

Original Article

Examination of Health-Promoting Behaviors and Mental Well-Being of Patients with Diabetic Foot Ulcer

Fatma Ersin, PhD

Associate Professor, Harran University, Faculty of Health Sciences, Department of Public Health Nursing, Sanliurfa, Turkey

Fatih Enzin, PhD

Assistance Professor, Harran University, Faculty of Health Sciences, Department of Physical Therapy and Rehabilitation, Sanliurfa, Turkey

Correspondence: Fatma Ersin, Associate Professor, Harran University, Faculty of Health Sciences, Department of Public Health Nursing, Sanliurfa, Turkey e-mail: fatmaersin1@gmail.com

Abstract

Aims: The aim of this study is to determine the health-promoting behaviors and mental well-being of patients with diabetic foot ulcer.

Methods: The study was conducted in the endocrine general internal medicine clinic of a university hospital between January 2022 and July 2022. The sample consisted of 144 patients with type 2 diabetes who suffered from foot ulcer. A Questionnaire, the Type 2 Diabetes and Health Promotion Scale, and the Warwick-Edinburgh Mental Well-Being Scale were used to collect data. Descriptive statistics, Independent Samples T Test, Mann Whitney U test, Kruskal Wallis test and correlation analysis were performed in the data analysis.

Results: In the study, Warwick-Edinburgh Mental Well-Being Scale total mean score of the participants was 45.49 ± 13.48 , and their Type 2 Diabetes and Health Promotion Scale total mean score was 84.87 ± 19.61 . There was a significant difference between the Type 2 Diabetes and Health Promotion Scale mean scores in terms of the participants' gender ($t=2.522$, $p=0.013$), education level (KW=24.150, $p=0.000$), comorbidity ($t=2.166$, $p=0.032$). A significant difference was found between the Warwick-Edinburgh Mental Well-Being Scale mean scores in terms of the participants' gender ($t=3.064$, $p=0.003$), marital status ($U=636.500$, $p=0.014$), education level (KW=17.252, $p=0.004$), general health perception status (KW=15.075, $p=0.001$), and comorbidity ($t=3.065$, $p=0.003$).

Conclusions: It is recommended that interventional studies be conducted to improve the participants' Type 2 Diabetes and Health Promotion and mental well-being.

Keywords: Type 2 diabetes, foot ulcer, health-promoting behaviors, mental well-being

Background

Diabetes is a lifelong chronic disease that directly concerns individuals of all ages and their relatives, imposes a heavy economic burden due to irreversible and chronic damages, affects self-care activities, and shortens life expectancy (Yılmaz, 2002). Health-promoting behaviors are important in the treatment and prevention of this chronic disease (Pender et al., 1992). Health promotion is not just related to disease prevention. Health promotion describes the behaviors exhibited by the individual for a

long and high-quality life, as well (Pender, 1996). These behaviors are effective in protecting and promoting the health of patients with diabetes, particularly in preventing possible complications of the disease (American Diabetes Association, 2016). Diabetic foot syndrome is a serious complication of diabetes mellitus (DM) and develops as a result of neuropathy and peripheral vascular diseases (Bahar et al., 2006). Individuals must adhere to a suitable diet, do physical activities, adhere to and administer correctly medication and follow up themselves in order to prevent diabetes

complications that affect their life (American Diabetes Association, 2016). In addition, patients with type 2 diabetes mellitus (T2DM) commonly suffer from psychological distress and negative affective disorders (Gonzalez et al., 2007). Patients with T2DM are scared of having their feet amputated due to foot ulcers. As the disease progresses, they endeavor to maintain their well-being (Pearson, 2014). For this reason, given that the mental health of patients with diabetic foot ulcers is negatively affected, it should be kept in mind that health-promoting behaviors are effective in both promoting mental health and healing the wound. Moreover, patients with T2DM can prevent from having complications associated with diabetes, enhance their quality of life and prolong their life expectancy by adopting healthy lifestyle behaviors (Kavuran & Yildiz, 2020).

Aims

When considering that there is an increase in the number of diabetic patients both in the world and in Turkey, it is important to determine the health-promoting behaviors and mental well-being of patients with T2DM (Kavuran & Yildiz, 2020). There is no study in the literature investigating the health-promoting behaviors and mental well-being of patients with diabetic foot ulcer. Therefore, this study was conducted to examine the health-promoting behaviors and mental well-being of patients with diabetic foot ulcer.

Material and Methods: This descriptive study was conducted between January 2022 and July 2022 in the Endocrine General Internal Medicine Clinic. The sample consisted of 144 patients with type 2 diabetes who were admitted in the Endocrine General Internal Medicine Clinic between these dates and met the inclusion criteria. The inclusion criteria were determined as follows; suffering from diabetic foot ulcer, being diagnosed with type 2 diabetes at least 6 months ago, being over the age of 18, being voluntary to participate in the study, being open to communication and cooperation, being able to communicate verbally, and having no mental health problem. The data were collected by face-to-face interview method within the scope of the pandemic precautions. The data were collected using a questionnaire prepared by the researchers by

reviewing the literature, the Type 2 Diabetes and Health Promotion Scale (T2DHPS), and the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS).

Questionnaire: The questionnaire consists of 11 questions prepared by the researchers to diagnose the patient by review the literature (Kavuran & Yildiz, 2020).

Type 2 Diabetes and Health Promotion Scale (T2DHPS): Developed by Chen et al., (2013), T2DHPS is an assessment tool used to evaluate the determinants of diabetic control in diabetic patients (Chen et al., 2013). The Turkish validity and reliability study of the scale was conducted by Yildiz and Kavuran. This scale assesses the healthy or unhealthy lifestyles of patients with type 2 diabetes in primary health care settings. The scale consists of 28 items and 6 subscales; physical activity (1-7), risk reduction (8-14), stress management (15-19), enjoy life (20-22), health responsibility (23-25), and healthy diet (26-28). The scale is anchored with a 5-point Likert type scale as never: 1, rarely: 2, sometimes: 3, usually: 4, and always: 5 points. The Cronbach's alpha reliability coefficient of the scale is 0.89 for the overall scale and ranges between 0.63 - 0.86 for six subscales. While higher scores indicate that an individual has a healthy lifestyle for health promotion, lower scores signify that the individual has an unhealthy lifestyle (Yildiz & Kavuran, 2018).

Warwick-Edinburgh Mental Well-Being Scale (WEMWBS): The scale was developed by Tennant et al., (2007) to assess the mental well-being levels of individuals living in England (Tennant et al., 2007). Its Turkish validity and reliability scale was conducted by Keldal (2015). WEMWBS consists of 14 items and is about the positive mental health of individuals, including psychological well-being and subjective well-being. The scale is anchored with a 5-point Likert type scale. The lowest and highest scores of the scale are 14 and 70 points, respectively. Items of the scale is scored as 1 = strongly disagree, 2 = disagree, 3 = somewhat agree, 4 = agree, 5 = strongly agree. All items of the scale are positive. The reliability studies of the scale were carried out with individuals aged 16 and over. The Cronbach's Alpha coefficient of the scale was found .89 (Keldal, 2015).

While the dependent variables of the study were the mean scores of T2DHPS and

WEMWBS, the independent variables were age, gender, education level, marital status, number of children, social security, employment status, health perception, duration of diagnosis, status of receiving training on diabetes, and comorbidity other than diabetes.

While evaluating the findings obtained in the study, Statistical Package for Social Sciences 20.0 program was used for statistical analysis. Descriptive statistics, independent samples t test, Mann Whitney U test, Kruskal Wallis test and Pearson' correlation analysis was performed in the data analysis.

Permission from the Chief Physician of a university hospital, approval from a university hospital Clinical Trials Ethics Committee (decision no. 08 of the session numbered 21 and dated 29.11. 2021) and consent from the participants were obtained.

Ethical Approval: This study was conducted in accordance with the Declaration of Helsinki and ethical principles. Permission from the Chief Physician of a university hospital, approval from a university hospital Clinical Trials Ethics Committee (decision no. 08 of the session numbered 21 and dated 29.11. 2021) and consent from the participants were obtained.

Results

It was found that 50.7% of the participants were female, 38.9% were illiterate, 88.9% were married, and 70.8% were unemployed (Table 1).

It was determined that 56.9% of the patients perceived their general health as moderate, 64.6% had a comorbidity other than diabetes, and 54.2% were living with diabetes for 11-

20 years. 50% of the participants had suffered from foot ulcer before and 12.5% of them had more than 2 active ulcers. Moreover, 16% of the patients stated that they underwent amputation and 61.8% of them stated that they received training on diabetes (Table 2). In addition, it was stated in the study that the ulcers of 20.1% of individuals having history of foot ulcer healed within 40-90 days.

The participants' T2DHPS mean score was 84.87 ± 19.61 and their WEMWBS total mean score was 45.49 ± 13.48 .

There was no significant difference between the T2DHPS mean scores according to the participants' gender ($t=2.522$, $p=0.013$), educational status ($KW=24.150$, $p=0.000$) and employment status ($t=-2.340$, $p=0.021$). A significant difference was found between WEMWBS mean scores of the patients in terms of gender ($t=3.064$, $p=0.003$), educational status ($KW=17.252$, $p=0.004$), marital status ($U=636.500$, $p=0.014$), and employment status ($t=-3.926$, $p=0.000$) (Table 3).

A significant difference was found between the participants' T2DHPS mean scores in terms of the comorbidity ($t=-2.166$, $p=0.032$) and the status of receiving training on your disease ($t=-4.507$, $p=0.000$). A significant difference was found between the WEMWBS mean scores in terms of the general health perception status of the patients ($KW=15.075$, $p=0.001$) and the presence of comorbidity ($t=3.065$, $p=0.003$) (Table 4).

A moderately significant positive correlation was found between the participants' T2DHPS and WEMWBS mean scores ($r=.590$, $p=0.000$) (Table 5).

Table 1. Distribution of Participants' Sociodemographic and Disease-Related Characteristics

Variables	Number	Percentage (%)
Gender		
Female	73	50.7
Male	71	49.3
Educational Background		
Illiterate	56	38.9
Literate	11	7.6

Primary school	47	32.6
Secondary school	15	10.4
High school and above	15	10.5
Marital status		
Married	128	88.9
Single	16	11.1
Employment Status		
Employed	42	29.2
Unemployed	102	70.8
Status of Perceiving Health		
Good	37	25.7
Moderate	82	56.9
Poor	25	17.4
Presence of Comorbidity		
Yes	93	64.6
No	51	35.4
Duration of the Diagnosis		
1-5 years	7	4.9
6-10 years	37	25.7
11-20 years	78	54.2
21 years and more	22	15.3
History of Foot Ulcer		
Yes	72	50.0
No	72	50.0
Presence of Active Ulcer		
1	90	62.5
2	36	25.0
3 and more	18	12.5
Presence of amputation		
Yes	23	16.0
No	121	84.0
Status of Receiving Training on Your Disease		
Yes	89	61.8
No	55	38.2

Table 2. Distribution of the Participants' Disease-Related Characteristics

Variables	Number	Percentage (%)
Status of Perceiving Health		
Good	37	25.7
Moderate	82	56.9
Poor	25	17.4
Presence of Comorbidity		
Yes	93	64.6
No	51	35.4
Duration of the Diagnosis		
1-5 years	7	4.9
6-10 years	37	25.7
11-20 years	78	54.2
21 years and more	22	15.3
History of Foot Ulcer		
Yes	72	50.0
No	72	50.0
Presence of Active Ulcer		
1	90	62.5
2	36	25.0
3 and more	18	12.5
Presence of amputation		
Yes	23	16.0
No	121	84.0
Status of Receiving Training on Your Disease		
Yes	89	61.8
No	55	38.2

Table 3. Comparison of the Mean Scores of the Type 2 Diabetes and Health Promotion Scale and the Warwick-Edinburgh Mental Well-Being Scale according to the Demographic Characteristics of the Participants

Variables	Type 2 Diabetes and Health Promotion Scale	Warwick-Edinburgh Mental Well-Being Scale
	$\bar{X} \pm SD$	$\bar{X} \pm SD$
Gender		
Female	80.88 \pm 18.95	42.19 \pm 11.89
Male	88.97 \pm 19.55	48.89 \pm 14.24
Statistical Value	t=2.522, p=0.013	t=3.064, p=0.003

Educational Background		
Illiterate	77.26 ± 17.73	43.32 ± 11.33
Literate	88.27 ± 7.14	41.27 ± 13.29
Primary school	87.30 ± 18.87	47.28 ± 13.78
Secondary school	83.07 ± 19.91	40.27 ± 17.20
High school	100.75 ± 22.42	56.63 ± 5.39
University	109.71 ± 16.87	56.00 ± 14.73
Statistical Value	$X^{2KW}=24.150, p=0.000$	$X^{2KW}=17.252, p=0.004$
Marital status		
Single	81.19 ± 18.15	37.25 ± 15.10
Married	85.33 ± 19.80	46.52 ± 12.97
Statistical Value	$U=878.500, p=0.355$	$U=636.500, p=0.014$
Employment status		
Yes	90.74 ± 20.68	52.05 ± 13.12
No	82.45 ± 18.73	12.74 ± 1.26
Statistical Value	$t=-2.340, p=0.021$	$t=-3.926, p=0.000$

Table 4. Comparison of the Participants' T2DHPS and WEMWBS Mean Scores in terms of Some Disease-Related Characteristics

Variables	Type 2 Diabetes and Health Promotion Scale	Warwick-Edinburgh Mental Well-Being Scale
	$\bar{X} \pm SD$	$\bar{X} \pm SD$
Status of Perceiving Health		
Good	90.73 ± 17.86	51.08 ± 11.49
Moderate	83.63 ± 18.85	45.56 ± 13.07
Poor	80.24 ± 23.10	37.00 ± 13.61
Statistical Value	$X^{2KW}=4.072, p=0.131$	$X^{2KW}=15.075, p=0.001$
Presence of Comorbidity		
Yes	82.28 ± 19.79	43.17 ± 11.10
No	89.59 ± 18.54	49.73 ± 14.15
Statistical Value	$t=-2.166, p=0.032$	$t=3.065, p=0.003$
Duration of Diagnosis		
1-5 years	75.86 ± 12.96	42.00 ± 10.11
6-10 years	88.35 ± 16.78	49.62 ± 9.95
11-20 years	85.62 ± 20.88	45.54 ± 14.45
21 years and more	79.23 ± 20.15	39.50 ± 14.22
Statistical Value	$X^{2KW}=4.473, p=0.215$	$X^{2KW}=7.642, p=0.054$

History of Foot Ulcer		
Yes	82.38 ± 18.97	45.79 ± 13.53
No	87.36 ± 20.05	45.19 ± 13.52
Statistical Value	t= 1.532, p=0.128	t= .265, p=0.792
Presence of Active Ulcer		
1	84.12 ± 19.47	45.16 ± 14.02
2	86.36 ± 20.45	45.61 ± 13.32
3 and more	85.61 ± 19.49	46.94 ± 11.50
Statistical Value	X ² _{KW} =.535, p=0.765	X ² _{KW} =.162, p=0.922
Presence of Amputation		
Yes	82.17 ± 20.59	46.12 ± 12.95
No	85.38 ± 19.46	42.22 ± 13.54
Statistical Value	U=1317.000, p=0.684	U=1160.000, p=0.207
Status of Receiving Training on Your Disease		
Yes	90.30 ± 20.05	46.43 ± 13.89
No	76.07 ± 15.35	43.98 ± 12.77
Statistical Value	t= -4.507, p=0.000	t= -1.057, p=0.292

Table 5. Correlation of the Participants' Type 2 Diabetes and Health Promotion Scale and Warwick-Edinburgh Mental Well-Being Scale Mean Scores

Type 2 Diabetes and Health Promotion Scale	Warwick-Edinburgh Mental Well-Being Scale	
	r	p
	.590	0.000

Discussion

In this study, it can be asserted that T2DHPS mean score of the participants was low (84.87±19.61). Since diabetes is a lifelong chronic disease, the individual has to cope with many factors in order to adapt to the disease. It is known that healthy lifestyle behaviors are effective in coping with these factors and in the management of adaptation to diabetes (Calik & Kapucu, 2017). For this reason, the fact that the participants' T2DHPS mean score was not high in this study may cause them to fall short of coping with diabetes and its complications. This situation can affect the mental well-being of individuals. In this study, it was observed that WEMWBS total mean score of the participants was not at a good level (45.49±13.48). The coexistence of mental

disorders and physical diseases and the role of each in maintaining the other are emphasized in the literature (Ahmad et al., 2018; Roy & Lloyd, 2012). The Diabetes Attitudes, Wants, and Needs (DAWN) program, the most comprehensive global psychosocial study on diabetes care, reported that most of patients with Type 1 or Type 2 diabetes experienced psychological problems (67.9% and 65.6%, respectively) (Skovlund & Peyrot, 2005). It is possible to encounter conditions such as limitation of movement, sensory impairment, deterioration of general health status (Khunkaew et al., 2019) impaired mental health (depression, anxiety, etc.) in patients with diabetic foot ulcer (DFU) (Hoban et al., 2015; Khunkaew et al., 2019; Neeru et al., 2015). Especially patients with DFU experience problems such as depression and

anxiety that adversely affect their mental health (Ahmad et al., 2018; Khunkaew et al., 2019; Roy & Lloyd, 2012; Skovlund & Peyrot, 2005). In addition, people living with diabetes and DFU often are scared of having their feet amputated (Singh & Armstrong, 2005). In this study, 16% of the patients were amputated at different levels. The fact that patients with T2DM suffered from foot ulcers and were amputated at different levels may have adversely affected their mental well-being.

In the study, it was determined that the T2DHPS mean scores of the patients were affected by the education level, gender and employment status. In the literature, similar results were obtained in the study by Kavuran and Yildiz, and it was stated that the T2DHPS mean scores were affected by education level and gender (Kavuran & Yildiz, 2020). In another study, it was stated that the health-promoting behaviors of patients with T2DM were affected by their educational status (Mirsamiyazdi et al., 2021). In addition, in this study, it was determined that the gender, education level, marital status, and employment status of the individuals affected their WEMWBS mean scores. There is no study in the literature showing the effect of demographic characteristics on mental well-being in patients with T2DM. The results obtained from this study suggested that education level increased individuals' awareness of health-promoting behaviors and mental well-being, and the social circle of employed ones may have a positive effect on their health-promoting behaviors and mental well-being. Moreover, the better mental well-being of married individuals may indicate that they receive support from family members and the social circle provided by marriage. Furthermore, the increased responsibilities of women due to the cultural characteristics of the place of residence may have negatively affected both their health-promoting behaviors and their mental well-being.

In the study, it is an expected result that patients with T2DM perceived their health as poor and having a comorbidity affected their mental well-being. The person's perception of health is especially related to psychological well-being (Kaleta et al., 2009). In the literature, it has been stated that the perception of good health is associated with

psychological well-being (Kaleta et al., 2009; Ryff, 2014). In addition, as expected, T2DHPS mean score was found to be high in those who had a comorbidity and obtained information about the disease. The training given about the disease in the study may have increased the awareness of individuals about health-promoting behaviors. In this study, it was observed that as T2DHPS mean score increased, the WEMWBS mean score also increased. Although the relationship between positive psychological structures and health outcomes is not fully understood, it has been stated that the beneficial effects of positive psychological states are most likely mediated by health behaviors (Celano et al., 2013). In this study, it is an expected result that there was a positive and significant correlation between the WEMWBS mean score and the T2DHPS mean score.

Conclusions: It was observed that the health promotion levels and mental well-being of patients with type 2 diabetes were not high. It is recommended to plan interventional programs that will improve the health-promoting behaviors and mental well-being of individuals with type 2 diabetes and ensure their continuity. In addition, all individuals with diabetes should be regularly screened for the symptoms of common psychiatric disorders as well as the complications of diabetes. Moreover, considering that there is a significant positive correlation between the health-promoting behaviors and mental well-being of patients with Type 2 diabetes, positive psychology (PP) interventions that will positively improve the mental well-being of patients with diabetes, and exercises designed to encourage optimism, positive impact and flexibility (e.g. using personal strengths) can be used. It is stated in the literature that these interventions increase the well-being of individuals (Boiler

References

- Ahmad A, Abujbaraa M, Jaddouc H, Younesd NA, & Ajlounia K. (2018). Anxiety and depression among adult patients with diabetic foot: prevalence and associated factors. *J Clin Med Res.* 10(5):411-418. doi:10.14740/jocmr3352w
- American Diabetes Association (ADA). Strategies for improving care. *Diabetes Care* (2016)., 39: 6-12. <https://doi.org/10.2337/dc16-S004>

- Bahar A, Sertbaş G, & Sonmez A. (2006). Determination of the level of depression and anxiety of the patients with diabetes mellitus. *Anatolian Journal of Psychiatry* 7:18-26
- Bolier L, Haverman M, Westerhof GJ, Riper H, Smit F, & Bohlmeijer E. (2013). Positive psychology interventions: a meta-analysis of randomized controlled studies. *BioMed Central Public Health*. 2013; 13:119. <https://doi.org/10.1186/1471-2458-13-119>
- Calik A, & Kapucu S. (2017). Developing healthy life style behaviors in diabetic patients: Pender's Health Promotion Model. *Journal of Hacettepe University Faculty of Nursing* 4(2): 62-75.
- Celano CM, Beale EE, Moore SV, Wexler DJ, & Huffman JC. (2013). Positive psychological characteristics in diabetes: a review. *Curr Diab Rep*. 13(6):917-929. <https://doi.org/10.1007/s11892-013-0430-8>
- Gonzalez JS, Safren SA, Cagliero E, Wexler DJ, Delahanty L, Wittenberg E, Blais MA, Meigs JB, Grant RW. (2007). Depression, self-care, and medication adherence in type 2 diabetes: relationships across the full range of symptom severity. *Diabetes Care* 30(9):2222-2227. <https://doi.org/10.2337/dc07-0158>
- Kaletka D, Polńska K, Dzionkowska-Zaborszczyk E, Hanke W, (2009). Drygas W. Factors influencing self-perception of health status. *Cent Eur J Public Health*. 17(3):122-7. <https://doi.org/10.21101/cejph.b0017>
- Kavuran E, & Yildiz E. (2020). Determine the health-promoting lifestyle in patients with type 2 diabetes. *Health and Society* 30(2): 64-69.
- Pender, NJ. (1996). *Health Promotion in Nursing Practice*. 3rd ed. Connecticut, USA: Appleton & Lange Stanford.
- Kavuran E, & Yildiz E. (2020). Determine the health-promoting lifestyle in patients with type 2 diabetes. *Health and Society* 30(2): 64-69.
- Keldal G. (2015). Turkish Version of the Warwick-Edinburgh Mental Well-Being Scale: A validity and reliability study. *The Journal of Happiness & Well-Being* 3(1): 103-115
- Khunkaew S, Fernandez R, & Sim J. (2019). Health-related quality of life among adults living with diabetic foot ulcers: a meta-analysis. *Qual Life Res*. 28:1413-1427. <https://doi.org/10.1007/s11136-018-2082-2>
- Mirsamiyazdi N, Jafari Pour F, Taqvaeinasab H, Masoudiyekta L, Amiri R, et al. (2021). The relationship between health literacy and health promoting behaviors in patients with type2 diabetes. *Journal of Health Literacy* 6(3):24-31. doi: 10.22038/jhl.2021.59721.1180
- Neeru B, Gagandeep K, Pal AJ, Bajwa SJS, Harbandna S, et al. (2015). Psychosocial, Psychiatric, and Clinical Implications of Diabetic Foot Ulceration: A Prospective Analysis. *Journal of Social Health and Diabetes* 3(2): 89-93.
- Pearson S, Nash T, & Ireland V. (2014). Depression symptoms in people with diabetes attending outpatient podiatry clinics for the treatment of foot ulcers. *Journal of Foot and Ankle Research* 7(47):108. <https://doi.org/10.1186/s13047-014-0047-4>
- Roy T, & Lloyd CE. (2012). Epidemiology of depression and diabetes: a systematic review. *J Affect Disord*. 142:S8-21. doi:10.1016/S0165-0327(12)70004-6
- Ryff CD. (2014). Psychological well-being revisited: advances in the science and practice of eudaimonia. *Psychother Psychosom* 83(1):10-28. doi: 10.1159/000353263
- Singh N, Armstrong DG, & Lipsky BA. (2005). Preventing foot ulcers in patients with diabetes. *Journal of the American Medical Association* 293(2):217-228. <https://doi.org/10.1001/jama.293.2.217>
- Skovlund SE, & Peyrot M. (2005). The diabetes attitudes, wishes and needs (DAWN) program: a new approach to improving outcomes of diabetes care. *Diabetes Spectr*. 18(3):136 – 142. <https://doi.org/10.2337/diaspect.18.3.136>
- Tennant R, Hiller L, Fishwick R, Platt S, Joseph S, et al. (2007). The warwick-edinburgh mental well-being scale (WEMWBS): development and UK validation. *Health and Quality of Life Outcomes*. *BioMed Central* 5(1):50-63. <https://doi.org/10.1186/1477-7525-5-63>
- Yildiz E., & Kavuran E. (2018). The validity and reliability of the type 2 diabetes and health promotion scale Turkish version: a methodological study. *Scandinavian Journal of Caring Sciences* 32(1):417-421. <https://doi.org/10.1111/scs.12483>