

The relationship of sexual dysfunction and quality of life patient with type 2 diabetes

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Abstract

Background Diabetes, along with being able to play a role in forming many health problems such as psychological, psychosocial, and sexual dysfunction, also indirectly affects the duration and quality of life. This research was conducted as a descriptive, cross-sectional research model to determine the relationship between sexual dysfunction and the quality of life of patients diagnosed with type 2 diabetes.

Methods: The research sample consisted of 485 individuals diagnosed with type 2 diabetes. The data were collected through the General Information Form, the Female Sexual Function Index, the Erection Function International Assessment Form and the Quality of Life Scale (SF-36).

Results: It was found that 91% of women had sexual dysfunction and were experiencing sexual desire (92.2%), orgasmic function, arousal (92.9%) and pain, satisfaction, and lubrication (92.5%), respectively. This rate was found to be 91.3% in men, and the degree of erectile dysfunction was found to be moderate (55%), mild (21.6%) and severe (14.7%), respectively. It was found that the problems experienced in sexual dysfunction were in the sub-dimensions of general satisfaction 20.6%, orgasmic function 49.5%, sexual desire 50.9%, and relationship satisfaction 72.5%. The study found that sexual dysfunction affects the quality of life in both sexes, and the scale sub-dimensions have a statistically significant difference ($p < 0.05$). It was found that the physical role difficulty, physical function, emotional role, mental health, and social function sub-dimension score had a statistically significant difference in men and women with sexual dysfunction, and the pain and vitality sub-dimension scores in men were significantly lower compared to those without sexual dysfunction ($p < 0.05$).

Conclusion: As a result, we showed that sexual dysfunctions were common in men and women with type 2 diabetes, and, in parallel, their quality of life was low.

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INTRODUCTION

Since diabetes is a health problem that is increasing in frequency all over the world and in Turkey, it is considered the epidemic of the 21. Century.¹ According to the data of 2017, there are 451 million people with diabetes between the ages of 18-99 worldwide, and it is estimated that this number will increase to 693 million in 2045. It is also estimated that about half of all people living with diabetes (49.7%) are undiagnosed.² Diabetes can play a role in the formation of many health problems such as psychological, psychosocial and sexual dysfunction, and indirectly affects the duration and quality of life. Since sexual dysfunction (SD) is a condition associated with disorders in the cycle of sexual desire and sexual response, it is seen as physiological and psychological changes that occur in both men and women.³ Although sexual dysfunction is one of the important causes in both men and women, it is reported in studies that it is twice as common in people with diabetes as in those without diabetes and that starts 10- 20 years earlier.⁴⁻⁷ Although sexuality is not a vital necessity for a person to maintain his existence, it is important in affecting the quality of an individual's life. Considering sexuality as a multidimensional concept, considering quality of life as a concept that expresses the satisfaction of an individual's sexual life in addition to sexual function contributes to ensuring the awareness of individuals with diabetes about sexuality and quality of

life.^{7,8} It is expected that SD, which is included in the complications that develop due to diabetes, will be recognized at an early stage, counselling with the necessary trainings, reducing the symptoms associated with the disease and treatment. As a result, positive contributions to the sexual functions of individuals with diabetes will be made.⁶ But it seems that sexual dysfunction is not addressed in the clinical practices of people with diabetes, it is often never questioned, the health professional avoids talking about the topic, people with diabetes; are approached more metabolically, but their counselling is insufficient. This Information aimed to evaluate the relationship between sexual secondary function and quality of life in patients diagnosed with type 2 diabetes mellitus (DM) in this study.

MATERIAL AND METHODS

Purpose and type of research The research was conducted as a descriptive, cross-sectional research model in order to determine the relationship between SD and quality of life in patients diagnosed with type 2 DM.

Sample and study design the universe of the research was composed of 1,600 diabetic patients admitted to the outpatient clinics of Internal Medicine and Adult Endocrinology and Metabolism at an LUMHS Jamshoro. The sample size was calculated using the formula determined by Salant and Dillman.⁹ Using the sampling formula, the required sample size (n) with a $\pm 5\%$ sampling error at a 95% confidence interval for this

universe, which was not in a homogeneous structure, was calculated as follows: $n = [1,600 (1.96)^2 (0.2) (0.8)] / [(0.5)^2 (450-1) + (1.96)^2 (0.2) (0.8)] = 213$. December-August 2020, a total of 485 patients, including 287 women and 218 men, who met the research criteria, were included in the sampling in this context. Individuals aged 18 years and older who have been diagnosed with type 2 DM for at least six months, who have been sexually active for the last four weeks, who have no problems with verbal communication, who are married or have a regular sexual partner and who have agreed to participate in the study were included in the study.

Data collection

The study was approved by the Clinical Research Ethics Committee of LUMHS Jamshoro (dated 31.01.2020). After obtaining the institution's permission, verbal consent was obtained from the patients registered in the centre to participate in the study. The data were collected by Patient Diagnosis Form, Female Sexual Function Index (FSFI), International Erectile Function Form (IIEF) and SF36 Quality of Life Questionnaire. Patient diagnosis form The form prepared according to the literature consists of two parts. The first part of the form consisted of sociodemographic characteristics; the second part consisted of questions about diabetes complications, metabolic parameters and other factors that may affect sexuality, as well as attitudes of cases to sexuality and information about diabetes (duration of diagnosis, medical treatment).

International index of erectile function (IIEF)

The validity and reliability of the scale developed by Rosen et al.^{8,10} was performed in 32 languages. The Erection Function International Assessment Form, approved by the Turkish Andrology Association, evaluated aspects of male sexual function. In this form, orgasmic function, erectile function, sexual desire, satisfaction from sexual intercourse and general satisfaction were assessed. The scores of the five sub-dimensions related to sexual function in the Erection Function International Assessment Form, which consisted of 15 questions, differed. In forms 11, 12 and 15. the questions were calculated with 6 points (between 0-5 points), and the other questions were calculated with 5 points (between 1-5 points). Decal scores were calculated with Decal scores. The scale, which can be applied to those who have had sexual intercourse in the last month, was scored negatively, and as the score increased, sexual dysfunction was interpreted as no or little. The highest score obtained from the scale was 75, and the lowest score was 5.8,^{10,11} In the current study, the Cronbach alpha value of the scale was found to be 0.90. Female sexual function index (FSFI) Rosen et al.¹² developed this instrument to evaluate female sexual function. The index included a total of 19 items questioning sexual function or problems within the last week in 6 subdimensions: desire, arousal, lubrication, orgasm, satisfaction, and pain. The first two items questioned the frequency and level of sexual desire (1–5 points); items 3 to 6 questioned arousal level, confidence, and satisfaction

(0–5 points); items 7 to 10 questioned the frequency or difficulty of lubrication and maintaining lubrication (0–5 points), items 11 to 13 question orgasm frequency, difficulty, and satisfaction (0–5 points), items 14 to 16 question satisfaction with amount of closeness with partner, sexual relationship, and overall sex life (1–5 points), and items 17 to 19 question the frequency and level of pain during and after penetration (0–5 points). Total FSFI score ranges from a minimum of 2 to a maximum of 36, with scores below 26.55 indicating SD. Aygin and Aslan¹³ conducted the reliability and validation study of the FSFI for Turkey in 2005. In the current study, Cronbach's alpha value of the scale was found to be 0.90. Quality of life scale (SF-36) Developed by Ware¹⁴ in 1987, the form was designed for use in clinical practice and research to evaluate health policies and general population studies. The scale had Likert-type scoring. 35 of the 36 statements in the scale were assessed by considering the last four weeks. The evaluation did not consider the expression in the scale containing the perception of changes in health in the previous 12 months. The scale did not have a single total score, but each dimension's score was calculated separately. The score of each sub-dimension and the two main dimensions varied between 0 and 100. SF-36 was scored so that the higher the score of each health area, the higher the quality of life associated with health decency.¹⁵ In the current study, the Cronbach alpha value was 0.90.

Collecting data

The researchers obtained the data by face-to-face interviews with the patients in the interview room. The researcher gave verbal information about the research to the patients and, after receiving the verbal and written consent of the patients, applied the survey forms to those who accepted the study. The surveys took an average of 20 minutes to complete. In addition, the glycaemic control parameters, including routine controls of diabetes patients, were obtained from the laboratory result paper and patient files after the measurement requested by the physician during admission to the outpatient clinic.

The distribution of the data was examined by the Shapiro-Wilk test. An independent sample t-test was used to compare groups with normal distribution decently. Fisher-Freeman-Halton Exact test, Fisher Exact test and Pearson Chi-square tests were used to evaluate the difference of categorical variables. Descriptive statistics of the data are explained as mean, standard deviation and frequency (percentage). All statistical analyses were analysed and reported at the significance level of 0.05 in the IBM SPSS Statistics 22.0 program.

Ethical aspect of the research

Before starting the research, written permission was obtained from the LUMHS Jamshoro Ethic Committee-Ethics Committee (31/01/2020-32) and the institution where the research was conducted. The purpose of the study was explained to the individuals.

Turk J Int Med 2024;6(1):12-22 who will participate in the research and their written consent was obtained for their participation in the research. It's stated that the data

will be used only within the scope of research, confidentiality will be strictly ensured.

Table 1. Distribution of sociodemographic disease characteristics				
Variables		Male (n: 218)	Female (n: 267)	P-values*
Age (year)	36-45 age	67 (30.7)	137 (51.3)	<0.001
	46-55 age	84 (38.5)	91 (34.1)	
	56-65 age	58 (26.6)	38 (14.2)	
	65 age and over	9 (4.1)	1 (0.4)	
Education level	Primary school	51 (23.4)	87 (32.6)	0.069
	High school	138 (63.3)	153 (57.3)	
	College	29 (13.3)	27 (10.1)	
Working Status	Housewife	-	133 (49.8)	<0.001
	Worker	135 (61.9)	117 (43.8)	
	Officer	17 (7.8)	13 (4.9)	
	Self-employment	12 (5.5)	-	
	Retired	49 (22.5)	4 (1.5)	
	Not working	5 (2.3)	-	
Economic level	Bad	21 (9.6)	35 (13.1)	<0.001
	Medium	193 (88.5)	153 (57.3)	
	Good	4 (1.8)	79 (29.6)	
Marriage time	10 years and less	38 (17.4)	129 (48.3)	<0.001
	11-20 year	74 (33.9)	50 (18.7)	
	21-30 year	45 (20.6)	54 (20.2)	
	30 year and over	61 (28)	34 (12.7)	
Smoking status	Yes	75 (34.4)	21 (7.9)	<0.001
	Quit	74 (33.9)	23 (8.6)	
	Not using	69 (31.7)	223 (83.5)	
Drinking alcohol status	Yes	2 (0.9)	8 (3)	<0.001
	Quit	12 (5.5)	-	
	Not using	204 (93.6)	259 (97)	
Diabetes times	1-5 year	121 (55.5)	207 (77.5)	<0.001
	6 year and over	97 (44.5)	60 (22.5)	
Form of treatment	Just diet treatment	-	4 (1.5)	0.361
	Insulin	37 (17)	49 (18.4)	
	OAD ¹	75 (34.4)	87 (32.6)	
	OAD and insulin	106 (48.6)	127 (47.6)	
Additional diseases	Yes	119 (54.6)	107 (40.1)	0.001
	No	99 (45.4)	160 (59.9)	
HbA1c (%)		9.09±1.10	8.87±1.24	0.045
BMI (kg/m ²)		26.33±2.49	25.50±2.19	<0.001

OAD: oral antidiabetic; BMI: body mass index.

* t-test. The values were expressed as n (%) or mean ± standard deviation.

RESULTS

Of the 485 patients included in the study, 55.1% were women and 44.9% were men. The rate of those in the 36-45 age group for women was 51.3%, and those in the 46-

55 age group for men was 38.5%. It was stated that the majority of high school graduates in women and men, 133 (49.8%) of were housewives.

Table 2. Evaluation of sub- and total scores of the frequency of sexual dysfunction by gender

Variables	Scores	Sexual dysfunction (%)		
		Yes	No	
Female (n: 267)	Sexual desire	3.65±0.89 (1.20:4.80)	92.2%	7.08%
	Arousal	2.88±0.90 (0:3.60)	92.9%	7.1%
	Lubrication	3.29±1.02 (0:4.80)	92.5%	7.5%
	Orgasmic function	3.19±0.97 (0:4)	92.9%	7.1%
	Satisfaction	3.41±1.02 (0:4.80)	92.5%	7.5%
	Pain	3.24±0.97 (0:4.40)	92.5%	7.5%
	FSFI total	19.70±5.41 (1.20:23.80)	91%	9%
Male (n: 218)	Erectile function	13.57±7.25 (1:27)	91.3%	8.7%
	Orgasmic function	4.41±2.40 (0:8)	49.5%	50.5%
	Sexual desire	5.37±1.87 (2:9)	50.9%	49.1%
	Relationship satisfaction	5.83±3.08 (0:10)	72.5%	27.5%
	General satisfaction	5.60±1.81 (2:8)	20.6%	79.4%
	IIEF total	34.79±15.97 (5:62)	91.3%	8.7%

Erectile dysfunction grade

Mild	47 (21.6%)
Moderate	120 (55%)
Severe	32 (14.7%)

Table 3. Comparison of the sub-dimensions of the quality of life scale by gender

Sub-dimensions	Male (n: 218)	Female (n: 267)	P-value*
Physical functioning	62.31±20.56	39.66±15.26	<0.001
Physical role function	65.13±27.76	19.85±9.96	<0.001
Bodily pain	55.95±9.86	57.62±11.13	0.928
General health	40.71±9.85	40.67±5.08	0.019
Vitality	28.48±12.26	37.39±7.57	<0.001
Social functioning	41.45±22.40	52.43±14.66	<0.001
Emotional role functioning	49.23±22.89	43.07±15.72	0.010
Mental health	41.54±22.40	52.43±14.66	0.270

The values were expressed as mean ± standard deviation.

* t-test

Table 4. Comparison of the effect of sexual dysfunction on quality of life by gender

Quality of life	Male (n: 218)			Female (n: 267)		
	SD (-)	SD (+)	P-value*	SD (-)	SD (+)	P-value*
Physical function	83.68±10.90	60.27±2.11	<0.001	46.66±18.97	38.97±14.72	0.018
Social function	75±00	38.25±5.78	<0.001	59.37±15.30	51.74±14.44	0.015
Physical role	100±0	61.80±4.70	0.001	50.36±10.27	38.24±2.45	0.005
Emotional role	78.94±6.51	46.39±1.37	<0.001	50±17.02	42.38±15.46	0.023
Mental health	51.78±0.91	40.56±7.64	<0.001	42.66±7.42	39.70±5.60	0.017
Vitality	44.73±1.14	26.93±11.70	<0.001	39.58±7.92	37.18±7.52	0.139
Pain	66.84±2.86	54.91±9.67	<0.001	61.04±13.57	57.28±10.84	0.115
General health	54.73±2.02	39.37±9.23	<0.001	42.50±6.07	40.49±4.95	0.065

SD: sexual dysfunction.

The values were expressed as mean ± standard deviation.

* t-test.

Vitality and social functionality sub-dimension, the mean score of men was found to be significantly higher compared to women. In contrast, the quality of life of men in terms of physical functionality, physical role, general health and emotional role was higher compared to women, while the quality of life in terms of vitality and social functionality was higher in women than men (Table 3). The quality of life scale sub-dimensions had a statistically significant difference according to whether men had SD or not ($p < 0.05$). The scores of physical role, physical function, emotional role, pain, vitality, mental health, and social function sub-dimension were significantly lower in men with SD disorder than those without SD disorder. In women, physical function, social function, physical role, emotional role and mental health sub-dimension score had a statistically significant difference ($p < 0.05$). Accordingly, physical function, social function, physical role, emotional role and mental health sub-dimension scores were significantly lower in women with SD disorder than women without SD disorder (Table 4).

DISCUSSION

In this study, the relationship between SD and quality of life in men and women with type 2 DM was evaluated. In studies conducted with men diagnosed with type 2 DM, it is reported that ED was detected at a rate of 35-90%.¹⁶⁻¹⁹ The prevalence of ED in 541 diabetic cases was found to be about 35%.²⁰ In a study conducted with 422 individuals diagnosed with diabetes, the majority of ED was found to be 85.5%.²¹ In a study from the Netherlands, the frequency of ED in patients diagnosed with type 2 DM was about 41.3%.²² Corona et al.²³ reported a prevalence of mild, mild-moderate, moderate and severe ED in men with DM of 19.4%, 15.4%, 10.4% and 21.6%, respectively. In a study by the LUMHS Jamshoro, mild ED was detected in 22% of men diagnosed with diabetes, moderate ED in 49% and severe ED in 19% and 90% in total.²⁴ In the study of Yalcin et al.²⁵, mild ED was detected in 18% of men diagnosed with type 2 DM, moderate ED in 24% and severe ED in 22% for a total of 64%. Another study found that 33.1% of male cases experienced ED, 42.6% had mild ED, 42.6% had moderate ED, and 14.8% had severe ED.²⁶ ED was observed in 91.3% of the men included in the current study, the degree of erectile function was moderate by 55%, mild by 21.6% and severe by 14.7%, respectively. Problems with SD areas, on the other hand, were found to be experienced in the sub-dimensions of general satisfaction 20.6%, orgasmic function 49.5%, sexual desire 50.9% and relationship satisfaction 72.5%. While the current study results showed similarities with some of the results in the literature, they differed with some. This may be due to the sample size in the studies, the duration of

diabetes, the presence of complications, and cultural differences. Also, as it is known, sexual dysfunctions have vascular, neurological, local, hormonal, drug-related and psychogenic causes. This suggests that the high level of dysfunction in our study may have resulted from the joint evaluation of diabetic patients in the group without comorbidity in the analysis of the study. In this sense, conducting studies on only diabetes and groups with diabetes and comorbidities will contribute to the literature.

Studies investigating the effect of diabetes on SD observed that most studies focus on sexual problems in men, while studies on sexual issues of women diagnosed with diabetes were in the minority. However, studies show that diabetes also negatively affects female sexuality, and the incidence of SD among women diagnosed with diabetes is 80%.^{18,26}

Various studies comparing women without a diabetes diagnosis with those diagnosed with diabetes have found that the incidence of SD is high in diabetic women. Still, despite this, the sexual problems of women diagnosed with diabetes and the risk factors associated with this condition have not been identified or explicitly stated.²⁷⁻³⁰ Studies by Doruk et al.¹⁸ and Erol et al.²⁷ conducted with women diagnosed with type 2 DM showed that the incidence of sexual dysfunction varied between 42% and 51.3%. When looking at the subgroups of sexual dysfunction, some studies have shown that sexual desire is associated with type 2 DM in diabetic women; a decrease in sexual desire and insufficient lubrication are commonly observed.²⁸⁻³² In another study, 84.4% of women diagnosed with type 2 DM had sexual dysfunction according to the FSFI sub-dimensions. While $\frac{3}{4}$ of women had sexual desire, $\frac{1}{2}$ had lubrication, arousal and pain disorders.³³ Similarly, Yıldız and Pınar's study³⁴ found that 67.3% of women diagnosed with type 2 DM had sexual desire, 45.6% arousal, 27.9%

lubrication, 34% orgasm, 38.1% satisfaction, and 38.8% pain disorder. Another study indicated that women with diabetes had low sexual desire, lack of sexual satisfaction, low vaginal lubricity and orgasmic dysfunction.³⁵ The present study showed that 91% of the 267 women included in the study had SD, and SD in women, respectively, 92.2% of them experienced sexual desire and orgasmic function, 92.9% of them experienced arousal and 92.5% experienced pain, satisfaction, lubrication. We think that the reason for the variability in the incidence of sexual dysfunction in women in our country and various countries may be a cultural and demographic feature factor affecting sexuality and related to different tests applied. SD, one of the common complications of diabetes, negatively affects the patient's quality of life.^{36, 37} In a study by

Lau et al.³⁸, in male patients with at least one sexual problem, SD negatively affected the quality of life. Another study stated that all quality of life scores except social function were statistically significant in patients diagnosed with type 2 DM with SD compared to those who did not have SD.²⁶ Okur et al.³⁹ found that the quality of life in individuals diagnosed with diabetes was poor compared to those without a diabetes diagnosis. In a study comparing male patients diagnosed with diabetes with ED and men without diabetes in terms of ED severity and quality of life, it was found that the ED rate was high in people with diabetes.⁴⁰

Similarly, Auld et al.³⁷ stated that ED affects the quality of life in 36% of men. Litwin et al.⁴¹ said that ED affects the quality of life; there was a relationship between ED and the general health perception, physical and emotional role dimensions of the SF-36 quality of life sub-dimensions.⁴¹ Similarly, ED negatively affects the health-related quality of life in patients diagnosed with type 2 DM. It has been stated that SF-36 sub-dimension scores are less for individuals with ED than for individuals without ED.⁴¹ In a study conducted on cases with diabetes, Penson et al.⁴⁰ found that the quality of life in individuals with ED was less compared to those without ED. The current study found that the quality of life scale sub-dimensions had a significant and positive relationship with physical function, physical role difficulty, emotional role difficulty, vitality, mental health, social functionality, pain and general health perception scores, erectile function, orgasmic function, sexual desire, sexual satisfaction, general satisfaction and total scores, which were each sub-dimensions of the IIEF scale. As the quality of life increases in men with ED disorders, the IIEF scale sub-dimension scores also increase significantly, and ED affects the quality of life. Our study findings were in line with the literature. In research, SD is often observed in women who do not have an active lifestyle and have a low quality of life, and it is reported that the quality of life is affected by the FSFI sub-dimensions.⁴¹⁻⁴³ Another study reported that women with a low quality of life experienced 6.6 times more SD than women with a high quality of life.⁴⁴ In a study conducted with 13,882 women aged 40 to 80 in twenty-nine countries, Lauman et al.⁴⁶ observed that 27% of women had a decrease in desire for sexuality, 21% had orgasm disorders, 17% had lubrication problems, and 10% had dyspareunia. The quality of life of women with a high rate of deceleration in desire was most affected.⁴⁶ Similarly, in a study conducted by Enzlin et al.⁴⁷, SD in women often showed impaired desire (17%), lubrication (14%), orgasm (14%), and pain (12%), and quality of life was affected. All sub-dimensions of quality of life and quality of life were

affected in the female cases detected by SD in the current study; the area most affected by SD was emotional role function, and satisfaction and pain with physical function from the FSFI subgroups; lubrication and orgasmic function with social function; arousal with physical role function; mental health and sexual desire, orgasmic function decency and FSFI total score; fitness and orgasmic function and satisfaction; pain and orgasmic function, satisfaction, pain and FSFI total score; general health perception and pain; physical dimension and orgasmic function and satisfaction; mental dimension and satisfaction; global quality of life and orgasmic function and satisfaction were found to have significant relationships. It was seen that our study findings were compatible with the literature.

Study limitations

The fact that sexuality is considered a private subject by many patients due to their cultural values and that the research was conducted at a single centre limits the generalisation of the research results to all patients with diabetes. During the study, when patients felt that there was a medical staff with whom they could make comfortable statements about sexuality, they tended to search for the answer to their problems related to the subject, which caused the planned time decoupled to patients during the interview to be exceeded.

CONCLUSIONS

It has been concluded that sexual dysfunction is observed at a high rate in both men and women in patients diagnosed with type 2 DM, and in parallel, the quality of life is low. In this context, it is recommended to routinely evaluate patients with type 2 diabetes in terms of SD to improve the quality of life of diabetics by making the necessary plans according to the evaluation result.

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