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DIYABETIK HASTALARIN SAĞLIK İNANÇLARININ METABOLIK KONTROL ÜZERINE ETKISININ İNCELENMESİ [1]

AN INVESTIGATION OF THE EFFECTS OF THE HEALTH BELIEFS OF DIABETICS ON METABOLIC CONTROL

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Öz: Bu araştırmada diyabetik hastaların sağlık inançlarının metabolik kontrol üzerine etkisinin incelenmesi amaçlanmıştır. Araştırma tanımlayıcı tiptedir. Araştırma Manisa Devlet Hastanesi Endokrinoloji Bölümü'nde tedavi gören Tip 2 diyabet hastalarında yürütülmüştür. Araştırmada veri toplama aracı olarak Diyabetik Hastaların Tanımlayıcı Özellikleri Bilgi Formu ve Diyabet Hastalarında Sağlık İnanç Modeli Ölçeği kullanılmıştır. Çalışmada tip 2 diyabetli bireylerin sağlık inançları ile yaş, cinsiyet, eğitim durumu, gelir durumu, çalışma durumları, diyabet süresi ve diyabet tedavisinin tipi arasında anlamlı bir ilişki olmadığı görülmüştür. Algılanan duyarlılık puan ortalaması tokluk kan şekeri kötü kontrol düzeyinde olan hastalarda daha yüksek, algılanan duyarlılık puan ortalaması BKI obez sınıfında olan hastalarda daha yüksek, hastaların sağlıkla ilgili önerilen aktiviteler alt boyutu puan ortalamalarının HbA1c değeri iyi kontrol düzeyinde olan hastalarda daha yüksek, algılanan ciddiyet alt boyutu puan ortalaması diyabet tedavisine uyum algıları ve diyete uyum algıları kötü olan hastalarda anlamlı düzeyde daha yüksek saptanmıştır. Bu çalışmada hastaların sağlık inançlarının negatif düzeyde olduğu ve tedavi uyumsuzluklarını yadsıdıkları belirlenmiştir. Bu bulgular hastaların diyabet ve tedavisi ile ilgili olumsuz tutumlara ve bilgi eksikliklerine ya da yanlış bilgilere sahip oldukları düşündürtmektedir.

Anahtar Kelimeler: Sağlık inançları, Diyabet, Metabolik Kontrol

Abstract: The aim of this study was to investigate the effects of the health beliefs of diabetic patients on metabolic control. This descriptive study. The study was performed on type 2 diabetes patients who were receiving treatment at the Endocrinology Department of Manisa State Hospital. Data collection in the study was performed by using an Identifying Characteristics Form for Diabetic Patients and a Model Scale for Health Beliefs in Diabetic Patients. It was established that the mean perceived sensitivity score was higher in patients whose postprandial blood sugar was poorly controlled and in patients whose BMI was classified as obese; the mean scores on the subscale of activities recommended in relation to patients' health were higher in patients whose HbA1c values were at a good level of control, and the mean scores on the subscale of perceived seriousness were significantly higher in patients whose perceptions of conformity to diabetes treatment and perceptions of conformity todiet were poor. It was shown in the study that patients' health beliefs were at a negative level, and that they denied their lack of conformity to treatment. These findings suggest that patients have negative attitudes towards diabetes and its treatment, and that their knowledge is incomplete or wrong.

Key Words: Health Beliefs, Diabetes, Metabolic Control

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INTRODUCTION

Diabetes is a chronic disease, which occurs when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin it produces (WHO, 2013: 1-2). The two main forms are type 1 diabetes and type 2 diabetes (Mansour-Ghanaei *et al.*, 2013:470-477). About 90% of all diabetics have type 2 diabetes (Karaca Sivrikaya, 2006). The World Health Organisation (WHO) has named diabetes mellitus as one of the most serious public health problems of the new millennium (Karaca Sivrikaya, 2006).

The prevalence of diabetes mellitus is increasing in developing countries due to population growth, aging, unhealthy diets, obesity and sedentary lifestyles (Ayele et al., 2012). According to the results of a 2010 study by Turkish Diabetes Epidemiology (TURDEP-II), the rate of diabetes in the adult Turkish population is 13.7% (Satman, 2010). The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030, while in developing countries the prevalence is projected to double between 2000 and 2030 (Cappelle, 2010:1-77).

Diabetes is a chronic illness that requires continuing medical care and patient self-management education to prevent acute complications and to reduce the risk of long-term complications (ADA 2008, Cappelle, 2010:1-77).

To prevent serious morbidity and mortality, diabetes treatment requires dedication to demanding self-care behaviors in multiple domains, including food choices, physical activity, proper medications intake and blood glucose monitoring (Ayele et al., 2012). Diabetes management primarily depends on the behavior and self-care of the patient (Clarke et al., 2002:340–349, Jahanlou et al., 2013: 297-312). Studies carried out in many countries (Da Qing, DPP, DPS) have shown that in diabetes, healthy changes in lifestyle alone can reduce risks by 44-58%, or at the very least put them off (TEMD 2013). Therefore, detecting the factors which are effective in changing the behavior of diabetic patients is very important (Pourghaznein et al., 2013). In order for diabetic patients to achieve successful daily management of their illness, they must have a positive attitude to information on diabetes and to adapting their behavior in the light of the information which they receive. Studies have found that the attitudes of patients to diabetes affect the course of their diabetes care (Çelik 2002, Karaca Sivrikaya 2006, Keskin & Balcı 2011). It is important to investigate the attitudinal components of health-related behavior. If attitudes related to health behavior can be identified, health protection interventions to secure attitudinal change can be developed, and an increase in desirable health behavior would be detected (Jirojwong & Mac Lennan, 2003).

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Various behavior models are used in developing healthy lifestyle behaviors. One of these is the Health Beliefs Model. The health beliefs of diabetic patients are considered to be one of the factors which are influential on health behavior performance and help to control complications (Pourghaznein et al., 2013). The Health Belief Model has been used to predict and explain compliance with preventive health behaviors, as well as with disease-specific health-promoting activities (Graziani et al., 1999: 358-363). According to the Health Beliefs Model, it is presumed that when a person follows the health-related activities recommended, he or she is under the influence of Perceived sensitivity, Perceived severity of disease and Perceived benefits against Perceived obstacles to following recommended behaviors. The health beliefs of diabetic patients are considered to be one of the factors which influence health behavior performance and which help control complications (Pourghaznein et al., 2013).

The aim of this study was to investigate the influence of the health beliefs of diabetic patients on metabolic control.

- The effect of patients' sociodemographic characteristics on their health beliefs,
- The effect of patients' treatment, diet and exercise regime on metabolic control,
- The application of health beliefs relating to recommended activities regarding the perceived sensitivity, seriousness, benefits, obstacles and health of patients to treatment, diet and exercise,
- The effect of health beliefs relating to suggested activities regarding the perceived sensitivity, seriousness, benefits, obstacles, and health of patients on metabolic values such as preprandial and postprandial blood sugar levels, HbA1C and BMI, were also studied as specific aims.

BACKGROUND

Health beliefs model was introduced in 1960's in order to provide a framework for discovering why some people who are not ill, take preventive measures while some people fail in doing preventive actions. This model is a framework for simulating people for positive behaviors and avoiding negative health behaviors. Many researchers apply this model for health intervention development to change behaviors. According to Health Beliefs Model, it is presumed that when a person follows recommended health related activities, it is under the influence of Perceived sensitivity, Perceived severity of disease and Perceived benefits against Perceived barriers for following recommended behaviors. If Perceived barriers were less than Perceived sensitivity or Perceived severity of disease it is more

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probable to do recommended health related activities. A perceived benefit is defined as how sticking to medication adherence is useful for their health. Perceived barriers refer to barriers for receiving medication regimen such as forgetfulness, family problems, lack of motivation and disorders in activity daily living. Perceived sensitivity is defined as people's beliefs about what would happen if they do not obey physician's orders, and Perceived severity is subjective understanding of severity of disease (Pourghaznein et al., 2013: 39).

In order for diabetic patients to successfully manage their illness on a daily basis, they must have sufficient knowledge and skills, and a positive attitude. Patients need knowledge which includes their beliefs and attitudes in order to prevent complications, ensure effective treatment, and develop strategies.

Surit (2001) examined the relationship between diabetes complications and the health belief model in diabetic patients, and found a medium-level relationship between diabetic complications and all fields in the health model. In a monitoring study by Daniel and Messer (2002) on the effects of perceived seriousness and obstacles on glycaemic control, it was emphasised that there was a statistically significant relationship between patients' glycaemic control and their belief levels, and that it was easier to secure the cooperation of patients in recommended approaches to treatment. Kartal and Özsoy (2007) found that as metabolic control values fell in type 2 diabetics, their mean health belief scores increased in a positive way. In a study by Şermet (2012) on the health beliefs of aged diabetic patients on the care and treatment of diabetes, it was found that these patients had negative health beliefs, and that this affected their methods of diabetes care and treatment. Pourghaznein et al. (2013), in a study of the relationship between the conformity to treatment of type 2 diabetics and their health beliefs, established that there was a relationship between their health belief model fields and their conformity to treatment.

METHODS

The study was performed on type 2 diabetes patients who were being treated at the Endocrinology Department of Manisa State Hospital. Data were collected between 15 January and 1 June 2013. The research sample was recruited after they gave informed consent, and consisted of 200 patients who were over the age of 18, had no mental problems, and who had had type 2 diabetes for at least three months.

Data Collection

An Identifying Characteristics Form for Diabetic Patients and the Health Beliefs in Diabetics Model Scale were used to collect data.

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The Identifying Characteristics Form for Diabetic Patients

This form was developed by Kartal and Özsoy in 2005 in accordance with the literature for the purpose of determining the socio-demographic characteristics of patients and their condition with regard to diabetes and diabetes control, and contains 25 questions. The first part of the questionnaire concerns the socio-demographic characteristics of the patients, while the second part asks about the patients' condition regarding diabetes and diabetes control (Kartal & Özsoy, 2007).

Health Beliefs in Diabetics Model Scale (HBM)

This scale was developed by Tan (2004) based on the five subscales of the Health Beliefs Model to assess the health beliefs and attitudes of diabetics towards their illness and to investigate their health behaviors (Tan 2004). The validity and reliability studies of the Turkish scale were performed by Kartal & Özsoy (2007) on type 2 diabetic patients. The study on the validity and reliability of the scale in Turkey was carried out on 352 type 2 diabetes patients between the ages of 30 and 70 who attended the Denizli Province Diabetics Association. The scale consists of a total of 33 items with five subscales on perceived sensitivity (4 items), perceived seriousness (3 items), perceived benefits (7 items), perceived obstacles (9 items), and health-related recommended activities (10 items). The test-retest reliability of the scale is 0.90, the Cronbach alpha values of the subscales vary from 0.73 to 0.86, and the Cronbach alpha value of the whole scale is 0.89 (Kartal & Özsoy 2007).

In evaluating the scale, each item is graded from 1 to 5 by Likert-type scoring. Responses ranged from "I definitely disagree" (1) to "I definitely agree" (5). Negative questions on the scale were scored the other way round. These were items 3 and 4 of the perceived sensitivity subscale, and items 16, 17, 18, 19, 20, 21, 22 and 23 of the perceived obstacles subscale. Subscale mean scores were calculated by totaling the scores of the items on each subscale and dividing it by the number of items in the subscale. A score of 4 or above was taken to show a high (positive) health belief, while a score of less than 4 showed a low (negative) health belief (Tan 2004, Kartal & Özsoy 2007).

The Cronbach alpha coefficients of the scale in this study were 0.57 for the subscale of perceived sensitivity, 0.71 for perceived seriousness, 0.81 for perceived benefits, 0.70 for perceived obstacles, and 0.89 for health-related recommended activities.

For metabolic control, the levels of preprandial and postprandial blood sugar, triglyceride,

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cholesterol, HDL and HbA1C in the patients' most recent routine monitoring were tested. Separate laboratory tests were not required to determine patients' metabolic values in the study, and the results of laboratory tests ordered by the endocrinologists at the clinic were used. For this reason, the metabolic data on some of the patients were incomplete. In the assessment of metabolic control monitoring, the values for good control and poor control of the World Health Organisation (WHO) and the American Diabetes Association (ADA) were used (ADA 2013, WHO 2013a). Thus, for preprandial blood sugar, 80-110 mg/dl was taken as good control and 111 mg/dl as poor control; for postprandial blood sugar, 80-140 mg/dl showed good control and 141 mg/dl poor control; HbA_{1C} of 6.5 % and below indicated good control and 6.6% or above showed poor control; total cholesterol of below 200 mg/dl showed good control and 201 mg/dl and above poor control; HDL of over 40 mg/dl was good and below 39mg/dl was poor; triglyceride of below 150 mg/dl was good and above 151 mg/dl was poor; systolic blood pressure of below 140mmHg was good and above 141 mmHg was poor, and diastolic blood pressure of below 90 mmHg was good and above 91 mmHg was poor (ADA 2005). Also, patients' height and weight were measured in order to calculate their BMI. Patients' BMI was calculated according to the international obesity categories of the WHO (WHO 2013b). A BMI of between 18.5 and 24.9 kg/m^3 was considered normal, and one above 25 kg/m^3 was considered obese. Patients' conformity to diabetes treatment and diet was evaluated according to the statements given by the patients.

Design

This was a cross-sectional and descriptive study. Patients attending the Endocrinology Department who gave their informed consent and agreed to take part in the study were taken to rooms in the clinic, and when they felt comfortable, the study, its purpose and the questionnaire forms were explained to them. The questionnaire forms were completed in twenty minutes by a researcher by using the face-to-face interview technique.

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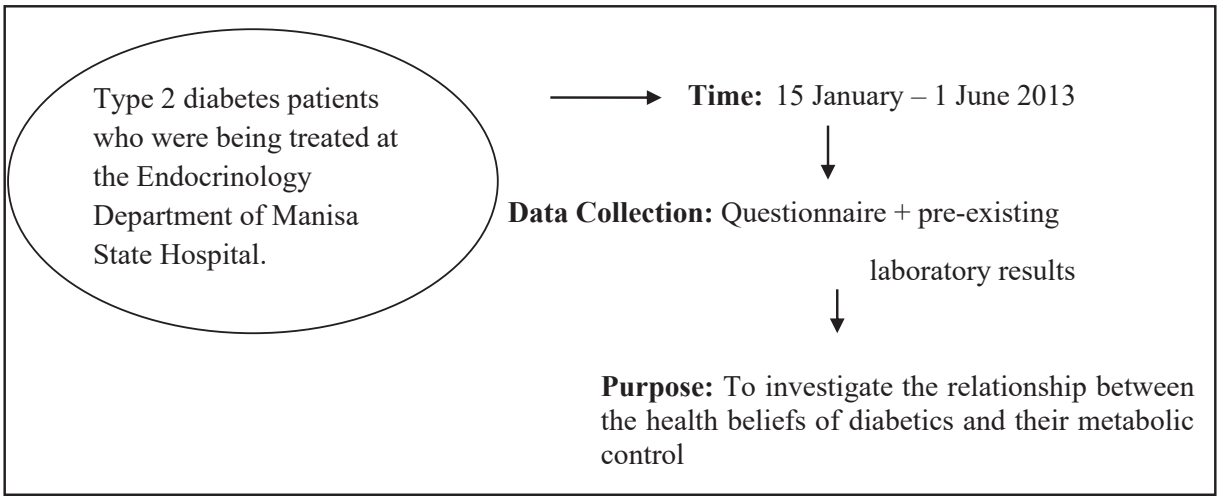
Figure 1. Survey Research Design



Ethical Considerations

Before starting the research, approval was given by the Ethics Committee for Non-Invasive Research of the Medical Faculty of Celal Bayar University, and written permission was obtained from Manisa State Hospital. Patients who attended the Endocrinology Department were recruited into the study after giving their informed consent to take part.

Data Analysis

The analysis of the research data was performed by using SPSS 15.00, using numerical and percentage distributions, Independent t-test for independent variables, variance analysis, ANOVA, and Mann Whitney U and Kruskall Wallis tests.

RESULTS

The following results shows the identifying characteristics of the 200 diabetic patients who participated in the study. It was found that 69.5% of the patients were women, 53.5% were aged 59 or over, 80% were married, 7.0% were primary school graduates, 63.5% were not working, and 70% had an income equal to or more than expenses.

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Table 1. Distribution of Patients According to Illness-Related Characteristics

Characteristics	n	%
Duration of diabetes		
1 year or less	28	14.0
2 - 9 years	77	38.5
10 years or more	95	47.5
How was diabetes detected?		
By measurement of blood sugar	28	14.0
After going for treatment for another illness	79	39.5
After going to the doctor with suspected diabetes	79	39.5
Other	14	7.0
Diabetes in first-degree relatives		
Yes	104	52.0
No	96	48.0
Current type of diabetes treatment		
Diet	12	6.0
Tablets	113	56.5
Insulin	75	37.5
Conformity to diabetes treatment		
Good	180	90.0
Poor	20	10.0
Blood sugar monitoring		
Yes	181	90.5
No	19	9.5
Frequency of blood sugar monitoring (N=181)		
Once a day	100	55.24
Once a week	31	17.12
Once a month	25	13.82
Other (when I don't feel well)	25	13.82
Smoking		
Yes	26	13.0
No / Stopped	174	87.0
Conformity to diet (n=106)		
Good	190	95.0
Poor	10	5.0

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Exercise		
Yes	73	36.5
No	127	63.5
Frequency of exercise (n=73)		
Regularly every day	40	54.1
1-2 times a week	10	13.5
Irregularly	23	32.4
Frequency of going to the doctor for diabetes check-up		
I don't go to the doctor for check-up	19	9.5
1- 3 times a month	133	66.5
6 -12 times a month	48	24.0
Hospitalization for diabetes within the past year		
Yes	119	59.5
No	81	40.5
Reason for hospitalization		
Hypoglycemia (low blood sugar)	12	7.2
Hyperglycemia (hig blood sugar)	108	65.1
Starting insulin	11	6.6
Other chronic illnesses	34	21.1
Total	200	100.0

Table 1 shows the distributions of patients according to illness-related characteristics. According to their statements, it was seen that 47.5% of the patients had had diabetes for more than 10 years; 39.5% had come for treatment for another illness; 39.5% had been diagnosed after coming to the doctor with suspected diabetes; 52% had first-degree relatives with diabetes; 56.5% were currently taking tablets as diabetes treatment; 90.5% were monitoring blood sugar levels; 55.24% measured blood sugar every day; 87% did not smoke, and 63.5% did not take exercise. Also, 90% stated that their perception of conformity to diabetes treatment was good, and 95% that their perception of conformity to diet was good, while 54.1% of those who took exercise stated that they took regular exercise every day. In addition, 66.5% of the patients stated that they had seen the doctor for a diabetes check-up once in the previous 1-3 months, 59.5% that they had been hospitalized because of diabetes in the past year, and 65.5% that the reason for hospitalization was hyperglycemia.

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Table 2. Distribution of Mean Scores on the Health Beliefs Model Scale and Patients' Mean Metabolic Control Values

Subdimensions on the Health Beliefs Model Scale	Av ± SD	Min-Max
Perceived Sensitivity (4 items)	2.66±0.83	1-5.00
Perceived Seriousness (3 items)	1.64±0.77	1-5.00
Perceived benefits (7 items)	1.84±0.62	1-3.86
Perceived obstacles (9 items)	1.89±0.76	1-4.56
Health-related recommended activities (10 items)	1.67±0.65	1-4.00
Metabolic Values	Av ± SD	Min - Max
Preprandial blood sugar (mg/dl)	148.29±59.70	36 – 389
Postprandial blood sugar (mg/dl)	208.06±76.61	66 – 450
HbA1c (%)	8.84±2.63	5.06 – 14.69
Total cholestorol (mg/dl)	177.27±37.68	97 – 255
HDL (mg/dl)	37.03±9.80	20 – 65
Triglyceride (mg/dl)	212.15±156.64	26 – 793
Blood pressure - systolic (mm/Hg)	119.32±14.98	80 – 170
Blood pressure - diastolic (mm/Hg)	72.84±9.73	50 – 90
BMI (Kg/m^2)	28.75±5.51	18 – 49

Table 2 shows the mean scores obtained by patients on the scale of the Health Belief Model (HBM). Mean scores were 2.66±0.83 (min=1 max=5) for perceived sensitivity, 1.84±0.62 (min=1 max=5.00) for perceived seriousness, 1.84±0.62 (min=1 max=3.86) for perceived benefits, 1.89±0.76 (min=1 max=4.56) for perceived obstacles, and 1.67±0.65 (min=1 max=4) for health-related recommended activities.

An examination of the distribution of the mean values of patients' metabolic control showed that the mean preprandial blood sugar level was 148.29±59.70 (min=36 max=389) mg/dl; mean postprandial blood sugar level was 208.06±76.61 (min=66 max=450) mg/dl; mean HbA1c was 8.84±2.63 (min= 5,06 max=14,69) %; total cholesterol was 177.27±37.68 (min= 97 max=255) mg/dl; mean HDL was 37.03±9.80 (min=20 max=65) mg/dl; mean triglyceride was

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212.15±156.64 (min= 26 max=793) mg/dl; mean systolic blood pressure was 119.32±14.98 (min= 80 max=170) mm/Hg; mean diastolic blood pressure was 72.84±9.73 (min= 50 max=90) mm/Hg; and mean BMI was 28.75±5.51 (min= 18 max=49) Kg/m^2 (Table 2).

Table 3. Relationship between Various Patient Characteristics and Mean Scores on the Health Beliefs Model Scale

Characteristic	n	Perceived Sensitivity	Perceived Seriousness	Perceived Benefits	Perceived Obstacles	Health-related Recommended Activities
Age		t= -0.294 p=0.769	t= -0.973 p=0.332	t=-0.757 P=0.450	t=-0.293 p=0.770	t=-1.350 p=0.179
58 years and below	93	2.64±0.78	1.58±0.74	1.81±0.58	1.87±0.76	1.60±0.63
59 years and above	107	2.67±0.87	1.69±0.80	1.87±0.66	1.90±0.75	1.72±0.66
Sex		t= -0.417 p=0.677	t= 1.060 p=0.290	t= 0.924 P=0.357	t=-0.252 p=0.801	t=-0.899 p=0.402
Female	139	2.64±0.82	1.68±0.82	1.87±0.63	1.88±0.72	1.64±0.63
Male	61	2.70±0.85	1.55±0.64	1.78±0.61	2.06±0.89	1.72±0.70
Educational Status		f=0.096 P=0.908	f=1.904 P=0.152	f=2.430 P=0.091	f=0.132 P=0.876	f=0.494 P=0.611
Illiterate / Literate	47	2.69±0.75	1.78±0.87	1.96±0.63	1.92±0.81	1.74±0.75
Primary school	140	2.66±0.85	1.62±0.75	1.83±0.60	1.87±0.74	1.65±0.62
Secondary school or above	13	2.57±0.90	1.33±0.49	1.54±0.50	1.95±0.74	1.56±0.57
Work status		t=-0.036 p=0.971	t=-1.028 p=0.305	t=-1.501 P=0.135	t=-0.220 p=0.826	t=1.084 p=0.280
Working	73	2.66±0.83	1.57±0.61	1.76±0.58	1.87±0.78	1.73±0.68
Not working	127	2.66±0.83	1.68±0.85	1.89±0.64	1.90±0.74	1.63±0.63
Marital Status		t= 0.488 p=0.626	t=-0.273 p=0.785	t=-1.107 P=0.199	t=-1.638 p=0.103	t=-0.200 p=0.842
Married	160	2.67±0.79	1.63±0.74	1.82±0.61	1.85±0.72	1.67±0.62
Single	40	2.60±0.98	1.67±0.89	1.94±0.66	2.06±0.89	1.65±0.76
Duration of diabetes		f= 0.255 p=0.858	f= 0.090 p=0.914	f= 0.756 p=0.520	f= 0.119 p=0.949	f= 2.116 p=0.930
1 year or less	28	2.66±0.95	2.11±1.51	1.91±0.73	1.92±0.81	1.69±0.55
2 - 9 years	77	2.76±0.78	1.53±0.59	1.88±0.52	1.83±0.72	1.82±0.53
10 years or more	95	2.63±0.83	1.67±0.79	1.93±0.60	1.91±0.77	1.78±0.79

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Type of diabetes treatment		X^2=0.261 P=0.878	X^2=0.656 P=0.720	X^2=0.444 p=0.642	X^2=0.699 P=0.705	X^2=0.776 P=0.679
	12	2.58±0.70	1.75±1.13	1.57±0.45	1.82±0.71	1.57±0.50
Diet	113	2.64±0.80	1.61±0.74	1.81±0.60	1.88±0.78	1.68±0.60
Tablets	75	2.70±0.89	1.66±0.75	1.93±0.66	1.91±0.74	1.67±0.65
Insulin						
Perception of conformity to diabetes treatment		z= -0.463 p=0.643	z=-2.098 p=0.036*	z=-0.224 P=0.823	z=-0.861 p=0.389	z=-0.453 p=0.650
	180	2.65±0.82	1.60±0.73	1.84±0.61	1.88±0.77	1.65±0.62
Good	20	2.73±0.76	2.05±1.00	1.91±0.75	1.96±0.59	1.85±0.89
Poor						
Perception of conformity to diet		z= -1.040 P=0.298	z= -2.099 P=0.036*	z= -0.085 P=0.932	z= -0.813 P=0.416	z= -1.199 P=0.230
	190					
Good	10	2.64±0.82	1.59±0.68	1.84±0.61	1.88±0.77	1.65±0.64
Poor		2.90±0.68	2.56±1.50	1.97±0.82	1.97±0.82	1.95±0.74

***Mann Whitney U**

Examining the relationship between the mean scores on subdimensions of the HBM scale and various patient characteristics, it was found that there was no significant relationship between the mean scores on the HBM subdimensions and patients' age sex, education level, income status, work status, marital status, duration of diabetes or type of diabetes treatment (p>0.005) (Table 3).

The mean score of the subdimension of perceived seriousness on the HBM scale of patients in the study was significantly higher in patients whose perception of conformity to diabetes treatment was poor than in those who perceived it as high (z=-2.098 p=0.036** Mann Whitney U). The mean score of the subdimension of perceived seriousness on the HBM scale was significantly higher in those whose perception of conformity to diet was poor than in those who perceived it as good (z= -2.099 P=0.036** Mann Whitney U) (Table 3).

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Table 4. Relationships between Various Metabolic Values of Patients and the Health Beliefs Model Scale

Metabolic Values	N	%	Perceived sensitivity	Perceived seriousness	Perceived benefits	Preceived obstacles	Health-related recommended activities
Preprandial blood sugar (n= 200)			t=-1.265 p=0.207	t=-0.363 p=0.717	t=-1.529 p=0.128	t=0.746 p=0.457	t=-0.765 p=0.445
Good control	56	28	2.54±0.81	1.61±0.83	1.95±0.70	1.95±0.88	1.61±0.57
Poor control	144	72	2.71±0.83	1.65±0.75	1.80±0.58	1.86±0.71	1.69±0.68
Postprandial blood sugar (n= 200)			t=-2.771 **p=0.006***	t=-0.725 p=0.469	t=-1.219 p=0.224	t=1.324 p=0.187	t=-1.833 p=0.068
Good control	33	16.5	2.30±0.72	1.55±0.72	1.96±0.74	2.05±0.89	1.48±0.55
Poor control	167	83.5	2.73±0.83	1.66±0.78	1.82±0.59	1.86±0.73	1.70±0.66
HbA1c (n= 42)			z=-0.596 p=0.551	z=-0.166 p=0.868	z=-0.916 p=0.360	z=-0.533 p=0.594	z=-2.200 **p=0.034****
Good control	10	23.8	2.52±0.59	1.66±0.70	2.04±0.46	2.12±0.45	1.99±0.47
Poor control	32	76.2	2.59±0.73	1.62±0.68	1.83±0.68	2.14±1.02	1.49±0.65
BMI (n=107)			X2=-2.043 **P=0.044****	X2=-1.401 P=0.164	X2=0.605 P=0.547	X2=2.858** P=0.005	X2=0.137 P=0.891
Normal	17	16	2.33±0.79	1.41±0.67	1.96±0.70	2.26±1.17	1.67±0.73
Obese	90	84	2.76±0.78	1.64±0.61	1.87±0.54	1.74±0.57	1.65±0.54

***t-test ** Mann Whitney U**

In evaluating the relationship between the patients' metabolic values and their mean scores on the HBM scale, it was seen that the mean score on the perceived sensitivity subscale of the HBM scale was significantly higher in patients whose postprandial blood sugar level was at a poor level of control than in those whose blood sugar level was at a good level of control (t=-2.771 p=0.006* t - test) (Table 4).

It was found that the perceived sensitivity mean score on the HBM scale was significantly higher in patients whose BMI was in the obese category than in those whose BMI was normal (X^2=-2.043 P=0.044* t-test) (Table 4).

It was shown that the mean scores of the patients on the health-related recommended activities subscale of the HBM scale were significantly higher in patients whose HbA1c values were at a good level of control than in those in which it was at a poor level of control (z=-2.200 p=0.034** Mann Whitney U test (Table 4).

No significant relationship was found between other metabolic variables and the subdimensions of the scale (p>0.005) (Table 4).

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DISCUSSION

In this study, which was conducted to investigate the effect of patients' health beliefs on their metabolic control, the mean age of patients was high and their mean education level was low. All the patients stated that they had received training from diabetes nurses and that they went to the doctor for diabetes checks. Most had had diabetes for more than two years, their preprandial and postprandial blood sugar levels and HbA1C were at a poor level of control, and most were obese according to their BMI. It is of interest that a majority of patients whose preprandial and postprandial blood sugar levels and HbA1C were at a poor level of control and who were mostly obese according to their BMI perceived their conformity to diabetes treatment and diet as good. Also, patients' health beliefs as measured on the HBM scale were at a negative level. As a result, it was thought that patients were in denial regarding their conformity to treatment because of their health beliefs, and that they had insufficient or mistaken information regarding diabetes.

Following this general evaluation, there will be a discussion of the variables among the mean scores on subscales of the HBM scale which were found to have a significant relationship.

The health beliefs of diabetic patients are considered to be a significant factor affecting their health behaviors. For this reason, health workers must know the beliefs and attitudes of patients in order to prevent complications caused by diabetes, to achieve conformity to treatment, and to be able to develop strategies for treatment (Şermet, 2012).

When patients' health beliefs were examined with the Diabetic Patients' Health Beliefs Model Scale, health beliefs scores on all subscales of the health scale (perceived sensitivity, perceived seriousness, perceived benefits, perceived obstacles and health-related recommended activities) were found to be at a negative level.

Kartal (2006) reported in a preliminary study on a planned training program for diabetic patients that mean health belief scores were negative, and Yandım (2011) reported that health beliefs were at a negative level in the two groups of patients – those with feet and those without – in a study of diabetics who were mostly over 40 years of age (Kartal 2006, Yandım 2011). In a study by Sermet (2012) it was reported that the mean health belief scores of a group of aged diabetic patients showed a negative health belief. Tan (2004), in a study investigating the health beliefs of diabetic patients in relation to their diabetes, found that these beliefs were negative, and Daniel (2002) found in a study monitoring diabetic training

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that before intervention the health beliefs of diabetics in relation to their illness were negative (Daniel & Messer 2002, Tan 2004).

Although socio-demographic characteristics such as age, sex, educational level and income level have been evaluated as factors in variations in health beliefs in HBM, there are varying findings in the literature on the topic of the effect of socio-demographic characteristics on health beliefs in diabetic patients. Surit (2001), Johnson (2005), Hazavehei et.al (2007) and Şermet (2012) reported a relationship between patients' health beliefs with regard to diabetic care and treatment and individual characteristics, while in studies by Javanshir (2006), Vardar İnkaya and Karadağ (2011), Ratanasuwan et al. (2012), Mansour-Ghanaei et al. (2013) and Pourghaznein et al. (2013) and also in our study no relationship was found between the health beliefs of diabetics and age, sex, educational status, income status or work status. A significant relationship was found between the patients' mean scores on the subscale of perceived seriousness and conformity to diabetes treatment and diet ($p<0.005$). The mean score for perceived seriousness was higher in patients whose conformity to diabetes treatment and to diet was poor. These results differ considerably from those of other studies (Mshungane et al. 2012, Pourhigaznein et al. 2013), and was considered to be the opposite of the expected result. Patients who are aware of their personal responsibilities and conform to the principles of treatment may get along well for years with their illness. At the same time, living for so long under the same discipline with a chronic illness like diabetes is very difficult. In this study, patients' conformity to diabetes treatment and conformity to diet were interrogated with two open-ended questions: 'How well do you conform to diabetes treatment?' and 'How well do you conform to your diet?' Although most patients answered both questions by saying that their conformity was good, the metabolic results did not support their statements. It is thought that patients who know that they must conform to treatment and diet but who do not will not report the truth on this topic but will give the answer which is expected of them, and this may have affected the results. When the patients' mean scores of perceived benefits were compared with their perception of conformity to diet and diabetes treatment, it was seen that this result was to a certain extent supported.

The mean score on the perceived sensitivity subscale of the HBM scale was higher in patients whose control of postprandial blood sugar was at a poor level of control than in those who had a good level of control, and there was a statistically significant relationship between them. Diabetes is a disease which both causes stress and is greatly affected by stress.

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Sensitive individuals experience greater pressure and stress (Kuloğlu et al., 2000). It has been reported that diabetics are at greater risk of psychosocial distress and depression than the general population (Peyrot & Rubin 1997, Anderson et al. 2001). Psychosocial distress and depression can have a negative effect on a diabetic's self-care, and may result in poor metabolic control (Ciechanowski et al., 2000). It was thought in this study that as a result of patients' use of negative coping skills, inability to control their eating habits had an adverse effect on their postprandial blood sugar levels. The fact that hyperglycemia was the most frequent among the reasons for hospitalization of patients in the study supports this. In particular, it was thought that social support from the family and health staff for patients with negative coping skills would support a tendency towards more positive coping skills.

The mean score on the subdimension of health-related recommended activities was higher in patients whose HbA1c values were at a good level of control than in those in whom control was at a poor level, and a significant relationship was found between them. This expected result is similar to the research findings of Skinner (2001), Daniel & Messer (2002) and Kartal (2006).

The mean score on the subdimension of perceived sensitivity was found to be higher in individuals whose BMI put them in the obese group than in those whose BMI was normal, and the relationship between them was significant. This is different from the results of studies by Swan (2010) and Zareban (2013). Obesity and a sedentary lifestyle are among the strong determinants of diabetes. The prevalence of diabetes in Turkey according to a study by TURDEP-II is 32% (Satman 2010). Obesity is an important risk factor for type 2 diabetes and 90% of type 2 diabetics are obese (ADA 2013). In the present study, 84.1% of patients were obese. It is thought that this value may have had an effect on the results.

CONCLUSION

The conclusion of this study was that health beliefs were low in type 2 diabetes patients in a city in the west of Turkey who had a high mean age and a low education level, and whose metabolic values were at a poor level, and whose body mass index was high.

LIMITATIONS

A limitation of this study was that the sample was small and was taken from only one centre. For this reason, the findings can only represent the research population.

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REFERENCES

AMERICAN DIABETES ASSOCIATION – ADA, (2005). Diabetes management in correctional institutions Diabetes Care, 28 (1) pp. 53–60

AMERICAN DIABETES ASSOCIATION – ADA, (2008). Standards of medical care in diabetes-2008. Diabetes Care, 31(suppl 1), pp.5-11

AMERICAN DIABETES ASSOCATION – ADA, (2013). Diagnosing Diabetes and Learning About Prediabetes, http://www.diabetes.org/diabetes basics/diagnosis/?loc=DropDownDB-diagnosis , (accessed 5 January 2013).

ANDERSON, R.J., FREEDLAND, K.E., CLOUSE, R.E., LUSTMAN, P.J., (2001). The prevalence of comorbid depression in adults with diabetes: a meta-analysis. Diabetes Care. Jun;24(6):1069-78

AYELE, K., TESFA B., ABEBE, L., TILAHUN, T., GIRMA, E., (2012). Self Care Behavior among Patients with Diabetes in Harari, Eastern Ethiopia: The Health Belief Model Perspective. PLoS ONE, April, Volume 7, Issue 4, e35515

CAPPELLE, M., (2010). Type 2 diabetes mellitus beliefs and experiences, University of Wisconsin Oshkosh Oshkosh, Wisconsin 54901-8621, Master of Science in Nursing, Family Nurse Practitioner, January, p:1-77

CLARKE, P., GRAY, A., HOLMAN, R., (2002). Estimating utility values for health states of type 2 diabetic patients using the EQ-5D (UKPDS 62). Med Decis Making 22:340–349

ÇELIK, S.G., (2002). Tip 2 diyabetli hastaların bakıma ve tedaviye yönelik tutumlarının ve iyilik hallerinin belirlenmesi [Determination of attitudes to diabetes care and well-being of patients with type 2 diabetes]. (Unpublished master's dissertation), İstanbul Üniversitesi Sağlık Bilimleri Enstitüsü,Yüksek Lisans Tezi, İstanbul, Türkiye (University Health Sciences Institute. Medical Nursing Department. Master Thesis. Istanbul, Turkey)

CIECHANOWSKI, P.S., KATON, W.J., RUSSO, J.E., (2000). Depression and diabetes: impact of depressive symptoms on adherence, function, and costs. Arch Intern Med. Nov 27;160(21):3278-85

DANIEL, M., MESSER, L.C., (2002). Perception of Disease Severity and Barriers to Self Care Predict Glysemic Control in Aboriginal Persons With Type 2 Diabetes Mellitus, Chronic Diseases in Canada, Vol,23 (4), 130-128

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www.sstbdergisi.com
International Refereed Academic Journal of Sports, Health and Medical Sciences
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(TRADEMARK)
(2015/04315- 2015-GE-18972)

GRAZIANI, C., ROSENTHAL, P.M., DIAMOND, J.J., (1999). Diabetes Education Program Use and Patient –Perceived Barriers to Attendence. Fam Med; 31(5):358-63

HAZAVEHEI, S.M.M., SHARIFIRAD, G., MOHABI, S., (2007). The effect of educational program based on health belief model on diabetic foot care,7; 27 (1):23-28

JAHANLOU, A.S., LOTFIZAD, M., KARAM,I N.A., (2013). A New Behavioral Model (Health Belief Model Combined with Two Fear Models): Design,Evaluation and Path Analysis of the Role of Variables in Maintaining Behavior, licensee InTech.Diabetes Mellitus – Insights and Perspectives, Chapter 16, p: 297-312

JAVANSHIR, M., (2006) Tip 1ve Tip 2 diyabetli hastaların tutumlarının değerlendirilmesi. [Evaluation of the Attitudes of Type 1 and Type 2 Diabetic Patients] (Unpublished master's dissertation), İstanbul Üniversitesi Sağlık Bilimleri Enstitüsü,Yüksek Lisans Tezi, İstanbul, Türkiye (Istanbul University Health Sciences Institute. Medical Nursing Department. Master Thesis. Istanbul, Turkey.)

JIROJWONG, S, MACLENNAN, R., (2003). Health beliefs, perceived self-efficacy, and breast self-examination among Thai migrants in Brisbane. Journal of Advanced Nursing. 41:241–249

JOHNSON, C., WHETSTANE, W.R., (2005). Assessing Transcultural Attitudes Towards Diabetes in Trinidad. Journal of National Black Nurses" Association. Dec;16(2):15-9

KARACA, S.S., (2006). Tip 2 diyabetes mellitus hastalarına verilen planlı eğitimin hastaların tutumlarına, iyilik hallerine ve metabolik kontrol değişkenlerine etkisi [The effect of planned education given to the patients with type 2 diabetes mellitus on the attitudes, well-being and metabolic control variations of patients] Atatürk Üniversitesi Sağlık Bilimleri Enstitüsü, İç Hastalıkları Hemşireliği Anabilim Dalı, Erzurum, Türkiye (Erzurum University Health Sciences Institute. Medical Nursing Department. Doctorate Thesis. Erzurum, Turkey).

KARTAL, A., (2006). Diyabetli Hastalarda Planlı Eğitim Programının Sağlık İnancına Ve Diyabet Yönetimine Etkisinin İncelenmesi [Effectiveness of A Planned Education Program on Health Belief and Diabetes Management of Patients With Diabetes] Ege Üniversitesi Sağlık Bilim-

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International Refereed Academic Journal of Sports, Health and Medical Sciences
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(ISO 9001-2008 Document No: 12879 & ISO 14001-2004 Document No: 12880)
(TRADEMARK)
(2015/04315- 2015-GE-18972)

leri Enstitüsü, Doktora Tezi, İzmir, Türkiye (Ege University Health Sciences Institute. Public Health Nursing Department. Doctorate Thesis. İzmir, Turkey)

KARTAL, A., ÖZSOY, S., (2007). Validity and reliability study of the Turkish version of Health Belief Model Scale in diabetic patients. International Journal of Nursing Studies, 44 (8): 1447 – 1458

KESKIN, Ö., BALCI, B., (2011). Diabetes Mellitus ve Kardiyovasküler Komplikasyonlar (Diabetes Mellitus and Cardiovascular Complications), Kafkas J Med Sci 2011; 1(2):81–85

KULOĞLU, M., KARAOĞLU, A., ATMACA, M., ÖZKAN, Y.A., TEZCAN, E., (2000). Tip II Diabetik Hastalarda Psikiyatrik Belirtiler ve Kan Şekeri Kontrolü (Blood Sugar Control and Psychiatric Symptoms in Patients with Type II Diabetic), Düşünen Adam (The Thinker: Journal of Psychiatry and Neurological Sciences), 13 (1):19-23

MANSOUR-GHANAEI, R., JOUKAR, F., SOATI, F., GHANBARI, KHANEGHA, A., (2013). Association between knowledge, locus of control and health belief with self-management, Hb A1c level and number of attendances in type 1 diabetes mellitus patients. Int J Clin Exp Med;6(6):470-477, www.ijcem.com / ISSN:1940-5901/IJCEM1303024

MSHUNQANE, N., STEWART, A.V., ROTHBERG, A.D., (2012). Type 2 diabetes management: Patient knowledge and health care team perceptions, South Africa. Afr J Prm Health Care Fam Med. 4(1), Art. 392, 7 pages. http://dx.doi.org/10.4102/phcfm.v4i1.392

PEYROT, M., RUBIN, R.R. (1997). Levels and risks of depression and anxiety symptomatology among diabetic adults. Diabetes Care. Apr;20(4):585-90

POURGHAZNEIN, T., GHAFFARI, F., HASANZADEH, F., CHAMANZARI, H., (2013). The relationship between health beliefs and medication adherence in patients with type 2 diabetes: A correlation-cross sectional study. Life Science Journal, 10(4s).

RATANASUWAN, T., INDHARAPAKDI, S., PROMRERK, R., KOMOLVIPHAT, T., THANAMAI, Y., (2005). Health belief model about diabetes mellitus in Thailand: the culture consensus analysis. J Med Assoc Thai. 88:623–31

SATMAN, İ., (2010). Türkiye Diyabet, Hipertansiyon, Obezite ve Endokrinolojik Hastalıklar Prevalans Çalışması-II, 2010 (TURDEP-II) [Turkey Diabetes, Hyper-

SSTB
www.sstbdergisi.com
International Refereed Academic Journal of Sports, Health and Medical Sciences
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(TRADEMARK)
(2015/04315- 2015-GE-18972)

tension, Obesity and Endocrinology Diseases Prevalence Study-II, 2010]. http://www.itf.istanbul.edu.tr/attachments/021_turdep.2.sonuclarinin.aciklamasi.pdf , (accessed 10 November 2013)

SERMET, Ş., (2012). Diyabetli Yaşlıların Diyabetin Bakım Ve Tedavisine Yönelik Sağlık İnançları [Health Beliefs of Elders with Diabetes About Care and Treatment of Diabetes]. Gazi Üniversitesi , Sağlık Bilimleri Enstitüsü, Yüksek Lisans Tezi. Ankara, Türkiye (Gazi University Health Sciences Institute. Nursing Department. Master Thesis. Ankara, Turkey)

SKINNER, T.C., HAMPSON, S.E., (2001). Personal Models of Diabetes in Relation to Self Care, Well Being, and Glycemic Control, Diabetes Care, 24, 828-833

SURIT, P., (2001). Health Beliefs, Social Support and Self Care Behaviors of Older, Thai Persons With Non Insulin Dependent Diabetes Mellitus, A Dissertation Submitted to The Faculty of the School Nursing, The Catholic University of America, Doctor of Nursing Science

SWAN, H., (2010). Knowledge, Beliefs, and Practices of Hispanic Type 2 Diabetics in South Philadelphia, Capstone Project, July, Masters of Public Health, Jefferson School of Population Health, Thomas Jefferson University

TAN, M.Y., (2004). The relationship of health beliefs and comlication prevention behaviors of chinese individuals with type 2 diabetes mellitus. Diabetes Research and Clinical Practive , 66 (1): 71- 77

TÜRKIYE ENDOKRINOLOJI VE METABOLIZMA DERNEĞI - TEMD, (2013). Diabetes Mellitus Ve Komplikasyonlarinin Tani, Tedavi Ve İzlem Kilavuzu 2013 - Guide follow and treatment Diagnosis of Diabetes Mellitus and its complications], ISBN 978-605-4011-16-2, 6.Baskı (The sixth edition) , BAYT Bilimsel Araştırmalar Basın Yayın ve Tanıtım Ltd. Şti. (company of Scientific Research Press Release and Promotion) May 2013 / Ankara, Turkey p:1-254

VARDAR, İ. B., KARADAĞ, E., (2011). Tip 2 Diyabetli Bireylerin Hastalıkları ve Tedavilerine Yönelik Tutumlarını Etkileyen Faktörler [Factors Affecting the Attitudes Diseases and Treatment of Individuals with Type 2 Diabetes]. Diyabet, Obezite ve Hipertansiyon Hemşirelik Formu Dergisi, Ocak-Haziran (Diabetes, Obesity and Hypertension Journal of Nursing Form January-June), 3 (1):1-8

WHO - WORLD HEALTH ORGANISATION, (2013a). Diabetes, http://www.who.int/mediacentre/factsheets/fs312/en/index.html, (accessed 5 November 2013)

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www.sstbdergisi.com
International Refereed Academic Journal of Sports, Health and Medical Sciences
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(ISO 9001-2008 Document No: 12879 & ISO 14001-2004 Document No: 12880)
(TRADEMARK)
(2015/04315- 2015-GE-18972)

WHO - WORLD HEALTH ORGANISATION, (2013b). *Obesity and overweight,* Fact sheet no. 311, available [online] http://www.who.int/mediacentre/factsheets/fs311/en/index.html). (accessed 5 November 2013)

YANDIM, A., (2011). Diyabetik Ayağı Olan ve Olmayan Diyabetes Mellituslu Hastaların Sağlık İnançları [Health Beliefs of Patients with Diabetes Mellitus of Diabetic Foot And Non Diabetic Foot]. Yayınlanmamış yüksek lisans tezi (Unpublished master's dissertation), Mersin Üniversitesi Sağlık Bilimleri Enstitüsü, Hemşirelik Bölümü, Yüksek Lisans Tezi, Mersin, Türkiye (Mersin University Health Sciences Institute. Medical Nursing Department. Master Thesis. Mersin, Turkey.)

ZAREBAN, I., NIKNAMI, S., HIDARNIA, A., RAKHSHANI, F., KARIMY, M., SHAMSI, M., (2013). The Effect of Education Program Based on Health Belief Model on Decreasing Blood Sugar Levels in Diabetic Type 2 Patients in Zahedan, Health Scope. Summer; 2(2): 73-8