



## Evaluation of Sexual Dysfunction in Women and Men with Diabetes

Hanie Mazloomi<sup>1</sup> and Leila Kashani<sup>2\*</sup>

<sup>1</sup>Medical student, Psychiatry Research Center, Faculty of Medicine, Golestan University of Medical Sciences, Gorgan, Iran.

<sup>2</sup>Assistant Professor of Psychiatry, Department of Neurology, Psychiatry Research Center, Golestan University of Medical Sciences, Gorgan, Iran.

### Article Info

**Received:** June 04, 2024

**Accepted:** June 20, 2024

**Published:** June 26, 2024

**\*Corresponding author:** Leila Kashani, Assistant Professor of Psychiatry, Department of Neurology, Psychiatry Research Center, Golestan University of Medical Sciences, Gorgan, Iran.

**Citation:** Hanie Mazloomi and Leila Kashani. (2024). "Evaluation of Sexual Dysfunction in Women and Men with Diabetes." *Clinical Psychology and Mental Health Care*, 6(1); DOI: 10.61148/2994-0184/CPMHC/076.

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### Abstract:

**Background:** Sexual dysfunction occurs frequently in patients with diabetes. This disorder prevents satisfaction from sexual activity.

**Objectives:** The aim of the present study was to investigate the rate of sexual disorders in men and women with diabetes referred to Sayad Shirazi Hospital in Gorgan in 1401.

**Methods:** The present study was a cross-sectional study with a descriptive and analytical approach that was conducted on 90 men and 72 women with diabetes. The instruments used were the International Index of Male Sexual Function (IIEF) and the Female Sexual Function Index (FSFI). Data were analyzed in spss19 software with descriptive statistics and Spearman's correlation tests at a significance level of 0.05.

**Results:** 5.56% of men with diabetes had erectile dysfunction and 87.78% had an average erectile function. The sexual performance of women with diabetes was poor in 87.5% of cases. Age, duration of marriage, and duration of diabetes had an inverse relationship with sexual performance of men and women ( $p=0.001$ ).

**Conclusion:** Sexual performance in diabetic men and women was at an average level. A significant inverse relationship between age, duration of marriage, duration of diabetes with decreased sexual performance of women and men was observed.

**Keywords:** diabetes; sexual satisfaction; sexual pleasure.

### Introduction:

Diabetes Mellitus is a type of metabolic disorder that may be caused by multiple causes. This disease is defined as chronic hyperglycemia, which may be due to defects in insulin secretion, insulin action, or both [1]. According to the report of the International Diabetes Federation (ninth edition), in 2019, the prevalence of diabetes worldwide is 9.3% of people aged 20-79, and 79.4% of these people live in low- to middle-income countries. to do [2]. The prevalence of diabetes in the Middle East is 16.2% [3] and the prevalence of diabetes in Iran is 0.15% [4].

Complications caused by diabetes are classified into two groups: early complications and late complications. Early complications of diabetes include: ketoacidosis or diabetic coma, hyperosmolar coma, hypoglycemia, and hyperglycemia. Late complications caused by end-organ injuries include eye complications, nephropathy, neuropathy, cardiovascular disease [5] and sexual dysfunction [6, 7]. Sexual dysfunction may affect both sexes. Vascular disorders directly caused by diabetes or psychological disorders that may be directly caused by diabetes or closely related to the disease [8].

Therefore, diabetes may directly or indirectly affect the quality of sexual life of patients. Problems related to sex life in diabetic men often have a biological basis, while women are more affected by psychological causes. [9].

[9]. Sexual dysfunction is a problem that can occur at any stage of the sexual response cycle. This disorder prevents satisfaction from sexual activity. The sexual response cycle traditionally includes excitement, quiescence, orgasm, and resolution. In a study conducted in northern Ethiopia, it has been shown that the prevalence of erectile dysfunction among diabetes mellitus patients is 69% [10]. Also, another study recorded low libido, sexual dissatisfaction, low vaginal smoothness and orgasmic dysfunction in women with DM [11].

While research shows that sexual dysfunction is common, many people don't like to talk about it. Since talking freely about sexual issues is taboo due to the socio-cultural norms of Iranian society, for this reason, most patients do not discuss sexual problems freely with their doctors or partners. As a result, sexual dysfunction is considered as an under-recognized and under-treated disorder in the country [12]. Considering the high prevalence of diabetes in our society and the negative effects of this disease on various physical and mental dimensions of patients, which affect their quality of life. Therefore, this study was conducted with the aim of investigating the sexual disorders of women and men with diabetes referred to Sayad Shirazi Hospital in Gorgan in 1401.

### Method:

The current study was a cross-sectional type with a descriptive approach. The studied population included women aged 18-60 and men aged 18-70. Entry criteria are; Having diabetes, being married and having a stable sexual relationship. A history of chronic physical illness in the individual or his spouse, having a chronic psychiatric illness and taking psychiatric drugs, taking any drug other than diabetes-related drugs, and addiction to any narcotic drug were considered as exclusion criteria.

The sample size for men using the findings of Hilmarova et al.'s study [13] and based on the prevalence of erectile dysfunction in men ( $p=28.1\%$ ) and for women using the study of Izini et al. [14] and based on the prevalence of erectile dysfunction The sexual performance of women ( $p=79.2\%$ ) was calculated at the confidence level of 0.95 and error  $d=0.10$ . 90 and 72 samples were estimated by taking into account 15% drop. Sampling was done by simple random sampling of diabetic patients referring to the clinics of Sayadshirazi Hospital in Gorgan. After ensuring that the criteria for participation in the study were met, the International Index of Male Sexual Function (IIEF) was completed for men with diabetes and the Female Sexual Function Index (FSFI) questionnaire was completed for women.

The index of women's sexual performance was created by Rosen and his colleagues (2000) and validated in a group of women with sexual arousal disorder [15]. In Iran, this index has been standardized by Mohammadi and his colleagues [16]. Based on Mohammadi's study, the reliability of the questionnaire was calculated using Cronbach's alpha coefficient of 0.92. The scores

obtained from the scale, subscales and psychiatrist's diagnosis were analyzed using the Rock curve and the level under the Rock curve. The appropriate cut score of the entire scale for diagnosing sexual dysfunction was determined to be 28. The accuracy index of the evaluation of the scale and subscales in the diagnosis of sexual function disorders is the level under the Rock curve. In this study, the highest level under the curve for the whole scale was  $AUC=0.873$  [16].

The International Index of Male Sexual Function (IIEF) questionnaire was created by Rosen and his colleagues [15] and validated in a group of men with sexual arousal disorder. One of the appropriate tools is the international index of erectile function, which, with 15 questions, measures the performance of men in 5 areas: erection; the peak function of sexual pleasure; Sexual desire, satisfaction from sexual contact, comprehensive satisfaction is evaluated.

area	Phrases	How to score	highest score
Erectile function	1-2-3-4-5-15	5-1	30
The peak function of sexual pleasure	9-10	5-0	10
sexual desire	11-12	5-2	10
Satisfaction with sexual contact	6-7-8	5-0	15
All-round satisfaction			10

**Table 1:** Components of men's sexual performance questionnaire and its grading method.

According to the studies of Rosen and his colleagues, the reliability index for each of the 5 subscales and the whole scale has an internal consistency with a specific value greater than 0.1, and the Cronbach's alpha coefficient was 0.73 or higher and 0.91 or higher in the studied population. Scores less than 14 in the field of erectile function are considered as erectile dysfunction, 14 to 25 as average function, and more than 25 as good function [14].

The present study was carried out after approval and obtaining permission from the Vice President of Research and Technology of Golestan University of Medical Sciences (Ethical code IR.GOUMS.REC.1401.393). After the necessary arrangements, the researcher introduced himself to the research subjects and stated the purpose of the research and obtained their written consent to participate in the research. The participants completed these questionnaires in the presence of the researcher, and if there were any problems or questions in answering the questionnaire questions, the researcher was responsible. If the person did not want to participate in the study, the person was not included in the study.

After collecting the data, it was entered into SPSS version 18 software. Mean  $\pm$  standard deviation was used to describe quantitative variables, and frequency distribution table was used to describe qualitative variables. The correlation of quantitative variables was measured with Spearman's correlation test. The significance level was considered 0.05 in all tests.

**Results:**

90 men and 72 women with diabetes participated in this study. Demographic findings including ethnicity, occupation, education,

duration of marriage and duration of diabetes of male and female patients are given in Table 2. The prevalence of ethnicity was higher in Persian men and women with diabetes. Most of the participants had university education. Most of the men were self-employed and most of the women were housewives.

Variable		Women N(%)	Men N(%)
nationality	Fars	(81.9) 59	59 (81.9)
	Turkmen	(9.7) 7	7 (9.7)
	Baloch	(8.3) 6	6 (8.3)
education	illiterate	(3) 2	2 (3)
	High school	(3) 2	2 (3)
	university	(94) 68	68 (94)
Job	free	(15/3) 11	11 (3/15)
	Employee	(19.4) 14	14 (19.4)
	housewife	(66.3) 47	47 (66.3)
quantitative variables; standard deviation $\pm$ mean			
age (years)		41.4 $\pm$ 8.2	52.1 $\pm$ 9.7
Duration of marriage (years)		17/4 $\pm$ 9/5	26/1 $\pm$ 10/1
Duration of diabetes (years)		10/8 $\pm$ 6/3	14/5 $\pm$ 8

**Table 2:** Demographic characteristics of men and women with diabete.

The results of measuring men's sexual performance are given in Table 3. The sexual performance scores in different areas show that the average sexual performance in all areas as well as the overall sexual performance is above average. Also, the results showed that 56.5% of patients with erectile dysfunction, 87.78% of patients with average erectile function and 6.67% had good erectile function.

The results of measuring women's sexual performance showed that the average sexual performance in all areas as well as the overall sexual performance is close to average. Also, the results showed that 87.5% of women with diabetes had poor sexual performance and 12.5% of women had good sexual performance.

standard deviation $\pm$ mean			
Women's sexual performance		Men's sexual performance	
total score	5.07 $\pm$ 22.66	total score	10.32 $\pm$ 48.18
sexual desire	0.83 $\pm$ 3.42	Erectile function	4.21 $\pm$ 18.18
mental stimulation	0.84 $\pm$ 3.59	The peak function of sexual pleasure	2.06 $\pm$ 7.34
humidity	0.96 $\pm$ 3.68	sexual desire	1.43 $\pm$ 6.44
The peak of sexual pleasure	0.97 $\pm$ 4.16	Satisfaction with sexual contact	2.15 $\pm$ 9.34
satisfaction	1.09 $\pm$ 4.08	All-round satisfaction	1.73 $\pm$ 6.87
sexual pain	1.00 $\pm$ 3.70	-	-

**Table 3:** Sexual performance of men and women with diabetes

Correlation between different areas of sexual performance of men and women with diabetes showed that men's sexual performance

in all areas has a negative and significant relationship with age, length of marriage and duration of diabetes; The correlation

between the different areas of sexual performance of women showed that the duration of diabetes had the strongest correlation with the decrease in sexual performance in women, and this

correlation was completely significant in all areas of sexual performance [4].

gender	area	Age		length of marriage		duration of diabetes	
		P-value	R	P-value	R	P-value	R
Men	Erectile function	<0.001	-0.627	<0.001	-0.454	<0.001	-0.588
	The peak function of sexual pleasure	0.002	-0.328	<0.001	-0.432	<0.001	-0.460
	sexual desire	0.036	-0.222	0.009	-0.275	0.002	-0.321
	Satisfaction with sexual contact	<0.001	-0.516	0.002	-0.328	<0.001	-0.430
	All-round satisfaction	<0.001	-0.451	<0.001	-0.410	<0.001	-0.517
	total score	<0.001	-0.554	<0.001	-0.447	<0.001	-0.565
Women'	sexual desire	<0.001	-0.527	0.015	-0.288	0.087	-0.203
	mental stimulation	<0.001	-0.530	<0.001	-0.414	0.017	-0.281
	humidity	<0.001	-0.611	0.200	-0.154	0.709	-0.045
	The peak of sexual pleasure	<0.001	-0.468	<0.001	-0.455	0.001	-0.378
	satisfaction	<0.001	-0.525	0.018	-0.281	0.060	-0.222
	sexual pain	<0.001	-0.617	0.034	-0.252	0.154	-0.170
	total score	<0.001	-0.660	0.003	-0.343	0.019	-0.276

**Table 4:** Correlation of sexual performance of men and women with age, duration of marriage and duration of diabetes

## Discuss:

In the present study, the sexual performance of women and men with diabetes was evaluated. The results showed that the sexual performance of men and women with diabetes is at an average level. In our study, the sexual performance of men and women with diabetes had an inverse relationship with age, duration of marriage, and duration of diabetes. Various studies have been conducted in connection with the sexual performance of women and men in diabetes patients. Esposito et al found that sexual dysfunction is present in 53.4% of women with type 2 diabetes. Women with type 2 diabetes who had depressive symptoms were 1.86 times more likely to have sexual dysfunction than women who were not depressed [17]. Among men, a positive relationship between diabetes mellitus and sexual dysfunction has been reported. Erectile dysfunction was observed in half of men with diabetes in the National Health and Nutrition Examination Survey (NHANES) [18]. Longo et al. showed that having an additional autoimmune disease in women with type 1 diabetes leads to a greater decrease in sexual function in women with type 1 diabetes, however, the frequency of sexual dysfunction in women with type 1 diabetes with and Without autoimmune disease, the excess is almost the same and about 30%. The findings of our study showed that in patients with diabetes living in Golestan province, the frequency of sexual dysfunction is higher and it includes about 87.5% of women [19]. The observed difference between the results of our study and the study of Longo et al. can be examined from two aspects: first, most of the patients in our study had type 2 diabetes and the age range of the patients in our study was much higher. As shown in our findings, there was an inverse relationship between the sexual performance of women with diabetes and the age of the patients and the duration of their diabetes, which shows that sexual dysfunction is not only caused by the fact that people are diabetic,

and the increase in women's age also the title of the influencing factor on sexual dysfunction plays an important role. This finding can justify the high rate of sexual dysfunction in women with diabetes in our study.

Erectile dysfunction occurs as one of the first problems in men with diabetes. Diabetic men may experience ejaculation problems and decreased libido. Diabetes can also lower testosterone levels, further reducing libido [20]. Hilmarova et al showed that erectile dysfunction is present in 28.1% of type 1 diabetic men, and the increase in the severity of diabetes and the lack of proper blood sugar control are directly related to the decrease in sexual performance. In our study, the rate of erectile dysfunction in diabetic men was 56.5%, which was much lower than the findings of Hilmarova et al. [13]. The difference in the study sample is a possible reason for the lower incidence of erectile dysfunction in our study than that of Hilmarova et al. Since type 2 diabetes starts at older ages and generally after the age of 40, its effect on erectile function is probably less, as our findings also showed that with the increase in the duration of diabetes, erectile function and other sexual functions in men decrease. Finds. In Rahimi et al.'s study, the sexual performance of men with type 2 diabetes was evaluated at a poor level [21]. The findings of our study showed that men's sexual performance is at an average level. In Tamrakar et al.'s study, it was shown that more than 76% of men with T2DM suffer from various degrees of erectile dysfunction and the duration of diabetes has an inverse correlation with the severity of erectile dysfunction [22]. Our findings were consistent with the findings of Tamrakar et al. However, in our study, 94% of men with diabetes reported moderate to severe erectile dysfunction.

Sexual dysfunctions in women with diabetes can be caused by microvascular, macrovascular, and also caused by the type of

insulin administration [23]. In the study of Izini et al., it was shown that there is no difference between the sexual function scores of women with type 2 diabetes and healthy women, however, there were disorders in the areas of humidity, sexual desire, and peak sexual pleasure of women with type 2 diabetes [14]. In our study, it was also shown that the most sexual dysfunction in women with diabetes was related to the areas of sexual pain, humidity, and sexual desire, which is consistent with the findings of Izini et al. In the study of Yakan et al., it was shown that in women with type 1 diabetes, the increase in fasting glucose has an inverse relationship with sexual performance, while in women with type 2 diabetes, sexual activity decreases as the duration of diabetes increases. They also showed that with the increase in the duration of marriage, sexual desire, arousal, lubrication and sexual satisfaction of women with type 2 diabetes decreased [24]. In our study, it was also shown that the duration of diabetes and the duration of marriage have an inverse relationship with women's sexual performance, which is in line with the findings of the study by Yakan et al. However, in our study, no distinction was made between the type of diabetes. The difference between the level of sexual performance in different types of diabetes has been shown in different studies. Eliasi et al showed that approximately 80% of women with type 2 diabetes had sexual dysfunction problems [25]. Vafai Menesh et al stated that half of women with type 2 diabetes had sexual dysfunction [26]. The findings of our study were consistent with the findings of Eliasi's study, while the rate of sexual disorders of women with diabetes in our study was much higher than the study of Vafai Menesh et al. Dorgon reported that 55.9% of women with type 2 diabetes had sexual dysfunction. 60.2% of women had libido problems, 58.1% sexual satisfaction problems, 55.9% lubrication problems, 54.8% pain, 52.7% arousal problems and 51.6% orgasm disorders [27]. In our study, the rate of sexual dysfunction and sexual pain was higher compared to Dorgon's study, while in other areas, the rate of disorders was lower. Altin stated that there is a significant difference between the mean scores of FSFI libido and pain subscales of diabetic women according to the duration of their marriage, while Exoy did not find a significant difference between the duration of marriage and women's sexual performance [28, 29]. Therefore, the findings of our study are consistent with the findings of Altin's study and inconsistent with the findings of Aksoy's study. One of the limitations of this study was the reluctance of the participants to talk about sexual and marital issues. Here, in order to overcome this limitation, the researcher conducted the research in the doctor's office and in his presence, and the patient was assured that participating in the study has no financial and social costs for him and that all the information in the questionnaire that is taken from the patient It will remain completely confidential.

### Conclusion:

The findings of the present study showed that in men with diabetes, sexual performance is at an average level, and 5.56% of men with diabetes suffer from severe erectile dysfunction. Our findings also showed that 87.5% of women with diabetes have at least one sexual dysfunction. In our study, a significant inverse relationship between the duration of diabetes and decreased sexual performance was observed in both women and men with diabetes.

### Acknowledgments:

The authors express their gratitude to Golestan University of Medical Sciences Research and Technology Vice-Chancellor, Psychiatry Research Center, Development and Clinical Research Support Unit of 5 Azargorgan, officials and nurses and participants in this research.

### Ethical considerations:

This research is the result of the general doctoral thesis of Golestan University of Medical Sciences with code of ethics number IR.GOUMS.REC.1401.393.

### Data accessibility:

The data generated in this study are included in this paper in the form of tables.

### Conflict of interest:

There is no conflict of sources in sending or publishing this article by the authors.

### Contribution of the authors:

.... Ideation, design, ... collection, .... They have been responsible for analyzing and interpreting the data, preparing the draft, and reviewing the study.

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