

## Original Article

# Analysis of the Relation between the Perception and Attitudes of Illness and Gender in Patients Diagnosed with Diabetes: The Example of Turkey

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## Abstract

**Objectives:** This study was made as a definitive and correlational study in order to analyse the relation between the attitudes and perception of illness and sex in the patients diagnosed for diabetes.

**Methodology:** Fiftysix diabetic individuals tracked in a Training and Research Hospital in the province of İzmir in Turkey make the sample of the research. “Diabetic Individual Identification Forms”, “Diabetes Attitude Scale” and “The Illness Perception Questionnaire” were used as data collection tools. Number percentage analysis, Mann-Whitney U test, single direction variance analysis and Spearman correlation analysis were used in the statistical evaluation of the research data.

**Results:** In consequence of the analyses made, no meaningful relation was determined between sex and the diabetes attitude scale and the illness perception questionnaire ( $p > 0,05$ ) ( $r = 0.25$ ,  $p = 0.06$ ). In the study, it was found that the symptoms of the diseases was seen more in diabetic women ( $\bar{x}: 6.47 \pm 2.35$ ). As for the diabetic men, it was found that they had the symptom of fatigue most (88.5 %) and they believed that they had more personal control on the disease ( $\bar{x}: 4.59 \pm 0.65$ ). Moreover, in this study, it was determined that female patients associated their illness with the dimension of “accident and luck” more than men and the female patients’ attitude of diabetes was positive ( $r: -1.260$   $p: 0.21$ ).

**Conclusion:** All health professionals are recommended to make the individuals perceive their illness in their training and plan their self management training regardless of the patients’ sex.

**Keywords:** diabetes, gender, sex, perception of illness, attitude.

## Introduction

Diabetes is a disease which lasts for a lifetime and can be treated and which reduces the life quality of the patient with its acute and chronic complications, with a high social and economical cost (American Diabetes Association [ADA], 2014) It is a problem of public health which bothers the individuals and the society with its complications and cost increasingly becoming common (ADA, 2014).

There are very few studies in the World medical literature indicating that the perception of illness affected the disease management behaviour and it

had an important effect on glysemic control (Glasgow, Hampson, Strycker, & Ruggiero, 1998). These studies propound that determining how the illness is perceived by the physically ill people is critically important to apply an effective treatment. The evaluations of perception of illness make important clues also in terms of the services provided and evaluating the diabetic patients’ perception of illness multidimensionally become important (Buick, 1997). The patient’s comments about his illness as an individual, his perception of illness and his evaluations about it, his emotional and behavioral reactions are elements determining his coping with the illness,

his psychosocial uneasiness and development of psychiatric disorders and his life quality (Mollaoglu, Tuncay, Kars & Çelik, 2010). In chronic diseases like diabetes, the individual's being have to make changes in his normal lifestyle in order to follow the rules of treatment cause the person to have adaptation and espousal problems about the illness (Demirtas & Akbayrak, 2010, Krepić et al., 2011).

According to the researches made for determining the relation between the perception of illness and the result of the illness, the conduct of the illness is better in people who have a high perception of internal control (Marshall, 1991). The perception of illness is known to be associated with coping with the illness, use of medical treatment and evaluating the effects of the treatment (Williams & Healy, 2001). The person's experience of illness according to his perception of illness is very important. Like the mental representations made by people to explain and foresee the happenings in the outer world, patients also develop cognitive models about the symptoms of the temporary or the longtime illness (Williams & Healy, 2001).

The patients' beliefs, attitudes and behaviours about their own health, especially their treatment make the base of the diabetes treatment. Beliefs and attitudes have a tight connection with each other because of cause effect relationship. Beliefs are continuous emotions made by perceptions and definitions about inner worlds. (Marshall, 1991; Williams & Healy, 2001). Attitudes are hidden in certain value judgements. Attitudes are organized longtime emotions, beliefs and tendencies of behaviours. An individual must have a tendency for a long time for that tendency become an attitude. Attitudes are a tendency dedicated to the individual, they cannot be observed but they can only be observed when they are reflected in the behaviours (Javanshir, 2006).

No studies scrutinising the relation between the attitudes and perceptions of illness and the sex of the patients diagnosed for diabetes was found in the medical literature study made. A diabetic patient must have enough knowledge, skills and positive attitude for him to actualize his daily diabetes management. The patients' own health and their attitudes and behaviour make the base of diabetes treatment. This study is thought to make contributions to make a database to enable the relation between the patient's training, an

important role of nursing, the perception of illness and the attitudes to be understood better.

### **Aim**

- To increase the level of knowledge of perception of illness and the attitudes about diabetes were same in men and women.
- To improve planning the self-management education according to the diabetes attitude regardless of the sexes of the individuals.

### **Method**

#### **Design**

#### **Sample and Participation**

The research was planned as definitive and correlational. The data of the research was collected from 250 diabetic individuals undergoing a cure in endocrine and diabetes policlinics in a Training and Research Hospital in the province of İzmir in Turkey, between October 2014 - January 2015. Choosing a sample from the research universe was not the method preferred in this research and 56 individuals who accepted to participate in the research made the sample on a volunteer basis according to the data obtained in a power analysis made in 95% confidence interval.

#### **Data Collection Tools**

The following data collection tools were used in order to collect the necessary data needed for the research: "Diabetic Individual Definition Form", "Diabetes Attitude Scale", "The Illness Perception Questionnaire".

"Diabetic Individual Definition Form" formed by the researcher based on the medical literature in order to obtain information about the sociodemographic features of the diabetic individual and the information about his illness (ADA, 2014). In this form, there are 11 questions about the age, sex, marital status, number of children, use of alcohol, smoking, job, income status, level of education and the time after the diagnosis about the sociodemographic features of the diabetic individual.

"Diabetes Attitude Scale (DAS) "was first developed by the National Commission of Diabetes in the USA and its validity and security work was done by Ozcan (1999) in Turkey (Ozcan, 1999). Seven subgroups DAS includes are the need of special training, attitude against the patient's adaptation, the seriousness of diabetes, blood glucose control and

complications, the influence of diabetes on the patient's life, attitude against the autonomy of the patient and attitude against the team's care. The entries of the scale were scored with likert type scoring changing from 1 to 5. If the score is  $>3$ , it is positive attitude, if the score is  $\leq 3$ , it expresses a negative attitude. All entry scores of DAS making each subgroup are added and divided into the number of entries of the subgroup and this way, the attitude score of that individual belong to the subgroup changing between 1 and 5 is calculated. In the same way, the points of all entries in the scale are added and divided into 34 and the general diabeted attitude score is calculated this way (Ozcan, 1999). DAS can be used for explaining the effect of the diabetes training programs, the importance of the patient's attitude in the effectiveness of the training and the relation between the attitude and behaviours (Ozcan, 1999). The Cronbach alpha value of the Diabetes Attitude Scale in our study was found as 0.74.

“The Illness Perception Questionnaire (IPQ)” was first developed by Weinman and his friends in 1996 and it was scientifically based on Leventhal's theory of representation of illness. The Illness Perception Questionnaire was developed in order to actualize the quantitative measurements of the areas of identity, time, reason, serious results and curability which are the five areas of the representation of illness (Weinman, Petrie, Moss-Morris & Horne, 2005). The scale was renewed by Moss – Morris and his friends in 2002 (Moss-Morris, Weinman, Petrie & et al., 2002). They tested the reliability and validity of the reviewed scale in many acute and chronic situations. The IPQ consists of three dimensions. They are the type of illness, the patients' views about the illness, (perception) and the dimensions of the reasons of illness The scale consists of total 70 entries. The reliability study of the The Illness Perception Questionnaire for Turkey is made by Armay and his friends (2007) in cancer patients ( $n=203$ ). The validity and reliability study of the scale was made by Armay and his friends (2007) in 2007 (Armay, Ozkan, Kocaman & Ozkan, 2007). While the Cronbach Alpha value of the scale was calculated as 0.89 at the end of the validity-reliability study made in Turkey, the Cronbach Alpha value in our study was found as 0.76.

### Data Analyses

The statistical analyses of the results of the study was made using SPSS 20.0 programme and

percent, mean value and standard deviation were used for demographic data and Mann-Whitney U test was used for the non-parametric data in two groups. The correlation between the nonparametric values was actualized with Spearman analysis. The verification of these analyses was made by an expert statistician. The results are given between a 95% confidence interval.

### Ethics of Study

A written approval was taken from a Training and Research Hospital in the province of İzmir in Turkey where the research was conducted. Also a written institutional approval was taken from the Turkish Union of Public Hospitals İzmir Southern Region General Secreteriat belong to the Training and Education Hospital in the province of İzmir. Moreover, the purpose of the study was explained to the diabetic individuals who participated in the research and their oral and written approvals were taken.

### Results

It was determined that the mean age of the diabetic women participated in our study was  $60.50 \pm 2.15$ . A 53.3% of the subjects were graduates of primary school, 66 % of them were married, 80% were housewives, 73.30% had a moderate economical situation, a 43.30% had health insurance coverage. A 27% of the subjects were smokers, and a 10% of them had been diabetic for 1-10 years. As for the men, their mean age was  $54.96 \pm 2.17$ . 53.3% of them graduated from the primary school. In addition, 88.5 % of them were married, 53.80 % of them had a moderate economical situation, 65.40% of them had health insurance and it was Social Insurance Institution of Turkey (SSK). Although 88.5% of them did not use alcohol, 73.10% of them smoked. Also, 65.40% of them were retired and 10% of them had been diabetic for 1-10 years (Table 1). When the number and mean values and standard deviation values of the diabetic individuals are studied making a frequency analysis of the scale mean value of their perception of illness; in the dimension of “Type of Illness”, “The Identity A” mean value is  $21.71 \pm 2.76$ . “The Identity B” mean value is  $19.48 \pm 3.88$ , the time score mean value of the sub-dimension of “Patient's Views About the Illness” is  $4.10 \pm 1.10$ . The mean value of the sub-dimension “Results” is  $3.05 \pm 0.93$ , the “Personal Control” mean value is  $4.44 \pm 0.77$ , the “Treatment Control” mean value is  $4.34 \pm 0.76$ ,

the mean value for “Ability to Understand the Illness” is  $4.06 \pm 0.91$ . The “Time (Cyclical)” mean value is  $3.84 \pm 0.94$ , the “Emotional Representations” mean value is  $3.55 \pm 1.28$ , the “Psychological Attributions” mean value is  $2.67 \pm 0.84$ , the Risk Factors mean value is  $2.29 \pm 0.62$ . The “Immunity” mean value is  $1.63 \pm 0.63$ , the “Accident and Luck” mean value is  $1.93 \pm 0.85$ . The general score of the scale is  $234 \pm 20.72$  (Table 2).

The diabetic individuals' experience frequency of the 14 symptoms in the symptoms part was found as 6.7%. When the number and the percentages of the most frequently experienced symptoms according to the sexes of the diabetic individuals was studied making crosstabs analysis: they were seen as fatigue (88.5%), sleep difficulties (73.1%), loss of strength (67.9%), feeling of dizziness (61.5%), complaints about the stomach (57.7%). The first five symptoms about the illness in men are respectively fatigue (88.5%), loss of strength (65.4%), feeling of dizziness (61.5%), sleep difficulties (61.5%) and irritancy in the eyes (56.7%). As for the women, the most frequent symptoms experienced since the beginning of the illness are fatigue (96.7%), loss of strength (70%), sleep difficulties (66.7%), feeling of dizziness (63.3%), complaints about the stomach (53.3%). The first five symptoms in women are fatigue (96.7%), loss of strength (65.4%), sleep difficulties (61.5%) and irritancy in the eyes (46.2%) (Table 3).

The experience frequency of the 14 symptoms in the symptoms part was found  $\bar{X}: 11.15 \pm$  in men who think “I have had this symptom since the beginning of my illness”. It was found  $\bar{x}: 12.86 \pm 0.87$  in women who think the same, in mean value, among the diabetic individuals (Table 4). A Spearman test was made for the relation between the “yes” answers to the questions asking “if they had experienced those symptoms since the beginning of the illness” and “if they regarded that symptom as something related to their illness” according to the 14 symptoms in the symptoms part. As a result of this test, a meaningful relation between these questions was determined ( $r: 0.757$ ,  $p < 0.05$ ) (Table 5). When the “Mann-Whitney U” test of the sub-dimension scores of the “Illness Perception Questionnaire” of the diabetic individuals was studied, no statistically meaningful difference was found between the type of illness in accordance with sex (identity symptoms) score mean values ( $p > 0.05$ ).

It is seen that the number of the men who answer “yes” to the questions about the symptoms they have ( $\bar{x} = 6.11 \pm 1.99$ ) is lower when compared to the women who answer “yes” ( $\bar{x} = 6.47 \pm 2.35$ ). No statistically meaningful difference could be determined in accordance with sex in terms of time, results, personal control, ability to understand the illness, time (cyclical) and emotional representations which are the sub-dimension of the part about the views about the illness ( $p > 0.05$ ). A negatively meaningful relation was found between the sub-dimension treatment control and sex ( $p < 0.05$ ). No statistically meaningful difference was found in accordance with sex in terms of psychological attributions, immunity, risk factors, accident or luck sub-dimensions of the dimension of causes of illness ( $p > 0.05$ ). When the general score of the illness perception questionnaire and sex is analysed with Mann Whitney U test, no meaningful difference could be found between them ( $p > 0.05$ ). (Table 6).

When the definitive frequency analysis of the Diabetes Attitude Scale Sub-Scale Scores of the diabetic individuals who participated in the research was made and their number and mean value and standard deviation values were scrutinised, the diabetes attitude scale total score was determined as  $\bar{x} = 4.05 \pm 0.36$ . It shows a positive attitude. When the Diabetes Attitude Scale scores' dispersion varying by the sexes of the diabetic individuals who participated in the research was evaluated with “Mann Whitney U” test, no meaningful difference was found between the diabetes attitude scale sub-scores and sex ( $p > 0.05$ ). (Table 7).

The relation between the Illness Perception Questionnaire General Mean value and Diabetes Attitude Scale general total points of the diabetic individuals participated in our research was evaluated with Spearman test. No meaningful relation was found between the illness perception questionnaire general mean value and the diabetes attitude scale general score ( $p > 0.05$ ) (Table 8).

According to the evaluation of the relations between the Illness Perception Questionnaire, Diabetes Attitude Scale and the sexes of the diabetic individuals participated in our research with Mann Whitney –U test; no meaningful relation was determined between sex and DAS general total score and Illness Perception Questionnaire total score ( $p > 0.05$ ).

**Table 1: Sociodemographic Characteristics of the Individuals In Accordance with Their Gender.**

Socio-Demographic Characteristics	Female		Male		
	n	%	n	%	
Education Level	Illiterate	7	23.30	1	3.80
	Primary School	16	53.30	16	61.50
	Secondary School	1	3.30	1	3.80
	High School	5	16.70	3	11.50
	University	1	3.30	5	19.20
Age	18-25	0	0.00	1	3.80
	26-33	1	3.30	0	0.00
	34-41	2	6.70	1	3.80
	42-49	1	3.30	4	15.40
	50-57	6	20.00	8	30.80
	58-65	8	26.70	9	34.60
	66 and over	12	40.00	3	11.50
Marital Status	Single	0	0.00	1	3.80
	Married	20	66.70	23	88.50
	Divorced	2	6.70	1	3.80
	Widow / widower	8	26.70	1	3.80
Economic Situation	Good	5	16.70	7	26.90
	Moderate	22	73.30	14	53.80
	Bad	3	10.00	5	19.20
Health Insurance	Social Insurance Institution of Turkey	13	43.30	17	65.40
	Government Retirement Fund of Turkey	11	36.70	7	26.90
	Turkish Pension Fund for the Self-Employed	4	13.30	1	3.80
	Other	0	0.00	1	3.80
	None	2	6.70	0	0.00
Smoking	Yes	3	10	7	26.90
	No	27	90	19	73.10
Drinking Alcohol	Yes	0	0	3	11.50
	No	30	100	23	88.50
Job	Housewife	24	80.00	0	0.00
	Retired	6	20.00	17	65.40
	Officer	0	0.00	2	7.70
	Worker	0	0.00	1	3.80
	Self-Employed	0	0.00	2	7.70
	Other	0	0.00	4	15.40
How long had diabetes (years)	1-10 years	15	50.00	14	53.80
	11-20	11	36.70	10	38.50
	21-30	4	13.30	2	7.70
TOTAL		30	100	26	100

**Table 2: The Internal Consistency Coefficients and Average Values of the Illness Perception Questionnaire Sub-Dimensions**

DIMENSIONS	k	Alpha	Min. Score	Max. Score	$\bar{x}$	SS
<i>THE DIMENSION OF TYPE OF ILLNESS (SYMPTOMS/ DIMENSION OF IDENTITY)</i>						
<b>Identity A</b>	14	0.68	15.00	28.00	21.71	2.76
<b>Identity B</b>	14	0.44	13.00	42.00	19.48	3.88
<i>THE PATIENT'S VIEWS ABOUT THE ILLNESS (PERCEPTION)</i>						
<b>Time(Acute/ Chronic)</b>	6	0.90	1.00	5.00	4.10	1.10
<b>Results</b>	6	0.65	1.50	5.00	3.05	0.94
<b>Personal Control</b>	6	0.83	1.67	5.00	4.44	0.77
<b>Treatment Control</b>	5	0.70	1.40	5.00	4.34	0.76
<b>Ability to Understand the Illness</b>	5	0.71	1.00	5.00	4.06	0.91
<b>Time (Cyclical)</b>	4	0.62	1.00	5.00	3.84	0.94
<b>Emotional Representations</b>	6	0.87	1.00	5.00	3.55	1.28
<i>CAUSES OF ILLNESS</i>						
<b>Psychological Attributions</b>	6	0.62	1.00	4.33	2.67	0.84
<b>Risk Factors</b>	7	0.46	1.00	3.57	2.29	0.62
<b>Immunity</b>	3	0.19	1.00	3.00	1.63	0.63
<b>Accident or Luck</b>	2	0.21	1.00	4.50	1.93	0.85
<b>GENERAL SCALE</b>	70	0.76	189.00	283.00	234.26	20.72

**Table 3: Findings of the Dimension of Type of Illness (Identity / Symptoms) of the Illness Perception Questionnaire In Accordance with Gender**

SYMPTOMS	I HAVE HAD THIS SYMPTOM SINCE THE BEGINNING OF THE ILLNESS (IDENTITY A) %		THIS SYMPTOM IS RELATED TO MY ILLNESS (IDENTITY B) %	
	Male	Female	Male	Female
Fatigue	88.5	96.7	88.5	96.7
Loss of Strength	65.4	70	65.4	70
Ache	34.6	43.3	19.2	16.7
Nausea	26.9	36.7	23.1	23.3
Sleep Difficulties	73.1	66.7	61.5	60
Complaints About the Stomach	57.7	53.3	50	33,3
Feeling of Dizziness	61.5	63.3	61.5	63,3
Headaches	19.2	66.7	11.5	26,7
Weight Loss	30,8	40	30.8	40
Hardness of the Joints	34.6	43.3	19.2	26.7
Irritancy in the Throat	11.5	13.3	7.7	6,7
Difficulty in Breathing	3.8	26.7	0	10
Irritancy in the Eyes	50	56.7	46.2	56.7
Wheezy Breathing	0	13.3	0	6.7
<b>AVERAGE ± S.S</b>	21.71±2.76		19.48±3.88	

**Table 4: Findings of the Type of Illness Dimension of the Illness Perception Questionnaire In Accordance with Gender**

Type of Illness(Identity/ Symptoms) Dimension	Lower-Higher Score	$\bar{x}$		SD	
		Male	Female	Male	Female
	3-12	11.115	12.867	0.879	0.877

**Table 5: Type of Illness, Dimension of Symptoms and Identities Relation**

THIS SYMPTOM IS RELATED TO MY ILLNESS (IDENTITY B)	I HAVE HAD THIS SYMPTOM SINCE THE BEGINNING OF MY ILLNESS (IDENTITY A)	
	r	p
	0.757	0.000

**Table 6: Comparison of the Scale of the Diabetic Individuals' Perception of Illness In Accordance with Gender According to the General Average Score**

ILLNESS PERCEPTION QUESTIONNAIRE	MALE		FEMALE		$Z_{MU}$	p
	$\bar{x}$	SD	$\bar{x}$	SD		
GENERAL SCORE	234.05	18.94	229.28	19.38	-0.126	0.451

**Table 7: Evaluation of the Diabetes Attitudes of the Diabetic Individuals Participated in the Research in accordance with Gender**

		$\bar{x}$	SD	$Z_{MU}$	p
Attitude About the Patient Adaptation	Male	3.01	0.55	<b>-0.516</b>	<b>0.606</b>
	Female	3.16	0.63		
Seriousness of Diabetes	Male	3.30	0.58	-0.831	0.406
	Female	3.13	0.79		
Blood Glucose Control and Complications	Male	4.37	0.79	-0.379	0.705
	Female	4.53	0.51		
Influence of Diabetes on the Life of the Patient	Male	3.56	1.11	-1.155	0.248
	Female	3.96	0.85		
Attitude About the Autonomy of the Patient	Male	4.49	0.66	-0.360	0.719
	Female	4.48	0.51		
Attitude About the Team's Care	Male	4.31	0.84	-1.020	0.308
	Female	4.57	0.44		
Need for Special Training	Male	4.59	0.71	-1.101	0.271
	Female	4.77	0.38		
Diabetes Attitude Scale Total Score	Male	3.97	0.43	-1.260	0.208
	Female	4.13	0.27		



**Table 8: Analysis of the Relation Between the Perception of Illness and the Diabetes Attitude in the Diabetic Individuals**

	DAS General Total	
	p	r
IPQ General Total	0.252	0.061

**Table 9: Analysis of the Relation Between the Perception of Illness and Diabetes Attitude According to Gender in Diabetic Individuals**

	Male		Female		Z <sub>MU</sub>	p
	$\bar{x}$	SD	$\bar{x}$	SD		
IPQ General Total	233.53	4.17	234.90	3.75	-0.164	0.869
DAS General Total	3.97	0.086	4.13	0.05	-1.260	0.208

The relation between the Illness Perception Questionnaire General Mean value and Diabetes Attitude Scale general total points of the diabetic individuals participated in our research was evaluated with Spearman test. No meaningful relation was found between the illness perception questionnaire general mean value and the diabetes attitude scale general score ( $p > 0.05$ ) (Table 8). According to the evaluation of the relations between the Illness Perception Questionnaire, Diabetes Attitude Scale and the sexes of the diabetic individuals participated in our research with Mann Whitney –U test; no meaningful relation was determined between sex and DAS general total score and Illness Perception Questionnaire total score ( $p > 0.05$ )

### Discussion

The data obtained from this study was discussed in the consideration of the knowledge of medical literature. The study results: the study was conducted thinking it would bring a plus dimension to diabetes nursing in diabetes management and make contributions to the diabetical literature.

When the illness perception mean values of the diabetic individuals were studied, it was observed that the experience frequency mean value of the 14 symptoms in the “symptoms” part of the dimension “Type of Illness” in the Illness Perception Questionnaire varied between 6.7% and 96.7% (Table 3). The mean value of the diabetic individuals who thought “I have had this symptom since the beginning of my illness” was

found  $\bar{x} = 21.71 \pm 2.76$  and the mean value number of the people of who thought “This symptom is about my illness” was found  $\bar{x} = 19.48 \pm 3.88$ .

Moreover, a meaningful relation was determined between the “yes” answers to the questions “Have you experienced this symptom since the beginning of the illness?” and “Do you consider this symptom as something related to your illness?” about the symptoms in this part ( $r : 0.757, p < 0.05$ ) (Table 5). Similar results were found in other studies (Ozcan, 1999). It was seen that most of the diabetic individuals remarked that they experienced symptoms about their illnesses also in our study. The first five most frequently experienced symptoms in the study conducted are fatigue (88.5%), loss of strength (65.4%), feeling of dizziness (61.5%), sleep difficulties (61.5%) and irritancy in the eyes (56.7%) in men. They are fatigue (96.7%), loss of strength (65.4%), feeling of dizziness (61.5%), sleep difficulties (61.5%) and irritancy in the eyes (46.2%) in women (Table 3). It was determined that the diabetic individuals who had had these symptoms since the beginning of their illness thought that these symptoms were about their illness (Table 5). In the similar studies made, it was reported that all symptoms included in the part “type of illness” were experienced at a certain rate and the symptoms of fatigue, loss of strength and ache were the most frequent ones (Kurt, Atmaca & Gurlek, 2004; Inkaya & Karadag, 2011). The results are similar also in our study. No statistically meaningful difference was found between the type of illness (identity/

symptoms) mean value according to sex in our study ( $p>0.05$ ) (Table 6). It is seen that the mean value “yes” answers to the questions about the symptoms were lower in men ( $\bar{x}:6.11 \pm 1.99$ ) when compared to the women ( $\bar{x}:6.47 \pm 2.35$ ) who answered the same questions “yes”, in other words, women experienced the symptoms more frequently. It was determined that the symptom mean values experienced by women were higher than the symptom mean values experienced by men also in the study by Ciddi (2010) about the effect of sex on the illness perception in the individuals who had coronary failure. In spite of this, in the study by Kucukbakar (2011), about the patients who had cancer, it was determined that men experienced the symptoms more than women. While our study has similar results with the study of Ciddi (2010), it is different than the study of Kuçukbakar (2011). According to this result, the study makes us think that women are more sensitive to the symptoms of diabetes and and they also associate the symptoms which are not related to diabetes with the illness.

The mean value of the “time (acute / chronic)” sub-dimension of the Illness Perception Questionnaire on the views of the diabetic individuals who participated in our study was determined as  $\bar{x}:4.10 \pm 1.10$  (Table 2). This result indicates that the patients think that diabetes will not recover quickly, it will continue for a long time and it is permanent. The result of the study conducted by Yorulmaz and his friends (2013) indicating that the diabetic individuals perceive their illness as chronic and they think that the changes related to the illness influence their perceptions about the time of the illness is similar to our result. Time is important from the point of the diabetic individuals’ understanding the necessity of sustaining the treatment. Although the mean value of women in the time (acute / chronic) sub-dimension is higher in our study, a statistically meaningful difference could not be determined ( $p>0.05$ ) (Table 6). Although this sample was different in the studies conducted by Ciddi (2010) with the coronary failure patients and by Kayacan (2012) with chronic patients, similar results were found because of their being chronic diseases.

The “results” sub-dimension of the IPQ Illness Perception Views of the diabetic individuals who participated in our study was found  $\bar{x}:3.05 \pm 0.94$  (Table 2). The “results” sub-dimension in our study is the sub-dimension with the lowest mean value in the “views about the illness”

dimension. This result indicates that diabetes have serious results in the life of the diabetic individuals, diabetes influence their life, it influences their point of view about other people, it caused difficulties for the patient relatives and it has serious financial results. Although it was remarked that women thought that their illness had serious results on their lives more than men, no meaningful difference was found in the subpart indicating the results according to the sexes ( $p>0.05$ ) (Table 6). It was found that men perceived the results of their illness more seriously than women in the studies Ciddi (2010) analysed the perception of illness in the individuals who had heart diseases. It was found that men perceived the results of their illness more seriously than women in the studies Aalto and his friends analysed the perception of illness in the individuals who had coronary heart disease (Aalto, Heijmans, Weinman & Aro, 2005). In his study, Kucukbakar determined that women believed cancer was a serious illness, it had serious effects on life, there were changes in the way people who do not have cancer saw the individuals diagnosed for cancer and the disease caused serious financial results more intensively than men.

The “personal control” sub-dimension of the IPQ Illness Perception Views of the diabetic individuals who participated in our study was found  $\bar{x}:4.44 \pm 0.77$  (Table 2). This result indicates that the patients believe in the importance of personal controls on diabetes. Moreover, our study conclusion also makes us think that there are many things to do in terms of control of the symptoms of the diabetic individuals. It also makes us think that the self-care of the individuals will be effective in the good or bad course of the disease and the course of the disease depends on the patient. The diabetic patients can be more willing for taking suitable precautions when they believe that their situation can be controlled. It can increase their adaptation to the treatment (Ciddi, 2010). In our study, although the mean value of men was found higher in the personal control sub-dimension, no statistically meaningful difference could be determined in accordance with sex ( $p>0.05$ ) (Table 6). The personal control perception of men was found higher than the women’s in the study conducted by Aalto and his friends (2005).

The “treatment control” sub-dimension of the IPQ Illness Perception Views of the diabetic

individuals who participated in our study was found  $\bar{x}:4.34\pm0.76$  (Table 2). This result makes us think that the patients can control their diabetes with a good treatment. It indicates that they think there are many things the diabetic individuals can do to recover, the treatment can be effective in the recovery, it can control the disease and it can abolish the negative effects of the disease. This result is lower than the personal control mean value and it indicates that the diabetic patients believe their situation can be controlled and it has the power to influence the illness. Although the mean value of men was found high in the "treatment control" sub-dimension in our study, a negatively meaningful relation was found between the treatment control sub-dimension and sex ( $p<0.05$ ) (Table 6). It indicates that the treatment will be more effective in women than men and there are many things to do to recover. Alsén (2009) found the treatment control higher in men in the study he analysed the perception of illness after myocardial infarction. Although the personal control perception of men are higher in our study, their adaptation to the treatment and thus their beliefs about the effectiveness of the treatment may be lower.

The score of the "ability to understand the disease" sub-dimension of the IPQ Illness Perception Views of the diabetic individuals who participated in our study was found  $\bar{x}:4.06\pm0.91$  (Table 2). This sub-dimension indicates the patients' ability to understand diabetes. Although the mean value of men was higher in the "ability to understand the disease" sub-dimension, no statistically meaningful difference could be determined ( $p>0.05$ ) (Table 6). The score of the sub-dimension of "ability to understand the disease" was found higher in the other studies made (Ciddi, 2010; Kucukbakar, 2011). It is important for the patients to understand their illness in terms of their believing in the treatment and sustaining the treatment. The results of this study indicate that the ability to understand diabetes is good. This situation's being probably related to the sufficient training of the patients and no difference in terms of sex make us think that it is because men and women take advantage of similar health services.

The score of the "time (cyclical) sub-dimension of the IPQ Illness Perception Views of the diabetic individuals who participated in our study is  $\bar{x}:3.84\pm0.94$  (Table 2). This result indicates that the diabetic individuals think their illness is cyclical. It can be said that they can think the

illness cannot be known before, it has good and bad periods, the symptoms vary from one day to another and they sometimes appear and sometimes disappear. It was found that the patients believed their illness was chronic and cyclical in the study conducted by Alsén (2009). Although the mean value of the women was found higher in the time (cyclical) sub-dimension, no statistically meaningful difference in accordance with sex could be determined ( $p>0.05$ ) (Table 6). In the study Alsén (2009) analysed the perception of illness after myocardial infarction, the time (cyclical) sub-dimension was found high in women. The diagnosis time of the 51.9 % of the patients included in our study is between 1-10 years. It makes us think that the perceptions of the patients about their illness' being chronic and cyclical is because of their experience.

The score of the "emotional representations" sub-dimension of the IPQ Illness Perception Views of the diabetic individuals who participated in our study is  $\bar{X}:3.55\pm1.28$  (Table 2). It indicates that the diabetic individuals' sadness, depression, fears and worries are excessive and they think they are negatively affected by them. The patients' positive perceptions can be developed focusing on their worries and providing effective psychological consultancy (Ciddi, 2010). The women's mean value is higher than men in the "emotional representations" sub-dimension but no statistically meaningful difference is found ( $p>0.05$ ) (Table 6). It is seen that women have more worries than men about the illness. In the study of Alsén (2009), emotional attributions were found equal in men and women (Alsén, 2009). Because of the cultural structure in our country, when the domestic responsibilities of women are considered, it is thought that women are negatively affected by their illness because of the worry of not being able to fulfill their responsibilities.

In our study, factors like genetics, eating habits, bad medical care in the past, own behaviour, aging, alcohol and smoking which are thought to form the illness were studied in the "causes" part of IPQ. Our study makes us think that the patients believe the reasons of the illness are psychological attributions ( $\bar{x}:2.67 \pm 0.84$ ) and risk factors ( $\bar{x}:2.29 \pm 0.62$ ) most and immunity ( $\bar{x}:1.63 \pm 0.63$ ) least (Table 2). Our study is similar to the study conducted by Karabulutlu (2011). In this study, the psychological

attribution mean value is not very high in men but it is an important finding because it is the highest mean value ( $\bar{x}:2.69\pm0.73$ ) (Table 6).

When the entries making the “psychological attributions” sub-dimension are studied, stress or worry, family problems and personality problems are expressed as the illness reasons most. No statistically meaningful difference was found in accordance with sex in the “Psychological Attributions”, “Risk Factors”, “Immunity” and “Accident or Luck” sub-scales (Table 6). The mean value of the women is higher in “Risk Factors”, “Immunity” and “Accident or luck” subscales and the mean value of the men is higher in the “Psychological Attributions” subscale. Because of these reasons, the training programs to be organized about the reasons of the illness are thought to affect the illness perception positively. In the study conducted by Ciddi (2010) in cardiac patients, the psychological attributions and the risk factors sub-dimensions are high in men and it is similar to this study.

When the IPQ and subscale entry scores were evaluated according to sex, it was determined that the symptoms were seen more in diabetic women (Table 6), fatigue was the most frequent symptom in men and women and they associated it with diabetes (Table 3). When the patients’ views about the illness were regarded, it was determined that the diabetic women’s illness was chronic, cyclical and it had serious results on their lives. They thought they experienced sadness, depression, fear and worry about their illness more. Their treatment adaptation was better. As for the diabetic men, they believed they had more personal control on diabetes. Their perception of personal control was higher and they understood the illness better. When the causes of illness are regarded, the highest mean value was psychological reasons and male and female patients associated their illness with psychological reasons at close mean values. Female patients associated their illness with the dimension of accident and luck more than men and the difference of perceiving the illness between the sexes was not found statistically meaningful (Table 6).

When the subscale scores of the Diabetes Attitude Scale of the diabetic individuals who participated in our study was analysed, the diabetes attitude scale total score was determined as  $\bar{X}: 4.05\pm0.36$  (Table 8). It shows a positive attitude. When the attitude is positive, positive

emotions, valuations and inclinations about the object, event or the person are at stake. The subgroup which the most positive attitude was developed was found the “need for special training” subgroup in the four studies conducted (Javanshir,2006). As for the subgroup “need for special training”, the attitudes of the patients about the special training about diabetes and the management of diabetes are questioned. The patients want the health team members who work for their treatment, care, training and consulting to have special knowledge and skills.<sup>8</sup> This result makes us think that the health professionals should attach more importance to the training of the diabetic individuals. In our study, when the diabetes attitude scores were evaluated in terms of sex, although the sub-dimension “need for special training” is the higher score in women, no meaningful difference could be found between the sexes ( $p>0,05$ ) (Table 8). It is seen that the women participated in the research have stronger positive attitude in the subgroup “attitude against patient adaptation” (Table 9). As for the study conducted by Javanshir (2006) it was determined that the male patients had stronger positive attitude in the “attitude against patient adaptation” subgroup ( $z = -0.52, p=0.606$ ) (Table 9). Because of its being a result of attitude measurements, some predictions can be made about the possible behaviour. Starting from these inferences and predictions, necessary precautions can be taken or conditions can be provided in order to form and propound the expected or required attitudes and behaviour against certain situations and events. In the recent years, the focus of the researches made in the field of attitude is the direction of the relation between the attitude and behaviour of the individual (cognitive conflict theory) and the interaction methods persuasive in changing the individual’s attitudes. In our study; no meaningful relation was determined between the Diabetes Attitude Scale and the Illness Perception Questionnaire ( $p>0.05$ ) ( $r =0.061$   $p=0.252$ ) (Table 9). No meaningful relation was determined between sex and DAS general total score and the Illness Perception Questionnaire ( $p>0.05$ ) (Table 9). In our medical literature study we made, no other studies analysing the relation between the illness perceptions and the attitudes of the patients diagnosed for diabetes according to their sex were found. More abounding and comprehensive studies about the difference of sex are needed. This information is very limited in the medical literature. According to this result obtained from

our study, the perception of illness and the attitudes about diabetes were same in men and women. It verifies the thesis stating “There is no change in the diabetic individuals’ perception of illness according to their sexes” in the 2014 guide of the American Diabetes Association (Aalto, Heijmans, Weinman & Aro, 2005)

### Conclusion and Recommendations

According to the data obtained from our study, the perception of illness and the diabetes attitudes are same in men and women in Turkey. Based on this knowledge, all health professionals are suggested to make the individuals perceive their illness in their trainings and plan the self-management trainings according to the diabetes attitude regardless of the sexes of the individuals.

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