Original Article

Healthy Lifestyle Behaviors of the Patients with Diabetes

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Abstract

Background and Aim: As in all chronic diseases, the health promoting behaviors are the basis in maintaining health in diabetes, as well. Accordingly, this study was conducted to determine the healthy lifestyle behaviors of the patients diagnosed with type 2 diabetes.

Method: This descriptive study was conducted with the patients who applied to the internal medicine and endocrinology outpatient clinics of two hospitals between August 2019 and January 2020. The sample of the study was composed of 174 patients diagnosed with diabetes. Before starting the study, approval from the ethical committee, permission from relevant institutions, and consent from the patients were obtained. The data of the study were collected using questionnaire and Healthy Promoting Lifestyle Profile (HPLP) II. The total score of this scale varies between 52 and 208 and high score indicates positive HPLP. Descriptive statistics, Student t, One Way Anova, Mann Whitney U Test, and Kruskal Wallis tests were used for data analysis.

Results: It was determined that 37.8% of the patients were diagnosed with diabetes for 1-5 years, 59.8% did not obey their diet, 60.9% did not do exercise regularly, 56.9% had sleep problems, 12.6% of them did not have medication adherence, diabetic neuropathy developed in 36.9% of them and 54.6% did not receive any training on diabetes. It was determined that HPLP II total mean score was 122.3±17.1 and HPLP II total mean score had a significant correlation with gender, educational status, receiving diabetes training, doing regular exercise, and dietary compliance (p<0.05).

Conclusion: It was determined that the HPLP II score of the patients with diabetes was at medium level and this score was affected by some of the parameters related to the disease and their socio-demographic characteristics. Accordingly, it may be recommended for the diabetes training nurses not to ignore the characteristics of the patients affecting HPLP.

Keywords: Diabetes, healthy lifestyle behaviors, nursing.

Introduction

Diabetes mellitus is a disease which is characterized by abnormal blood glucose levels and the defect in insulin production and glucose metabolism (El Sayed, 2014). Type 2 diabetes is the most common diabetes type, constitutes approximately 85-95% of all the diabetes cases in the developed countries and have increased considerably in recent years (World Health Organization 2020; Steinsbekk et al., 2012;

American Diabetes Association Diabetes Care 2020). The World Health Organization reports that there are 422 million people with diabetes around the world. According to the International Diabetes Federation (IDF), it is estimated that the number of adults with diabetes will be 578 million until 2030 and this number would reach to approximately 700 million in 2045 (World Health Organization 2020; IDF Diabetes Atlas 2019). Together with especially rapid change in lifestyles, the prevalence of type 2 diabetes has

highly increased in all the developed and developing countries and this has made diabetes an important public health problem. It is considered that the socio-economic, demographic, environmental and genetic factors have been effective in the increased prevalence of diabetes throughout the world. The increase in obesity prevalence and physical inactivity due to the lifestyle changes caused especially by population increase, aging and urbanization are other factors increasing the prevalence of diabetes (Turkey diabetes control program of the Ministry of Health 2020; Ching et al., 2020; Tuomilehto et al., 2001).

The importance of developing healthy lifestyle behaviors has been emphasized in the literature in terms of preventing the acute complications caused by diabetes, decreasing chronic complication risk and increasing the quality of life (Standards of Medical Care in Diabetes—2007; Surucu, 2014) Because adopting healthy lifestyle behaviors provides optimal glycemic control for diabetes and helps to minimize or prevent acute and chronic complications (Al-Khawaldeh, Al-Hassan & Froelicher, 2012). Promoting health is described as one's gaining the ability to promote his/her own health and increase the control on their health. Performing intervention for early diagnosis and using health promoting behavior in sustaining health are essential in protecting the diseases. According to Pender, healthy lifestyle behaviors include moral improvement, health responsibility, exercise, nutrition, interpersonal relations and stress management (Bahar et al., 2008). Health promoting activities are associated with the individuals' turning towards positive activities to elevate health level. It is a process including the ways allowing the individuals to change their behaviors to reach to high health levels physically and mentally and social environment, and the factors affecting the process of change. Gaining knowledge, skills, attitude, and behaviors is primarily required in bringing health level up to the top level in concept of health promotion focusing on behavioral change (Zaybak & Fadiloglu, 2004). The individuals should avoid the risky behaviors such as smoking, alcohol and substance use, malnutrition, physical inactivity, violence, unhealthy weight control, family communication problems and stress in order to achieve health promotion (Yalcinkaya, Ozer & Karamanoglu, 2007). Because the individuals who have involved these behaviors in their lifestyles and perform them continuously in their life are able to maintain being healthy and

make their current health status better (Ozkan & Yilmaz, 2008). For this reason, the use of health promoting behaviors is essential in maintaining health in diabetes. In light of this information, this study was conducted to determine the healthy lifestyle behaviors of the patients with type 2 diabetes.

Method

Type and Date of the Study: This descriptive study was conducted with the patients who applied to the internal medicine and endocrinology outpatient clinic of two hospitals between August 2019 and January 2020. The sample size was determined as 150 using «G.power 3.1.9.4» software with an acceptable margin of error of $\pm\%5$, confidence interval of 0.95 and power of 0.80 and the study was completed with 174 patients. The patients who were diagnosed with type 2 diabetes, agreed to participate in the study, were over the age of 18, and had no communication, visual and hearing problems were included in the study.

Data Collection: The data were collected with the questionnarie prepared based on literature and in accordance with the expert's opinion and HPLP II. The questionnaire and the scale were filled out by the researcher using the face-to-face technique. It took about 20 minutes to apply the data collection tools (Yilmaz, Kumsar & Celik, 2018).

Questionnarie: This is a form including the questions about age, gender, marital status, educational status, social security, smoking, status of receiving diabetes training, diabetes duration, presence of complication due to diabetes, restricted salt, doing regular exercise, and going on a diet.

The Healthy Promoting Lifestyle Profile: The original version of the scale, developed by Walker in 1987 includes 48 items and six subscales: self-actualization, health responsibility, exercise, nutrition, interpersonal support, and stress management. The scale was revised in 1996 and named as Healthy Promoting Lifestyle Profile II. The Turkish reliability and validity study of the scale was conducted by Bahar et al., in 2008. The scale measures the health promoting behaviors in relation with the health lifestyle of the individuals. It includes a total of 52 items and six subscales. The subscales are spiritual development, health responsibility, physical activity, nutrition, interpersonal relations, and stress management. The general score of the scale gives the healthy lifestylebe havior score and all of its items are positive. The scale scoring is in the form of 4-

point Likert scale ranging from Never (1), sometimes (2), frequently (3) and regularly (4). The minimum score to be obtained from the overall scale is 52 and the maximum score is 208. High score signifies that the healthy lifestyle behaviors are positive (Bahar et al., 2008). This scale, which is recommended to be used to determine healthy lifestyle behaviors of the society, has been also used in other studies conducted with the individual's diabetes (Yilmaz, Kumsar & Celik, 2018; Sen & Sirin, 2015). Assessment of Data Descriptive statistics, Student t, One Way Anova, Mann Whitney U Test, Kruskal Wallis test were used for data analysis.

Ethical Consideration: The required permissions were obtained from the patients, ethics committee, and institutions.

Results

Findings on Some Characteristics of the Patients : It was determined that the average age of the patients was 56.2 ±13.7, 62.1% of them were female, 90.8% were married, 35.1% were primary school graduates, 54.6% did not have social security, 75.3% did not smoke, 54.6% did not receive the diabetes training, the diabetes duration of 37.8% varied between 1 and 5 years, and neuropathy was the most frequently seen complication due to diabetes (36.9%). It was determined that 82.2% of the patients restricted salt, 60.9% did not do regular exercise, 12.6% did not have medication adherence, 56.9% had sleep problems, and 59.8% of them did not diet (Table 1).

Findings on Healthy Promoting Lifestyle Profile II Mean scores of the Patients : It was determined that Healthy Promoting Lifestyle Profile total mean scores of the patients were 122.3±17.1. It was determined that the mean score of the health responsibility subscale of the scale was 20.9±5.5, the physical activity mean score was 11.8±3.9, nutrition mean score was 22.8±3.5, spiritual development mean score was 23.5±3.8, interpersonal relations mean score was 25.1±3.9 and stress management mean score was 18.1±3.3 (Table 2).

Findings on the Comparison of Some of the Characteristics of the Patients with Mean scores of Healthy Promoting Lifestyle Profile II: It was determined that HPLP II all subscale and total mean scores of the male patients were higher compared to those of the females but it was determined that there was a significant correlation between the subscales, other than the interpersonal relations and stress management subscales, and the total scale score and gender (p<0.05). It was determined that there was no significant correlation between the marital status of the patients and total and subscale mean scores (p>0.05). HPLP II all subscale and total mean scores of the patients graduated from high school and above were higher, and there was a correlation between the subscales, other than the physical activity and stress management and total mean scores (p<0.05). It was determined that all the HPLP II subscale and total mean scores of the patients who received diabetes training, did regular exercise, and did not have sleep problems were higher and, also, all the subscales, other than the stress management, and total mean scores were higher in those who had dietary complication (Table 3).

Table.1. The Distribution of Some Characteristics of the Patients

Characteristics	n (%)
Age (year) (Mean±SD) 56.2 ±13.7	
Gender	
Female	108 (62.1)
Male	66 (37.9)
Marital status	
Married	158(90.8)
Single	16(9.2)
Educational Status	
Illiterate	102(58.6)
Primary education	61(35.1)
High school and higher	11(6.3)
Social Security	
Yes	79(45.4)
No	95(54.6)
Smoking	
Yes	43(24.7)
No	131(75.3)
Having diabetes training	
Yes	79(45.4)
No	95(54.6)
Diabetes duration (year)	
1-5	66(37.8)
6-10	54(31)
11 and over	54(31)
Complication associated with diabetes	
Nephropathy	29(16.8)
Neuropathy	64(36.9)
Retinopathy	33(19)
Restricted salt	
Yes	143(82.2)
No	31(17.8)
Doing regular exercise	
Yes	68(39.1)
No	106(60.9)
Medication adherence	
Yes	152 (87.4)
No	22 (12.6)
Sleep problem	
Yes	99 (56.9)
No	75 (43.1)
Going on a diet	
Yes	70 (40.2)
No	104(59.8)
Total	**174(100.0)**

Table 2. Distribution of Mean Scores of Healthy Promoting Lifestyle Profile II

HPLP II and Subscales	X±SD	Min-Max Scores
Health Responsibility	20.9±5.5	10.00-34.00
Physical Activity	11.8±3.9	8.00-27.00
Nutrition	22.8±3.5	14.00-33.00
Spiritual Development	23.5±3.8	13.00-34.00
Interpersonal relations	25.1±3.9	10.00-35.00
Stress management	18.1±3.3	11.00-32.00
HPLP II total score	122.3±17.1	83.00-192.00

Table 3. Comparisons Some of the Characteristics of the Patients with Their Healthy

Characteristics	Health Responsibility Mean±SD	Physical Activity Mean±SD	Nutrition Mean±SD	Spiritual Improvement Mean±SD	Interpersonal Relations Mean±SD	Stress management Mean±SD	HPLP II total score
Gender							
Female	19.4±4.9	11±3.5	22.1±3.4	22.5±3.6	24.7±3.7	17.8±3	117.7±15.3
Male	23.3±5.5	12.9±4.1	23.9±3.4	25.1±3.4	25.6±4	18.7±3.6	129.8±17.2
p	0,000	0.001	0.001	0,000	0.122	0.139	0.000
Marital status							
Married	21.1±5.4	11.8±3.9	22.8±3.5	23.4±3.7	25.1±3.7	18.1±3.3	122.4±16.6
Single	19±5.7	11.8±3.7	22.5±4	24±4.1	25.2±5.4	18.8±3.3	121.4±21.5
p	0.191	0.878	0.949	0.284	0.385	0.397	0.945
Educational Status							
Literate	20.22±4.3	12±3.3	22.5±3.3	22.7±2.4	26.2±3.3	19±2.8	122.7±8.2
Illiterate	19.3±4.8	11.2±3.8	22.1±3.4	22.5±3.6	24.4±3.2	17.6±3	117.4±15.2
Primary education	23.3±5.4	12.6±3.7	23.5±3.4	24.8±3.3.	26±4.1	18.7±3	129.2±14.7
High school and higher	24.8±7.1	14.5±5.3	26.5±4.1	26.6±5.5	26.4±6.4	20.5±6.5	138.2±27.1
p	0.000	0.062	0.005	0.000	0.022	0.230	0.000
Receiving diabetes training	22.5±5.9	12.2±3.9	23.6±3.4	23.8±3.8	25.7±4	18.3±3.3	126.3±17.3
Yes	19.8±4.9	11.5±3.9	22.2±3.5	23.3±3.7	24.6±3.8	18±3.3.	119.6±16.5
No	0,002	0.124	0.010	0.318	0.190	0.739	0.011
P							
Doing regular exercise							
Yes	21.2±4.8	14.5±4.3	23.1±3	24.1±3.1	25.3±3.5	19±3.7	127.4±15.8
No	20.7±5.9	10±2.2	22.6±3.8	23±3.8	24.9±4.1	17.6±2.9	119.1±17.1
p	0.450	0.000	0.306	0.049	0.333	0.008	0.001
Going on a diet							
Yes	23±5.7	12.6±4.3	24±3.5	23.9±3.5	25.3±4	18±3.4	127±16.7
No	19.5±4.9	11.2±3.4	22±3.3	23.2±3.9	24.9±3.8	18.3±3.2	119.3±16.7
p	0.000	0.036	0.000	0.132	0.683	0.311	0.003
Sleep problem							
Yes	20.7±5.4	11.5±3.9	22.4±3.6	22.8±3.7	24.6±4.2	17.4±3.1	119.7±17.5
No	21.2±5.5	12.1±3.9	23.3±3.4	24.3±3.6	25.6±3.3	19.1±3.2	125.9±16
p	0.45	0.140	0.098	0.005	0.067	0.001	0.009

Discussion

In this study conducted to determine the health lifestyle behaviors in the patients with diabetes, it was determined that the HPLP II total mean scores of the patients were observed at moderate level, the lowest score was determined at the physical activity subscale and the highest score was determined at the interpersonal relations and spiritual development subscales, which was followed by the nutrition, health responsibility and stress management subscales. It was determined in the study conducted by Yilmaz et al., with the individuals with type 2 diabetes that the subscale mean scores were lined-up similarly (Yilmaz, Kumsar & Celik, 2018). It was determined in the study conducted by Shima et al., with the patients with type 2 diabetes that the second highest score was observed in the spiritual development subscale and the lowest score was observed in the physical activity subscale. These results related to the lowness of the physical activity score suggest that the individuals with diabetes did not have adequate knowledge on the advantages of regular exercise and they may have lack of motivation for physical activity. However, physical activity is very important in diabetes management in terms of blood glucose control (Cherik et al., 2018). Spiritual development is described as working for life purposes and maximizing the power of the individuals on their well-being. This situation gives hope, power, relief and peace to the individuals to cope with their problems and it has also positive effects on the disease and health by providing advantages in terms of supporting positive lifestyle of individuals, preventing diseases and providing better health, alleviating ache and pain, making it easier for the individuals to accept diseases, reducing stress and depression and coping with them, enhancing the quality of life, having the individuals take social responsibility, and changing their personal values and worldview. The interpersonal relations/support include the relations of the individuals with the others. It requires using communication to establish a meaningful relationship. Communication includes sharing verbal and nonverbal messages and thoughts and emotions. In the literature review, it has been seen that the spiritual development and positive interpersonal relations contribute to the management of diseases positively (Bostan & Beser 2017; Savasan, Ayten & Ergene 2013; Erisen & Sivrikaya 2017; Yilmaz & Okyay 2009; Bahar et al., 2008). Also

in this study, it was observed that the highest subscale mean score belonged to the interpersonal relations and spiritual development and Yilmaz et al., obtained the same results in their study conducted with the individuals with type 2 diabetes (Yilmaz, Kumsar & Celik, 2018). Healthy nutrition is one of the key components of diabetes management. American Diabetes Association has also accepted that nutrition therapy has a very important role in general diabetes management and recommended that each individual with diabetes should participate in a self-management, training and therapy planning actively with an personalized nutrition plan (Evert et al., 2014). Also in this study, the highness of the nutrition subscale mean score supported these data. It has been reported in the literature that there is a correlation between some characteristics of the patients and HPLP. Also in this study, it was determined that all subscale and total mean scores of the male patients for HPLP II were higher compared to the females; however it was determined that there was a significant correlation between the subscales, except for the interpersonal relations and stress management subscales, and the total score and gender (p<0.05). In their study, Kucukberber et al., determined that the HPLP total score of the men was higher compared to the score of the women. It was found in the study conducted by Kuru et al., with the individuals with coronary artery disease that men had higher HPLP total score compared to the women (Kucukberber, Ozdilli & Yorulmaz, 2011; Kuru & Piyal 2012). In the examination of marital status and HPLP II subscale mean scores, it was determined that singles had higher mean scores in all subscales except for health responsibilities and nutrition, compared to married people but there was no significant difference between the total mean scores. In their study, Curcani et al., determined that single ones had higher mean scores in all the subscales, except for nutrition subscale, compared to the married ones and the difference between their total scores was not significant. However, unlike this study and the specified study results, it was determined in the study by Kucukberber et al., that the married ones had higher mean scores in all subscales except for the interpersonal relations and the difference between the total HPLP II scores was significant. When examining the correlation between the educational status and HPLP II subscale mean scores, it was determined that the patients receiving high school and higher education had higher subscale and total mean scores and the difference between all the subscale

scores, except for the physical activity and stress management, was significant. It was determined in the studies by Kucukberber et al., and Kuru et al., that the ones receiving high school and higher education had higher subscale scores in all subscale and total scores as in the present study and Yalcinkaya et al., determined in their study with healthcare professionals that all subscale mean scores were higher as the educational level increases (Curcani, Tan & Ozdelikara, 2010; Kucukberber, Ozdilli & Yorulmaz, 2011; Kuru & Piyal 2012; Yalcinkaya, Ozer & Karamanoglu 2007). These results indicated that as educational level increased, the realization level of healthy lifestyle behavior would also increase. It was determined that receiving diabetes training was effective in providing glysemic control by increasing self-management and diabetes knowledge (Kim et al., 2004). Training has a major role in the integration of the lifestyle characteristics such as physical activity, diet and stress. In the meta-analysis studies in which the effect of lifestyle changes in patients with diabetes was determined, it was determined that glycemic control was provided better in the people for whom diet change and physical activity increase were provided. Also, lifestyle changes are not only composed of the changes in the diet and exercise habits, but also should aim to reduce alcohol consumption and smoking and recover sleep disorders (Magkos et al., 2009; El-Sinani et al., 2010; Chen et al., 2014; Htoo , Hsu & Rosenkranz, 2016). In this study, it was determined that all subscale and total mean scores of the patients who received diabetes training, did regular exercise, and did not suffer from sleep disorder were higher and, also mean scores of all the subscales, except for the stress management, and total mean score were higher in this who had dietary compliance. In their study, Vural et al., determined that all the HPLP II subscale scores and total mean score of the patients doing regular exercise were statistically and significantly higher compared to the students not doing regular exercise. In the study conducted by Yalcinkaya et al., with healthcare professionals they reported that all subscale and total scale scores of the patients doing exercise 3-4 and more days a week were higher compared to those not doing exercise. In the study by Yilmaz and Ozkan, it was also found that the HPLP total mean scores of those doing regular exercise were higher compared to those not doing regular exercise (Vural & Bakir, 2015; Yalcinkaya , Ozer & Karamanoglu, 2007; Ozkan & Yilmaz , 2008).

Conclusion and Recommendations: It was determined in this study that HPLP II total score of the patients with diabetes was at "moderate level", the lowest subscale mean score was determined at the physical activity subscale and the highest score was observed at the interpersonal relations and spiritual development subscales, which was followed by nutrition, health responsibility and stress management subscales. It was determined that those who were male, received high school and higher education, received diabetes training and did not have sleep problem had higher HPLP II total and subscale scores. In accordance with these results, it may be recommended for the diabetes training nurses encourage patients to exercise, to provide health training for the continuity of the lifestyle changes which will be formed in the patients, and to consider the socio-demographic characteristics in planning training.

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