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THE DETERMINATION OF SELF-EFFICACY LEVELS OF INDIVIDUALS WITH TYPE 2 DIABETES USING AND NOT USING INSULIN¹

İNSÜLİN KULLANAN VE KULLANMAYAN TİP 2 DİYABETLİ BİREYLERİN ÖZ-YETERLİLİK DÜZEYLERİNİN BELİRLENMESİ

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| Date of receipt/ Geliş tarihi: 26 Sep 2023 | ABSTRACT | ÖZET |
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| Date of acceptance/ Kabul tarihi: 01 Apr 2024 | It is aimed to determine the self-efficacy levels of individuals with type 2 diabetes using and not using insulin. The descriptive and cross-sectional study was conducted in the internal medicine clinics of a public hospital between September 2018 and January 2019. A total of 200 individuals who used insulin and 200 individuals who did not use insulin made up the sample size, which was separated into two groups for comparison. The Descriptive Characteristics Form and Diabetes Management Self-Efficacy Scale was used to collect the data. Of the 400 participants, 69.8% were identified as female, 52.3% were between the ages of 50 and 64. No significant differences were detected between the two groups in terms of the total scores of the scale. The physical activity subscale mean scores did not change significantly between the groups. However, individuals who did not use insulin had a higher mean score on the diet and foot control subscale. The mean scores for the medical treatment subscale were higher in insulin users. In this study, there was no significant difference in the self-efficacy levels among individuals grouped according to the type of treatment used, and their self-efficacy was found to be at a moderate level. | Bu çalışma insülin kullanan ve kullanmayan tip 2 diyabetli bireylerin öz yeterlilik düzeylerini belirlemek amacıyla yapılmıştır. Tanımlayıcı ve kesitsel türdeki çalışma, Eylül-2018-Ocak 2019 tarihleri arasında bir kamu hastanesinin dahiliye kliniklerinde gerçekleştirilmiştir. Karşılaştırma amacıyla iki gruba ayrılan örneklem büyüklüğünü insülin kullanan 200 birey ve insülin kullanmayan 200 birey oluşturmuştur. Verilerin toplanmasında Tanıtıcı Özellikler Formu ve Diyabet Yönetimi Öz-Yeterlilik Skalası kullanılmıştır. 400 katılımcının %69.8'inin kadın, %52.3'ünün 50-64 yaş aralığında olduğu belirlenmiştir. Ölçeğin toplam puanları açısından ise iki grup arasında anlamlı farklılık bulunamamıştır. Fiziksel aktivite alt boyutu puan ortalamaları gruplar arasında anlamlı düzeyde değişmemiştir. Ancak insülin kullanmayan bireylerin diyet-ayak kontrolü alt boyutunda puan ortalamaları daha yüksektir. Tıbbi tedavi alt boyutu puan ortalamaları ise insülin kullananlarda daha yüksektir. Bu çalışmada kullanılan tedavi türüne göre gruplandırılan bireylerin öz yeterlilik düzeylerinde anlamlı bir farklılık bulunmamış olup öz yeterliliklerinin ise orta düzeyde olduğu görülmüştür. |
| Keywords: Nurse, insulin, type 2 diabetes, self-efficacy | | |
| Anahtar kelimeler: Hemşire, insulin, öz-yeterlilik, tip 2 diyabet | | |
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¹ This study was accepted as a master thesis in Atatürk University Institute of Health Sciences in 2019.

INTRODUCTION

Diabetes Mellitus (DM) is a type of metabolic disorder characterized by glycemic abnormalities due to abnormalities in insulin action, insulin secretion, or both (Calli & Kartal, 2021; Huang et al., 2021). According to the International Diabetes Federation (IDF, 2021) data, diabetes is one of the fastest-growing global health conditions in the twenty-first century, attributed to population growth rate and increased urbanization. DM affects more than half a billion people worldwide, between the ages of 20 and 79. Diabetes prevalence increased in Turkey from 8.1% in 2011 to 14.5% in 2021. According to the same report, it is predicted that Turkey will be among the top ten countries in the world in terms of diabetes prevalence by the year 2045 (IDF, 2021).

The most prevalent kind of diabetes, according to the American Diabetes Association (ADA, 2022), is type 2 diabetes, and its incidence rises with advancing age. Diabetes is a lifelong disease and often requires desired behavioral changes through interventions provided by healthcare professionals, such as education, counseling, skill development, and enabling diabetic patients to perform self-care activities (Gedik & Koçođlu, 2018; Heydarian et al., 2021; Kara et al., 2006). Behavioral changes are complex processes influenced by factors such as knowledge, attitudes, beliefs, motivation, skills, and social support. Self-efficacy, or the belief in one's capacity to carry out the particular actions necessary to achieve objectives, is one of the crucial elements in accomplishing behavioral goals (Bandura, 1997). In this regard, having a high level of self-efficacy in individuals with type 2 diabetes is important in preventing other complications related to the disease and its treatments (Ahmad Sharoni et al., 2018; Gupta et al., 2021; Heydarian et al., 2021; Karimy et al., 2018). The self-efficacy theory developed by Bandura in 1997, which is based on the Social Learning Theory guided this study.

To maintain the appropriate blood sugar level during diabetes treatment, additional care should be paid that individuals with diabetes take on additional responsibility through personal

care activities such as healthy diet, exercise, frequent blood sugar monitoring, and medication usage (IDF, 2015). But many individuals living with diabetes finds it difficult to adhere to the recommended standards for diabetes management (Gonzalez et al., 2016). In this case, individuals with type 2 diabetes typically require pharmacotherapy when they cannot control glycemic abnormalities through exercise and diet (American Diabetes Association, 2022). When the literature is examined, nonadherence related to the use of antidiabetic drugs taken orally or in insulin form is reported. Such nonadherence is expressed as a medication burden (Saundankar et al., 2016), side effect experiences such as weight gain (Lee & Lee, 2022), chronic medication use, forgetfulness, and cost (Piragine et al., 2023). However, it has been shown that concerns with injections, such as needle aversion, discomfort, or needle size; have an impact on non-compliance with anti-diabetic medication (Spain et al., 2016). Non-compliance with antidiabetic drugs results in long-term poor glycemic control (Spain et al., 2016). Adults with type 2 diabetes who have poor glycemic control are more likely to have low self-efficacy behaviors (Al-Khawaldeh et al., 2012; D'Souza et al., 2017).

To provide for their care, the self-efficacy status of individuals should be assessed, considering the biological, physical, psychological, sociocultural, and economic aspects. Research on self-efficacy mostly focuses on chronic illnesses (Almutary & Tayyib, 2021; Giezeman et al., 2022; Ha et al., 2018; Hayward & Stynes, 2021; Selzler et al., 2020; Yi et al., 2021). The level of self-efficacy is reportedly impacted by income level, socioeconomic position, place of residence, work status, and time of diagnosis (Akpınar et al., 2019; Muz & Eğlence, 2013). Moreover, there are studies indicating that high self-efficacy positively affects blood glucose levels (Oluma et al., 2020), shows a positive correlation with HbA1c levels (Johnston-Brooks et al., 2002), and is effective in overall diabetes management (Calli & Kartal, 2021; Gedik & Koçoğlu, 2018; Olgun & Altun, 2012; Yanık & Erol, 2016).

According to nurses in particular, “Self-efficacy approaches have become a fundamental strategy for health professionals.” (Çetinkaya & Karadakovan, 2023). The importance of the role of nurses in improving the self-efficacy of individuals with diabetes is recognized worldwide (El Berri et al., 2020). In many regions of Europe, New Zealand, Australia, and the United States, support provided to individuals with diabetes, both in community and acute care hospital settings, is largely delivered by expert nurses (Kumah et al., 2021). In Türkiye, diabetes support and education are predominantly supplied by diabetes nurse educators. Numerous studies have demonstrated that nurse-led interventions increase self-efficacy in people with type 2 diabetes (Young et al., 2020), lower HbA1c levels (Azami et al., 2018), and improve self-management, effectively lowering fasting and postprandial blood sugar levels (Ko & Gu, 2004; Subramanian et al., 2020).

The difficulties faced by nurses and other healthcare professionals globally, including in Türkiye, include increasing self-efficacy, minimizing DM complications, and lowering healthcare utilization for individuals with diabetes. Therefore, addressing the self-efficacy behaviors that individuals with type 2 diabetes need and gaining a better understanding of factors influencing glycemic control are of vital importance. Furthermore, information about current self-efficacy behaviors and the antidiabetic medications they use can help identify groups at high risk for poor glycemic control. In various studies, the use of antidiabetic drugs by diabetics has been linked to concepts like medication adherence and self-efficacy. However, there are limited studies on whether the levels of insulin use and non-insulin use, which carry a high risk for the self-efficacy of individuals with diabetes, affect these concepts. In this regard, assessing the self-efficacy of individuals with type 2 diabetes and looking at the impact of insulin use on self-efficacy might help nurses design and implement intervention and education programs that promote self-care management and improve glycemic control. The results can also help nurses assess diabetic individuals' self-efficacy behaviors in areas where they may

need additional care and contribute to the literature. It is aimed to determine the self-efficacy levels of individuals with type 2 diabetes using and not using insulin.

Research Questions

1. What are the self-efficacy levels of individuals with type 2 diabetes using and not using insulin?
2. Is there a difference between the self-efficacy of individuals with type 2 diabetes using and not using insulin?

MATERIAL AND METHOD

Study Type

The research is in a descriptive and cross-sectional design.

Population and Sampling

The study was conducted in the internal medicine clinics of a public hospital between September 2018-January 2019. The population of the study included 8.726 type 2 diabetes patients who received inpatient and outpatient care at an internal medicine clinic at a public hospital in 2017. In the study, the sample size was calculated by using the sample formula ($n = Nt^2pq/d^2(N-1) + t^2pq$) when the population was known (Troost, 1986). According to the results, 368 individuals were calculated for the sample of the study. The sample size was set at 400 to improve the research's power. A total of 200 individuals who used insulin and 200 individuals who did not use insulin made up the sample size, which was separated into two groups for comparison. For sample selection, simple random sampling approach was applied. The participants in the study -met the following inclusion criteria: having type 2 diabetes, being between 18 and 75 years of age, disease duration greater than 6 months, HbA1c level >6.5%, absence of cognitive impairments, ability to independently complete the questionnaires, and patient's consent to participate in the study.

Data Collection Tools

Descriptive Characteristics Form

Twelve questions on sociodemographic traits and some health information are included in this form (Calli & Kartal, 2021; Gedik & Koçođlu, 2018; Olgun & Altun, 2012; Yanık & Erol, 2016). Age, gender, marital status, level of education, occupation, place of residence (longest duration), income status, household size, smoking status, years with diabetes, use of other medications, and regular medication use were among the sociodemographic characteristics and some health characteristics covered by these questions.

The Diabetes Management Self-Efficacy Scale (DMSES)

The DMSES was developed by Bijl et al. (Bijl et al., 1999). The Turkish validity and reliability of the scale were tested by Kara et al. (Kara et al., 2006). There are 3 sub-dimensions in the scale. These are "diet and foot control" (1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 14), "medical treatment" (10, 12, 18, 19, 20), and "physical exercise" (15, 16, 17). There are 20 items on the scale, each with a five-point Likert scale (Kara et al., 2006). The minimum and highest possible scores on the scale are 20 and 100, respectively, with higher scores implying higher self-efficacy. Cronbach's alpha value is 0.81 for the scale (Bijl et al., 1999; Kara et al., 2006). In this study, Cronbach's alpha coefficient is 0.84.

Data Collection

The data were collected in internal medicine, physical therapy, orthopedics and traumatology, hemodialysis and endocrinology services of a public hospital. The researcher gave the participants enough time to finish the survey, which typically took 20 to 25 minutes to complete. The purpose and details of the study were told to the participants with a research information form. Until the needed sample size was obtained, the data were gathered from willingly participating individuals using a simple random sampling approach. It was not feasible to achieve the full number of participants for both groups at once because some

individuals declined to take part, left the research, or interrupted the interview. To get the necessary number (200) of people in the group of people with type 2 diabetes using insulin, more time and effort were needed.

Data Analysis

The data were examined using IBM SPSS Statistics 22 (IBM SPSS, Turkey) software after being double-checked for correctness. The Shapiro-Wilk test was used to determine if the distribution of the variables was normal. Descriptive statistical techniques (mean, standard deviation, frequency, and percentage) were used in the analysis of the study data. For quantitative data, such as self-efficacy sub-dimensions and total scores, which showed normal distribution, Student's t-test was used in the comparison between the two groups. The Mann-Whitney U test was used to compare two groups when the data did not have a normal distribution. Pearson's Chi-Square test and Continuity (Yates) Corrected Chi-Square test were used in the examination of qualitative data such as gender, age, and education. Significance was considered at $p < 0.01$, $p < 0.05$.

Strengths of the Study

A sizable sample of patients (200 using insulin and 200 not using insulin) from various treatment groups participated in this study. According to our thorough examination of the literature, it was found that there is a limited number of studies on the connection between self-efficacy levels and the utilization of various treatment modalities. Therefore, this study may make a significant contribution to the literature regarding the relationship between different types of treatment and self-efficacy. Furthermore, our study shows that individuals with type 2 diabetes who are using different treatment types have moderate levels of self-efficacy. In this regard, the self-efficacy levels of the participants using different treatment types can be further explored in relation to their sociodemographic characteristics.

Limitations of the Study

The limitation of this study was that it was conducted in one center. This study should be carried out in various provincial centers and cultures, and the outcomes should be compared. Additionally, more research should be done to analyze the factors influencing the levels of diabetes-related self-efficacy in different areas based on the treatment types they use.

Ethical Committee Approval

The study was approved by the Atatürk University's Scientific Research and Publication Ethics Committee (Approval No: KB-622/2018; 11 June 2018; 2018-5/4). Written permission for the study was obtained from the hospital for the study (Number: 87142773-774.99). The permission was also obtained for the scale used in the research. The study's specifics were made available to the study's participants in detail. Written informed consent was obtained from the participants. The study was carried out in line with the principles of the Helsinki Declaration and Good Clinical Practice.

RESULTS

A total of 69.8% of individuals with type 2 diabetes were female, and 52.3% were between the ages of 50-64, 85% of these individuals were married, 61.5% were housewives, 72.8% had completed primary school, 69.8% had lived mostly in city, and 51% had income less than expenses. Also, 45% of the individuals were living with their spouses, 64.8% were non-smokers, and 43% had had their diabetes diagnosis for at least 11 years. In addition, 79.5% of the patients reported utilizing other drugs, and 81% said they took their prescription drugs on a regular basis and 50% of the participants were using insulin to treat their diabetes while the other 50% were not. Single individuals and smokers had statistically and significantly higher rates of insulin use ($p<0.05$). In addition, the rate of insulin usage was much greater in men and in those with diabetes who had had the condition for at least 11 years ($p<0.01$). No significant differences were detected in the rates of insulin use between the groups according to age,

employment, education level, longest residence, income status and living with their spouses (p>0.05). (Table 1)

Table 1

Evaluation of Socio-Demographic Characteristics of the Individuals with Type 2 Diabetes Using and Not Using Insulin

| Socio-Demographic Characteristics | | Insulin Users n (%) | Non-Insulin Users n (%) | Total | Test Value | p Value |
|-----------------------------------|---------------------------|------------------------|----------------------------|------------|-----------------|------------------|
| Gender | Female | 125 (44.8%) | 154(55.2%) | 279(69.8%) | $\chi^2=9.965$ | p=0.002** |
| | Male | 75 (62%) | 46 (38%) | 121(30.3%) | | |
| Age group | 18-49 years | 35 (53%) | 31 (47%) | 66 (16.5%) | $\chi^2=4.664$ | p=0.097 |
| | 50-64 years | 94 (45%) | 115 (55%) | 209(52.3%) | | |
| | 65-75 years | 71 (56.8%) | 54 (43.2%) | 125(31.3%) | | |
| Marital status | Married | 162 (47.6%) | 178(52.4%) | 340 (85%) | $\chi^2=5.020$ | p=0.025* |
| | Single | 38 (63.3%) | 22 (36.7%) | 60 (15%) | | |
| Occupational status | Housewife | 112 (45.5%) | 134(54.5%) | 246(61.5%) | $\chi^2=5.149$ | p=0.076 |
| | Retired | 60 (57.7%) | 44 (42.3%) | 104 (26%) | | |
| | Other | 28 (56%) | 22 (44%) | 50 (12.5%) | | |
| Educational status | Literate | 21 (60%) | 14 (40%) | 35 (8.8%) | $\chi^2=4.399$ | p=0.221 |
| | Primary school | 137 (47.1%) | 154(52.9%) | 291(72.8%) | | |
| | Middle School | 17 (63%) | 10 (37%) | 27 (6.8%) | | |
| Longest living place | High school and above | 25 (53.2%) | 22 (46.8%) | 47 (11.8%) | $\chi^2=0.263$ | p=0.877 |
| | Village | 47 (48.5%) | 50 (51.5%) | 97 (24.3%) | | |
| | District | 13 (54.2%) | 11 (45.8%) | 24 (6%) | | |
| Income status | City | 140 (50.2%) | 139(49.8%) | 279(69.8%) | $\chi^2=0.170$ | p=0.918 |
| | Income less than expenses | 100 (49%) | 104 (51%) | 204 (51%) | | |
| | Income equals expense | 89 (51.1%) | 85 (48.9%) | 174(43.5%) | | |
| People living | Income more than expenses | 11 (50%) | 11 (50%) | 22 (5.5%) | $\chi^2=6.309$ | p=0.097 |
| | Spouse | 88 (48.9%) | 92 (51.1%) | 180 (45%) | | |
| | Kids | 21 (61.8%) | 13 (38.2%) | 34 (8.5%) | | |
| | Spouse and kids | 74 (46%) | 87 (54%) | 161(40.3%) | | |
| Smoking | Alone | 17 (68%) | 8 (32%) | 25 (6.3%) | $\chi^2=6.578$ | p=0.037* |
| | Yes | 31 (63.3%) | 18 (36.7%) | 49 (12.3%) | | |
| | No | 118 (45.6%) | 141(54.4%) | 259(64.8%) | | |
| Duration of Diabetes | Quit smoking | 51 (55.4%) | 41 (44.6%) | 92 (23%) | $\chi^2=49.257$ | p=0.001** |
| | 5 years and below | 37 (27.6%) | 97 (72.4%) | 134(33.5%) | | |
| | 6-10 years | 46 (48.9%) | 48 (51.1%) | 94(23.5%) | | |
| Other drug use | 11 years and above | 117 (68%) | 55 (32%) | 172(43%) | $\chi^2=2.209$ | p=0.137 |
| | Yes | 165 (51.9%) | 153(48.1%) | 318(79.5%) | | |
| Taking drugs regularly | No | 35 (42.7%) | 47 (57.3%) | 82 (20.5%) | $\chi^2=1.040$ | p=0.308 |
| | Yes | 158 (48.8%) | 166(51.2%) | 324((81%) | | |

χ^2 : Pearson Chi-Square Test and Continuity (Yates) Correction Z: Mann Whitney U Test p<0.05** p<0.01

In the study, diabetes patients' overall self-efficacy scores were not affected by their insulin utilization or non-usage characteristics ($p>0.05$). It was found that the mean score of the diet and foot control sub-dimension was higher for those not using insulin compared to those using insulin when the DMSES sub-dimensions were evaluated ($p<0.05$). Also, individuals who used insulin had a considerably higher mean score in the medical treatment sub-dimension than those who did not ($p<0.01$). Using or not using insulin had no impact on the physical exercise sub-dimension ($p>0.05$). (Table 2)

Table 2

Evaluation of the Diabetes Management Self-Efficacy Scale Sub-Dimension and Total Scores in Type 2 Diabetes Individuals Using and Not Using Insulin

| | | Insulin Users | Non-Insulin Users | Test Value | p value |
|------------------------------|----------------|----------------------|--------------------------|-------------------|------------------|
| Diet and Foot Control | Min-Max | 18-60 | 22-60 | t=-2.092 | p=0.037* |
| | Mean±SD | 37.60±7.87 | 39.33±8.65 | | |
| Medical Treatment | Min-Max | 12-25 | 12-25 | t=5.073 | p=0.001** |
| | Mean±SD | 20.96±2.68 | 19.54±2.92 | | |
| Physical Exercise | Min-Max | 3-15 | 3-15 | t=-1.702 | p=0.090 |
| | Mean±SD | 9.08±2.80 | 9.53±2.48 | | |
| Total DMSES* | Min-Max | 34-100 | 45-98 | t=-0.691 | p=0.490 |
| | Mean±SD | 67.63±10.65 | 68.39±11.34 | | |

*DMSES: The Diabetes Management Self-Efficacy Scale

DISCUSSION

The sociodemographic characteristics and a few health parameters of people with type 2 diabetes residing in a Turkish city were examined in this study. The patients had a profile of showing symptoms for approximately 11 years. Studies related to diabetes management generally focus on patients who have been exhibiting symptoms for an average of 10 years (Çetinkaya & Karadakovan, 2023; Gedik & Koçoğlu, 2018; Kara et al., 2006; Ko & Gu, 2004;

Lahoz-Rallo et al., 2007). To make a true assessment of individuals' degrees of self-efficacy, the high length of symptom presentation is crucial.

The individuals' rates of using and not using insulin differed by gender, the length of their diabetes, their marital status, and their smoking habits. Males, those who were single, smokers, and individuals with diabetes who had had it longer than 11 years had greater insulin usage. Demographic data such as age, gender, or ethnicity, and comorbidity profiles had significant effects on medication (insulin) adherence and persistence in individuals with type 2 diabetes (Lee & Lee, 2022). Some studies showed that smoking affects medication adherence and HbA1c levels (Kayar et al., 2019), increases susceptibility to micro and macrovascular problems, and increases the likelihood of developing diabetes (Eliasson, 2003; Xie et al., 2009). Furthermore, the Global Adult Tobacco Survey states that smoking is more prevalent among men in Turkey, one of the nations with the largest cigarette consumption (Öntaş & Aslan, 2018). In a study on medication compliance among heart failure patients, it was found that patients who were not married were more likely to be non-compliant than patients who were married (Wu et al., 2012). In people with diabetes, factors like smoking and medication non-adherence lead to a more difficult metabolic control, resulting in the need for higher insulin doses to achieve the same metabolic targets as non-smokers (Kayar et al., 2019). Given this, it is expected that a patient's adherence to injection-based medications might be affected by several factors (Piragine et al., 2023; Saundankar et al., 2016; Spain et al., 2016).

Participants' age, education level, employment, residence (longest duration), income status, living with their spouses, usage of other drugs, regular drug use, rates of insulin use and non-use were not shown to be significantly correlated. Regular medication use requires medication adherence. Studies examining the regular use of antidiabetic medications, whether in oral or insulin form, have identified a number of demographic and non-demographic factors (Lee & Lee, 2022; Piragine et al., 2023; Saundankar et al., 2016; Spain et al., 2016).

The result of our study indicated that, when evaluated based on the highest possible score attainable from the scale, the self-efficacy levels of both insulin users and non-users were found to be moderate. Numerous studies in the literature show that individuals with type 2 diabetes have moderate (Calli & Kartal, 2021; Gedik & Koçođlu, 2018; Lee et al., 2009) and high levels of self-efficacy (Al-Khawaldeh et al., 2012; Johnston-Brooks et al., 2002; Yanık & Erol, 2016). In fact, it is crucial for people to have high levels of self-efficacy in order to be able to take on and maintain the advised behaviors connected to treating diabetes (Heydarian et al., 2021). People may become less inclined to alter their current health practices or embrace new ones as their levels of self-efficacy decline (Bandura, 1997; Heydarian et al., 2021). Therefore, type 2 diabetes individuals' self-efficacy levels should be kept above the moderate level.

This study showed that there was no significant correlation between the self-efficacy levels of individuals using insulin and those not using insulin. In a previous study, it was reported that there was no significant relationship between the use of oral antidiabetic medications and insulin and the self-efficacy of individuals with type 2 diabetes (Yanık & Erol, 2016). Using multiple regression analysis, another study revealed that patients receiving both oral antidiabetic medication and insulin therapy had greater self-efficacy scores than those getting either insulin or oral antidiabetic medication alone. Additionally, the use of oral antidiabetic drugs or insulin was predicted to be a determinant of the self-efficacy score (Gedik & Koçođlu, 2018). The findings of our investigation is supportive of the information in the literature. The main reason that a relationship was not found was self-efficacy levels was similar in both groups and the moderate. More information can be obtained by determining groups in larger area with normal and abnormal indicators and comparing these groups with one another.

The mean score of the diet and foot sub-dimension for people not using insulin and the mean score of the medical treatment sub-dimension for those using insulin were significantly higher according to the evaluation of the scale sub-dimensions in the study. In the physical therapy

sub-dimension, it was concluded that there was no difference between those who used insulin and those who did not. The consistency in the DMSES sub-dimensions may have been influenced by certain patient features. In another study, it was discovered that different DMSES sub-dimensions were related to hospital size, cities, age, gender, income, education level, family history of diabetes, BMI, alcohol use, duration of diabetes, smoking status, and treatment form (Sangruangake et al., 2017). In this respect, different patient subgroups are likely to be at risk in terms of various aspects of moderate diabetes self-efficacy.

CONCLUSION

This study has shown that individuals with type 2 diabetes, depending on the sort of treatment they use, have a moderate level of self-efficacy. Additionally, it has been discovered that there is no difference in self-efficacy levels between people using and not using insulin. Males, single individuals, smokers, and those with diabetes for more than 11 years have been shown that insulin usage was higher. Based on the findings of this study, follow-up and monitoring of type 2 diabetes individuals should be conducted, considering the treatment type used, as well as diet, foot care, and other combined therapies within the scope of diabetes education programs. To maintain and raise the self-efficacy levels of diabetic individuals, it is advised to support studies related to planning and implementing nursing care, promoting telehealth systems, and investigating factors affecting these levels.

ETHICAL COMMITTEE APPROVAL

The study was approved by the Atatürk University's Scientific Research and Publication Ethics Committee (Approval No: KB-622/2018; 11 June 2018; 2018-5/4).

AUTHOR CONTRIBUTION

Idea/concept: AT; Design: AT; Consultancy: MK; Data collection: AT; Data Processing: AT; Analysis and/or Interpretation: AT; Literature review: AT; Writing of the article: AT; Critical review: MK

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

FINANCIAL DISCLOSURE

This study has not been financed by any institutional organization.

PEER REVIEWED

Externally peer-reviewed.

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