Original Article

Self-Management Status and COVID-19 Phobia of Patients with Type 2 Diabetes

Gunes Alkaya Feyizoglu, RN, PhD
Istanbul Medeniyet University Goztepe Education and Research Hospital, Goztepe Prof. Dr. Suleyman Yalcin City Hospital, Internal Medicine Department, Diabetes Nursing, Istanbul, Turkey

Berna Dincer, RN, PhD
AssistantProfessor, Istanbul Medeniyet UniversityFaculty of Health Sciences, Department of Internal Medicine Nursing, Istanbul, Turkey

Correspondence: Gunes Alkaya Feyizoglu, RN, PhD, Goztepe Prof. Suleyman Yalcin City Hospital, Internal Medicine Department, Diabetes Nursing, Istanbul, Turkey. E-mail: galkaya@yahoo.com

Abstract

Background: Self-management knowledge and skills, which are important for ensuring glycemic control, can be affected by many events as well as factors such as education and age. Understanding the effect of phobia on self-management behaviours experienced by diabetic patients who are at risk in the Covid-19 pandemic is important for diabetes management.

Aim: The aim of this study was to determine the COVID-19 Phobia of patients with type 2 diabetes compared to healthy individuals and to examine their self-management status during the COVID-19pandemic.

Methods: The descriptive and cross-sectional study was conducted between Jun-Aug 2020 with a total of 197 subjects consisting of patients with type 2 diabetes and healthy volunteers. Patient information form, Diabetes Self-Management Scale and COVID-19 Phobia Scale were used to collect data. In the analysis of the data, percentage, mean, standard deviation, and Mann Whitney U tests were used to compare two groups of the variables with non-normal distribution, and Pearson correlation analysis was used to evaluate the relations between the variables. Multiple regression analysis was used to determine the factors affecting the level of COVID-19 Phobia.

Results: In the inter-group comparison of patients with diabetes and healthy individuals forCOVID-19 Phobia and its subscales, the patients with diabetes were found have statistically significantly higher mean scores from the COVID-19 PhobiaScale (p=.000), and its Somatic (p= .000) and Social (p= .024) subscales compared to healthy individuals. The multiple regression analysis demonstrated a positive moderate correlation between the COVID-19 Phobia and Diabetes Self-Management levels of patients with diabetes (r= .509, p= .000).

Conclusions: Patients with diabetes had a higher level of COVID-19 Phobia than healthy individuals, and they were more afraid of social and somatic symptoms.

Keywords: Type 2 diabetes, Covid-19 phobia, diabetes self-management

Introduction

Caused by the severe acute respiratory syndrome-Coronavirus-2 (SARS-CoV-2), the coronavirus disease-19 (COVID-19) spread rapidly worldwide after it was first detected in Wuhan, China in December 2019. It was declared an "International Public Health Emergency" by the World Health Organization in January 2020 (Sohrabi et al., 2020).

Being an important health threat for the entire population, the COVID-19 disease has a more severe course in people with chronic diseases. Mortality rate was found as 5.6% in cancer patients, 7.3% in patients with diabetes, 6% in hypertension patients, 6.4% in those with chronic respiratory disease and 10.3% in those with cardiovascular diseases, all of which are higher than in the healthy population (Liang, 2020; J.Am.Coll.Cardiol, 2020). In the literature for the previous H1N1,

SARS-CoV and MERS-CoV pandemics, the presence of a chronic disease was reported to be associated with poor clinical outcome (Karla, Elsa, Jaime, 2009; Yang et al., 2020; Gauri, Yadav, Prajapati, 2020). According to reports from China and Italy in the COVID-19 pandemic, patients with diabetes and other chronic diseases have a higher risk of severe disease and mortality (Liu, Guan, Zhong, 2020; Pasquariello, Stranges, 2020).

Diabetes is a chronic disease that has become increasingly pandemic worldwide. When it is not well controlled, it threatens life with acute and chronic complications and impairs the quality of life of people. In order to manage the disease and prevent complications, patients' self-management capabilities in their care, follow-up and treatment need to be improved given thatthe main factor affecting the course of diabetes seems to be the patient's self-management (Ersoy, Yilmaz, Edirne, 2001; ADA-2019). In diabetes self-management training, patients are provided with training on the disease process, treatment features, appropriate dietary principles, physical activity, blood glucose and ketone measurement, acute complications, chronic complications, blood glucose target values, drug use and self-monitoring for them to gain the knowledge and skills necessary for diabetes self-management. Successful self-management of the patient increases metabolic control and quality of life. Patients with diabetes are at risk for infectious diseases (ADA-2019; IDF-2015; Gupta et al., 2020).

It has been reported in the literature that diabetes is a risk factor for COVID-19 and that the prognosis is worse in patients with diabetes. In addition to the general advice to protect themselves against the COVID-19 pandemic, patients with diabetes are recommended to monitor their blood sugar more frequently for good glycaemic control, pay attention to their diet, exercise, and have influenza and pneumonia vaccinations (Gupta et al., 2020; Richardson at al., 2020; Maddaloni, Buzzetti, 2020).

COVID-19 has affected patients with diabetes, both physiologically and psychologically, as it did all individuals. Pandemics can lead to an increase in phobia, anxiety and fear in people, and may lead to depression in the long term (Dincer, Ayaz, Oguz, 2021). It has been reported that phobic reactions began to occur in people with the rapid spread of the COVID-19 pandemic (Soraci et al., 2020). The undesirable circumstances that people find themselves in can affect their daily living activities and impair the management of chronic diseases. This can affect patients with diabetes in particular in many ways. Impairment of self-management is an important consideration for patients with diabetes to avoid the potential complications. It is therefore necessary to ensure and maintain the self-management of patients with diabetes during the pandemic.

Purpose of the study

This study aimed to examine the COVID-19 Phobia of patients with type 2 diabetes and their self-management during the COVID-19 pandemic.

Research questions and hypothesis:

- What is the COVID-19 Phobia status of patients with diabetes during the COVID-19 pandemic compared to healthy individuals?
- How was the self-management of patients with diabetes affected during the COVID-19 pandemic?

Methods

The descriptive and cross-sectional study was conducted between 15.06.2020 and 15.08.2020 to examine COVID-19 Phobia in patients with type 2 diabetes and their self-management status during the COVID-19pandemic.

Patients who were 18 years of age or older, volunteered to participate in the study, had no communication problems, were diagnosed with diabetes at least 6 months ago according to the ADA criteria, were literate and could speak Turkish, and did not have history of a psychiatric condition were included in the study. People who were in Istanbul during the COVID-19 pandemic were eligible. The city of Istanbul was chosen because its population includes people from every region of Turkey, is the city with the highest population density and with the highest number of COVID-19 cases. The power analysis method resulted in a sample of 150 people with an effect size of 0.5 and an α level of 0.05 with a confidence interval of 79%.

Data Collection Tools: Data were collected with the Patient information Form, Diabetes Self-Management Scale, and COVID-19 Phobia Scale (C19P-S).

Patient information form: The form includes 9 questions created by the researchers. Prepared by the researchers based on the literature, this form covers socio-demographic details (age, gender, height/weight, educational status, employment status, chronic disease history, duration of diabetes, medications used).

Diabetes Self-Management Questionnaire (DSMQ): The Questionnaire was developed by Schmitt et al., 2013 and its Turkish validity and reliability was established by Eroglu and Sabuncu, 2018. The scale, in which patients are asked to answer the questions considering their last 8 weeks, consists of 16 items, 9 of which are reversely scored. It has 4 subscales, namely glucose management covering items 1, 4, 6, 10 and 12, dietary control covering items 2, 5, 9 and 13, physical activity covering items 8, 11 and 15, and health-care use covering items 3, 7 and 14. Item 16 is not included in any subscale. It is a 4-point Likert type scale rated as 0: Does not apply to me, 1: Applies to me to some degree, 2: Applies to me to a considerable degree, 3: Applies to me very much. Scale scoring is calculated as (total score of items from the total scale or subscale) / (the maximum total score of items that can be obtained from the total scale or subscale) x 10. The maximum score obtainable from the scale is 10. Scores closer to 10 indicate better diabetes self-management. The Cronbach's alpha value of the scale was found to be 0.85, and it was 0.86 in this study.

COVID-19 Phobia Scale (C19P-S): The scale is a 5-point Likert-type self-assessment scale developed by Arpaci et al. (Arpaci, Karatas, Baloglu, 2020) to measure the phobia that may develop against the COVID-19. Scale items are rated between 1 "Strongly Disagree" and 5 "Strongly Agree". Items 1, 5, 9, 13, 17 and 20 measure the psychological factors, items 2, 6, 10, 14 and 18 measure the psycho-somatic factors, items 3, 7, 11, 15 and 19 measure the social factors and items 4, 8, 12 and 16 items measure the economic factors. Subscale scores are obtained by the sum of the answers given to the items belonging to that subscale, and the total C19P-S score is obtained by the sum of the subscale scores and ranges from 20 to 100 points. Higher scores indicate higher subscale scores and a higher overall corona phobia. The Cronbach's alpha value of the scale was found to be 0.92, and it was 0.89 in this study.

Data Collection: Data were collected by the online survey method. The patient evaluation form, Diabetes Self-Management Questionnaire, and the COVID-19 Phobia Scale were administered to the patients who were known to have type 2 diabetes and whose contact information was available in the hospital patient information system, while the patient information form and the COVID-19 Phobia Scale were administered to the healthy individuals. All data was collected online using Google Forms. The patients with contact information were called by the researcher, the study was explained, and a form was sent to those who agreed to participate. In the healthy individuals' group, those who were similar to the sociodemographic characteristics of the patients with diabetes (age, gender, educational status), who were known not to have diabetes, who applied to the clinic for general control and agreed to participate in the study, were included in the study by sending a questionnaire to their mobile phones.

Data Analysis: In the analysis of the data, percentage, mean, standard deviation and Mann Whitney U test was used to compare the two groups of variables with non-normal distribution. Pearson correlation analysis was used to evaluate the relationships between variables. Multiple regression analysis was used to determine the factors affecting the Level of COVID-19 Phobia. Significance was set at $p < 0.05$ level.

Ethical Issues: Ethics approval was obtained from the ethics committee of Istanbul Medeniyet University Hospital (Approval number: 2020/0340) to conduct the study. In addition, consents were obtained online from the people included in the study after the information text about the study was read to them. Participants were informed about the study objectives, procedures and data privacy, and were told that participation was optional and that they could withdraw from the study at any time. The research was conducted in accordance with the Declaration of Helsinki. Written consents were obtained for the scales used in the study. Data collection forms were created using Google Forms, which provides

electronic self-control and facilitates data collection and tracking by preventing multiple entries from the same person.

Results

The mean age of 197 people participating in the study was 55.64±11.34 years. 58.4% of them were women, 71.5% were married, 53.8% were primary school graduates and 48.2% were retired. The mean duration of diabetes in patients with diabetes was 11.95±8.69 years (Table 1).

In the inter-group comparison of patients with diabetes and healthy individuals for COVID-19 Phobia Scale and its subscales, the scores from the COVID-19 Phobia Scale (p=.000)and its somatic (p= .000) and social (p= .024) subscales were found to be statistically significantly for patients with diabetes higher compared to healthy individuals (Table 2).

Table 1. Demographics of the participants (n=197)

Feature		n	%
Gender	Female	115	58.4
	Male	82	41.6
Age		Min:25 Max:98 Mean±SD: 55.64±11.34	
Marital status	Married	141	71.5
	Single	56	28.4
Educational status	Primary school	106	53.8
	High school	47	23.9
	University	44	22.3
Occupation	Retired	95	48.2
	Employed	57	28.9
	Unemployed	45	22.8
Diabetes diagnosis	Yes	98	49.7
	No	99	50.3
Diabetes duration		Min:1 Max:45Mean±SD: 11.95±8.69	

min: minimum value, max: maximum value, Mean±SD: mean ± standard deviation

Table 2. COVID-19 Phobia of Individuals

	Group			
	Patients with diabetes (n=98) Mean±SD (min-max)	**Healthy individuals (n=99)** Mean±SD (min-max)	**Test value p**	**p**
COVID-19 Phobia (CP19-S) Scale	79.51±7.38 (59-92)	62.89±6.96 (45-80)	U:565 [a]	**.000** **
Psychological subscale	23.27±4.76 (12-30)	22.81±4.15 (12-30)	U:4398 [a]	.258
Somatic subscale	19.82±3.77 (12-25)	9.85±3.46 (5-23)	U:395 [a]	** **.000**
Social subscale	23.72±1.54 (20-25)	22.70±3.13 (12-30)	U:3974 [a]	* **.024**
Economic subscale	6.98±1.60 (5-10)	7.51±1.61 (5-11)	U:4105 [a]	.057

Data are provided as mean ± SD (min-max). [a]Mann Whitney U Test   *p< .05   **p< .01

Discussion

Beyond medical risks, the COVID-19 pandemic has caused enormous psychological and sociological effects in the entire population but most notably in people with chronic diseases (Ozamiz-Etxebarria et al., 2020; Wang et al., 2020). This study aimed to examine the COVID-19 Phobia of patients with type 2 diabetes and their self-management during the COVID-19pandemic.

In the report prepared by the China Center for Disease Control and Prevention that includes 44.672 COVID-19 patients, old age, cardiovascular disease, diabetes, chronic respiratory disease, hypertension and cancer were reported to be associated with an increased risk of death. In addition, the World Health Organization (2020) stated that individuals with chronic diseases may encounter more serious complications. There are reports in the literature suggesting patients with diabetes mellitus in particular may have poorer prognosis of COVID-19 and

glycaemic control, and that they should therefore be more vigilant (Wang et al., 2020; Serlachius, Badawy, Thabrew, 2020).

The social isolations imposed are known to disrupt patients' routine doctor visits and cause them to change their eating and exercise habits, negatively affecting them psychologically. According to the studies examining stress, anxiety and depression in chronic diseases, people suffer from higher levels of anxiety and depression during the pandemic, and it is important to provide them with psychological support and ensure that they can self-managein this process (Wang et al., 2020; Umucu, Lee, 2020).

Diabetes treatment, a lifelong therapy, requires the patients to manage their own treatment and make lifestyle changes (ADA-2019). Thus, self-management in diabetes is important for the management of complications that may occur. In our study, the self-management scores of patients with diabetes were low. There are studies with

similar findings in the literature (Mattioli et al., 2020; Nelson et al., 2017). In their study, Weinger et al. described diet as an important element of self-care for every patient with diabetes and emphasized the importance of a healthy diet in regulating blood sugar and preventing complications (Weinger, Beverly, Smaldone, 2015). According to this study examining the effect of the COVID-19 pandemic on self-management in patients with type 2 diabetes, the pandemic adversely affected disease management by 79.9% in 56.6% of the patients. Regarding diabetes self-management, all of the patients used the drugs prescribed by the doctor, but more than 20% tended to forget or skip medication, and 11.6% did not attend doctor visits regularly. It was noted that 13.7% of the patients did not measure their blood sugar at all, 17.9% never followed the dietary recommendations, and 28.4% did not exercise at all (Utli, Vural Dogru, 2021).

Compliance with the diet program is an important part of the treatment to ensure glycaemic control in patients with diabetes. Each patient should have an individualized diet program. It is generally recommended that 45-60% of energy needs be met from carbohydrates, 20-35% from fats and 10-20% from proteins, and that the required amounts of vitamins and minerals be consumed. It has been reported that the isolations during the pandemic period changed the eating habits and lead to an increased consumption of food rich in carbohydrates (Mukona, Zvinavashe, 2020).

In Grabia's study, 60% of the participants reported that their eating habits improved during the pandemic. Consumption of fresh fruits, vegetables and cereals increased while consumption of ready-to-eat foods and sweet-salty snacks decreased (Grabia et al., 2020).

In our study, 46.3% of the patients described that they paid close attention to their diet plans, 44.2% could pay a little attention and 9.5% did not pay attention at all, and 32.6% tended to consume sweet foods.

Physical activity is an important factor affecting diabetes self-management. Moderate-intensity activity for at least 150 minutes a week is recommended for patients with diabetes. However, as social isolation in the pandemic limited physical activity, it has

been recommended that patients be informed about alternative physical activities that can be done at home (Banerjee, Chakraborty, Pal, 2020).

In our study, 28.4% of the patients reported that they did not exercise at all, 23.1% regularly exercised, and 48.4% exercised even though not regularly.

Glycaemic control may be worsened, and patients may be exposed to hypoglycaemia or long-term hyperglycaemia as they are unable to attend doctor visits and access to drugs. Monitoring blood sugar more frequently during the pandemic period may improve glycaemic control, while reducing the risk of infection and the severity of the disease. It has been suggested that tele systems should be made more available and that insurance companies should provide home services with online access to prevent patients from falling short of measuring strips, glucometers and medicines that they will need (Mukona, Zvinavashe, 2020).

The fact that diabetes drugs are covered by social security and are fully repaid and registered drugs can be purchased from the pharmacy without going to the doctor during the pandemic in our country has significantly prevented patients from having problems in accessing drugs and materials.

Self-monitoring of blood glucose is an important part of diabetes management. Although the frequency of measurement varies according to the individual, it is recommended that even type 2 patients with diabetes with glycaemic control should measure at least 3-4 times a week (TEMD, 2020).

According to a study conducted before the pandemic, 46% of patients with diabetes measured glucose regularly, 20.6% measured at irregular intervals, and 33% measured irregularly only before going to a doctor for a visit. In our study, 50.5% of the patients with diabetes had regular measurements, 35.8% had irregular measurements, while 13.7% only checked their blood sugar when they had complaints. The increase in the frequency of glucose measurements has been attributed to the fear of COVID-19 (Celik et al., 2018).

In the study of Musche et al., patients with diabetes were found to have significantly

increased fear of COVID-19 than those without. While there was no significant difference in the perceptions of the risk of COVID-19 infection between the groups, it was found that the occurrence of symptoms, severe illness and risk of death were significantly more frequent in patients with diabetes. Anxiety or depressive symptoms of patients with diabetes were similar to those without diabetes. The authors reported that fear can act as a warning in diabetic patients and may affect patients towards safe behaviour (Musche et al., 2021).

In the study of Kalafatoglu et al., using the "COVID-19 Fear Scale to examine the COVID-19 fears of individuals according to certain variables, fear of COVID-19 did not differ significantly by gender, educational status, marital status, having children and having a relative diagnosed with COVID-19, and the scale score of patients who had COVID-19 was found to be significantly lower than those who did not (Kalafatoglu, Yam, 2021).

In the study of Grabia et al, (2020).examining the effects of the COVID-19 pandemic on the diet and health of patients with diabetes, diabetes self-management developed in 50%, got worse in 30% and did not change in 20% of the patients with type 2 diabetes according to patients' self-reports.

In our study, when the patients were asked about their self-care, 30.5% described it as sufficient, 47.4% as a somewhat insufficient and 22.1% as insufficient.

It has been stated that the fear of pandemic was more intense in elderly individuals, they are more anxious due to the decrease in cognitive functions, and that closer attention should be paid to their psychological needs due to social isolation. The mean age of the patient group in our study was 55 years, and the fact that one out of every five people was in the elderly group (>65 years old) may be associated with a high fear of pandemic (Kara, 2021).

In the study conducted to examine the effect of fear of death experienced by patients with type 2 diabetes during the pandemic on diabetes self-management, the fear of COVID-19 and the attitude towards death were mutually affected, resulting in a better

self-management in diabetes (Serin, Bulbuloglu, 2023). The data obtained in our study showed that diabetes self-management behaviours improved with the effect of fear of COVID-19. In the study examining the effect of the COVID-19 pandemic on self-management in patients with type 2 diabetes (Utli, Vural Dogru, 2021), 56.6% of the patients stated that the pandemic affected the disease management negatively by 79.9%, 61.6% described increased anxiety in this period and 61.9% reported increased stress. In our study, the patients' fear level and self-care management scores were found to be significantly higher. This can be explained by the fact that the deadly consequences of the pandemic affects individuals with chronic diseases more and patients, especially those with diabetes, therefore pay more attention to their self-management.

Limitation: This study includes several limitations. First, the cross-sectional design limited the ability to make inferences about the directions of causality. More comprehensive results can be obtained with data from more cities and countries, but Istanbul was chosen as the city that best reflects Turkey, as it has districts and neighbourhoods with various socio-economic levels and is the city with the highest population. Although valid and reliable scales were used to determine the self-management and COVID-19 fear levels of individuals, the study used self-reporting. There is a need for studies that evaluate various factors by conducting face-to-face sessions when social isolation rules are not in effect. The strengths of the study were that it was carried out during the period of lockdown and quarantine to see the effects caused by the COVID-19 pandemic, and it is one of the rare studies that included healthy volunteers and patients with chronic diseases, showing whether cancer has an effect on COVID-19 stress. In addition, considering the global effects of the pandemic, we believe that these data provide extremely useful information to reflect on other countries and future outbreaks.

Conclusion: Our study demonstrated that patients with diabetes had a higher level of COVID-19 Phobia than healthy individuals during the COVID-19 pandemic and were more afraid of social and somatic symptoms. It was also found that the diabetes self-

management levels of the patients were high, and the COVID-19 Phobia of the individuals increased as their age increased. It is therefore important that the entire population, especially patients with diabetes, should be followed up for self-management during the pandemic, and supported with timely and necessary interventions against fear, stress and anxiety. It is recommended to establish online patient support programs and teach patients coping methods to support self-management processes.

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