



# Personal and Social Predictors of Sexual Function of Women With Type Two Diabetes in Sanandaj

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## Abstract

**Objectives:** Diabetes is considered a chronic metabolic disorder which is caused by increased levels of blood sugar. In addition, neurological complications including sexual function disorders are one of the long-term side effects of diabetes. Further, decreased libido, as another complication, is highly prevalent in people with diabetes. Accordingly, the present study aimed to determine sexual function and its predictors in women with type 2 diabetes in Sanandaj, Iran.

**Methods:** The participants of the study included 254 women (127 married women with type 2 diabetes vs. 127 healthy women) who referred to the diabetes center in Sanandaj during 2016. The randomized sampling method was used to select the study samples. Furthermore, data were collected by demographic and sexual function questionnaires. Finally, the obtained data were analyzed using SPSS software. The  $P < 0.05$  was considered statistically significant.

**Results:** The mean (SD) of the total sexual function of healthy women and those with diabetes was 29.89 ( $\pm 9.8$ ) and 28.83 ( $\pm 12.1$ ), respectively, indicating that there was a statistically significant difference between the groups in this respect ( $P = 0.044$ ).

**Conclusions:** In general, sexual dysfunction was found to be an effective variable in the lives of women with diabetes type 2. Therefore, identifying and treating sexual dysfunction in women can increase life satisfaction and thus result in preserving the families and having a healthy community.

**Keywords:** Sexual dysfunction, Diabetes, Sexual satisfaction

## Introduction

Sexual health is defined as the state of physical, emotional, psychological, and social well-being while not merely the absence of any disease, dysfunction, or disability. Accordingly, the requirements of the sexual health include a positive and respectful approach toward sexualities and sexual relationships, as well as the desire of having a pleasant and safe sexual experience which is free of any threat and duress, discrimination, and violence. In addition, the sexual rights of all individuals should be respected, protected, and accomplished in order to realize and protect sexual health (1). Further, various factors or diseases may affect individuals' sexual health among which diabetes is of great importance. As it is known, diabetes is a chronic metabolic disorder resulted from the increase in blood sugar levels (2). According to the recent Atlas published by the International Diabetes Federation, nearly 415 million adults are estimated to suffer from diabetes all around the world, which is increased to 642 million adults by 2040. In other words, one out of every ten individual will suffer from this disease by 2040. Furthermore, 75% of people diagnosed with diabetes live

in developing countries while the disease has not yet been diagnosed in up to 50% of these people.

In fact, type 2 diabetes is the most common type of disease which constitutes 90–95% of all diabetic cases (3). Currently, more than 6.4 million people are suffering from diabetes in Iran (4). According to the reports from Iranian Diabetes Society, the prevalence of type 2 diabetes among Iranian women is two times higher than its prevalence among Iranian men, and the prevalence increases as obesity becomes more prevalent (5). Moreover, diabetes is recognized as the main cause of many physical and mental disorders (6). Sexual dysfunction is a public health problem (7) with a global prevalence of 30–78% (8). Based on the results of the study by Bahrami et al, 60.4% of women have a less than average sexual satisfaction (9). The statistic is increased among diabetic women up to 80% (10). Additionally, sexual dysfunction is a long-term consequence of diabetes, which is often ignored in surveillance programs provided to such patients (11). It should be noted that other factors such as age, diabetes duration, various medicine consumption, and other chronic diseases are related to sexual dysfunction as well

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(2). The lack of sexual desire is a common feature, which may be observed in more than 70% of diabetic women (12). Erol et al (13) studied sexual dysfunction among 72 Turkish women (with an age mean of 38.8 years) who were then compared with 60 healthy women. Based on their reports, the female sexual function index (FSFI) score among diabetic women was in a range of 12-41 ( $P>0.05$ ) while, in the control group, the range was between 32 and 42 ( $P<0.05$ ). Moreover, the lack of sexual desire was the most prevalent symptom (77%) in diabetic women. In this regard, Elyasi et al (14) investigated the sexual dysfunction among 150 women diagnosed with type 2 diabetes during 2012 in Mazandaran province, Iran. The average FSFI score was equal to 22 and sexual dysfunction was observed in 78.7% of the patients (CI: 71.4-84.4). In addition, Taghavi et al (15) compared 50 women with diabetes with 40 other healthy women and found that the scores of the sexual function index were lower in diabetic women compared to the healthy women. Similarly, Hassanin et al (16) conducted a study on Egyptian women and demonstrated that the sexual dysfunction was present in 76.9% of diabetic women. Although a large body of research is implemented to assess the presence of sexual dysfunctions in diabetic men, studies regarding evaluating the sexual function in diabetic and non-diabetic women are rare. Therefore, considering that the effect of diabetes on sexual dysfunction is still questionable and given the growing prevalence of people with diabetes and decreasing onset age of the disease, the present study sought to evaluate social and personal factors associated with women suffering from type 2 diabetes who referred to the health centers of Sanadaj, Kurdistan, Iran.

### Materials and Methods

The present analytical cross-sectional study was performed to investigate the sexual function of 127 married women within the age range of 30-50 who were afflicted with type 2 diabetes and referred to health centers located in Sanadaj, Kurdistan, Iran. Then, the sexual function of these women was compared with that of the 127 healthy married women referring to the same centers. Women who were involved in no surgery during the previous three months, suffered from no disease or wound in their genital system and sex organs, lived with their husbands for at least the previous six months, and those without any mental illness (depression), according to the declaration of the patients, were included in the current study.

Further, healthy women were randomly selected. To this end, five health centers out of 15 health centers located in Sanadaj were randomly selected using <http://www.random.org> website. Then, the number of women from each health center was proportionally determined based on the number of married women aged between 30-50 years covered by each of the five health centers and the required sample size, (i.e., 254). Next, the list of women covered by each center was separately prepared, a code

number was assigned to each of them, and finally, they were randomly selected based on the assigned code number. Afterward, women were included in the study if their fasting blood sugar level were lower than 126. Finally, they received a detailed description of the study and signed a consent form.

Furthermore, patient women were randomly selected using the table of random numbers. Then, the researchers called the patients in order to invite them for participation and explain the aims and procedure of the study. In the cases that patients accepted the invitation, a meeting was appointed in the intended health center for completing the questionnaire. During the first meeting, the patients were examined in terms of the inclusion criteria and their basic information were recorded. If they had the inclusion criteria, they were provided with the detailed information related to the study, as well as its aims and benefits. Patients who accepted to participate in the study signed an informed consent form. If the number of patients who enjoyed the inclusion criteria and accepted to participate in the present study was lower than what was needed, the sampling process was conducted again and new cases were introduced to the study until the number of patients equaled the required sample size.

The required data were collected by a self-administered questionnaire for basic and demographic information, along with the questionnaire for evaluating the FSFI. The questionnaire was completed by the interviewee in the case of uneducated participants.

Moreover, the questionnaires were validated in terms of face and content validity. To this end, it was sent to several university professors and the questionnaire was modified and validated based on their comments. Additionally, the test-retest approach was employed to evaluate the reliability of the questionnaires respecting intraclass correlation and internal consistency (i.e., the Cronbach's Alpha coefficient). Accordingly, in a pilot study, the validated version of the questionnaires was distributed among 20 participants and recollected. The results showed an acceptable level of internal consistency. In addition, the Cronbach  $\alpha$  of the sexual function, along with the basic and demographic questionnaires was 0.89 and 0.7, respectively.

The quantitative variables such as the age of the women and their husbands, as well as the age of marriage was analyzed using the independent  $t$  test. Further, qualitative variables including the number of pregnancies, children, and abortion were estimated utilizing the chi-square or Fisher exact test. Furthermore, multivariate analysis of variance (MANOVA) with group score was compared. Finally, the data were analyzed using normality the chi-square test.

### Results

The average age (standard deviation) of the healthy and diabetic women was 40.85 (7.5) and 46.7 (5.2) years,

respectively. Moreover, the average age of the husbands (SD) of the healthy and diabetic women was 45.43 (9.1) and 55.1 (5.58) years respectively, which differed significantly (Table 1).

Most women in the healthy group had two previous pregnancy experiences (35.4%) while the majority of patient women had more than five pregnancy experiences (66.9%). Therefore, there was a significant difference between the two groups in terms of the pregnancy experience.

As regards the contraception methods, most women in the healthy group (40.5%) used natural methods whereas women in the patient group often employed tubal ligation (47%), which demonstrates a significant difference between the groups in this respect ( $P=0.042$ ).

Moreover, women in both groups represented a statistically significant difference in terms of the level of education ( $P=0.00$ ); totally, 31.5% of the women in the healthy group had a diploma of higher education while 55.9% of the patient group women were uneducated.

Additionally, the frequency of housewives in the healthy group was 57.3% whereas it was 88.2% in the patient group, indicating that there was a meaningful difference between both groups in this regard ( $P=0.00$ ).

Considering the level of income, 29.1% of women in the healthy group had high enough income while only 6.3% of patient women received enough income ( $P=0.00$ ). In addition, the two groups were significantly different in terms of various sexual function-related variables such as desire, lubrication, orgasm, satisfaction, and pain during the sex ( $P<0.05$ ). However, the difference between the two groups in terms of sexual arousal was negligible ( $P=0.672$ ). Further, the mean score (standard deviation) of the total sexual function in the healthy and patient groups was 29.89 (9.8) and 28.83 (12.1), respectively, suggesting a slight difference between the groups in this respect ( $P=0.044$ ). The results associated with the sexual function of both groups are presented in Table 2.

### Discussion

Sexual health is regarded as an important part of the surveillance program provided for diabetic women patients, which is overlooked in most cases. The resistance of these women against macrovascular diseases decreases due to the presence of hemodynamic and metabolic disorders (17,18). The present study attempted to investigate the sexual function of women with type 2 diabetes and evaluate the effects of several social and

**Table 1.** Social and Individual Characteristics of the Study Groups

Characteristics	Healthy Women (n=127)	Diabetic Women (n=127)	P Value
Age (y), mean (SD)	40.85 (7.5)	46.7 (5.2)	0.000
Age of husband (y), mean (SD)	45.43 (9.1)	55.1 (8.58)	0.000
Age of marriage (y), mean (SD)	20.22 (5.6)	16.45 (4.5)	0.000
Age at the first pregnancy (y), mean (SD)	21.46 (5.1)	16.45 (4.5)	0.000
Duration of suffering from diabetes (y), mean (SD)	-	9.25 (6.24)	-
No. of pregnancies			
0	18 (14.2)	-	0.000
1-2	61 (48)	35 (27.6)	
3-4	29 (22.8)	41 (32.3)	
> 5	19 (15)	51 (40.2)	
No. of children			
0	18 (14.2)	-	0.000
1-2	61 (48)	35 (27.26)	
3-4	29 (22.8)	41 (32.2)	
> 5	19 (15)	51 (40.2)	
No. of dead child			
0	111 (87.4)	86 (67.7)	0.000
1	16 (12.64)	31 (24.4)	
2	-	10 (7.9)	
Number of abortions			
0	86 (67.7)	71 (55.9)	0.054
1	26 (20.5)	41 (32.2)	
2	15 (11.8)	12 (9.4)	
3	-	3 (2.4)	
Pregnancy prevention methods			
Natural	49 (40.5)	21 (21)	0.042
Preventive pill	1 (0.8)	17 (17)	
IUD	23 (19)	15 (15)	
Condom	24 (19.8)	-	
TL	24 (19.8)	47 (47)	

Note. All tests were performed at  $P > 0.05$  level of significance.

**Table 2.** Sexual Function and its Sunscales in Healthy and Diabetic Women

Characteristics	Healthy Women	Diabetic Women	P Value
	(n=127) Mean (SD)	(n=127) Mean (SD)	
Desire	3.4 (1.5)	4.52 (1.1)	0.000
Arousal	5.17 (3.1)	5.35 (3.8)	0.672
Lubrication	6.82 (3.1)	5.6 (3.5)	0.003
Orgasm	4.95 (2.1)	4.29 (2.7)	0.036
Satisfaction	2.5 (2.1)	4.2 (1.8)	0.000
Pain	7.03 (2.1)	4.81 (3.4)	0.000
FSFI	29.89 (9.8)	28.83 (12.1)	0.044

Abbreviation: FSFI, female sexual function index.

individual factors on this disease. The results indicated that the difference between the level of sexual function in both healthy and patient groups was significant ( $P=0.044$ ).

The education level of the husband, behavioral characteristics of the husband, satisfaction with the husband, and an experience of depression are some predictive factors of sexual function. Soltan Ahmadi et al (19) investigated sexual health in women with type 2 diabetes in Kerman and reported the scores of  $65.75 \pm 13.46$  and  $74.27 \pm 10.69$  in the case and control groups, suggesting that the sexual function was lower in diabetic women compared to the healthy women. This finding is in line with the results of the present study. In a similar study, 50 women with type 2 diabetes were compared to 40 healthy women and the results demonstrated a lower level of sexual function in diabetic women (14), which is consistent with the results of the current study. Likewise, another study conducted in Turkey (10) reported the same pattern of sexual function (based on female sexual function index) in diabetic and healthy women. Moreover, the lack of sexual desire was highlighted by the above-mentioned study as the most prevalent characteristic presented in diabetic women, which contradicts with the findings of the present study in which lubrication disorder was reported as the most prevalent type of disorder. This discrepancy in the findings can be due to the different age ranges investigated by the two studies (10). Furthermore, In another study in Mazandaran, the sexual function of 150 women with type 2 diabetes was investigated (14). Based on the results, 78.7% of the cases suffered from sexual dysfunction and the average score of the female sexual function index was 22, which corroborates with the results of the current study.

## Conclusions

The present study evaluated sexual function and some of its predictive social and individual factors in women with type 2 diabetes. Based on the results, the education level of the husbands, the behavioral characteristics of the husbands, and satisfaction of wife were the most important factors associated with sexual dysfunction. Furthermore,

the average score of sexual function in the patient group was compared to the healthy group. Considering the fact that sexual function has a great influence on the life satisfaction of the couples, the presence of sexual dysfunction can endanger the strength and survival of the families and thus the health and security of society. Accordingly, the results of the present study can help health care services in planning for preventive programs and treatment strategies, as well as counseling about sexual problems.

## Limitations of the Study

The possible effects of mental disorders and family problems on the results were difficult to control in above-mentioned studies. However, in the present study, it was attempted to control these confounding factors by considering them in the inclusion criteria although such factors were only assessed by a yes/no question. Another limitation of the present study was the large sample size, which challenged the matching process. Furthermore, the current study was of a cross-sectional type and the relationships demonstrated in the study are not necessarily a causal relationship.

## Suggestions for Further Research

Future studies are recommended to assess the sexual function of the husbands of women with type 2 diabetes on smaller sample size. .

## Conflict of Interests

Authors have no conflict of interests.

## Ethical Issues

This study was approved by Tabriz University of Medical Sciences (identifier code: TBZMED.REC.1394.1133).

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