

ORIGINAL ARTICLE

Determination of the Perception Level of Life Style Innovations in Type 2 Diabetes Mellitus

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ABSTRACT

BACKGROUND: In this study, our aim was to measure information and behaviors of our patients about their diseases, and to determine the level of compliance with their treatment and to investigate the causes of nonconformities.

METHODS: A total of 111 patients who applied to outpatient clinics between May-December 2017 were included in this prospective cross-sectional study. Sociodemographic, clinical data, diabetes, medical nutrition therapy and physical activity questionnaires were administered face to face by the researchers.

RESULTS: About 68.5% of the 111 patients were females. While 64.9% were primary school graduates, 58.6% were housewives and 82.9% were low income level. Body Mass Index (BMI) was found to be significantly higher in women ($p=0.041$). It has been found that the awareness of the patients about themselves and their illnesses are 37.8% for HbA1c, 64.8% for fasting blood sugar level, 78.3% for their height and body weight. While males had a higher score than females in the diabetes survey, females scored higher than males in the medical nutrition therapy and physical activity questionnaires. On the other hand, 46.8% of patients showed additional health problems as a cause of non-compliance to physical activity.

CONCLUSIONS: Level of knowledge and compliance with treatment were also found to be inadequate.

KEYWORDS: Type 2 diabetes, perception, awareness, diseases

INTRODUCTION

Along with the rapid change in lifestyle throughout the world, the prevalence of type 2 diabetes mellitus (T2DM) has also increased rapidly and become one of the leading health problems. T2DM is a genetic disease that develops with insulin resistance and deterioration in insulin secretion, often progressing insidiously, usually over 30 years of age (1). It has been shown that T2DM shortens the life span of 5-10 years, deteriorates the quality of life and increases the risk of cardiovascular disease 2-4 times. Diabetic patients have a two-fold higher risk of death from all causes than their healthy counterparts (2).

According to the TURDEP-I study conducted in Turkey, the prevalence of T2DM was 7.2%, while the rate of TURDEP-II increased to 13.7%. The prevalence of T2DM is increasing in the early age period due to changes in diet and lifestyle. T2DM accounts for more than 90% of all diabetes patients and is the most common type of diabetes. Diabetes is ranked as the 8th commonest diseases among all causes of death worldwide (3). Most T2DM patients are obese or overweight (4). Treatment of the disease, diet, physical activity, patient education, oral antidiabetic agents, and insulin therapy may be mentioned in 5 main categories. Diet and physical activity are indispensable parts of the treatment plan in all types of diabetes. In patients with T2DM with diet, a decrease of 1-2% in HbA1c levels can be achieved. Regular physical activity also provides a similar reduction. Invariant elements of treatment in all types of diabetes are patient education, medical nutrition therapy, and exercise (3). The American Dietetic Association and ADA recommend the delivery of diabetes patients to the dietitian within 1 month after diagnosis. On the other hand, 3-4 dietician interviews lasting 45-90 minutes in six months after T2DM diagnosis is recommended (4). It should be ensured that adult diabetics exercise at a medium intensity with a minimum of 150 minutes per week, at least 3 days per week on alternate days (4). The reasons of the increase in the prevalence of disease in recent years, population aging, unhealthy nutrition, obesity and sedentary life can be counted (5).

Treatment of T2DM involves significant lifestyle changes such as diabetic diet and regular physical activity. Planning adequate treatment including awareness of patients and education to reach a correct level of knowledge are directly related to the patient's perception. Thus, we would like to determine the consciousness level of T2DM patients about diet and physical activity by determining the causes of incompatibility to diet and physical activity.

MATERIAL AND METHODS

Place and time of research: This study was conducted between May 2017 to December 2017 in our hospital, Family Medicine and Endocrinology Outpatient clinics.

Research universe and sample: The universe of the research were the patients who were diagnosed with T2DM at least 1 year ago were admitted to our hospital with different reasons.

Sample of the research: Patients over the age of 30, willing to participate in the study and literate were able to understand and answer the questions were selected patients.

Sample size: Sample volume of 95% confidence interval, 5% error margin was calculated as $p=0.50$ to 384 in non-prevalence cases. After an additional 3 months, the study was terminated with 111 patients.

Exclusion criteria: Patients diagnosed with T2DM in the last one year, under the age of 30, impaired oral intake, disorientation dis-cooperation, uncontrolled cardiac disease and with physical disabilities that would impede physical activity were excluded from the study.

Ethics committee approval: Approval for the study was taken from the Ethics Committee of Dumlupınar University Faculty of Medicine. The ethical clearance number is 2017-5/12.

Data collection tools: Sociodemographic data form, Clinical data form, Diabetes form, Medical Nutrition Therapy and Physical Activity questionnaire were used by the researcher. Patient declaration and/or hospital records were based on T2DM diagnosis. Informed consent form was obtained from patients.

Sociodemographic characteristics survey: We collected information about participants' age, gender, education, occupation, marital status, number of children, living area and income rate.

Clinical data survey: The patient's history and the family history of the disease, follow-up frequency, physical characteristics consist of 10 questions.

Diabetes questionnaire: In order to measure the level of awareness about diabetes, the questionnaire, which was designed with questions about the definition, diagnosis, treatment and complications of diabetes, was scored as 100 points. It consists of 15 questions.

Medical nutrition therapy questionnaire: It consists of 15 questions that measure attitudes, behaviors and knowledge of the patients.

Physical activity survey: It consists of 9 questions that measure the physical activity levels of the patients, their knowledge about exercise and their attitudes.

Statistical analysis: All normally distributed variables were expressed as mean and SD. Normality tests were used to analyze the normal distribution of the variables. Parametric tests were used for the variables with normal distribution. T-test was used for the independent samples for the comparison of mean values of the two groups. Paired sample t-test was used for the variables with a group number 3 or higher. Data were summarized as mean \pm standard deviation.

P-value <0.05 was considered statistically significant.

RESULTS

A total of 111 patients were included in the study. The majority of the patients were below the age of 65 years (63.1%); 76 patients (68.5%) were females and 35(31.5%) were males. In educational status, 18 were illiterate, 5 were literate, 5 were primary, 72 were high school, 5 were university graduates; 65(58.6%) of the participants were housewives. Sociodemographic characteristics are given in Table 1.

Table 1: Sociodemographic characteristics

Sociodemographic Characteristics			
Variable	Subgroups	Number(n=111)	Percent(%)
Gender	Male	35	31,5
	Female	76	68,5
Age	Under 65 years	70	63,1
	65 years and older	38	34,2
Education Status	Illiterate	18	16,2
	Literate	5	4,5
	Primary education	72	64,9
	High school	9	8,1
	University	5	4,5
Job	Housewife	65	58,6
	Retired	13	11,7
	Worker	9	8,1
	Officer	8	7,2
	Farmer	5	4,5
	Artisan	1	0,9
Income rate	Low (<2000)	92	82,9
	Middle (2000-4000)	13	11,7
	High (>4000)	4	3,6
Marital status	Married	99	89,2
	Single	12	10,8
Social life	Living with family	107	96,4
	Living Alone	6	5,4
Living Area	City	97	87,4
	Rural	13	11,7

According to the duration of diabetes, the number of patients diagnosed with diabetes for more than five

years was 79(71.2%). Oral antidiabetics were among the first treatment modalities. The mean HbA1c level of

the patients was 8.02%. It is above the target value. The difference by gender was not significant. According to education level, the group with the highest HbA1c level was primary school graduates, and the lowest group was university graduates.

The mean fasting blood glucose level was 168mg/dl in males and 188mg/dl in females. Although the fasting

blood glucose levels were higher in women, the difference was not significant. Body Mass Index (BMI) was significantly higher in women ($p = 0.041$). BMI awareness has been found higher in males with a rate of 91.4% (Table 2).

Table 2: Clinical information.

Variable	Subgroups	Number(n=111)	Percent(%)
Diabetes Duration	Under 5 years	28	25,2
	5 years and above	79	71,2
Treatment Type	OAD	48	43,2
	Insulin	27	24,3
	OAD ve Insulin	33	29,7
Variable	Subgroups	Average Value	P<0.05
HbA1c (%)	All	8,02	-
	Male	7,41	p=0.052
	Female	8,40	
	Primary education	8,47	
	High school	7,2	-
	University	7,08	
	Housewife	8,8	
	Retired	7,62	-
FBG(mg/dl)	Male	168	p>0.05
	Female	188	
BMI	Male	28,1	p=0.041
	Female	32,1	

FBG: Fasting Blood Glucose BMI: Body Mass Index OAD: Oral Antidiabetic

Table 3: Consciousness form

Variable	Subgroups	Number(n=111)	Percent(%)
HbA1c (%)	All	42	37,8
	Male	16	45,7
	Female	26	34,2
FBG (mg/dl)	All	72	64,8
	Male	23	65,7
	Female	49	64,4
BMI	All	87	78,3
	Male	32	91,4
	Female	55	72,3
Variable	Subgroups	Average Value	P<0.05
Diabetes score	Male	47	p=0.022
	Female	41	
Diet score	Male	62	p=0.43
	Female	64	
Exercise score	Male	48	p=0.551

It has been asked as "Do you know the value of HbA1c and FBG" for measurement of the level of awareness of the disease. The majority of males answered 'yes'. When the form that measures the level of consciousness about T2DM, the average score of males was significantly higher than females, respectively; 47 and 41 out of 100 points ($p = 0.022$). When the level of exercise consciousness was examined there was not statistically significant difference between males and females (Table 3).

According to the survey examining the reasons for non-compliance with diet and exercise, 35% of the patients stated that they did not comply with their dietary recommendations. The most common dietary discrepancy is that patients cannot prevent themselves. The other causes of non-compliance with diabetic diet were as follows: 'Very difficult to follow diet recommendations', 'I do not have the strength and time to prepare the recommended diet', 'I don't need a diabetic diet', 'I forget the suggestions', 'My blood sugar is very low'.

Although 88.2% of the patients ($n=98$) agreed that exercise was an important part of the treatment of the disease, 28.8% of them were doing regular and recommended physical activity, 42.3% did not exercise at all. The commonest exercise type was walking (64.8%). The most common physical activity as a reason for noncompliance, 46.8% of the patients have other health reasons that prevent exercise.

DISCUSSION

It is known that having adequate information and correct attitude about the diseases for T2DM patients plays an effective role in the management of diabetes (6). Proper nutrition increases the quality of life in diabetic patients (7). In our study, the diet score was 64 points for females and 62 points for males (100 full points). There was no difference in gender ($p=0.43$).

Many studies have shown that physical activity has prevented or delayed progression of impaired glucose tolerance. Lifestyle changes, such as weight loss, can significantly reduce the risk of diabetes (8,9). However, in such patients, weight loss of below <5% does not allow access to metabolic results at a targeted level. When weight loss is above > 5%, good results have been obtained at laboratory levels such as HbA1c, lipid, and arterial blood pressure. In order to be over 5% of weight loss, regular physical activity and regular physician control are essential in addition to energy constraints (10). In our study, the exercise score was 53

points for males (100 full points). Exercise score was low, but there was no difference in gender ($p = 0.551$). The diet and exercise scores were below the targeted value. The low level of exercise perception of the patients suggests that there is no exercise habit in the community.

In the study of Franz *et al.*, it was found that weight loss in overweight or obese people with T2DM was not effective in providing glycemic control alone. They argued that the first stage of treatment was provided when proper nutrition, restriction in energy intake, regular physical exercise and training were applied together (7). In our patients, correct nutrition, regular exercise and education perception are low. The reason is composed of many components.

Erdem *et al.* have observed that 25% of the patients fully applied medical nutrition therapy. In this study, we found almost the same ratio. In the same study, 48% of the patients did not exercise before the diagnosis of diabetes, and this rate fell to 15% after diagnosis (5). In our study, there was no significant decrease in the rate of those who did not exercise before and after the diagnosis. This shows that health professionals do not provide adequate training to patients.

Atmaca *et al.* found that about half of the patients with diabetes had inadequate or inaccurate knowledge about the disease (1). The findings of our study were consistent with the available literature. In addition, it was seen that males were significantly more conscious than females, and the reason was higher education levels of males. Thus, we concluded that the level of education makes it easier to reach the information needed for awareness of a healthy lifestyle.

Tavakolizadeh *et al.* have shown that diabetic patients have significantly reduced their blood sugar levels, and that their diet and exercise habits have changed positively (11). In our study, 72.9% of the patients with T2DM were educated about diabetes. Only 23.5% of the educated patients were doing what they had learned during the training.

In another study, the use of long-term diabetes, insulin and oral antidiabetic combination, obesity or overweight, poor diet and low physical activity compliance, and follow-up incompatibility were associated with poor glycemic control. About 68% of the patients were on a diet, and 78.4% were found to be incompatible with exercise. In spite of the importance of diet and exercise, inconsistency is high especially in females. There was no significant correlation between

education level and treatment compliance (12). This shows that there are factors other than education for patient behavior. In our study, the patient stated that females could not control herself as the cause of non-compliance with the diet. We think to reach correct attitudes for diet is hard for females compared with males. This situation may be related to differences in hormonal status between the two genders.

In a study that investigated the causes and factors facilitating the change of positive behavior in T2DM patients and their families, lack of family and health service support, low-income level, and recommendations were seen as obstacles to behavior change (13). In our study, socioeconomic factors, and low and inadequate family support were found to be effective in patient perception. However, the role of environmental factors is higher than these. This shows that there is a much longer distance to be covered in terms of education.

As a result, it was determined that compliance with diabetes awareness and lifestyle changes were below the desired levels. Compliance with lifestyle changes of patients with T2DM can be achieved by planning patient education in a quick and multidisciplinary way and the work of all health professionals within a team understanding.

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