



Investigation of Well-Being Levels of Individuals Diagnosed with Type 2 Diabetes in Terms of Sociodemographic Characteristics and Life Experiences with the Disease

Tip 2 Diyabetli Bireylerin Sosyodemografik Özellikleri ve Hastalıkla Yaşam Deneyimleri Açısından İyi Oluş Düzeylerinin İncelenmesi

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ABSTRACT

Objective: This study was conducted to examine the sociodemographic characteristics of people diagnosed with type 2 diabetes and the level of well-being in terms of life experiences with the disease.

Methods: This descriptive type of research was conducted with 254 people diagnosed with type 2 diabetes and admitted to Internal Medicine and Endocrinology Clinics of a hospital. "Sociodemographic characteristics form," "life experiences with the diagnosis of type 2 diabetes form," and the "PERMA Sscale" were used to collect the data. The data of the study were statistically analyzed using the SPSS 25.0 package program and descriptive statistics, independent t test, ANOVA, pearson correlation analysis and Posthoc Tukey test.

Results: It was determined that the individuals participating in the study lived with type 2 diabetes for an average of 8.29 ± 6.72 years. Individuals diagnosed with type 2 diabetes in the study got the highest score from the PERMA Scale sub-dimensions of success (8.49 ± 0.99) and the lowest score from the sub-dimensions of negative emotions (3.17 ± 1.60). It has been determined that there is a significant difference in the PERMA scale sub-dimension scores in terms of place of residence, education level, working status, treatment type, having other health problems related to the disease, hospitalization history, adaptability to the recommended diet, activity, and informal support ($P < .05$).

Conclusion: It was concluded that individuals diagnosed with type 2 diabetes had a high level of well-being, which varies depending on the place of residence, education level, employment status, types of treatment, other health problems related to the disease, hospitalization history, adaptation to the recommended diet, adaptation to the recommended activities, and to what extent informal support is received.

Keywords: Type 2 diabetes, sociodemographic characteristics, illness experiences, well-being, nursing

ÖZ

Amaç: Bu araştırma tip 2 diyabetli bireylerin sosyodemografik özellikleri ve hastalıkla yaşam deneyimleri açısından iyi oluş düzeylerinin incelenmesi amacıyla yapılmıştır.

Yöntemler: Bu tanımlayıcı araştırma bir hastanenin dahiliye ve endokrinoloji polikliniklerine başvuran tip 2 diyabetli 254 bireyle yürütülmüştür. Verilerin toplanmasında "Sosyodemografik Özellikler Formu," "Tip 2 Diyabet Tanısıyla Yaşam Deneyimleri Formu" ve "PERMA Ölçeği" kullanılmıştır. Araştırmanın verileri SPSS 25.0 paket programı ile tanımlayıcı istatistikler, independent t testi, ANOVA, pearson korelasyon analizi ve Posthoc Tukey testi kullanılarak istatistiksel olarak analiz edilmiştir.

Bulgular: Araştırmaya katılan bireylerin ortalama $8,29 \pm 6,72$ yıldır tip 2 diyabet ile yaşadıkları belirlenmiştir. Çalışmadaki tip 2 diyabet tanısı alan bireyler PERMA Ölçeği alt boyutları arasında en yüksek puanı başarı ($8,49 \pm 0,99$), en düşük puanı ise olumsuz duygular ($3,17 \pm 1,60$) alt boyutlarından almışlardır. Bireylerin yaşadığı yer, eğitim durumu, çalışma durumu, tedavi şekli, hastalığa bağlı başka sağlık sorunu olma durumu, hastaneye yatış öyküsü, önerilen diyete, aktiviteye uyum sağlayabilme durumu ve informal destek alma durumu açısından PERMA Ölçeği alt boyut puanlarında anlamlı bir fark olduğu saptanmıştır ($P < ,05$).

Sonuç: Tip 2 diyabetli bireylerin iyi oluş düzeylerinin yüksek seviyede olduğu, yaşanan yer, eğitim düzeyi, çalışma durumu, tedavi şekilleri, hastalığa bağlı başka sağlık sorunu olma durumu, hastaneye yatış öyküleri, önerilen diyete uyum sağlayabilme, önerilen aktivitelere uyum sağlayabilme ve informal destek alma durumları açısından bireylerin iyi oluş düzeylerinin değiştiği sonucuna ulaşılmıştır.

Anahtar Kelimeler: Deneyim, doğum korkusu, fenomenolojik, hemşirelik

INTRODUCTION

Diabetes mellitus is a lifelong disease that occurs when the pancreas in the body does not make enough hormone insulin or the hormone insulin it makes fails to be used effectively. Type 2 diabetes, an organic disease, also has psychosocial and psychiatric aspects.¹ Individuals diagnosed with type 2 diabetes can have a high level of non-compliance with a drug, low self-efficacy, and inadequate exercise and dietary behavior.¹² Emotional reactions often cause problems in individuals living with diabetes,³ while mental disorders such as depression, generalized anxiety disorder, and eating disorder occur more frequently than in the general population.⁴ All of these are the reactions of the individual to the anxiety and stress that occur due to both the disease itself and the many lifestyle changes that come with this disease.⁵ This case requires the individual to feel good, to function effectively, and to struggle with painful experiences and negative effects to live a good life with diabetes⁶ as well as shows the importance of the level of well-being that enables him/her to realize themselves and lead a meaningful life when faced with difficulties.

Although the concept of well-being has attracted the attention of thinkers for years, it was not until recently that its systematic measurement and study aroused interest. These studies are meant to define 3 aspects of well-being: positive emotion, negative emotion, and life satisfaction. Positive emotion shows the individuals pleasant emotions such as joy, excitement, trust, hope, interest, strength, pride, enthusiasm, or contentment, whereas, negative emotion shows the tendency to experience unpleasant emotions such as stress, distress, anger, hatred, guilt, anxiety, and sadness. Life satisfaction points to contentedness with life in general and constitutes the cognitive component of well-being. It reflects the evaluations of the individual's satisfaction in various social and life areas.⁷ Where all 3 aspects are taken together, the more people evaluate their lives with positive emotions and thoughts, the higher their well-being levels become. The ratio of positive evaluations to negative evaluations of people in terms of well-being evaluations is crucial. Although one's happiness level is related to the frequency of experiencing positive emotions rather than negative emotions, the balance between positive and negative emotions also contributes to thoughts of life satisfaction. Considering all these elements of the concept of well-being, the individual with a high level of well-being is an individual who rarely feels sad and is generally happy and cheerful in life. From a different point of view, individuals' well-being levels increase when they feel negative emotions at a relatively low level and positive emotions intensely and frequently and when activities in their lives are somewhere close to help the individual be satisfied.^{8,9}

Positive emotions of individuals diagnosed with type 2 diabetes tend to be influenced by variables such as their level of compliance with treatment, diet and physical activity program, social support from the family and social environment, and appropriate methods they use to cope with the disease.¹⁰ On the other hand, variables such as loneliness, non-compliance with treatment and lifestyle changes related to the disease, progression of the disease, and the emergence of complications may predispose individuals to develop negative emotions.¹¹ Patients with type 2 diabetes are expected to have increased life satisfaction as well as an increased level of well-being both psychologically and cognitively if they check their doctor, adapt to diet, and exercise programs regularly, receive positive support from their families and social circles, see diabetes not as a disease but as a lifestyle, and live accordingly.¹² It is known that besides the variables related to the disease, sociodemographic variables also cause differences in the well-being of individuals. A review of the literature makes it clear that there are studies touching upon the effects of demographic variables such as age, gender, marital status, and employment status on well-being.^{13,14}

Examining the factors affecting the well-being levels of individuals with type 2 diabetes is important in terms of planning interventions for patients. This study was conducted to examine the sociodemographic characteristics and well-being levels of individuals diagnosed with type 2 diabetes in terms of their life experiences with the disease.

Research questions are as follows:

- What are the sociodemographic characteristics of individuals diagnosed with type 2 diabetes?
- What are the characteristics of individuals diagnosed with type 2 diabetes regarding their life experiences with the disease?
- What are the well-being levels of individuals diagnosed with type 2 diabetes?
- Is there a difference in the level of well-being of individuals diagnosed with type 2 diabetes according to their sociodemographic characteristics?
- Is there a difference in the level of well-being of individuals diagnosed with type 2 diabetes according to the characteristics of their life experiences with the disease?

METHODS

Study Design

This research was conducted in descriptive type.

Study Population

The population of this study consists of patients who applied to the internal medicine and endocrinology polyclinics of a hospital in the Black Sea Region of Turkey with the diagnosis of type 2 diabetes. The minimum sample size to be included in the study was calculated with the Open Epi 3.01 program. While determining the sample of the study, the number of patients (1000 people) diagnosed with type 2 diabetes and admitted to the polyclinics in the last 1 year was taken as a basis. With the relevant number taken as a criterion as well as a power analysis, the sample size was determined as at least 214 people, with a 5% margin of error, a 90% CI, and the ability to represent the population by 80%. In this regard, the study was conducted with 253 people admitted to polyclinics between October 2019 and January 2020 and appropriate for the inclusion criteria. Voluntary individuals older than 18 years of age, living with a diagnosis of type 2 diabetes for at least 6 months, and without a severe neurological or mental disorder or communication disabilities were included in the study. Individuals younger than 18 years of age, living with the diagnosis of type 2 diabetes for less than 6 months, diagnosed with a serious neurological or mental illness, having a communication disability, and who did not volunteer to participate in the study were excluded from the study. The individuals who met the criteria for inclusion in the study between the specified dates formed the sample group.

Research Variables

The independent variables: Sociodemographic characteristics and life experiences of individuals diagnosed with type 2 diabetes constitute the independent variables.

The dependent variables: Well-being levels of individuals diagnosed with type 2 diabetes constitute the dependent variables.

Instruments

The data in the study were collected using the “sociodemographic characteristics form,” “life experiences with the diagnosis of type 2 diabetes form,” and “PERMA scale (P: positive and negative emotions, E: engagement, R: relationships, M: meaning, A: accomplishment).”

Sociodemographic characteristics form: This form was created by the researcher by reviewing the literature.¹²⁻¹⁷ The form contains 6 questions about sociodemographic information (age, gender, marital status, place of residence, educational status, and employment status).

Life experiences with the diagnosis of type 2 diabetes form: This form was created by the researcher by reviewing the literature.¹²⁻¹⁷ The form contains 8 questions about the life experiences of individuals diagnosed with type 2 diabetes (duration of illness, type of treatment, other health problems related to the disease, frequency of going to the hospitals, hospitalization history, adaptation to the recommended diet, adaptation to the recommended activities, and to what extent informal support is received during the life experience with type 2 diabetes).

PERMA Scale: The Turkish validity and reliability studies of this scale, which was developed by Butler and Kern¹⁸ to evaluate the well-being levels of individuals, were conducted by Demirci et al.¹⁹ The scale consists of 15 items and 8 filler items and 5 domains: “positive emotions,” “engagement,” “positive relationships,” “meaning,” and “accomplishment.” Three items make up each domain. In the evaluation of the scale, the average scores of the

items of each domain are taken. However, none of them alone explains the level of well-being as each domain contributes to the level of well-being. In addition, apart from the domains of well-being, Butler and Kern¹⁸ added 6 out of 8 filler items to the scale as “health” and “negative emotions” as 2 separate domains. The Cronbach’s alpha reliability coefficient of the scale is 0.91. In this study, the reliability of the PERMA scale was found to be 0.934, showing that the scale is quite reliable.

Data Collection

The data collection process was implemented through cooperation with specialty doctors and secretaries working in the polyclinics where the research was conducted. The data collection process was carried out by the researcher. The researcher collected the data by interviewing the individuals who met the criteria for inclusion in the study using face-to-face interview technique. The implementation of the data collection form took approximately 15-25 minutes.

Statistical Analysis

The analysis of the data obtained from the research was carried out using the Statistical Package for Social Sciences (IBM SPSS Corp., Armonk, NY, USA) 25.0 package program. The suitability of the data to the normal distribution was evaluated with the Kolmogorov–Smirnov test, and parametric tests were used in this study. Descriptive statistics (frequency, percentage, and mean); independent samples *t*-test, and analysis of variance were used to evaluate differences in well-being levels according to these characteristics and Pearson correlation analysis was used to evaluate the relationship between age and life expectancy with type 2 diabetes and well-being. In addition, the post-hoc Tukey HSD test was used to further evaluate the differences in well-being levels according to the characteristics of the participants.

Ethical Aspect of Research

Before starting the research, permission was obtained from the Ondokuz Mayıs University Clinical Research Ethics Committee, numbered OMÜ KAEK 2019/544. Institutional permission of the study was obtained from the Provincial Health Directorate with the decision numbered 93771576-302.08.01-E.23636. All individuals with Type 2 Diabetes who were included in the study before starting the study were informed about the study and both verbal and written consents were obtained.

RESULTS

Findings obtained from individuals with a diagnosis of type 2 diabetes included in the study are given in this section.

The average age of individuals with a diagnosis of type 2 diabetes included in the study was 59.38 ± 12.33 (19-90). About 65.7% of the individuals were women, 96.6% were married, 55.1% lived in the city, and 65.4% had primary school level of education. In addition, 68.9% of the participants were unemployed (Table 1).

It is shown that the individuals participating in the study have been living with type 2 diabetes for an average of 8.29 ± 6.72 years. As indicated in Table 3, 65.7% of the individuals received oral antidiabetic treatment, 52.8% did not experience other health problems related to the disease, 54.7% went to the controls sporadically and in case of need 73.6% had no hospitalization history, 42.1% rarely adapted to the recommended diet, 48.4% rarely adapted to the recommended activities, 96.1% received informal support in life experience with the disease,

Table 1. Distribution of the Participants According to Sociodemographic Characteristics (n = 254)

| Sociodemographic Characteristics | | Frequency (n) | Percentage (%) |
|----------------------------------|------------------|---------------|-----------------|
| Gender | Female | 167 | 65.7 |
| | Male | 87 | 34.3 |
| Marital status | Married | 246 | 96.6 |
| | Single | 8 | 3.1 |
| Place of residence | City | 140 | 55.1 |
| | District | 108 | 42.5 |
| | Village | 6 | 2.4 |
| Educational status | Primary school | 166 | 65.4 |
| | Secondary school | 58 | 22.8 |
| | High school | 26 | 10.2 |
| | University | 4 | 1.6 |
| Employment status | Employed | 79 | 31.1 |
| | Unemployed | 175 | 68.9 |
| Age | | X ± SD | Minimum–maximum |
| | | 59.38 ± 12.33 | 19-90 |

and 94.1% received psychosocial support from nurses while experiencing the disease (Table 2).

The PERMA scale sub-dimension mean scores of individuals diagnosed with type 2 diabetes in the study were found as follows: accomplishment 8.49 ± 0.99 ; relationships 8.42 ± 0.87 ; engagement 8.40 ± 0.80 ; positive emotions 8.33 ± 0.93 ; meaning 8.10 ± 1.01 ; health 7.56 ± 1.56 ; and negative emotions 3.17 ± 1.60 , from high to low, respectively (Table 3).

According to the sociodemographic characteristics of the individuals with type 2 diabetes in the study, the domain mean scores of the PERMA scale were analyzed (Table 4). In terms of the place of residence, it was determined that the individuals living in the city got higher scores in the engagement ($P = .01$) and health ($P < .001$) domains than those living in the district.. In addition, it was found that those living in villages had higher scores of accomplishment ($P = .04$) and negative emotion ($P = .003$) domains than those living in the city. Among the individuals participating in the study, the mean scores of the negative emotions domain were higher in those with a university degree than others, while the mean scores of the health domain of the secondary school graduates were significantly higher than the primary school graduates ($P < .001$). Employed ones had higher scores of positive emotions ($P = .003$), meaning ($P = .019$), accomplishment ($P = .005$), and health ($P < .001$) domains among the individuals with type 2 diabetes in the study, while they had lower scores in the negative emotion ($P < .001$) domain. A significant negative relationship was found between the age of the participants and the positive emotions ($P = .007$), engagement ($P < .001$), relationships ($P = .01$), meaning ($P < .001$), accomplishment ($P < .001$), and health ($P < .001$) domain mean scores of the PERMA scale; however, a significant positive relationship was found in terms of negative emotion ($P = .002$) domain mean scores. According to the other variables in Table 4, no statistically significant difference was found between the mean scores of the PERMA scale domains ($P > .05$).

Table 2. Distribution of the Life Experiences of the Participants Related to the Diagnosis of Type 2 Diabetes (n = 254)

| Life Experiences Related to Type 2 Diabetes Diagnosis | | Frequency (n) | Percentage (%) |
|---|----------------------------|---------------|----------------|
| Type of treatment | Oral antidiabetic | 167 | 65.7 |
| | Insulin+oral antidiabetic | 87 | 34.3 |
| Other disease-related health problems | Yes | 120 | 47.2 |
| | No | 134 | 52.8 |
| Frequency of going to the hospitals | Once a week | 3 | 1.2 |
| | Once a month | 12 | 4.7 |
| | Once a year | 100 | 39.4 |
| | Sporadic (in case of need) | 139 | 54.7 |
| Hospitalization history | Yes | 67 | 26.4 |
| | No | 187 | 73.6 |
| Adaptation to the recommended diet | Always | 7 | 2.8 |
| | Often | 51 | 20.1 |
| | Sometimes | 89 | 35.0 |
| | Rarely | 107 | 42.1 |
| Adaptation to the recommended activities | Always | 2 | 0.8 |
| | Often | 33 | 13.0 |
| | Sometimes | 96 | 37.8 |
| | Rarely | 123 | 48.4 |
| To what extent informal support is received during the life experience with type 2 diabetes | Yes | 244 | 96.1 |
| | No | 10 | 3.9 |

According to the life experiences of the participants related to the diagnosis of type 2 diabetes, the mean scores of the PERMA scale domains are given in Table 5. Considering the PERMA scale domain scores according to the treatment types of the individuals, it was found that the negative emotion ($P < .001$) domain scores were higher and the health ($P < .001$) domain scores were lower in those subjected to insulin+oral antidiabetic treatment together. The positive emotions ($P = .04$), relationships ($P = .001$), meaning ($P = .007$), and health ($P < .001$) domain scores of the participants with other health problems related to the disease were lower, while negative emotion ($P < .001$) domain scores were found to be higher. After the frequency of individuals going to the hospitals for health checks

Table 3. PERMA Scale Domain Mean Scores of Patients Diagnosed with Type 2 Diabetes

| PERMA Scale Sub-Dimensions | X ± SD |
|----------------------------|-------------|
| Positive emotions | 8.33 ± 0.93 |
| Engagement | 8.40 ± 0.80 |
| Relationships | 8.42 ± 0.87 |
| Meaning | 8.10 ± 1.01 |
| Accomplishment | 8.49 ± 0.99 |
| Negative emotions | 3.17 ± 1.60 |
| Health | 7.56 ± 1.56 |

Table 4. PERMA Scale Sub-Dimensions Mean Scores According to the Sociodemographic Characteristics of Individuals

| | | PERMA Scale Sub-Dimensions | | | | | | | | | | | | | |
|----------------------------------|------------------|----------------------------|---------------------|------------------|-------------------|---------------------|--------------------------|----------------------|------------|----------------|------------|-------------------|------------|------------|------------|
| Sociodemographic Characteristics | | Positive Emotions | | Engagement | | Relationships | | Meaning | | Accomplishment | | Negative Emotions | | Health | |
| | | X \pm SD | X \pm SD | X \pm SD | X \pm SD | X \pm SD | X \pm SD | X \pm SD | X \pm SD | X \pm SD | X \pm SD | X \pm SD | X \pm SD | X \pm SD | X \pm SD |
| Gender | Female | 8.36 \pm 0.96 | 8.44 \pm 0.83 | 8.44 \pm 0.91 | 8.07 \pm 1.09 | 8.42 \pm 1.08 | 3.15 \pm 1.52 | 7.55 \pm 1.60 | | | | | | | |
| | Male | 8.27 \pm 0.87 | 8.34 \pm 0.74 | 8.38 \pm 0.79 | 8.16 \pm 0.85 | 8.62 \pm 0.79 | 3.21 \pm 1.59 | 7.56 \pm 1.49 | | | | | | | |
| Test and P-value | | t=0.72 P=.47 | t=0.92 P=.35 | t=0.53 P=.59 | t=-0.67 P=.50 | t=-1.57 P=.11 | t=-0.28 P=.77 | t=-0.04 P=.96 | | | | | | | |
| Marital status | Married | 8.34 \pm 0.92 | 8.41 \pm 0.80 | 8.44 \pm 0.84 | 8.12 \pm 0.92 | 8.49 \pm 1.00 | 3.16 \pm 1.57 | 7.55 \pm 1.56 | | | | | | | |
| | Single | 8.00 \pm 1.30 | 8.33 \pm 0.85 | 7.75 \pm 1.54 | 7.54 \pm 2.67 | 8.41 \pm 0.79 | 3.54 \pm 2.54 | 7.62 \pm 1.82 | | | | | | | |
| Test and P-value | | t=1.02 P=.30 | t=0.27 P=.78 | t=2.23 P=.02 | t=1.60 P=.11 | t=0.21 P=.82 | t=-0.65 P=.51 | t=-0.11 P=0.90 | | | | | | | |
| Place of residence | City | 8.43 \pm 0.87 | 8.52 \pm 0.72 | 8.47 \pm 0.78 | 8.21 \pm 0.77 | 8.57 \pm 0.81a | 2.90 \pm 1.59a | 7.92 \pm 1.28a | | | | | | | |
| | District | 8.20 \pm 0.96 | 8.24 \pm 0.87 | 8.34 \pm 0.88 | 7.96 \pm 1.05 | 8.34 \pm 1.17b | 3.44 \pm 1.44b | 7.12 \pm 1.74b | | | | | | | |
| | Village | 8.33 \pm 1.65 | 8.77 \pm 2.21 | 8.77 \pm 2.21 | 7.94 \pm 3.32 | 9.22 \pm 0.75c | 4.51 \pm 3.13c | 6.72 \pm 2.28c | | | | | | | |
| Test and P-value | | F=1.79 P=.16 | F=4.54 P=.01 a>b | F=1.16 P=.31 | F=1.93 P=.14 | F=3.23 P=.04 c>a | F=6.03 P=.003 c>a | F=9.38 P=.000 a>b | | | | | | | |
| Educational status | Primary school | 8.31 \pm 1.00 | 8.37 \pm 0.88 | 8.43 \pm 0.92 | 7.98 \pm 1.14 | 8.38 \pm 1.12 | 3.31 \pm 1.65a | 7.28 \pm 1.66a | | | | | | | |
| | Secondary school | 8.51 \pm 0.72 | 8.57 \pm 0.48 | 8.50 \pm 0.71 | 8.32 \pm 0.57 | 8.70 \pm 0.62 | 2.60 \pm 1.14b | 8.35 \pm 0.96b | | | | | | | |
| | High school | 8.16 \pm 0.86 | 8.33 \pm 0.82 | 8.32 \pm 0.95 | 8.33 \pm 0.78 | 8.73 \pm 0.64 | 3.28 \pm 1.44c | 7.48 \pm 1.58c | | | | | | | |
| | University | 7.58 \pm 0.50 | 7.91 \pm 0.73 | 7.75 \pm 0.31 | 8.25 \pm 1.13 | 8.33 \pm 0.72 | 6.25 \pm 1.52d | 7.83 \pm 0.83d | | | | | | | |
| Test and P-value | | F=1.86 P=.136 | F=1.50 P=.215 | F=1.06 P=.366 | F=2.12 P=.098 | F=2.04 P=.109 | F=9.55 P=.000 d>a,b,c | F=7.109 P=.000b>a | | | | | | | |
| Employment status | Employed | 8.59 \pm 0.75 | 8.50 \pm 0.74 | 8.53 \pm 0.64 | 8.32 \pm 0.70 | 8.75 \pm 0.66 | 2.64 \pm 1.41 | 8.16 \pm 1.07 | | | | | | | |
| | Unemployed | 8.21 \pm 0.98 | 8.36 \pm 0.82 | 8.37 \pm 0.96 | 8.00 \pm 1.11 | 8.37 \pm 1.09 | 3.41 \pm 1.64 | 7.28 \pm 1.67 | | | | | | | |
| Test and P-value | | t=2.97 P=.003 | t=1.23 P=.21 | t=1.32 P=.188 | t=2.36 P=.019 | t=2.82 P=.005 | t=-3.57 P=.000 | t=4.29 P=.000 | | | | | | | |
| Age (59.38 \pm 12.33) | | r=-0.16 P=.007 | r=-0.23 P=.000 | r=-0.16 P=.01 | r=-0.27 P=.000 | r=-0.30 P=.000 | r=0.194 P=.002 | r=-0.338 P=.000 | | | | | | | |

Tukey HSD test results are shown using a, b, c, d values.

Table 5. The Mean Scores of the Sub-Dimensions of the PERMA Scale in Terms of Their Experience with the Disease of the Participants with Type 2 Diabetes

| | PERMA Scale Domains | | | | | | |
|---|--|--|---|---|---|--|--|
| | Positive Emotions | Engagement | Relationships | Meaning | Accomplishment | Negative Emotions | Health |
| Life Experiences | X±SD | X±SD | X±SD | X±SD | X±SD | X±SD | X±SD |
| Type of treatment | | | | | | | |
| Oral antidiabetic | 8.39 ± 0.91 | 8.42 ± 0.81 | 8.46 ± 0.82 | 8.17 ± 0.84 | 8.51 ± 0.98 | 2.98 ± 1.48 | 7.90 ± 1.34 |
| Insulin+oral antidiabetic | 8.21 ± 0.97 | 8.38 ± 0.77 | 8.36 ± 0.96 | 7.98 ± 1.27 | 8.45 ± 1.01 | 3.54 ± 1.76 | 6.89 ± 1.75 |
| Test and <i>P</i> -value | <i>t</i> =1.43 <i>P</i> =.15 | <i>t</i> =0.37 <i>P</i> =.708 | <i>t</i> =0.83 <i>P</i> =.404 | <i>t</i> =1.38 <i>P</i> =.167 | <i>t</i> =0.46 <i>P</i> =.645 | <i>t</i> =0.01 <i>P</i>=.000 | <i>t</i> =5.10 <i>P</i>=.000 |
| Other disease-related health problems | | | | | | | |
| Yes | 8.20 ± 1.02 | 8.34 ± 0.81 | 8.24 ± 1.01 | 7.92 ± 1.16 | 8.41 ± 1.12 | 3.66 ± 1.73 | 6.85 ± 1.71 |
| No | 8.44 ± 0.83 | 8.46 ± 0.79 | 8.59 ± 0.69 | 8.27 ± 0.82 | 8.55 ± 0.86 | 2.73 ± 1.35 | 8.19 ± 1.09 |
| Test and <i>P</i> -value | <i>t</i> =-2.04 <i>P</i>=.04 | <i>t</i> =-1.16 <i>P</i> =.24 | <i>t</i> =-3.21 <i>P</i>=.001 | <i>t</i> =-2.73 <i>P</i>=.007 | <i>t</i> =-1.10 <i>P</i> =.27 | <i>t</i> =4.77 <i>P</i>=.000 | <i>t</i> =-7.51 <i>P</i>=.000 |
| Frequency of going to the hospitals | | | | | | | |
| Once a week | 7.77 ± 0.76 | 8.11 ± 0.50 | 8.66 ± 0.33 | 8.00 ± 0.57 | 8.77 ± 0.69 | 3.88 ± 1.26 | 6.00 ± 2.51a |
| Once a month | 8.61 ± 0.76 | 8.66 ± 0.61 | 8.75 ± 0.76 | 8.58 ± 0.71 | 8.69 ± 0.67 | 2.88 ± 1.55 | 8.52 ± 0.77b |
| Once a year | 8.38 ± 0.87 | 8.43 ± 0.89 | 8.50 ± 0.81 | 8.08 ± 0.90 | 8.57 ± 0.93 | 3.06 ± 1.53 | 7.75 ± 1.33c |
| Sporadic (in case of need) | 8.29 ± 0.99 | 8.37 ± 0.75 | 8.34 ± 0.92 | 8.08 ± 1.11 | 8.41 ± 1.06 | 3.26 ± 1.67 | 7.36 ± 1.69d |
| Test and <i>P</i> -value | <i>F</i> =0.88 <i>P</i> =.45 | <i>F</i> =0.67 <i>P</i> =.57 | <i>F</i> =1.32 <i>P</i> =.26 | <i>F</i> =0.92 <i>P</i> =.42 | <i>F</i> =0.74 <i>P</i> =.52 | <i>F</i> =0.60 <i>P</i> =.61 | <i>F</i> =3.85 <i>P</i>=.01 b>a |
| Hospitalization history | | | | | | | |
| Yes | 8.17 ± 10.07 | 8.23 ± 0.94 | 8.33 ± 0.97 | 7.93 ± 1.32 | 8.19 ± 1.38 | 3.32 ± 1.74 | 7.11 ± 1.86 |
| No | 8.39 ± 0.87 | 8.47 ± 0.73 | 8.46 ± 0.83 | 8.16 ± 0.87 | 8.59 ± 0.79 | 3.11 ± 1.56 | 7.72 ± 1.41 |
| Test and <i>P</i> -value | <i>t</i> =-1.59 <i>P</i> =.11 | <i>t</i> =-2.09 <i>P</i>=.03 | <i>t</i> =-1.02 <i>P</i> =.30 | <i>t</i> =-1.61 <i>P</i> =.10 | <i>t</i> =-2.84 <i>P</i>=.005 | <i>t</i> =0.91 <i>P</i> =.36 | <i>t</i> =-2.74 <i>P</i>=.006 |
| Duration of living with type 2 diabetes (8.29 ± 6.72) | <i>r</i> =-0.09 <i>P</i> =.134 | <i>r</i> =-0.12 <i>P</i> =.05 | <i>r</i> =-0.11 <i>P</i> =.06 | <i>r</i> =-0.16 <i>P</i>=.01 | <i>r</i> =-0.21 <i>P</i>=.001 | <i>r</i> =0.23 <i>P</i>=.000 | <i>r</i> =-0.38 <i>P</i>=.000 |

Tukey HSD test results are shown using a, b, c, d values.

due to type 2 diabetes was examined, it was determined that the mean scores of the health ($P = .01$) domain of those with monthly controls were significantly higher than those weekly controls. It was found that the mean scores of engagement ($P = .03$), accomplishment ($P = .005$), and health ($P = .006$) domains of the participants who had a history of hospitalization for type 2 diabetes were significantly lower. After the relationship between the duration of living with type 2 diabetes and the domains of the PERMA scale was examined, a statistically significant and negative relationship was found between the mean scores of the meaning ($P = .01$), accomplishment ($P = .001$), and health ($P < .001$) domains; on the other hand, a statistically significant and positive relationship was found between negative emotion ($P < .001$) domain mean scores. The participants who can always adapt to the recommended diet had significantly low scores than the others in the positive emotion ($P = .03$) and relationship ($P = .02$) domains, while they got high scores in the negative emotion ($P = .004$) domain. It was also found that the participants able to always adapt had significantly higher scores from the domain of accomplishment ($P = .002$) than those able to rarely adapt, while participants generally adapting the recommended diet had higher meaning ($P = .03$) domain scores than those rarely adapting. Relationships ($P = .03$) and health ($P < .001$) domain scores of individuals always adapting to the recommended activities were found to be significantly lower

than the other groups. Those sometimes adapting to the recommended activities had significantly higher meaning ($P = .005$) and accomplishment ($P = .02$) scores than those rarely adapting. Positive emotions ($P = .01$), relationships ($P = .001$), meaning ($P < .001$), and health ($P = .002$) domain mean scores of participants who received informal support in their life experience with type 2 diabetes were higher than those who did not receive support, while negative emotion domain mean scores were lower. According to the other variables in Table 5, no statistically significant difference was found between the mean scores of the PERMA scale domains ($P > .05$).

DISCUSSION

The findings of this study, which examined the sociodemographic characteristics and well-being levels of individuals diagnosed with type 2 diabetes in terms of their life experiences with the disease, are discussed in this section.

According to the sociodemographic characteristics of individuals diagnosed with type 2 diabetes, the mean scores of the PERMA scale domains are given in Table 4. It was found that there was no significant difference between the well-being levels of individuals according to their gender, which is different from some findings on this issue in the literature. Considering the findings of the research on whether well-being varies

according to gender, one may notice different results. In some studies, it was found that women's well-being levels were better than men,^{20,21} and in some, men were found to have higher positive emotion scores than women.¹³ In addition, there are a great number of studies with various sample groups reporting that there is no significant difference in the level of well-being according to gender.²² The research finding of this study is in line with the literature.

It was determined that there was no significant difference between the well-being levels of individuals diagnosed with type 2 diabetes according to their marital status (Table 4). The literature review reveals that among individuals diagnosed with diabetes, the quality of life of married people is higher than that of singles.^{23,24}

A significant difference was found between the well-being levels of the participants according to the place of residence (Table 4). There are studies conducted with different samples that report that there is a significant difference between the mean scores of negative emotions that affect the level of well-being according to the place of residence²⁵ or that there is no significant difference between the mean scores of the level of well-being.²⁶ One of the results of this study is that among individuals diagnosed with type 2 diabetes, the well-being levels of those living in villages are higher than those living in cities and districts, which is because they have more comfortable freedom of movement and clean air as a result of being engaged in gardening.

A significant difference was found between the scores of "negative emotions" and "health" domains in terms of the educational status variable of the participants (Table 4). There are studies in the literature showing that educational status affects well-being¹⁴ or not.²⁷ In a study on the quality of life of individuals diagnosed with type 2 diabetes, Cruz et al²⁸ stated that low education level affects the quality of life in diabetic patients, that the quality of life of diabetic individuals with low education level is lower than diabetic individuals with high education level, and that there is a significant difference between their quality of life according to their education level. Huang et al.²⁹ Çitil et al.³⁰ and Lu et al³¹ found similar results in their studies. The fact that graduates of university felt more negative emotions than those with lower education levels may be related to their inability to manage stress arising from awareness.

A significant difference was found between the areas of well-being such as "positive emotions," "meaning," "success," "negative emotions," and "health" according to the employment status of individuals with type 2 diabetes (Table 4). The mean scores of the working individuals in the areas of positive emotions, meaning, success, and health were higher than those in the non-working areas, and the mean scores in the area of negative emotions of the working individuals were found to be lower than those of the non-working individuals (Table 4). Studies examining the quality of life of individuals with a diagnosis of type 2 diabetes also show that the employment status is an influencing variable.^{32,33} It is thought that the high well-being of employed individuals diagnosed with type 2 diabetes may be due to their high welfare and quality of life and nutrition.

According to the findings obtained from the study, as the age of individuals diagnosed with type 2 diabetes increases, the mean scores of "positive emotions," "engagement," "relationships,"

"meaning," "accomplishment," and "health" decrease, while the mean scores of "negative emotions" increase (Table 5). Prajapati et al³⁴ stated in their study that as the age of patients diagnosed with type 2 diabetes increases, their well-being and quality of life decrease and that there was a significant relationship between the age of individuals diagnosed with type 2 diabetes, their well-being, and quality of life. In addition, studies in the literature show that as the age of individuals diagnosed with type 2 diabetes increases, their well-being levels and quality of life decrease.^{28,29,35,36} It is possible to imply that the fact that the age of individuals diagnosed with type 2 diabetes increases based on the development of disease-related complications (such as diabetic foot, heart, and eye diseases) may stem from the greater fear of death they feel.

A significant difference was found between the mean scores of the PERMA scale "negative emotions" and "health" domains according to the types of treatment applied to individuals diagnosed with type 2 diabetes (Table 5). The mean scores of the negative emotions domain of individuals treated with oral anti-diabetic agents were lower than those treated with insulin and oral antidiabetic agents, while the mean scores of the health domain of individuals treated with oral antidiabetic agents were higher than those treated with insulin and oral antidiabetic agents (Table 5). In the literature, there are studies showing that patients using insulin have a lower quality of life than patients using only oral drugs.^{37,38} In the study, the low level of well-being of patients who received insulin and oral antidiabetic treatment together may be due to the fact that the use of insulin requires more follow-up and effort, and the individual feels more about lifestyle changes.

A significant difference was found between "positive emotions," "relationships," "meaning," "negative emotions," and "health" domains of well-being according to other health problems related to the disease suffered by individuals diagnosed with type 2 diabetes (Table 5). Individuals who do not have any other health problems related to the disease have higher mean scores of positive emotions, relationships, meaning, and health domains than individuals with other health problems related to the disease, while they have lower mean scores of the "negative emotion" domain (Table 5). Eren and Erdi³⁹ suggest that individuals with chronic diseases have higher levels of well-being than individuals without chronic diseases. In a study on the quality of life of individuals diagnosed with type 2 diabetes, Imayama et al⁴⁰ pointed out that individuals with other health problems related to diabetes have a lower quality of life than those who do not have a health problem other than diabetes and that there is a significant difference between their quality of life according to their health problems related to diabetes. Similarly, Green et al.⁴¹ who studied individuals with type 2 diabetes suffering from chronic diseases and individuals without chronic diseases, specified that the quality of life of individuals with chronic disease type 2 diabetes is lower than that of patients without chronic diseases and that there is a significant difference between their quality of life according to whether they suffer from chronic disease or not. Kumar et al.³⁸ Trikkalinou et al.³³ and Mokhtari et al⁴² found similar results in their study. It is possible to imply that individuals diagnosed with type 2 diabetes have a higher level of well-being than those with chronic diseases, as having chronic diseases related to diabetes negatively affects their life processes with diabetes.

It was found that individuals with type 2 diabetes going for a checkup once a month had higher mean scores of the health domain than those going for a checkup once a week (Table 5). Daya et al⁴³ revealed that as the duration of diabetes increases and patients' diabetes frequency of checkup increases, their quality of life is negatively affected. Redekop et al.³⁶ Koh et al.⁴⁴ Fu et al.⁴⁵ and Amelia et al⁴⁶ found similar results in their studies.

In the study, it was determined that individuals with a diagnosis of type 2 diabetes who do not have a hospitalization history had higher mean scores of accomplishment and health domains than individuals with a hospitalization history (Table 5). In the literature, there are studies showing that individuals diagnosed with type 2 diabetes who do not have a previous hospitalization history have a higher quality of life than those with a hospitalization history.^{34,35} It can be said that the higher level of well-being of individuals diagnosed with type 2 diabetes compared to those without hospitalization history is due to the advanced disease of those with a hospitalization history.

As individuals diagnosed with type 2 diabetes live longer with the diagnosis of type 2 diabetes, the mean scores of "meaning," "accomplishment," and "health" domains of well-being decrease, and the mean scores of "negative emotions" increase (Table 5). Corrêa et al²⁴ and Verma and Dadarwal²³ revealed that as the duration of diagnosis of type 2 diabetes increases, the well-being levels and quality of life of patients with type 2

diabetes decrease, and there is a significant difference between the life experience and well-being and quality of life of patients with type 2 diabetes. In addition, studies in the literature show that as the duration of diabetes increases, the quality of life decreases.^{29,30,45,46} It can be said that the psychological and mental strain of diabetic patients results in the following issues: as individuals diagnosed with type 2 diabetes live longer with the relevant diagnosis, their well-being level decreases, no regression occurs in the disease in parallel with the increase in the duration of the disease, and patients struggle with the negativities brought by the disease as a result of aging.

Individuals diagnosed with type 2 diabetes who adapt to the recommended diet had higher mean scores in the meaning domain than those who rarely adapt, and the mean scores in the accomplishment domain of individuals who always adapt are higher than those who rarely adapt (Table 6). Studies in the literature reveal that individuals who have a regular diet have high well-being levels. Saatci et al¹⁴ suggested that regular dieting in diabetic patients affects the general well-being. In addition, studies in the literature show that regular dieting has a positive effect on the quality of life.^{36,40}

Individuals with type 2 diabetes who always adapt to the recommended activities had generally lower mean scores of relationships and health domains than individuals who sometimes or rarely adapt to the recommended activities, and individuals

Table 6. The Mean Scores of the Sub-Dimensions of the PERMA Scale in Terms of the Diet, Exercise, and Support Experience of the Participants with Type 2 Diabetes

| | PERMA Scale Domains | | | | | | |
|--|----------------------------|-----------------|----------------------------|-------------------------|-------------------------|-----------------------------|-----------------------------|
| | Positive Emotions | Engagement | Relationships | Meaning | Accomplishment | Negative Emotions | Health |
| Life Experiences | X±SD | X±SD | X±SD | X±SD | X±SD | X±SD | X±SD |
| Adaptation to the recommended diet | | | | | | | |
| Always | 7.33 ± 1.75a | 8.61 ± 1.06 | 7.76 ± 1.92a | 8.57 ± 0.62a | 9.23 ± 0.78a | 5.04 ± 2.15a | 7.33 ± 1.21 |
| Often | 8.33 ± 0.71b | 8.30 ± 0.87 | 8.45 ± 0.66b | 8.40 ± 0.78b | 8.73 ± 0.63b | 3.49 ± 1.63b | 7.52 ± 1.36 |
| Sometimes | 8.38 ± 0.88c | 8.50 ± 0.82 | 8.60 ± 0.79c | 8.09 ± 1.01c | 8.58 ± 0.96c | 2.96 ± 1.46c | 7.55 ± 1.61 |
| Rarely | 8.35 ± 0.98d | 8.36 ± 0.73 | 8.31 ± 0.90d | 7.94 ± 1.09d | 8.24 ± 1.10d | 3.07 ± 1.59d | 7.59 ± 1.65 |
| Test and P-value | F=2.84 P=.03 a<b,c,d | F=1.01 P=.38 | F=3.21 P=.02 a<b,c,d | F=2.97 P=.03 b>d | F=5.02 P=.002 a>d | F=4.64 P=.004 a>b,c,d | F=0.073 P=.97 |
| Adaptation to the recommended activities | | | | | | | |
| Always | 7.66 ± 3.29 | 8.00 ± 1.88 | 7.83 ± 2.12a | 7.50 ± 3.53a | 8.00 ± 2.82a | 3.00 ± 4.24 | 5.16 ± 0.23a |
| Often | 8.50 ± 0.61 | 8.49 ± 0.85 | 8.69 ± 0.69b | 8.37 ± 0.63b | 8.64 ± 0.78b | 2.95 ± 1.78 | 8.05 ± 1.22b |
| Sometimes | 8.39 ± 0.89 | 8.53 ± 0.67 | 8.53 ± 0.82c | 8.31 ± 0.66c | 8.68 ± 0.71c | 2.96 ± 1.47 | 7.87 ± 1.23c |
| Rarely | 8.24 ± 0.99 | 8.29 ± 0.85 | 8.28 ± 0.92d | 7.88 ± 1.21d | 8.30 ± 1.16d | 3.39 ± 1.61 | 7.21 ± 1.77d |
| Test and P-value | F=1.20 P=.31 | F=1.91 P=.12 | F=2.94 P=.03 a<b,c,d | F=4.39 P=.005 c>d | F=3.16 P=.02 c>d | F=1.54 P=.20 | F=6.25 P=.000 a<b,c,d |
| Informal support status | | | | | | | |
| Yes | 8.36 ± 0.92 | 8.42 ± 0.81 | 8.46 ± 0.80 | 8.16 ± 0.88 | 8.49 ± 1.01 | 3.12 ± 1.57 | 7.62 ± 1.51 |
| No | 7.63 ± 1.07 | 8.03 ± 0.48 | 7.56 ± 1.85 | 6.70 ± 2.34 | 8.43 ± 0.44 | 4.36 ± 2.12 | 6.10 ± 2.23 |
| Test and P-value | t=2.44 P=.01 | t=1.51 P=.13 | t=3.22 P=.001 | t=4.647 P=.000 | t=0.190 P=.84 | t=-2.41 P=.01 | t=3.05 P=.002 |

Tukey HSD test results are shown using a, b, c, d values.

who sometimes adapt to the activities had higher mean scores of meaning and accomplishment domains than individuals who rarely adapt (Table 6). Krousel-Wood et al⁴⁷ identified that the well-being levels of diabetic patients who exercise regularly are high, and there is a significant difference between their well-being levels. It is known that regular adherence to physical activity programs reduces the development of complications and mortality in patients with diabetes.¹⁴ In the literature, there are studies reporting the positive effect of regular exercise on the quality of life of patients with type 2 diabetes.^{48,49}

Individuals who received informal support in their life experience with type 2 diabetes had higher mean scores of positive emotions, relationships, meaning, and health domains than individuals who did not receive support, and the mean scores of the negative emotions domain for those receiving informal support were lower than those who did not receive support (Table 6). Similarly, Shen,⁵⁰ Peyrot et al.⁵¹ Shayeghian et al.¹ Rotberg et al.⁵² and Muslu et al⁵³ determined that social support positively affects the well-being levels of sick individuals, and there is a significant difference between social support and well-being levels.

Study Limitations

The limitations of this research are that it was conducted in a single center and was carried out only in a quantitative research design.

It has been concluded that individuals diagnosed with type 2 diabetes have a high level of well-being, which varies depending on the place of residence, education level, employment status, types of treatment, other health problems related to the disease, hospitalization history, adaptation to the recommended diet, adaptation to the recommended activities, and to what extent informal support is received.

In light of research results, it is recommended:

- To take into account that well-being levels may vary depending on factors such as age, the place of residence, education level, employment status, duration of living with the disease, other health problems related to the disease, frequency of going to controls, hospitalization history, adaptation to the recommended diet, adaptation to the recommended activities, and to what extent informal support is received during experiences of living with type 2 diabetes;
- To be periodically evaluated by nurses in terms of life experiences with type 2 diabetes and to include strategies of increasing well-being in the patient care.

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