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Research Article

Determination of Eating Attitude and Life Satisfaction in Patients with Type 2 Diabetes Mellitus: A Cross-Sectional Study

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Abstract

Objective: Type 2 diabetes mellitus is a severe, chronic metabolic disease. Since mental or behavioral problems accompanying physical diseases negatively affect the patient's adaptation, well-being, mortality and morbidity, it is essential to evaluate these problems. The aim of the study was to determine eating attitudes and life satisfaction in patients with type 2 diabetes mellitus.

Methods: This cross-sectional study consisted of 130 patients who were hospitalized at the internal medicine and wound care services in Sakarya Training and Research Hospital and who met the inclusion and exclusion criteria. The data were collected by face-to-face interviews using the Patient Descriptive Questionnaire, Eating Attitude Test-40 and Satisfaction with Life Scale.

Results: The prevalence of probable eating disorder among the patients was 46.9% (n¬=61) and their perception of life satisfaction was above moderate. Additionally, it was determined that there was a significant difference between the mean of the Satisfaction with Life Scale score according to income and perception of health status, and between the mean of the Satisfaction with Life Scale score and possible eating disorder according to the place of residence (p<0.001).

Conclusion: In this study, approximately half of the patients with type 2 diabetes mellitus are at risk for eating disorders and their perception of life satisfaction was above moderate. Healthcare professionals must provide individual-centered.

Keywords: Type 2 Diabetes Mellitus, Life Satisfaction, Eating Attitude, Holistic Health

1. Introduction

Diabetes Mellitus (DM) is one of the most rapidly increasing, severe and costly public health concerns of the current century; its prevalence among adults worldwide has growen more than three-fold in the last 20 years (1, 2). In the last edition of the 10 th Diabetes Atlas, the International Diabetes Federation (IDF) reported a likelihood of the presence of 537 million adult patients with diabetes by the year 2021, 80% of whom were likely to live in moderate- and low-income countries; this number was expected to reach 783 million by 2045 (3). The prevalence of diabetes in Türkiye is 11.1%among adults aged 20-79 years, making it the country with the highest rate of diabetes in Europe (4).

Chronic medical conditions like diabetes are likely to affect many aspects of the individual's quality of life. Diabetes patients are often at risk of reduced satisfaction with life, poor mental health and increased prevalence of other physical illnesses (5). Life satisfaction is one of the leading indicators of well-being and is essential in efficiently monitoring health status (6). Eating disorders (ED) are commonly seen in efficiently patients with high-risk medical complication including impaired metabolic control and are thought to significantly affect the physical and mental health of individuals with diabetes, resulting in increased mortality. Eating disorders have been studied less in type 2 diabetes than in type 1 diabetes

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(7). Therefore, an assessment of eating disorders among patients with diabetes is of clinical importance (6). Treatment of ED and other mental illnesses can potentially heal physical health, well-being, and functionality in general (7). Moreover, it is essential to understand a patient holistically while evaluating behavioral-emotional reactions accompanying an illness, although variations may exist according to the patient and the illness (8). In this sense, a patient-centric approach with integrated care can assist patients in developing efficient health behavior and sustain it (9). While a number of studies have reported ED, eating attitude and life satisfaction in patients with T_2DM, there are no studies evaluating probable ED along with life satisfaction in these patients.

The current study aimed to evaluate the risk factors that may be associated with eating attitude and life satisfaction in T_2DM patients.

2. Methods

2.1. Study Design and participants

The research was conducted in a cross-sectional design. The population of the research consisted of 188 patients diagnosed with T_2DM who were hospitalized in the internal medicine and wound care services of the Sakarya Training and Research Hospital between December 2018 and May 2019. No sample selection was made in the study. The study sample consisted of 130 T_2DM patients (n=100 in the internal medicine ward; n=30 in the wound care ward) who met the following inclusion and exclusion criteria. A post hoc power analysis to determine the adequacy of the sample size indicated that the confidence interval was 95%, influence quantity was 0.500 and power was 0.80 (significance level of 0.05). These values suggest that the sample size was adequate (10).

The inclusion criteria were 18 years or older and a diagnosis of T_2DM, without any limits for diagnosis time. The exclusion criteria included physical (hearing, sight, speaking impairments), neurological or mental handicaps at a level that can affect the implementation of the forms.

2.2. Data collection tools

2.2.1. Patient descriptive questionnaire

The patient descriptive questionnaire consisted of 13 questions regarding the socio-demographic characteristics of the patients and their illnesses such as age, sex, economic status, education level, and duration of diabetes diagnosis.

2.2.2. Eating Attitude Test-40 (EAT-40)

The test was developed by Garner and Garfinkel in 1979 to evaluate the eating behaviors and attitudes of patients with anorexia nervosa as well as possible disorders in eating behaviors among normal individuals (11). The validity and reliability studies for the Turkish population was conducted by Erol and Savaşır in 1989 (12). The total score of EAT-40 ranges from 0 to 120, and the minimum score indicating an eating disorder is 30 (11). The Cronbach's alpha value of the scale was reported as 0.70 [13]; and was found to be 0.77 in the current study.

2.2.3. Satisfaction with Life Scale (SWLS)

This scale was developed by Diener et al. (14) to determine an individual's satisfaction from his life and was adapted into Turkish by Köker (15). The scale consists of five Likert-style items with 7 grades (1: strongly disagree, 7: strongly agree). The lowest score of the scale is 5, while the highest score is 35. A high score is accepted as an indicator of high life satisfaction. Cronbach's alpha coefficient was reported as 0.85 for the overall scale (15) and was determined to be 0.85 in the current study.

2.2.4. Body Mass Index (BMI)

The BMI was calculated with the formula weight (kg)/ height (m^2). Based on the classification recommended by the World Health Organization, individuals with a BMI under 18.5 were classified as low weight, 18.5-24.9 as normal, 25-29.9 as overweight, and 30 and over as obese (16).

The heights and weights of the patients were also measured.

Measurement of height: The patients were made to stand up right on a smooth surface with their heads, shoulders, hips and heels touching a smooth wall. The measurements were carried out with a tape measure and recorded in centimeters (cm).

Measurement of weight: The patients were asked to take off excess clothing and the weight was measured on bare feet using a standard weighing machine on hard ground. The weight was recorded in kilograms (kg).

2.3. Data collection

The data were collected by the first author from patients hospitalized in the internal medicine and wound care services at the Ministry of Health-Sakarya University Training and Research Hospital by face-to-face interview in 20 to 30 minutes.

2.4. Statistical analysis

The normality distribution of the data was carried out according to Kurtosis and Skewness coefficients. In the analysis of the data, numbers, percentages, minimum and maximum values as well as means and standard deviations were calculated when the data showed a normal distribution. Parametric tests (t test and Variance analysis) were determined since the data were compatible with normal distribution. Bonferonni and Tamhane T2 advanced analysis was carried out, to determine the source of a difference. The relationship between categorical variables was determined with the Chi-square test. The level of significance was regarded as $p<0.05$. The data were analyzed using SPSS, edition 23.0.

2.5. Ethical approval

Ethical approval (01.11.2018/09/07) was obtained from the University Clinical Research Ethics Committee. The principles of the Helsinki Declaration were considered while carrying out this research.

3. Results

Individual and disease-related descriptive characteristics of the patients are shown in Table 1.

Table 1. Distribution of Descriptive Characteristics of T_2DM Patients (n=130)

Descriptive Characteristics		
	n	**%**
Sex		
Female	63	48.5
Male	67	51.5
Age		
38-50	14	10.8
51-63	33	25.4
64 and over	83	63.8
Marital status		
Married	89	68.5
Single	41	31.5
Educational status		
Uneducated*	33	25.38
Educated	97	74.62
Employment status		
Employed	31	23.8
Unemployed	99	76.2

Perception of income		
Poor	14	10.7
Moderate	99	76.2
Good	17	13.1
Place of residence		
Village	41	31.5
District	61	46.9
City	28	21.6
Living with		
Alone	8	6.2
Family	79	60.7
Children	43	33.1
Duration of diabetes diagnosis (year)		
10 years and below	54	41.5
Over 10 years	76	58.5
Additional disease		
Yes	99	76.2
No	31	23.8
Type of treatment		
Oral	15	11.5
Insulin	88	67.7
Oral+insulin	27	20.8
Hobbies		
Yes	122	93.8
No	8	6.2
Perception of health status**		
Poor	64	49.3
Good	66	50.7
BMI		
Normal (18-24.9)	32	24.6
Overweight (25-29.9)	54	41.5
Obese (30 and over)	44	33.9

*Illiterate and literate; **The answer moderate was not given.

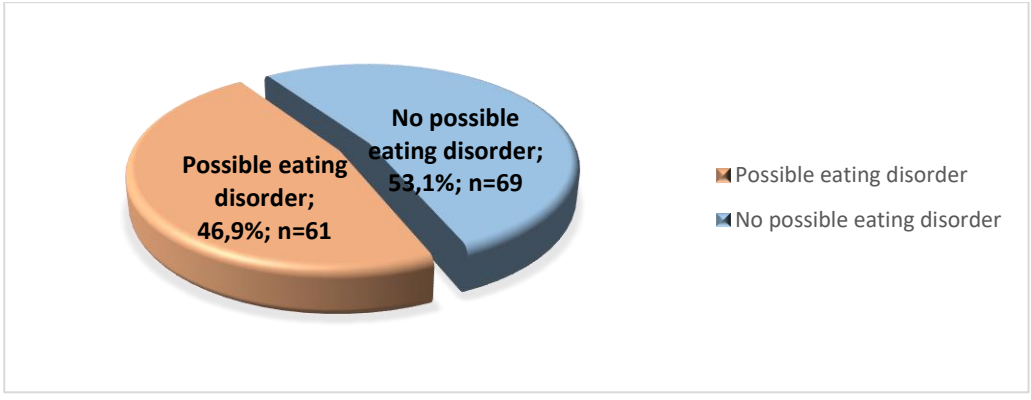
The mean SWLS score of the patients was 24.76±5.74 while the EAT-40 score was 30.14±6.29 (Table 2).

Table 2. Distribution of Mean Scores of SWLS And EAT-40 of T_2DM Patients

Scales	Range	Minimum and Maximum scores were taken	Mean ± SD
SWLS	5-35	7-35	24.76±5.74
EAT-40	0-120	20-53	30.14±6.29

SWLS: Satisfaction with Life Scale, EAT-40: Eating Attitude Test-40, SD: Standard Deviation

The prevalence of probable ED among the patients (EAT-40 score ≥30) was determined as 46.9% (n=61) (Graphic 1).



Graphic 1. The Prevalence of Probable Eating Disorders of Patients

A significant relationship was identified between probable ED (EAT-40≥30) and the location of their place of residence (village versus city) (p<0.05). However, no statistically significant relationship was found between the incidence of probable ED (EAT-40≥30) and gender, age, marital status, education, employment, income status, duration of diabetes diagnosis, presence of additional disease, type of treatment, health status, BMI and presence of hobbies (p>0.05) (Table 3).

Table 3. Comparison of EAT-40≥30 Conditions According to Descriptive Characteristics of T2DM Patients

Descriptive Characteristics	EAT-40<30		EAT-40≥30		Test and significance
	n	**%**	**n**	**%**	
Sex					
Female	33	47.8	30	49.2	χ^2=0.024
Male	36	52.2	31	50.8	p=0.877
Age					
38-50	10	14.5	4	6.6	χ^2=2.663
51-63	15	21.7	18	29.5	p=0.264
64 and over	44	63.8	39	63.9	
Marital status					
Single	23	33.3	18	29.5	χ^2=0.219
Married	46	66.7	43	70.5	p=0.639
Educational status					
Uneducated	13	18.8	20	32.8	χ^2=3.325
Educated	56	81.2	41	67.2	p=0.068
Employment status					
Employed	14	20.3	17	27.9	χ^2=1.024
Unemployed	55	79.7	44	72.1	p=0.312
Perception of income					
Poor	9	13.0	5	8.2	χ^2=0.966
Moderate	52	75.4	47	77.0	p=0.617
Good	8	11.6	9	14.8	
Place of residence					
Village	19	27.5	22	36.1	**χ^2=7.961**
District	40	58.0	21	34.4	**p=0.019***
City	10	14.5	18	29.5	
Duration of diabetes diagnosis (year)					
10 years and below	30	43.5	24	39.3	χ^2=0.228
Over 10 years	39	56.5	37	60.7	p=0.633
Additional disease					
Yes	48	69.6	51	83.6	χ^2=3.515
No	21	30.4	10	16.4	p=0.061
Type of treatment					
Oral	9	13.0	6	9.8	χ^2=2.178
Insulin	49	71.1	39	63.9	p=0.337
Oral+insulin	11	15.9	16	26.3	
Perception of health status					
Poor/Very poor	38	55.1	26	42.6	χ^2=2.008
Good/Very good	31	44.9	35	57.4	p=0.157
BMI					
Normal (18-24.9)	19	27.5	13	21.3	χ^2=2.646
Overweight (25-29.9)	31	44.9	23	37.7	p=0.266
Obese (30 and over)	19	27.6	25	41.0	
Hobbies					
Yes	62	89.9	60	98.4	χ^2=4.056
No	7	10.1	1	1.6	p=0.066

EAT-40: Eating Attitude Test-40, χ^2: Chi-square test, *p<0.05.

It was determined that there was a significant difference between the SWLS mean score according to the perception of income (p<0.001). Further statistical analysis (Bonferonni posthoc) suggested that individuals with high- or moderate-income level had a higher mean SWLS score than those with low level income. A significant difference between the mean SWLS score and the place of residence was also identified. A Bonferonni posthoc analysis indicated that individuals living in cities had a higher mean SWLS score than those living in villages. Additionally, individuals with a better health status had a significantly higher mean SWLS score than patients with poor health status (p<0.001) (Table 4).

Table 4. Comparison of Mean SWLS Scores According to Descriptive Characteristics of T_2DM Patients

Descriptive characteristics	SWLS		Test and significance
	n	Mean±SD	
Sex			
Female	63	24.37±5.59	t=-0.762
Male	67	25.13±5.89	p=0.447
Age			
38-50	14	23.79±7.44	F=0.247
51-63	33	24.70±5.52	p=0.782
64 and over	83	24.95±5.56	
Marital status			
Single	41	24.49±6.55	t=-0.368
Married	89	24.89±5.36	p=0.714
Educational status			
Uneducated	33	24.52±5.5	t=-0.284
Educated	97	24.85±5.85	p=0.777
Employment status			
Employed	31	24.87±6.64	t=0.121
Unemployed	99	24.73±5.47	p=0.904
Perception of income			
Poor	14	18±5.79	**F=14.269**
Moderate	99	25.27±5.26	**p<0.001**
Good	17	27.35±4.5	
Place of residence			
Village	41	23.05±6.16	**F=3.296**
District	61	25.13±5.53	**p=0.040***
City	28	26.46±5.07	
Duration of diabetes diagnosis (year)			
10 years and below	54	25.48±6.28	t=1.207
Over 10 years	76	24.25±5.31	p=0.230
Additional disease			
Yes	99	24.82±5.85	t=0.200
No	31	24.58±5.46	p=0.842
Type of treatment			
Oral	15	25.6±4.27	F=0.294
Insulin	88	24.8±5.93	p=0.746
Oral+insulin	27	24.19±5.95	
Perception of health status			
Poor	64	23.34±5.67	**t=-2.848**
Good	66	26.14±5.51	**p=0.005****
BMI			
Normal (18-24.9)	32	24.91±6.52	F=0.383
Overweight (25-29.9)	54	25.17±5.31	p=0.682
Obese (30 and over)	44	24.16±5.73	
Hobbies			t=0.768
Yes	122	24.86±5.73	p=0.444
No	8	23.25±6.09	

SWLS: Satisfaction with Life Scale, SD: Standard Deviation, *p<0.05. **p<0.01.

4. Discussion

In this study, the mean EAT-40 score of T2DM patients was determined as 30.14±6.29, and the prevalence of probable ED (EAT-40≥30) was determined as 46.9%. The overall prevalence of ED in Türkiye was previously reported as 42.7% and 39.3% in two separate studies, respectively (17,18). A cross-sectional study based on self-report carried out with 2977 T_1DM and T_2DM patients indicated that the prevalence of subjective ED reported by the patients was high (19). Moreover, a study from Saudi Arabia with 350 T_2DM patients indicated the presence of inappropriate eating attitudes, food choice, food restrictions, food classification and a detrimental effect on health (20). Data from the current study supports these findings. A study comparing eating disorders among patients with DM and hypertension in Türkiye reported that the mean EAT-40 score among T_2DM patients was 20.7±11.4 and the prevalence of probable ED was 19.7% (21). In another study conducted in Turkey using the EAT-26 scale in diabetic patients, the scale score was determined as 18.22± 12.01. (22). A study conducted with 320 T_2DM patients in Spain using EAT-26 indicated that, 14% of the patients suffered from ED while 12.2% of the patients had Binge Eating Disorder (BED) (23). A Brazilian study carried out with T_2DM patients aged between 40 and 65 years using the Structured Clinical Interview for DSM-IV Disorders and Binge Eating Scale, indicated that 20% of the patients had ED, and the apparent eating disorder was BED (24). The probable ED scores in these reported studies are lower than the current study's finding. It can be thought that patients' perception of the disease, their region, social and economic level, and the place they live in may be effective in these different results.

Mental disorders like depression, non-satisfaction with life and negative emotions accompanying the illness in T_2DM patients are likely to be debilitating (25). Considering the highest and the lowest scores obtained from the scales used in the current study, it can be said that the patients had a moderate level of life satisfaction. A study with 793 T_2DM patients attending the Centre of National Diabetes, Endocrinology and Genetics in Jordan, reported that the mean SWLS score was 26.1±5.2. The score ranged from 5 to 35 with about half the patients scoring 27 and over and the other, half scoring between 23-29. Thus, these patients had a moderate-high level of life satisfaction (26). A study carried out with 79 T_1DM and T_2DM patients in India indicated that, 57% of the patients had a moderate level of satisfaction with life; only 15% thought that they got what they expected from life, while 47% felt lonely even when they were engaged in carrying out various activities (27). Data from these studies corroborate the findings of the current study. A study conducted with 210 T_2DM patients in an endocrinology clinic in Türkiye reported a, mean SWLS score of 18.42±9.03 (28). A study carried out with 210 women with T_2DM in Poland, reported that the mean SWLS score was 20.78±5.31 (29). 64% of the patients with DM in Pakistan were found to be dissatisfied with their lives (30). Furthermore, 23.5% of DM patients in Nigeria were reported to lack satisfaction from life (31). Another study carried out in Iran showed that women with diabetes had a lower mean SWLS score (13.4±3.21) compared to women without diabetes (32). Studies have also reported that the majority of patients are partially satisfied with their lives (33) or have low life satisfaction (34). In a study conducted in Türkiye found that the patient's life satisfaction scale scores were lower (15.22± 5.12) than the result of the current study (22). The level of life satisfaction reported in these studies is lower than the findings of the current study; this may be due to personal and demographic, environmental and societal characteristics such as health perception, mental well-being, economic status and social relationship among the study populations.

We observed that a perception of the income level and health status as poor and living in a village were all accompanied by reduced life satisfaction. In a study conducted with 496 DM patients in Pakistan, it was reported that 64% of the patients were dissatisfied with life due to their illnesses; patients with moderate and low level of income had a higher level of dissatisfaction with life (30). However

satisfaction with life among T_2DM patients in Poland was not affected by the place of residence (25). In a cross-sectional study with 456 DM patients in Spain where health, social, demographic, and clinical markers were studied, it was indicated that young age, being female, being unemployed and poor glycemic control were determining factors in the deterioration of quality of life. Note, the patients who were married had fewer worries about illnesses; additionally, the quality of life associated with health got worse in parallel with poor glycemic control and increased disease complications (35). In a nother study, it was stated that patients with low education levels and long disease duration had low life satisfaction. In this case, it was reported that the life satisfaction of people with T2DM was related to their ability to maintain their mental health (36). Individual, socio-cultural, regional, geographical and time factors may impact these different results.

5. Conclusion and Recommendations

Approximately half of the T_2DM patients evaluated in the current study had probable eating disorders and their perception of satisfaction with life was above moderate. Poor income and health status were the factors that could reduce satisfaction with life. Living in a rural setting increased the incidence of probable eating disorders and reduced satisfaction with life. Considering all these results, the following can be suggested:

Barriers to the knowledge, and attitude of patients as well as implementations related to the monitoring of diabetes and healthy lifestyle behavior need to be monitored and addressed.

An individual diet and exercise schedule for each patient (keeping in mind individual, socio-cultural, and economic idiosyncrasies) need to be planned and patients need to be educated in order to incorporate these changes into their lifestyle.

Individual-centered psychosocial care needs to be provided by engaging the patients themselves in the process of healing both physical and mental health.

Conditions that are likely to affect eating disorders such as satisfaction with life, mental status and satisfaction with health care services should not be ignored.

Limitations

The study was conducted in a hospital setting, which can be considered as a limitation of the study. In addition, the cross-sectional nature of the study means that variables for determining eating attitude and life satisfaction could not be controlled properly. This can be stated as an additional limitation.

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