International Anatolia Academic Online Journal

ORIGINAL ARTICLES / ARAŞTIRMA MAKALESİ

DETERMINATION OF THE OBSTACLES TO COPING WITH DIABETES IN THE TYPE 2 DIABETIC PATIENTS

Ayşe Kacaroğlu Vicdan[1], Ülkü Demirkan Yapar[2]

[1]Muğla Sıtkı Koçman University Faculty of Health Sciences, Department of Nursing, Mugla/Turkey

[2]Muğla Sıtkı Koçman University Training and Research Hospital, Mugla/Turkey

Corresponding Author: Ayşe Kacaroğlu Vicdan, RN, PhD

e-mail: aysevicdan64@hotmail.com

Tel: +90 252 211 56 43

Abstract

Type 2 diabetes is a disease that causes individuals to experience physiological, psychological and social obstacles. This study was conducted to determine the obstacles experienced by type 2 diabetes patients in coping with their diseases. The cross-section study was conducted between the dates of September 10, 2018 - January 18, 2019. Being literate, being diagnosed with type 2 diabetes at least six months ago and being volunteer to participate in the study were determined as the inclusion criteria. It was found that the patients who aged 28-45 years, married, were living with their families, used insulin for 1-5 years had more obstacles in coping with their disease, and this finding was statistically significant ($p<0.05$). It was determined that the female patients, housewives, high school graduates, individuals with a disease duration of 1-7 years and individuals with another chronic disease experienced more obstacles, although not statistically significant ($p>0.05$). In this study, it was determined that the patients with Type 2 diabetes experienced some obstacles related medication use, self-monitoring, knowledge and belief, diagnosis, relationships with health professionals, lifestyle change, coping with diabetes, and receiving support.

Keywords: Type-2 diabetes, obstacles, patient

IAAOJ International Anatolia Academic Online Journal

ORIGINAL ARTICLES / ARAŞTIRMA MAKALESİ

TİP 2 DİYABET HASTALARININ HASTALIKLARI İLE BAŞ ETMELERİNDE KARŞILAŞTIKLARI ENGELLERİN BELİRLENMESİ

Özet

Tip 2 diyabet, bireylerin fizyolojik, psikolojik ve sosyal sorunlar yaşamasına neden olan bir hastalıktır. Bu çalışma, Tip 2 diyabet hastalarının hastalıkları ile baş etmelerinde karşılaştıkları engellerin belirlenmesi amacıyla yapılmıştır. Kesitsel tipdeki çalışma, 10 Eylül 2018 - 18 Ocak 2019 tarihleri arasında yapılmıştır. Çalışmaya katılan 28-45 yaş aralığındaki hastaların, evli bireylerin, ailesiyle yaşayan ve 1-5 yıldır insülin kullanan hastaların hastalıklarıyla baş etmelerinde daha fazla engel yaşadıkları ve bu oranın istatistiksel olarak anlamlı olduğu bulunmuştur ($p<0.05$). Çalışmaya katılan kadın hastaların, ev hanımlarının, lise mezunlarının, hastalık süresi 1-7 yıl olan bireylerin ve başka bir kronik hastalığı olan bireylerin istatistiksel olarak anlamlı olmamakla birlikte daha fazla engel yaşadıkları belirlenmiştir ($p>0.05$). Bu çalışmada Tip 2 diyabet hastalarının ilaç kullanımı, kendi kendini izleme, bilgi ve inanç, tanı, sağlık profesyonelleriyle ilişkiler, yaşam tarzı değişikliği, diyabetle başa çıkma ve destek almada engeller yaşadıkları belirlenmiştir.

Anahtar kelime: Type -2 diyabet, engeller, hasta

Introduction

Diabetes Mellitus is a chronic disease caused by elevated blood glucose levels as a result of insulin deficiency, insulin resistance, or a combination of both (1,2). While the number of patients with diabetes in the world is 422 million as of 2014, this number has been projected to increase by 55% to 592 million in 2035 (1,2). Diabetes is ranked as the seventh cause of death worldwide (2). In 2015, 1.6 million people worldwide were reported to died due to diabetes (1,2). Type 2 diabetes is the most common type of diabetes, accounting for about 90% of all diabetes cases. The prevalence of type 2 diabetes is rapidly increasing in conjunction with rapid changes in lifestyle (1,3,4).

Type 2 diabetes is a disease that causes individuals to experience physiological, psychological and social problems. The obstacles faced by the patients in coping with their disease cause serious problems in the management of it. Therefore, self-monitoring is very important for the patients to manage the disease that affects the whole life of them (1,5). The continuous drug use, blood glucose measurement, lack of knowledge about the disease and its treatment, health professionals' approach, lifestyle changes, low levels of psychosocial support are among the obstacles the diabetic patients face (6-9). In the studies conducted on the determination of obstacles that Type 2 diabetic patients experience, it can be observed that the patients experience obstacles of diet (10), treatment (11,12), exercise (13), lifestyle change (4), and the management of diabetics (14,15). A well diabetes management help individuals to cope with their diseases and obstacles. For ensuring the management of the disease, the families of patients, the healthcare team members providing care to the patient, must cooperate and support each other (15-17) Nurses have important responsibilities in identifying, reducing and eliminating the obstacles faced by the patients. For this reason, nurses should identify the obstacles faced by the diabetic patients in coping with their diseases and then plan nursing interventions to overcome these obstacles and assess whether these interventions are successful. In order to determine the obstacles faced by diabetes patients, nurses should assess the problems experienced by the patients in terms of drug use, unwanted side effects of the drugs, the problems experienced in measuring blood glucose levels, lifestyle changes experienced of the patients and support systems (3,5,18-20). The identification of the obstacles faced by patients with type 2 diabetes in coping with the disease and the elimination or reduction of these obstacles can contribute positively to the quality of life of the patients (4,5,8).

When the studies conducted on the determination of obstacles that Type 2 diabetic patients are examined, it was observed that only one or two obstacles were evaluated (4,5,10-15). However, in this study, obstacles related to medication, self-monitoring, knowledge and belief, diagnosis, relationships with health professionals, lifestyle changes, dealing with diabetes, and getting support that Type 2 diabetic patients experience were evaluated

altogether. For this reason, the present study would be a guide for determining the obstacles that patients experience more comprehensively and planning nursing care.

This study was conducted to determine the obstacles experienced by type 2 diabetes patients in coping with their diseases.

Materials and Method

The cross-section study was conducted between the dates of September 10, 2018 - January 18, 2019. Being literate, being diagnosed with type 2 diabetes at least six months ago and being volunteer to participate in the study were determined as the inclusion criteria. The study was carried out with 194 patients who stayed in the internal medicine service of an university hospital in western part of Turkey and met the inclusion criteria.

Data collection tools

The Patient Identification Form and Diabetes Obstacles Questionnaire (POQ) were used to collect the data.

Patient Identification Form

This form was prepared by the researchers to determine the sociodemographic characteristics and disease status of patients with type 2 diabetes (3-6). The form includes nine questions on patients' age, gender, marital status, education level, occupational status, persons living together, presence of another chronic disease, duration of diabetes, and duration of insulin use.

The Diabetes Obstacles Questionnaire (DOQ)

The Diabetes Obstacles Questionnaire was developed by Hearnshaw et al. in 2007 (21). The DOQ is a five-point likert-type scale consisting of eight sub-scales with 78 questions and without a total score. The sub-scales of the DOQ are the obstacles to medication (10 items), the obstacles to self-monitoring (5 items), the obstacles to knowledge and belief (10 items), the obstacles to diagnosis (6 items), the obstacles to relationship with

health professionals (18 items), the obstacles to lifestyle change (13 items), the obstacles to coping with diabetes (8 items), the obstacles to receiving advice and support (8 items). The DOQ is a five-point Likert type scale and consists of the questions which can be answered with the choices of “strongly agree”, “agree”, “neutral”, “disagree”, “strongly disagree”. The scale is scored by taking the mean score on each sub-dimension. The choices are scored as 2 points for strongly agree, 1 point for agree, 0 points for neutral, -1 points for disagree, and -2 points for strongly disagree. Negative scores indicate that the patient experiences no difficulty related to the condition while positive scores indicate that the patient has difficulty. The mean score for each sub-dimension scored in this way reflects the degree of difficulty experienced by a patient because of the related obstacle. Accordingly, a positive score from the relevant sub-dimension indicates the increasing severity of the obstacles experienced while a negative score indicates the increase of the positive condition. The scale was adapted to Turkish society in 2016 by Kahraman et al. (3). Cronbach's alpha coefficient ranges from 0.69 to 0.93 (21) in the original scale while it ranges from 0.63 to 0.84 in its Turkish version (3). In this study, it ranged between 0.77- 0.95.

Data collection

The data were collected by the researcher using face-to-face interview technique in patient rooms on weekdays when both the patients and the researchers were avaliable. Filling the forms used to collect data took about 20 minutes.

Statistical analysis

SPSS 22 (Statistical Package for the Social Sciences) was used in the evaluation of the data and $p<0.05$ was accepted as statistically significant. Shapiro-Wilk test was used to determine whether the data were distributed normally. Non parametric tests were used because the data were non-normally distributed. The sociodemographic characteristics and disease characteristics of the patients were analyzed by percentage test. Mann Whitney U test and Kruskal Wallis test were used for the variables with more than two categories. Post hoc test was used to determine the difference between the groups.

Ethical statement

In order to conduct the study, an ethical approval was obtained from the Scientific Research and Publication Ethics Committee of Muğla Sıtkı Koçman University (Date: 08.12.2016 Protocol no:1 Decision no: 1) and an institutional permission was also obtained from the hospital where the research was conducted. The required permission for the use of the Turkish questionnaire was taken from the authors. The objective of the study was explained to the participants and their written consent was obtained.

Results

52.6% of the patients were female while 47.4% of them were male. The mean age of the patients was 58.46 ± 11.40 years (Min=28 years - Max=76 years). 87.1% of the participants were married; 57.7% of them were primary school graduates; 47.4% of them were retired; 47.4% were living with their spouse and children; 52.6% of them had other chronic diseases besides diabetes. 38.1% of the participants had diabetes for 1-7 years; 48.5% of them had been using insulin for the treatment of type 2 diabetes for 1-5 years.

When the ages of the patients in the study were compared with their mean scores on the Diabetes Obstacles Questionnaire, the difference between their scores on the subscales of the obstacles to medication (p= 0.001), the obstacles to self-monitoring (p= 0.000), the obstacles to diagnosis (p= 0.003), the obstacles to the relationship with health professionals (p= 0.004), the obstacles to life style change (p= 0.010), the obstacles to coping with diabetes (p= 0.002), and the whole Diabetes Obstacles Questionnaire (p= 0.000) (Table 1). This difference was originated from the patients aged 64 years or older.

There was no significant difference between the participants' in terms of gender, educational level, occupational status, presence of having another chronic disease besides diabetes and the duration of disease. The difference between the mean scores of the participants on the subscales of the obstacles to medication (p= 0.017), the obstacles to diagnosis (p= 0.029), the obstacles to coping with diabetes (p= 0.004), the obstacles to receiving advice and support (p= 0.000) and the whole Diabetes Obstacles Questionnaire (p= 0.017) were found to be statistically significant in terms of their marital status (Table 1). The

differences between the scores of the individuals on the subscales of the obstacles to the relationship with health professionals (p= 0.000), the obstacles to coping with diabetes (p= 0.004), and the obstacles to receiving advice and support (p= 0.001) were statistically significant in terms of the persons living together (Table 1).

There were statistical significant differences between the scores on the subscales of the obstacles to medication (p= 0.002), the obstacles to self-monitoring barriers (p= 0.000), the obstacles to information and belief (p= 0.001), the obstacles to diagnosis (p= 0.002), the obstacles to lifestyle change (p= 0.004), the obstacles to coping with diabetes (p= 0.001), the obstacles to receiving advice and support (p= 0.001), and the whole Diabetes Obstacles Questionnaire (p= 0.000) in terms of the duration of insulin usage (Table 1). This difference was due to the patients using insulin for 11 years or longer.

ORIGINAL ARTICLES / ARAŞTIRMA MAKALESİ

Table 1. Comparison of the patients' variables and their mean scores on the whole Diabetes Obstacles Questionnaire and its subscales

Variables	n	%	Medication Obstacles Mean Scores	Self-Monitoring Obstacles Mean Scores	Obstacles of Knowledge and Beliefs Mean Score	Obstacles of Diagnosis Mean Scores	Obstacles of Relationships with the Healthcare Professionals Mean Scores	Obstacles of the Lifestyle Changes Mean Scores	Obstacles of Coping with Diabetes Mean Scores	Obstacles of the Advice and Support Mean Scores	Diabetes Obstacles Questionnaire Total Mean Scores
Age			Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
28-45 years	31	16.0	2.06 ± 7.89	3.64 ± 4.43	4.38 ± 7.44	2.38 ± 5.26	6.03 ± 12.92	9.87 ± 10.54	6.29 ± 5.71	3.19 ± 6.23	39.45 ± 44.98
46-63 years	94	48.5	0.52 ± 6.89	1.89 ± 4.95	3.15 ± 7.66	1.64 ± 5.11	-4.52 ± 15.46	6.24 ± 11.39	3.96 ± 6.71	0.79 ± 7.04	15.08 ± 48.34
64 years or older	69	35.5	-2.97 ± 7.29	-0.54 ± .4.68	2.11 ± 8.59	-0.63 ± 4.72	-3.76 ± 15.79	-3.76 ± 15.79	2.98 ± 5.16	-0.30 ± 7.28	2.27 ± 45.73
X^2			**14.614**	**17.005**	2.973	**11.762**	**11.090**	**9.283**	**7.344**	4.962	**13.290**
p*			**.001**	**.000**	.226	**.003**	**.004**	**.010**	**.002**	.080	**.000**
Gender											
Female	102	52.6	-0.35 ± 7.37	1.68 ± 4.67	3.47 ± 7.79	0.90 ± 5.18	-2.13 ± 15.23	6.16 ± 10.82	4.57 ± 6.22	0.90 ± 7.01	15.46 ± 48.24
Male	92	47.4	-0.60 ± 7.51	0.89 ± 5.30	2.45 ± 8.17	1.01 ± 5.08	-2.38 ± 16.07	5.19 ± 11.30	4.44 ± 6.01	0.88 ± 7.18	13.39 ± 48.58
z			-.060	-.975	-.518	-.066	-.010	-.509	-972	-.228	-.307
p**			.972	.329	.574	.948	.992	.611	.331	.820	.759
Marital status											
Married	169	87.1	0.01 ± 7.58	1.53 ± 5.11	3.19 ± 8.01	1.25 ± 5.18	-2.03 ± 15.76	5.98 ±1 1.36	4.42 ± 6.10	1.45 ± 6.87	17.35 ± 49.21
Single	25	12.9	-3.76 ± 5.22	-0.20 ± 3.81	1.64 ± 4.20	-1.08 ± 4.20	-6.16 ± 14.23	3.84 ± 8.44	1.08 ± 5.52	-3.72 ± 6.85	-4.80 ± 36.79
z			**-2.390**	-1.905	-1.240	**-2.181**	-1.211	-1.234	**-2.839**	**-3.644**	**-2.378**
p**			**.017**	.067	.225	**.029**	.226	.217	**.004**	**.000**	**.017**
Educational level											
Literate	20	10.3	-1.00 ± 8.15	-0.90 ± 4.93	3.30 ± 8.89	1.35 ± 4.78	-2.10 ± 15.52	4.45 ± 11.47	2.45 ± 5.97	-1.25 ± 6.45	12.70 ± 55.61
Primary school	112	57.7	-0.79 ± 7.40	1.02 ± 4.84	3.81 ± 7.68	1.49 ± 5.08	-3.00 ± 15.04	6.45 ± 10.60	2.57 ± 5.77	-1.57 ± 6.62	18.04 ± 45.83
Middle School	15	7.7	-2.93 ± 7.14	-1.46 ± 5.34	4.13 ± 6.83	0160 ± 4.99	-1.13 ± 12.66	2.60 ± 9.57	1.66 ± 5.17	-1.00 ± 6.11	12.00 ± 43.52
High school	36	18.6	1.33 ± 7.27	1.04 ± 4.70	4.27 ± 6.83	2.69 ± 4.64	-1.02 ± 17.63	7.63 ± 11.49	2.13 ± 6.63	-1.25 ± 6.76	25.28 ± 51.40
University	11	5.7	1.18 ± 6.77	0.81 ± 4.95	4.57 ± 4.26	2.27 ± 4.26	-3.45 ± 16.85	-1.72 ± 12.71	1.27 ± 7.51	-1.18 ± 6 21	17.63 ± 41.75
X^{2k}			5.543	6.651	3.798	6.625	1.093	7.103	5.704	5.517	4.720
p*			.236	.127	.456	.365	.895	.131	.238	.242	.415
Occupational status											
Housewife	77	44.8	0.03 ± 7.38	1.21 ± 4.83	4.10 ± 7.62	1.32 ± 5.27	-2.11 ± 15.00	7.32 ± 10.68	4.32 ± 5.99	1.37 ± 6.85	19.96 ± 47.92
Retired	59	30.4	-0.11 ± 7.65	1.35 ± 5.21	3.10 ± 7.78	1.10 ± 4.92	-3.49 ± 16.69	5.64 ± 10.89	4.12 ± 5.91	1.22 ± 7.44	14.86 ± 47.14
Working	48	24.8	-1.81 ± 7.20	1.33 ± 4.93	0.81 ± 8.39	0.10 ± 5.10	-2.25 ± 15.54	2.85 ± 11.46	2.72 ± 6.53	-0.81 ± 6.86	4.10 ± 49.61

X^2			1.807	3.385	3.411	1.929	.543	4.327	2.730	3.310	2.922
p*			.405	.184	.182	.381	.762	.115	.255	.191	.232
Persons living together											
Living alone	17	8.8	-3.17 ± 6.05	-0.29 ± 3.75	2.35 ± 7.49	-1.52 ± 3.82	-10.29 ± 9.59	3.47 ± 8.17	0.94 ± 5.61	-3.11 ± 6.57	-8.76 ± 31.43
Lives with family	92	47.4	-0.28 ± 7.91	1.11 ± 4.47	3.22 ± 7.19	1.06 ± 4.91	1.94 ± 13.88	5.20 ± 10.49	3.66 ± 5.50	1.61 ± 6.83	18.91 ± 43.96
Lives with his wife/her husband	72	37.1	0.11 ± 6.83	2.25 ± 5.78	3.01 ± 8.77	1.65 ±. 5.56	-7.01 ± 17.09	7.01 ± 12.44	5.41 ± 6.84	1.06 ± 7.13	15.69 ± 54.66
Lives with relatives	13	6.7	-1.53 ± 8.47	-0.46 ±. 4.33	2.00 ± 9.89	-0.07 ± 4.82	0.23 ± 15.19	4.92 ± 9.90	2.30 ± 4.95	-1.53 ± 7.61	7.00 ± 53.95
X^2			3.745	7.950	.730	6.058	**18.415**	2.772	**12.772**	**9.108**	5.441
p			.290	.061	.786	.109	**.000**	.428	**.004**	**.001**	.142
Presence of having another chronic disease besides diabetes											
Yes	102	52.6	1.90 ± 6.90	1.36 ± 4.92	2.97 ± 7.99	1.76 ± 4.67	-4.05 ± 15.21	6.21 ±1 0.39	4.41 ± 5.59	1.59 ± 6.83	16.23 ± 53.94
No	92	47.4	1.89 ± 7.76	1.25 ± 5.08	2.77 ± 7.98	1.46 ± 4.52	-4.47 ±1 5.83	5.1 4± 11.73	3.52 ± 6.65	1.00 ± 6.65	15.85 ± 52.86
z			-2.253	-.224	-.366	-.615	-1.625	-.308	-.955	-.389	-.553
p			.234	.823	.715	.539	.104	.758	.340	.698	.580
Duration of disease											
1-7 years	74	38.1	0.11 ± 7.25	2.00 ± 4.98	3.39 ± 8.19	1.17 ± 5.18	-1.06 ± 16.01	6.58 ± 11.84	4.40 ± 6.55	1.29 ± 6.70	20.01 ± 45.99
8-14 years	58	29.9	0.5 3± 7.22	2.10 ± 4.96	3.25 ± 7.01	1.14 ± 4.91	-1.50 ± 15.38	6.18 ± 10.47	4.05 ± 5.95	1.26 ± 6.64	19.78 ± 49.46
15 years or longer.	62	32.0	-2.00 ± 7.68	2.15 ± 4.78	1.77 ± 8.51	-0.24 ± 5.07	-5.35 ±1 5.16	4.20 ± 10.55	3.43 ± 5.78	-0.35 ± 7.82	2.80 ± 47.67
X^2			5.287	8.355	2.470	5.114	2.713	2.297	1.359	2.236	5.237
p*			.071	.412	.261	.078	.258	.317	.507	.327	.073
Duration of insulin usage											
1-5 years	94	48.5	0.87 ± 7.37	2.63 ± 4.61	4.68 ± 7.00	1.97 ± 5.09	-0.45 ± 15.46	7.87 ± 10.59	5.37 ± 5.83	2.34 ± 6.54	27.24 ± 44.32
6-10 years	67	34.5	-0.38 ± 7.44	1.07 ± 5.25	2.16 ± 8.40	0.79 ± 5.05	-.2.88 ± 16.81	5.02 ± 11.42	3.46 ± 6.34	0.50 ± 7.18	11.21 ± 50.47
11 years or longer.	33	17.0	-4.48 ± 6.15	-2.00 ± 3.84	-0.69 ± 8.31	-1.63 ± 4.49	-7.93 ± 12.09	0.90 ± 10.47	1.12 ± 5.40	-3.06 ± 6.93	-15.30 ± 41.11
X^2			**12.916**	**19.849**	**14.761**	**12.279**	5.476	**11.177**	**14.077**	**14.831**	**19.345**
p*			**.002**	**.000**	**.001**	**.002**	.065	**.004**	**.001**	**.001**	**.000**

** Mann Whihtney U Test *Kruskal Wallis H Test SD= Standart Deviation

Discussion

In this study, it was determined that the patients witht type 2 diabetes experienced some obstacles related to medication, self-monitoring, lack of knowledge, relationship with health professionals, lifestyle change, coping with diabetes and receiving support. The results of the study were discussed with the literature assessing the barriers experienced by type 2 diabetic patients.

It was found that the patients who aged 28-45 years, married, were living with their families, used insulin for 1-5 years had more obstacles in coping with their disease, and this finding was statistically significant (Table 1). It was determined that the female patients, housewives, high school graduates, individuals with a disease duration of 1-7 years and individuals with another chronic disease experienced more obstacles, although not statistically significant (Table1). In a study by Cheng et al. (2018) (10), the participants under the age of 65 had more dietary barriers than those aged ≥ 65 years. Bi et al. (2010) (11), Cowie et al. (2010) (12) found that the young adult patients faced more obstacles in terms of diet. In the Ghimire's study conducted with Nepalese diabetic patients, the patients had obstacles related to diet and exercise (13). Heissam et al. (2015) (22) determined the treatment, belief, and motivation obstacles of Type 2 diabetic patients experience, Adu et al. (2019) (5) determined the obstacles of dealing with diabetes and treatment, and Saghir et al. (2019) (23) determined the obstacles of diet, exercise, and blood glucose control. In a study by Üren and Karabulutlu (2018) (8), it was observed that the patients using insulin experienced more obstacles to treatmet, the female patients were more affected by their social and personal needs compared to men, and had more negative attitudes about their diseases. In addition, as the duration of

diagnosis increased, the patients were more likely to encounter control problems. In the study of Orhan and Karabacak (2016) (24), it was stated that the occupational, social and recreational activities of women were more negatively affected than those of the male patients. Byers et al. (2016) (12), found that patients were forced to lifestyle changes, experience obstacles to diet, and had lack of knowledge about how to manage diabetes. In the study of Jones et al. (2014) (14), it was determined that patients experience obstacles in communicating with healthcare professionals.

As observed in this study and other studies, although the variables such as age, gender, marital status, duration of diagnosis, applied treatment method, etc. affected the level of the obstacles experienced by the patients, type 2 diabetes caused the individuals to experience physiological, psychological and social obstacles. Therefore, it has been thought that identifying the barriers experienced by patients with type 2 diabetes, supporting patients for overcoming the obstacles can facilitate the management of the disease and treatment process, support the adaptation process and improve the life quality of individuals.

Conclusion

In this study, it was determined that the patients with type 2 diabetes experienced some obstacles related to medication, self-monitoring, knowledge and belief, diagnosis, relationships with health professionals, lifestyle change, coping with diabetes, and receiving support. It was also found that the young adult patients, married patients and patients using insulin for 1-5 years experienced more obstacles to coping with their diseases. According

these results, nurses who have important responsibilities in determining the obstacles experienced by diabetic patients, can contribute to the elimination/reduction of these obstacles by taking into account the sociodemographic and disease characteristics of the patients.

It is recommended that similar studies be conducted on different sample groups in order to determine the obstacles experienced by patients with type 2 diabetes.

Limitations of the study

A limitation of the study is that it was carried out in only one center.

References

1. ADA (American Diabetes Association) Standards of medical care in diabetes. Diabetes Care 2019; 42 (Suppl. 1):3-11.

2. World Health Organization (WHO). Guidelines on secondand third-line medicines and type of insulin for the control of blood glucose levels in non-pregnant adults with diabetes mellitus. Geneva: WHO, 2018. [online]. https://apps.who.int/iris/handle/10665/272433 Accessed date: 10 August 2019.

3. Kahraman G, Tavşanlı NG, Baydur H, Özmen D, Özmen E. Validity and reliability of the Diabetes Obstacles Questionnaire in type-2 diabetic patients. Anatolian Journal of Psychiatry 2016; 17(Suppl.1):33-44. doi: 10.5455/apd.184116

4. Muslu L, Ardahan M. Motivational interview technique for life style change in diabetes mellitus. Current Approaches in Psychiatry 2018; 10(3):346-357. Doi: 10.18863/pgy.348106

5. Adu MD, Malabu UH, Malau-Aduli AEO, Malau-Aduli BS. Enablers and barriers to effective diabetes self-management: A multi-national investigation. PLoS One 2019; 14(6): 1-22. Doi: 10.1371/journal.pone.0217771

6. Pilv L, Ratsep A, Oona M, Kalda R. prevalent obstacles and predictors for people living with type 2 diabetes. International Journal of Family Medicine 2012; 1-8. doi:10.1155/2012/842912

7. Shrivastava RS, Shrivastava PS, Rmasamy J. Role of self-care in management of diabetes mellitus. J Diabetes Metab Disord. 2013; 12(14):14-18.

8. Üren Y, Karabulutlu EY. Investigating the factors that complicate diabetes control in patients with type 2 diabetes. HSP 2018; 5(3):376-386.

9. Pal K, Eastwood SV, Michie S, et al. Computer-based diabetes self-management interventions for adults with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2013; 3: CD008776

10. Cheng LJ, Wu VX, Dawkes S, Lim ST, Wang W. Factors influencing diet barriers among outpatients with poorly-controlled type 2 diabetes: A descriptive correlational study. Nurs Health Sci. 2019; 21:102-111.

11. Bi Y, Zhu D, Cheng J, Zhu Y, Xu N, Cui S, Hu Y. The statusof glycemic control: A cross-sectional study of outpatients with type 2 diabetes mellitus across primary, secondary, and

tertiary hospitals in the Jiangsu province of China. Clinical Therapeutics 2010; 32(5): 973-983.

12. Cowie CC, Rust KF, Byrd-Holt DD, Gregg EW, Ford ES, Geiss L, S.Fradkin JE. Prevalence of diabetes and high riskfor diabetes using A1C criteria in the US population in 1988–2006. Diabetes Care 2010; 33(3): 562-568.

13. Ghimire S. Barriers to diet and exercise among nepalese type 2 diabetic patients. International Scholarly Research Notices 2017; 1-9. https://doi.org/10.1155/2017/1273084

14. Jones L, Crabb S, Turnbull D, Oxlad M. Barriers and facilitators to effective type 2 diabetes management in a rural context: a qualitative study with diabetic patients and health professionals. J Health Psycol. 2014; 19(3):441-453. DOI: 10.1177/1359105312473786

15. Byers D, Garth K, Manley D, Chlebowy D. Facilitators and barriers to Type 2 diabetes self-management among rural African American adults. J Health Dispar Res Pract. 2016; 9(1):1-11.

16. Li J, Li Z, Zhao W, Pan H, Halloran EJ. The reliability and validity of the diabetes care profile for Chinese populations. Eval Health Prof. 2015; 38(2):200-218.

17. Fatema K, Hossain S, Natasha K, Chowdhury HA, Akter J, Khan T, et al. Knowledge attitude and practice regarding diabetes mellitus among Nondiabetic and diabetic study participants in Bangladesh. BMC public health. 2017;17(1):364.

18. Anari R, Amani R, Veissi M. Obesity and poor glycemic controlin patients with type 2 diabetes. International Journal of Research in Medical Sciences 2016; 4(2):584-588.

19. Gurmu, Y, Gela, D, Aga, F. Factors associated with self-care practice among adult diabetes patients in West Shoa Zone, Oromia Regional State, Ethiopia. BMC Health Serv Res 2018; 18(1):732.

20. Manne-Goehler J, Atun R, Stokes A, Goehler A, Houinato D, Houehanou C. Diabetes diagnosis and care in sub-Saharan Africa: pooled analysis of individual data from 12 countries. Lancet Diabetes-Endocrinol 2016; (16) 30: 216-219. http://dx.doi.org/10.1016/

21. Hearnshaw H, Wright K, Dale J, Sturt J, Vermeire E, van Royen P. Development and validation of the Diabetes Obstacles Questionnaire (DOQ) to assess obstacles in living with type 2 diabetes. Diabetic Medicine 2007; 24: 878-882.

22. Heissam K, Abuamer Z, El-Dahshan N. Patterns and obstacles to oral antidiabetic medications adherence among type 2 diabetics in Ismailia, Egypt: a cross section study. Pan Afr Med J. 2015; 20 (177):1-7. doi:10.11604/pamj.2015.20.177.4025 1-10.

23. Saghir SA, Alhariri AE, Alkubati SA, Almiamn AA, Aladaileh SH, Alyousefi NA. Factors associated with poor glycemic control among type-2 diabetes mellitus patients in Yemen. Trop. J. Pharm. Res. 2019; 18 (7): 1539-1546.

24. Orhan B, Gülseven KB. Assciation between cognitive and social factors and metabolic control parameters in patients with type 2 diabetes. Clin Exp Health Sc. 2016; 6:1-8.