64)
55-71 years of age	17,0 (5-25)	11,0 (5-15)	11,0 (4-20)	12,0 (3-15)	50,0 (30-71)
72-88 years of age	16,0 (7-25)	11,0 (4-14)	12,0 (4-20)	13,0 (5-15)	50,0 (34-61)
χ^2	2,083	1,225	0,818	2,591	2,034
P	0,353	0,542	0,664	0,274	0,565
Gender					
Female	17,0 (7-25)	11,0 (4-15)	12,0 (4-20)	13,0 (5-15)	50,0 (30-71)
Male	16,0 (5-25)	12,0 (3-15)	10,0 (4-18)	13,0 (3-15)	48,5 (33-67)
U	6592	6025	**5131**	6874,5	5785,0
P	0,384	0,052	**<0,001**	0,731	0,017
Education					
Literate	15,5 (9-25)	12,0 (5-15)	12,0 (4-16)	13,0 (6-15)	50,5 (41-64)
Primary School	16,5 (10-25)	11,0 (6-14)	11,5 (6-17)	12,0 (9-15)	50,5 (44-57)
Secondary School	16,0 (5-25)	11,0 (5-15)	12,0 (4-20)	12,0 (5-15)	50,0 (30-71)
High School	18,0 (8-25)	12,0 (4-14)	11,0 (7-18)	12,0 (3-15)	50,0 (37-64)
University	17,0 (7-24)	11,0 (3-15)	12,0 (4-20)	12,0 (5-15)	50,0 (33-62)
χ^2	0,195	3,243	0,774	3,287	2,206
P	0,907	0,198	0,679	0,193	0,698
Profession					
Housewife	17,0 (7-25)	11,0 (4-15)	12,0 (5-20)**A**	13,0 (5-15)	50,0 (34-71)
Public official	13,0 (11-23)	13,0 (8-15)	7,5 (4-13) **BC**	13,0 (7-15)	48,5 (36- 54)
Retired	17,0 (5-25)	11,0 (4-15)	9,0 (4-18)**C**	12,0 (3-15)	49,0 (30- 67)
Self-employed	16,0 (7-25)	11,0 (3-15)	12,0 (4-16)**A**	13,0 (6-15)	49,0 (42- 64)
χ^2	2,785	5,481	**25,439**	4,458	3,088
P	0,426	0,140	**<0,001**	0,216	0,378
Marital Status					
Married	16 (5 - 25)	11 (4 - 15)	12 (4 - 20)	13 (3 - 15)	50,0 (33-71)
Single	18 (9 - 25)	11 (3 - 15)	11 (4 - 18)	13 (5 - 15)	50,0 (30- 62)
U	3257	3523,5	3877	3680	3410,5
P	0,079	0,273	0,838	0,488	0,170
Place of residence					
City	16,0 (5-25)	12,0 (5-15)	12,0 (4-18)	13,0 (7-15)	51,0 (33-62)
District	17,0 (7-25)	11,0 (4-15)	11,5 (4-20)	13,0 (3-15)	49,0 (30-71)
Village	18,0 (9-24)	11,0 (3-15)	12,0 (6-20)	12,0 (5-15)	50,0 (37-61)
χ^2	1,683	2,639	0,978	1,564	1,776
P	0,431	0,267	0,613	0,457	0,411
Socioeconomic Status					

Income below the expenses	20,5 (10-25)**A**	9,0 (4-14)**A**	13,0 (5-20)**A**	11,0 (83-15)	53,0 (40-71)
Income equal to the expenses	16,0 (7-25)**B**	11,0 (3-15)**A**	12,0 (4-18)**A**	13,0 (5-15)	50,0 (30-67)
Income above the expenses	17,0 (5-25)**B**	12,0 (6-15)**B**	9,0 (4-19)**B**	13,0 (7-15)	50,0 (33-64)
χ^2	**10,677**	**17,382**	**18,452**	5,878	2,326
P	**0,005**	**<0,001**	**<0,001**	0,053	0,313
Social Security Insurance					
Yes	17 (5 - 25)	11 (4 - 15)	12 (4 - 20)	13 (3 - 15)	50,0 (30-71)
No	17 (10 - 23)	7 (3 - 12)	13 (7 - 20)	11 (5 - 14)	47,0 (37-60)
U	1164	**498,5**	932,5	602	959,5
P	0,638	**0,001**	0,135	0,003	0,170

χ^2:Kruskal Wallis Test Statistics, U: Mann Whitney U test Statistics A-B-C: No difference was observed between groups denoted with the same letters.

Clinical characteristics of the patients and their median total scores in the Perception of Health Scale (PHS) and its sub-dimensions were compared in Table 7. It was determined that the median total scores of the patients on the Perception of Health Scale differed by their health perception status (χ^2=6,361, p<0,05) and their alcohol consumption (U=1216,5, p=0,012). It was also determined that median scores of the patients in the "Control Center" sub-dimension differed by their accompanying chronic diseases other than diabetes (U=3760,5 p<0,05), diabetes-related health problems (U=5014,5, p<0,01) and their health perception status (χ^2=7, 797, p=0,020). Median scores of the patients in the "Self-Awareness" sub-dimension were found to differ by whether they received any prior training on diabetes (U=4377,5, p<0,01), their health perception status (χ^2=14, 347, p<0,01) and whether they regularly did exercise (U=3035,5 p<0,01). Median scores of the patients in the "Certainty" sub-dimension were found to differ by whether they received any prior training on diabetes (U=4388,5, p<0,01) and whether they regularly did exercise (U=3711, p<0,01) and finally median scores of the patients in the "Importance of Health" sub-dimension were found to differ by whether they received any prior training on diabetes (U=4315,5, p<0,01), their health perception status (χ^2=6,262, p=0,044) and whether they regularly did exercise (U=3830,5 p=0,018) (Table VII)

TABLE VII

COMPARISON OF THE CLINICAL CHARACTERISTICS OF THE PATIENTS WITH THEIR SCORES IN THE SUB-DIMENSIONS OF THE PERCEPTION OF HEALTH SCALE

Characteristics	**Control Center**	**Self-Awareness**	**Certainty**	**Importance of Health**	**Total PHS Score**
	Med (Min-Max)	Med (Min-Max)	Med (Min-Max)	Med (Min-Max)	Med (Min-Max)
Type of Diabetes					
Type-1 Diabetes	21,0 (9-25)	9,0 (3-15)	12,0 (7-15)	13,5 (11-15)	53,0 (47-62)
Type-II Diabetes	16,5 (5-25)	11,0 (4-15)	12,0 (4-20)	13,0 (3-15)	50,0 (30-71)
U	592,5	618	863	658,5	676
p	0,077	0,099	0,707	0,149	0,181
Any Disease other than Diabetes					
Yes	17,0 (5-25)	11,0 (4-15)	12,0 (4-20)	12,5 (3-15)	50,0 (30-71)
No	14,0 (9-23)	11,0 (3-15)	12,0 (4-18)	13,0 (5-15)	48,5 (42-64)
U	**3760,5**	4463,5	5011,5	4489,5	4363
p	**0,004**	0,173	0,886	0,191	0,115
How long have they been diagnosed with Diabetes?					
1-10 yrs	16,5 (7-25)	11,0 (4-15)	12,0 (4-20)	13,0 (3-15)	50,0 (34-67)
11-20 yrs	16,0 (5-25)	11,0 (3-15)	10,0 (4-20)	13,0 (5-15)	50,0 (30-71)
21-30 yrs	18,0 (8-25)	10,0 (6-14)	12,0 (4-16)	12 (6-15)	50,0 (42-62)
31-40 yrs	16,5 (9-23)	11,0 (4-14)	13,5 (4-13)	13,0 (7-14)	50,0 (36-56)

χ^2	0,684	3,689	5,415	1,444	3,653
p	0,877	0,297	0,144	0,695	0,301
Using the Medication Regularly?					
Yes	16,5 (5 - 25)	11 (3 - 15)	12 (4 - 20)	13 (5 - 15)	50,0 (30-71)
No	19,5 (7 - 25)	10 (5 - 14)	14 (4 - 20)	11 (3 - 15)	50,5 (33-64)
U	1948	1912	2073	1773	2366
p	0,131	0,102	0,266	0,037	0,863
Diabetes-related Health Problems					
Yes	18,0 (7-25)	11,0 (4-15)	10,0 (4-19)	12,0 (5-15)	50,0 (30-64)
No	16,0 (5-25)	11,0 (3-15)	12,0 (4-20)	13,0 (3-15)	49,5 (34-71)
U	**5014,5**	6069,5	5782	6284	6196,5
p	**0,001**	0,174	0,057	0,342	0,268
Prior Diabetes Training					
Yes	16,0 (5-25)	11,0 (3-15)	11,0 (4-20)	13,0 (5-15)	50,0 (30-64)
No	17,0 (7-25)	10,0 (4-14)	13,0 (5-20)	12,0 (3-15)	50,0 (33-71)
U	5203	**4377,5**	**4388,5**	**4315,5**	5505,0
p	0,361	**0,008**	**0,009**	**0,005**	0,780
Status of Regular Health Check-up					
Disrupts Health Checks	17,5 (7-25)	12,0 (5-15)	11,5 (5-20)	13,0 (6-15)	51,0 (33-67)
Once every three months	15,0 (5-25)	11,0 (6-15)	12,0 (4-20)	13,0 (5-15)	50,0 (30-71)
Once every six months	16,0 (8-25)	10,0 (3-15)	12,0 (4-17)	12,0 (5-15)	50,0 (36- 62)
Once a year	17,0 (10-25)	11,0 (5-14)	12,0 (4-17)	11,0 (3-15)	48,0 (41-64)
χ^2	3,156	8,175	1,406	7,916	2,667
p	0,368	0,043	0,704	0,048	0,446
Health Perception					
Good	17,0 (5-25) **AB**	12,0 (3-15)**A**	11,0 (4-19)	13,0 (3-15)**A**	51,0 (30-67)**A**
Moderate	15,0 (7-25) **A**	10,0 (5-15)**B**	12,0 (4-20)	12,0 (5-15)**B**	49,0 (33- 62)**B**
Poor	18,5 (8-25) **B**	10,5 (4-14)**AB**	10,0 (4-20)	13,0 (6-15)**AB**	50,0 (37- 71)**AB**
χ^2	**7,797**	**14,347**	4,775	**6,262**	**6,361**
p	**0,020**	**0,001**	0,092	**0,044**	**0,042**
Smoking					
Yes	18,0 (7-25)	11,0 (3-15)	10,5 (4-16)	12,0 (6-15)	48,0 (33-62)
No	16,5 (5-25)	11,0 (4-15)	12,0 (4-20)	13,0 (3-15)	50,0 (30- 71)
U	3737,5	3957,5	3596,5	3511	3669,5
p	0,261	0,553	0,142	0,091	0,198
Alcohol Consumption					
Yes	14,0 (7-25)	11,0 (6-14)	9,0 (4-16)	11,0 (7-15)	46,0 (33- 59)
No	17,0 (5-25)	11,0 (3-15)	12,0 (4-20)	13,0 (3-15)	50,0 (30- 71)
U	1666	1827	1405	1399	**1216,5**
p	0,375	0,757	0,067	0,062	**0,012**
Regular Exercise					
Yes	14,0 (7-25)	12,0 (3-15)	10,0 (4-18)	13,0 (3-15)	50,0 (30- 64)
No	17,0 (5-25)	11,0 (4-15)	12,0 (4-20)	12,0 (5-15)	50,0 (33- 71)
U	4008,5	**3035,5**	**3711**	**3830,5**	4605,0
p	0,052	**<0,001**	**0,009**	**0,018**	0,549

χ^2:Kruskal Wallis Test Statistics, U: Mann Whitney U test Statistics.

Correlation between the Perception of Health Scale and the Diabetes Attitude Scale is presented in Table 8. In this study, a positive however statistically weak correlation was found between the patients' total scores on the Perception of Health Scale (PHS) and the Diabetes Attitude Scale (r=0.155, p<0.05) (Table VIII). It was further determined that the positive attitudes of the patients towards diabetes improved as the health perception of the patients increased.

TABLE VII
CORRELATION BETWEEN THE PERCEPTION OF HEALTH SCALE AND THE DIABETES ATTITUDE SCALE

Sub-dimensions of the Scale	**The Diabetes Attitude Scale**	
Importance of Health	r= 0.304	p<0.001
Certainty	r= -0.206	p=0.001
Self-Awareness	r= 0.292	p<0.001
Control Center	r=0.061	p=0.343
Total PHS Score	r=0.155	p=0.016

Spearmen's correlation coefficient. *p<0.05, **p < 0.001

4. Discussion

Findings obtained in this study, which was conducted to determine the correlation between diabetes attitudes and health perceptions of diabetes patients receiving treatment in a university hospital located in the Central Black Sea Region in northern Turkey, were discussed in line with the relevant literature.

The median total score of patients with diabetes on the Diabetes Attitude Scale was determined as 4.1 (3-5). A median total score above 3 (three) in the Diabetes Attitude Scale was interpreted as patients having a positive attitude. In the literature review conducted for the study, the median total score of the patients participating in the research of Rashidi and Genç in the Diabetes Attitude Scale was determined as 3.8±0.3 [14] whereas this median score was determined as 3.5 (2.5-4.4) by Akaltun and Ersin [15] and as 3.99±0.30 by Aydoğan et al. [16]. The patient needs to have positive attitudes towards diabetes for the diabetes treatment management to be successful, for the patient to adapt to the nutrition, medical treatment, and exercise programs, and to be able to assume their care [17].

The median total score of the patients included in the study in the Diabetes Attitude Scale was found to differ according to their marital status, status of using their medication regularly, and whether they had prior training on Diabetes; accordingly single patients who have regularly used their medications and received prior training on diabetes were found to have positive attitudes towards diabetes. Rashidi and Genç determined, in their study carried out to evaluate the diabetes attitudes of patients diagnosed with Type 1 and Type 2 diabetes, that the diabetes attitudes of patients who complied with medical treatment were positive [14, 18]. In the study carried out by Karakurt et al. examining the knowledge levels and attitudes of diabetic patients about their disease, it was determined that the total Diabetes Attitude Scale score of the patients differed according to whether they used their medications regularly [19,20].

In another study carried out by Aydoğan et al. [16] to examine the factors affecting the knowledge level and attitudes of Type-2 diabetes patients about their disease, it was found that patients who received prior training on diabetes had positive attitudes towards diabetes [13]. Contrary to the research findings here, Dinç and Ovayolu [21] reported that patients who received prior training on diabetes developed negative attitudes towards diabetes . Negative or positive attitudes developed by the patients following their training on diabetes may be attributed to the content of the training provided or the qualifications of the nurses providing the training.

It was determined in this study that the total score of the patients on the Perception of Health Scale differed by their health perception status and their alcohol consumption status. It was observed that patients who perceived their health status as good and did not consume alcohol had higher health

perceptions. For their study in which they examined the health perceptions and health-promoting lifestyle profiles of coronary artery patients, Gür and Sunal [22] reported that the health perceptions of the patients were above the average and, contrary to our research findings, the health perceptions of those who consumed alcohol were higher than those who did not. The literature review revealed that the health perception level of patients differed by factors such as their gender, family relationships [22,23], profession, body mass index [22], chronic disease status, number of chronic diseases, exercising and healthy dietary habits [24,25], smoking, alcohol consumption [22, 25], regular visits to a physician and regularly having been checked up [22].

In this study, a statistically significant relationship was determined between median total scores in the Diabetes Attitude Scale and the Perception of Health Scale ($r=0.155$, $p<0.05$). It was further determined that the positive attitudes of the patients towards diabetes improved as their health perceptions increased. For diabetes management to be effective and for the patients' adaptation to care and treatment instructions, the patients should have sufficient knowledge, skills, and attitudes toward diabetes. For the patients to develop positive health behaviors, it is important to ensure that patients have positive attitudes and to consider their health perception levels [26-28]. Accordingly, it is recommended to plan and implement nursing care practices from a holistic and humanistic perspective and to provide training and counseling in line with patient needs so that diabetes patients can lead a quality life and improve their well-being.

5. Conclusion

In this study, the median total score of patients with diabetes in the Diabetes Attitude Scale was determined as 4.1 (3-5). It was determined that the total median score of the patients in the Diabetes Attitude Scale differed according to some socio-demographic and professional characteristics of the nurses ($p<0.05$). The median total score on the Perception of Health Scale (PHS) was determined as 50.0 (30-71). It was observed that patients who perceived their health status as good and did not consume alcohol had higher health perceptions.

It was determined in this study that there is a positive however statistically weak correlation between the patients' total scores in the Perception of Health Scale (PHS) and the Diabetes Attitude Scale and that patients with positive attitudes perceived their health better. In line with the findings obtained from the research, nurses are recommended to plan diabetes-related training aiming to improve the quality of life of patients diagnosed with diabetes, to follow up with the patients periodically after the training, and to ensure the cooperation of the patient's relatives in these training.

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