**Received:** 25 Apr 2023 | **Accepted:** 26 Nov 2024 **Genel Tıp Derg. Volume** 34/**Issue** 6 (December), 743-749
DOI: 10.54005/geneltip.1287564

**ORIGINAL ARTICLE**

# Self-Management Perceptions and Death Anxiety of Patients with Diabetes Mellitus

# Diyabetes Mellitus'lu Hastaların Öz Yönetim Algıları ve Ölüm Kaygıları

[1]Alev YILDIRIM KESKİN, [1]Halil İbrahim TUNA, [2]Enes GÜNHAN

[1]Selcuk University, Aksehir Kadir Yallagoz Health School, Department of Nursing, Konya, Türkiye
[2]Aksehir State Hospital, Department of Internal Diseases, Konya, Türkiye

**Correspondence**

Alev YILDIRIM KESKİN, Assist Prof.
Selcuk University, Aksehir Kadir Yallagoz Health School,Department of Nursing, Konya, Türkiye

**E-Mail:** alevyildirim@selcuk.edu.tr

**How to cite ?**

Yıldırım Keskin A, Tuna Hİ, Günhan E. Self-Management Perceptions and Death Anxiety of Patients with Diabetes Mellitus. Genel Tıp Derg. 2024;34(6):743-749

**ABSTRACT**

**Aims:** In the present study, it was aimed to determine the death anxiety and diabetes self-management perceptions of diabetes mellitus (DM) patients.
**Methods:** The descriptive and correlational study was conducted on 351 DM patients who visited the internal medicine outpatient clinic of a government hospital between 20.02.2022 and 20.05.2022. The Patient Identification Form (PIF), Death Anxiety Scale (DAS), and Diabetes Self-Management Perception Scale (DSMS) were used as data collection tools. The descriptive statistics, Mann-Witney U, Kruskall-Wallis, and Spearman correlation tests were used to evaluate the data. In the study, $p<0.05$ was considered significant.
**Results:** It was determined that 39.3% of DM patients participating in the study experienced fear of death. It was determined that the average score of the patients on the death anxiety scale was 9.24±3.70, and the average score on the diabetes self-management perception scale was 24.84±3.28. It has been determined that the self-management skills of patients who are primary school graduates and patients who develop acute complications due to DM are higher. In terms of death anxiety scale scores, it was determined that women had higher death anxiety levels than men and patients with DM-related fear of death compared to others. There was no significant relationship between the Death Anxiety Scale Total Score and the Diabetes Self-Management Scale Total Score ($p>0.05$).
**Conclusion:** In the study, it was determined that patients experienced more severe death anxiety and moderate death anxiety. Additionally, the self-management of DM patients was found to be above average. No relationship was found between the patients' Death Anxiety Scale and Diabetes Self-Management Perception Scale score averages. The mean Diabetes Self-Management Perception Scale scores of primary school graduates and patients with DM-related complications are significantly higher than others.

**Keywords:** Death anxiety, diabetes mellitus, patient, perception, self-management

**ÖZ**

**Amaç:** Bu çalışmada diabetes mellitus (DM) hastalarının ölüm kaygısı ve diyabet öz yönetim algılarının belirlenmesi amaçlanmıştır.
**Yöntem:** Tanımlayıcı ve ilişki arayıcı tipteki çalışma, 20.02.2022-20.05.2022 tarihleri arasında bir Devlet Hastanesinin Dahiliye polikliniğine başvuran 351 DM hastası ile yapılmıştır. Araştırmada veri toplama aracı olarak; Hasta Tanılama Formu, Ölüm Kaygısı Ölçeği (ÖKÖ) ve Diyabet Öz-Yönetim Algısı Ölçeği (DÖYAS) kullanılmıştır. Verilerin değerlendirilmesinde; tanımlayıcı istatistikler, Mann-Witney U, Kruskall-Wallis ve Spearman Korelasyon testleri kullanılmıştır. Çalışmada $p<0.05$ anlamlı olarak kabul edilmiştir.
**Bulgular:** Araştırmaya katılan DM hastalarının %39,3'ünün ölüm korkusu yaşadığı belirlenmiştir. Hastaların ölüm kaygısı ölçeğinden aldıkları puan ortalamasının 9,24±3,70, diyabet öz yönetim algısı ölçeğinden aldıkları puan ortalamasının ise 24,84±3,28 olduğu belirlenmiştir. İlkokul mezunu hastalar ile diyabete bağlı akut komplikasyon gelişen hastaların özyönetim becerilerinin daha yüksek olduğu saptanmıştır. Ölüm kaygısı ölçeği puanları açısından kadınların erkeklere göre, diyabete bağlı ölüm korkusu olan hastaların ise diğerlerine göre ölüm kaygısı düzeylerinin daha yüksek olduğu belirlenmiştir. Ölüm Kaygısı Ölçeği Toplam Puanı ile Diyabet Öz Yönetim Ölçeği Toplam Puanı arasında anlamlı bir ilişki bulunmamıştır ($p>0.05$).
**Sonuç:** Araştırmada hastaların daha çok şiddetli ölüm kaygısı ve orta düzeyde ölüm kaygısı yaşadığı belirlenmiştir. Ayrıca DM hastalarının öz yönetimlerinin ortalamanın üzerinde olduğu saptanmıştır. Hastaların Ölüm Kaygısı Ölçeği ve Diyabet Öz-Yönetim Algısı Ölçeği puan ortalamaları arasında ilişki bulunamamıştır. İlköğretim mezunlarının ve DM' ye bağlı komplikasyonu olan hastaların DSMS puan ortalamaları diğerlerine göre anlamlı derecede yüksektir.

**Anahtar Sözcükler:** Algı, hasta, ölüm kaygısı, öz-yönetim, şeker hastası

## Introduction

Diabetes mellitus (DM) is a chronic metabolic disease that requires constant medical care in which the organism cannot benefit sufficiently from carbohydrates, fats, and proteins due to insulin deficiency or problems in the effect of insulin (1). Today, Type 1 and Type 2 DM have become a very important health problem affecting millions of people worldwide, and their incidence in childhood is increasing and is increasing much faster than expected (2). Type 2 DM is the most common form of DM (3).

Since DM is a chronic disease and patients see a healthcare professional only a few times a year, the rest of the time, patients need to self-manage

**Peer-Review:** Double anonymized - Two External
**Plagiarism Checks:** Yes - intihal.net
**Complaints:** geneltip@selcuk.edu.tr


Selcuk University Press
Genel Tıp Dergisi | e-ISSN: 2602-3741
https://dergipark.org.tr/tr/pub/geneltip
https://yayinevi.selcuk.edu.tr/

their disease by controlling all these problems themselves. Self-management is defined as the active participation of patients in their treatment (4), and self-management medical management includes processes such as taking medication and following dietary recommendations, adopting new behaviors and emotional management in the context of chronic disease, and coping with feelings of disappointment, fear, and helplessness associated with chronic disease (5).

DM self-management practices include nutrition planning, self-monitoring of blood sugar, metabolic control, proper exercise, avoiding risky behavior, prevention of acute and chronic complications, and good problem-solving skills (6). Complications seen in individuals with DM cause individuals to experience sadness, anger, anxiety, self-sufficiency, social isolation, helplessness, hopelessness, anxiety, stress, fear and anxiety of death, and weakening of their self-management (6-9). Individuals show different reactions to death anxiety. These reactions may tend to increase or decrease health-promoting behaviors. When individuals' health becomes critical, factors such as death anxiety levels, social supports, and self-management perceptions may affect their illness self-management (10, 11). Thus, effective DM self-management becomes important in reducing DM-related complications and death anxiety by ensuring that the DM patient complies with the treatment and care programs (6).

Studies on death anxiety show that cancer cases are the most common chronic diseases. Nefs et al. (2019) stated that individuals with DM experience intense psychological problems and cannot manage their self-care well (12). It is thought that in a disease with a better prognosis, such as DM, there is a need for study results on self-care management and attitude toward death (13, 14). When the literature is examined, it is seen that there are different results regarding death anxiety in patients. Based on the literature, it is reported that death anxiety is high in women with Type II DM. In a study on spiritual development and death attitude in women with Type II DM, it is reported that the spiritual development of women is significantly related to some elements of attitude profiles towards death, and DM patients with depression have high death anxiety (10, 15). Therefore, this study aimed to determine DM patients' death anxiety and diabetes self-management perceptions.

**Research Questions**

1. What are the death anxiety and self-management perception levels of DM patients?

2. Is there a relationship between self-management perceptions and death anxiety of individuals with DM?

3. What are the variables affecting the death anxiety and self-management perceptions of individuals with DM?

**Methods**

**Study Design:** This research is a descriptive and correlational study. The STROBE Checklist directive was followed in the study.

**Setting and Sample:** The research was carried out between 20.02.2022 and 20.05.2022 in Akşehir State Hospital Internal Medicine Polyclinic with DM patients who met the research criteria and volunteered to participate in the research. The population of the study consisted of 680 Type I and Type II DM patients registered in the Internal Medicine Polyclinic in the last year. The required minimum sample size universe was calculated using the known sample calculation and the formula n= Nt2pq/d2(N-1)+pq. The minimum sample size was determined as 246 with a 95% confidence interval and a 5% margin of error. A total of 351 patients constituted the sample of our study. Of the 351 patients with DM, 43 are patients with Type I DM and 308 are patients with Type II DM. Patients admitted to the DM polyclinic for examination met the inclusion criteria and volunteered to be referred to the researchers by the physician. The researchers gave information about the research to the patients and asked them to fill out the data collection form after obtaining verbal and written consent. Patients who were able to fill out the data collection form filled it out themselves. Patients who could not fill it out were asked questions by the researchers.

The inclusion criteria consisted of the following: Being 18 years of age or older, having been diagnosed with DM at least one year ago, not having a communication problem, agreeing to participate in the study, being a DM patient admitted to the internal medicine clinic on the dates of the study. However, the exclusion criteria were as follows: Not being under 18 years of age, and communication problems such as vision and hearing. Those who were illiterate and did not want to participate in the study were also excluded.

**The Data Collection**

The Patient Identification Form (PIF), Death Anxiety

Scale (DAS), and Diabetes Self-Management Perception Scale (DSMS) were used as data collection tools in the study.

**The Patient Identification Form (PIF)**

The form consisting of two parts includes questions about the sociodemographic and disease characteristics of the patients, such as age, gender, marital status, educational status, place of residence, employment status, income status, smoking and alcohol use, number of people living at home, duration of DM disease, duration of insulin use, duration of oral antidiabetic drug use, development of acute and chronic complications due to DM, experiencing death anxiety due to DM, type of DM.

**The Death Anxiety Scale (DAS)**

It was developed by Templer (1970) and its validity and reliability study in our country was carried out by Şenol 1989 (16). It is a 15-question scale that measures the anxiety and fears of the person's death and the danger of death answered as true or false. The scale consists of 15 items and is arranged as a true-false binary Likert scale. Correct answers are given 1 point, while incorrect answers are not scored. In the test, whose score range is between 0-15, it is interpreted that there is an increase in death anxiety as the scores increase in this range, and those who score 7 and above are considered to have anxiety. "1" for each "yes" answer given to the first 9 questions in the scale (for example: "I am very afraid of dying"), "0" for "no" answers, and "0" for each of the other 6 items (for example: "I am not afraid of dying at all"). A score of "1" is given for a "no" answer and a "0" for a "yes" answer. The sum of the scores obtained from the scale reports the death anxiety score. The maximum score taken from the scale is 15. 0-4 points are considered as "mild", 5-9 points as "moderate", 10-14 points as "severe", and 15 points as "panic" as "death anxiety". Şenol (1989) found Cronbach's Alpha coefficient to be 0.86 in his validity and reliability study. The Cronbach's Alpha coefficient for this study was found to be 0.83.

**The Diabetes Self-Management Perception Scale (DSMS):**

DSMS is a scale prepared by Wallston et al., (2007) colleagues, taking into account the Perceived Competence Health Scale (PHCS) developed by Smith et al., (1995). The scale was adapted to Turkish by Bayındır Çevik (2010). The scale consists of one dimension and 8 items. It is scored as strongly disagree 1, disagree 2, undecided 3, agree 4, strongly agree 5. The minimum score that can be obtained from the scale is 8, and the maximum score is 40. A high total score on the scale indicates that the individual's awareness of diabetes management is very good. DSMS was studied to be adapted to Turkish society and its Cronbach's Alpha value was found to be 0.83 (17). The Cronbach's Alpha coefficient for this study was found to be 0.72.

**Implementation of the research**

Consent was obtained from patients who met the inclusion criteria. Then the patients were asked to fill in the scales. The research was carried out between February and May 2022. Data collection took approximately 20-25 minutes per patient and data were collected from 351 patients. Data from 29 patients were excluded from the sample due to missing data on the data collection form. The study was completed with 351 patients. Data were collected by the same researcher.

**Data analysis**

IBM SPSS 24.0 and SigmaStat 3.5 statistical programs were used to evaluate the data. Summary statistics are given as the number of units (n), percent (%), mean ± standard deviation, median, and percentile. The distribution of numerical variables was evaluated with the normality test. Mann-Witney U test was used in the comparison of two groups, the Kruskall-Wallis test was used in the evaluation of more than two measurements, and the Spearman correlation analysis was used in the comparison of the scales used with each other. In the study, $p < 0.05$ was accepted as significant.

**Ethical consideration**

Ethical permission (2022/59), necessary institutional permissions, and verbal consent from the patients to participate in the study were obtained from the non-interventional ethics committee of the university to implement the study and collect data. Permission for the scale work was obtained from the relevant persons via e-mail. All principles of the Declaration of Helsinki were complied with in the study.

**Results**

Half of the DM patients participating in the study were between the ages of 36-64, 67.0% were women, 49.0% were primary school graduates, 83.2% lived with their families, and 60.1% were housewives. It was

determined that 51.6% had income (Table 1).

**Table 1.** Distribution of patients with DM by socio-demographical and disease characteristics (n=351)

| Variables | n | % |
|---|---|---|
| **Age (years)** | | |
| 18-35 | 19 | 5.4 |
| 36-64 | 176 | 50.2 |
| 65 years and older | 156 | 44.4 |
| **Gender** | | |
| Female | 235 | 67.0 |
| Male | 116 | 33.0 |
| **Marital status** | | |
| Married | 303 | 86.3 |
| Single | 48 | 13.7 |
| **Educational Status** | | |
| Illiterate | 80 | 22.8 |
| Primary education | 172 | 49.0 |
| Secondary education | 65 | 18.5 |
| High education | 34 | 9.7 |
| **Person living with** | | |
| Alone | 45 | 12.8 |
| Family | 292 | 83.2 |
| Relative | 20 | 4.0 |
| **Employment Status** | | |
| Housewife | 211 | 60.1 |
| Officer | 19 | 5.4 |
| Employed | 33 | 9.4 |
| Unemployed | 88 | 25.1 |
| **Income status** | | |
| Income less than expenses | 181 | 51.6 |
| Income equal to expenses | 158 | 45.0 |
| Income more than expenses | 12 | 3.4 |
| **Smoking status** | | |
| Yes | 12 | 3.4 |
| No | 332 | 94.6 |
| I quit | 7 | 2.0 |
| **Alcohol Use** | | |
| Yes | 12 | 12.8 |
| No | 332 | 81.5 |
| I quit | 7 | 5.7 |
| **DM disease duration** (years) ($\bar{X}$ ±SD) | 11.47±8.41 | |
| **Duration of insulin use** (years) ($\bar{X}$ ±SD) | 8.44±7.40 | |
| **Oral antidiabetic drug use duration** (years) ($\bar{X}$ ±SD) | 10.96±7.90 | |

DM: Diabetes mellitus, SD: Standard deviation

In Table 2, DAS and DSMS mean scores of DM patients, minimum (min) and maximum (Max), Cronbach Alpha values are included. In the study, it was determined that 53.8 % of the patients had severe (Min: 10, Max: 14) death anxiety, and 32.5% had moderate (Min: 5, Max: 9) death anxiety. It was determined that the DAS mean score of DM patients was 9.24±3.70 points above the mean score (Min: 0, Max: 15), and the DSMS mean score was 24.84±3.28 above the mean (Min: 8, Max: 40) (Table 2).

Table 3 shows the relationship between DAS and DSMS mean scores of patients with DM who participated in the study. It was determined that there was no significant relationship between death anxiety and self-management perceptions of DM patients (r=-0.077, p=0.149).

**Table 3.** Correlation between death anxiety and self-management perceptions of individuals with DM

| Scales | DSMS | |
|---|---|---|
| | r | p |
| DAS | -0.077 | 0.149 |

DAS: Death anxiety scale, DM: Diabetes mellitus, DSMS: Diabetes self-management perception scale

Table 4 shows the distribution of mean scores of DM patients participating in the study according to variables affecting their perception of death anxiety and diabetes self-management. In the study, it was determined that women's DAS score averages were significantly higher than men's. It was found that the average DAS score of those who had a fear of death due to DM was higher. According to education level, the mean DSMS scores of primary school graduates and patients with DM-related complications were found to be significantly higher than others (Table 4).

## Discussion

DM consists of self-management; it is required to

**Table 2.** Mean Scores of the DAS and the DSMS (N=351)

| | N | % | $\bar{x}$ ±SS | Min | Max | Cronbach Alpha |
|---|---|---|---|---|---|---|
| **DAS** (Min: 0, Max: 15) | 351 | 100.0 | | 0 | 15 | |
| Mild death anxiety | 35 | 12.8 | | 0 | 4 | |
| Moderate death anxiety | 114 | 32.5 | 9.24±3.70 | 5 | 9 | 0.831 |
| Severe death anxiety | 189 | 53.8 | | 10 | 14 | |
| Panic-level death anxiety | 3 | 0.9 | | - | 15 | |
| **DSMS** (Min: 8, Max: 40) | 351 | 100.0 | 24.84±3.28 | 8 | 40 | 0.720 |

*Min: Minimum, Max: Maximum, $\bar{X}$ ±SD: Mean±Standard deviation. DAS: Death anxiety scale, DSMS: Diabetes self-management perception scale

**Table 4.** Comparison of death anxiety and self-management perceptions of individuals with DM with some sociodemographic and disease characteristics **(N=351)**

| Variables | n | % | DAS $\bar{X}$ ±SS | DSMS $\bar{X}$ ±SS |
|---|---|---|---|---|
| **Gender** | | | | |
| Woman | 235 | 67.0 | 9.57±3.53 | 24.73±3.14 |
| Male | 116 | 33.0 | 8.56±3.96 | 25.06±3.55 |
| z /p | | | z=-2.160, **p = 0.031** | z = -1.173, p = 0.241 |
| **Educational Status** | | | | |
| Illiterate | 80 | 22.8 | 10.11±3.17 | 24.20±2.84 [c] |
| Primary education | 172 | 49.0 | 9.02±3.60 | 25.25±3.24 [a] |
| Secondary education | 65 | 18.5 | 9.10±4.03 | 24.89± [3.78b] |
| High education | 34 | 9.7 | 8.52±4.42 | 24.20±3.20 [d] |
| KW /p | | | KW=5.429, p=0.143 | KW =8.943, **p=0.030** |
| **Complication development status due to DM** | | | | |
| Yes | 250 | 71.2 | 9.36±3.51 | 24.63±3.24 |
| No | 101 | 28.8 | 8.95±4.13 | 25.36±3.33 |
| z /p | | | z=-0.489, p = 0.625 | z = -2.036, **p = 0.042** |
| **Fear of death due to DM** | | | | |
| Yes | 138 | 39.3 | 11.13±2.82 | 24.56±3.24 |
| No | 213 | 60.7 | 8.01±3.69 | 25.02±3.30 |
| z /p | | | z =-7.917, **p = 0.000** | z = -1.527, p=0.127 |

Min: Minimum, Max: Maximum, *In the comparison of two independent groups not showing normal distribution; z: Mann - Whitney U test ** In the comparison of three independent groups; KW: Kruskal - Wallis Test, $\bar{X}$ ±SD: Mean±Standard Deviation. DAS: Death anxiety scale, DM: Diabetes mellitus, DSMS: Diabetes self-management perception scale

prevent acute and chronic complications in DM (10). It is emphasized that the self-management skills of DM patients are an important factor that increases the chance of success in treatment (9). In the literature, it is stated that death anxiety aggravates the conical disease state and affects self-management because it is a multidimensional concept that includes the fear of death (18-20). In this study, death anxiety and self-management perceptions of patients with DM were discussed in the literature.

In the study, it was found that 53.8% of the patients experienced severe death anxiety and 32.5% experienced moderate death anxiety. It was determined that the mean Death Anxiety Scale score of DM patients was 9.24±3.70 points above the mean score. Thinking about death is also one of the concerns of DM patients (21). It is stated that the prevalence of anxiety and depression is high in patients with Type 2 DM (15), and if the necessary interventions are not made, the patient's self-management is negatively affected, the risk of complications increases, and they experience death anxiety over time (15, 21). When the literature is examined, it is seen that there are a limited number of studies examining the levels of death anxiety and fear in DM patients (7, 20, 22). In a study comparing the self-concept and death anxiety of Type II DM and healthy women, it was stated that death anxiety in women with Type II DM was significantly higher at 44.41±8.44 (7). In a study conducted on spiritual development and death attitude in women with Type II DM, it was observed that women's spiritual development was significantly associated with some elements of their attitude towards death profiles (11). In the study of DM patients with depression, it was found that the death anxiety scores of the patients were significantly higher than the pre-test and post-test before training (15). However, it is also seen in the literature that there are studies addressing death anxiety in different chronic diseases with similar results to our study findings (23). One of the reasons why the death anxiety scores of patients with DM were moderate and severe in our study may be the large number of individuals aged 65 and over. In a study conducted with patients with DM; It has been stated that the patients' age and high

level of religiosity may have reduced their anxiety, and for these reasons, they experienced less death anxiety (24). The results of this study suggest that the death anxiety levels of individuals with chronic diseases such as DM should be determined at an early stage and their disease self-management perceptions should be positively strengthened.

It was found that the mean score of Diabetes Self-Management Perception was significantly lower in patients who developed acute complications due to DM compared to those who did not, and their awareness of diabetes management was poor. In a study conducted to determine the relationship between Self-Management Perceptions and the Health status of individuals with DM; DSMS scale scores of DM patients were determined as 30.69±2.65. In a study conducted with 110 DM patients, it was emphasized that cognitive fusion and distortion were among the variables that predicted death anxiety in patients (25). When the literature is examined, it is emphasized that the self-management skills of patients with DM are weak, with similar results to our study findings, and that self-management perceptions and skills should be increased with training programs (9). The results of this study made us think that it is important to increase the disease self-management perceptions of DM patients through training and turn them into positive behavioral changes.

The results of this study made us think that it is important to increase the self-management perceptions of patients with DM who develop complications by supporting them with regular education programs.

**Limitations of the Study**

The data are limited to DM patients who came to the hospital's outpatient clinic at the time of the study. The data are based on self-report and cannot be generalized to all DM patients. Another limitation is that the study was conducted in a mixed age group rather than a specific age group. Conducting the study during the COVID-19 pandemic period, requiring compliance with masks, distance, and hygiene rules, causing a decrease in the number of patients participating in the study, and affecting possible death anxiety levels and self-management perceptions can be counted among the limitations.

**Conclusions and Recommendations**

It was determined that nearly half of the DM patients participating in the study experienced moderate death anxiety, more than half experienced severe death anxiety, and their diabetes management perceptions were above average. In addition, it was determined that the average DAS score of women was significantly higher than that of men, and the average DAS score of those who had a fear of death due to DM was higher. According to education level, the mean DSMS scores of primary school graduates and patients with DM-related complications were found to be significantly higher than others. Diabetic patients can be supported to manage their disease better by reducing their death anxiety by giving training at regular intervals and providing psychological support. It is recommended to increase the self-management perceptions of patients with DM through self-management programs.

**Funding**

There was no funding for this study.

**Conflict of Interest**

The author declares that there is no conflict of interest.

**Acknowledgment**

The authors would like to thank all the participants.

**References**

1.Kaner G, Ayer C, Yalcin T, Bakir B. Associations of Dietary Fructose and Sucrose Intake with HbA1c and Anthropometric Measurements in Patients with Type 2 Diabetes Mellitus. Galician Medical Journal. 2023;30(3):E202333-E.

2.American Diabetes A. Standards of medical care in diabetes—2022 abridged for primary care providers. Clinical Diabetes. 2022;40(1):10-38.

3.Satman I, Bayirlioglu S, Okumus F, Erturk N, Yemenici M, Cinemre S, et al. Estimates and Forecasts on the Burden of Prediabetes and Diabetes in Adult and Elderly Population in Turkiye. European Journal of Epidemiology. 2023;38(3):313-23.

4.Schulman-Green D, Jaser SS, Park C, Whittemore R. A meta-synthesis of factors affecting self-management of chronic illness. Journal of advanced nursing. 2016;72(7):1469-89.

5.Almutairi N, Hosseinzadeh H, Gopaldasani V. The effectiveness of patient activation intervention on type 2 diabetes mellitus glycemic control and self-management behaviors: a systematic review of RCTs. Primary care diabetes. 2020;14(1):12-20.

6.Kretchy IA, Koduah A, Ohene-Agyei T, Boima V, Appiah B. The association between diabetes-related distress and medication adherence in adult patients with type 2 diabetes mellitus: a cross-sectional study. Journal of diabetes research. 2020;2020.

7.Adakan FY, Vural R, Boylubay ŞM, Yilmaz Ü, KulaksizoğLu B, YeŞİL B, et al. The relation of socio-demographic and clinical factors to depression and anxiety levels in diabetic patients. Konuralp Medical Journal. 2017;9(2):96-105.

8.Mukhtar S, Mukhtar S. Mental health and psychological distress in people with diabetes during COVID-19. Metabolism-Clinical and Experimental. 2020;108.

9.Whittemore R, Vilar-Compte M, De La Cerda S, Marron D, Conover R, Delvy R, et al. Challenges to diabetes self-management for adults with type 2 diabetes in low-resource settings in Mexico City: a qualitative descriptive study. International journal for equity in health. 2019;18(1):1-10.

10.Kaplan Serin E, Bülbüloğlu S. The effect of attitude to death on self-management in patients with type 2 diabetes mellitus during the COVID-19 pandemic. OMEGA-Journal of Death and Dying. 2023;87(2):448-68.

11.Nozari M, Dousti Y. Attitude toward death in healthy people and patients with diabetes and cancer. Iranian journal of cancer prevention. 2013;6(2):95.

12.Nefs G, Hendrieckx C, Reddy P, Browne JL, Bot M, Dixon J, et al. Comorbid elevated symptoms of anxiety and depression in adults with type 1 or type 2 diabetes: Results from the International Diabetes MILES Study. Journal of Diabetes and its Complications. 2019;33(8):523-9.

13.Demmer RT, Gelb S, Suglia SF, Keyes KM, Aiello AE, Colombo PC, et al. Sex differences in the association between depression, anxiety, and type 2 diabetes mellitus. Psychosomatic medicine. 2015;77(4):467.

14.Naicker K, Johnson JA, Skogen JC, Manuel D, Øverland S, Sivertsen B, et al. Type 2 diabetes and comorbid symptoms of depression and anxiety: longitudinal associations with mortality risk. Diabetes care. 2017;40(3):352-8.

15.Bahar A, Shahriary M, Fazlali M. Effectiveness of logotherapy on death anxiety, hope, depression, and proper use of glucose control drugs in diabetic patients with depression. International journal of preventive medicine. 2021;12.

16.Sarıkaya Y, Baloğlu M. The development and psychometric properties of the Turkish Death Anxiety Scale (TDAS). Death studies. 2016;40(7):419-31.

17.Yalçın M, Yetkin İ. Diagnosis, treatment and follow-up guide of diabetes mellitus and its complications-2022. 2022.

18.Aghajani S, Samadifard H. The relationship between cognitive fusion and cognitive distortion with death anxiety in patients with diabetes mellitus. Chronic Diseases Journal. 2018:18-22.

19.Kaplan Serin E, Bülbüloğlu S. The effect of attitude to death on self-management in patients with type 2 diabetes mellitus during the COVID-19 pandemic. OMEGA-Journal of Death and Dying. 2021:00302228211020602.

20.Rahrovi G, Nouhi S, Khastar H. The comparison of self-concept and death anxiety between women affected by Type 1 and 2 diabetes and healthy women. International Journal of Health Studies. 2017.

21.Doğan R, Arslantas D, Ünsal A. Assessment of depression and death anxiety level in diabetic patients in Eskisehir, Turkey. International Journal of Diabetes in Developing Countries. 2015;35:242-9.

22.Korkut B, Sevinç N. Effects of chronic diseases and polypharmacy on death anxiety. Ann Clin Anal Med 2021; 12 (3): 338.42.

23.Yıldırım D, Kocatepe V. Evaluating death anxiety and death depression levels among patients with acute myocardial infarction. OMEGA-Journal of Death and Dying. 2023;86(4):1402-14.

24.Hajihasani M, Naderi N. Death anxiety in the elderly: The role of spiritual health and perceived social support. Aging Psychology. 2021;6(4):319-09.

25.Aghajani S, Samadifard H, Narimani M. The Role of Cognitive Avoidance Components and Metacognitive Belief in the Prediction of Quality of Life in Diabetic Patients. Health Psychology. 2017;6(21):142-56.