

Sexual Dysfunctions among Diabetic and Non-diabetic People Attending in Tribhuvan University Teaching Hospital, Kathmandu Nepal

Khem B Karki,¹ Bhupendra Kumar Shah,² Sushan Man Shrestha³

¹Department of Community Medicine and Public Health, IOM TU Nepal, ²Biratnagar Metropolitan City, Koshi, Nepal, ³Central Department of Public Health IOM TU Nepal.

ABSTRACT

Background: Sexual dysfunctions including erectile dysfunction among men, a widespread sexual health issue, pose challenges to sexual satisfaction. This cross-sectional study aimed to assess the prevalence and determinants of sexual dysfunctions in both diabetic and non-diabetic individuals aged 30-70.

Methods: A study at Tribhuvan University Teaching Hospital in Kathmandu, Nepal, surveyed 350 participants (176 men, 174 women), aged 30-70, with 52.6% having diabetes. The structured interviews and validated questionnaires like IIEF-5 for men and FSFI-6 for women to assess the prevalence and factors associated with erectile dysfunction were used. Statistical tools were employed to measure the associations of different variables with Sexual dysfunctions.

Results: Overall, the prevalence of sexual dysfunction was 73.7% (95% CI: 72.4- 73.7) with higher rates in men 83.9% (95% CI: 83.1- 84.7) than women 63.6% (95% CI: 62.0 - 65.2). Individuals with diabetes experienced an 81.5% prevalence of sexual dysfunction (95% CI: 80.6-82.4), whereas non-diabetic individuals exhibited a 65.1% prevalence (95% CI: 63.5-66.7). In the diabetic male population, the prevalence of sexual dysfunction was 97.5% (95% CI: 97.4-97.6), while diabetic females had a prevalence of 68.9% (95% CI: 67.5-70.3). Among non-diabetic men, the percentage of erectile dysfunction was 72% (95% CI: 70.7-73.3), and among non-diabetic women, sexual dysfunction remained 56.2% (95% CI: 54.4-58.0). Among individuals with diabetes, those who used tobacco exhibited a sexual dysfunction prevalence of 93.8% (95% CI: 93.5-94.1), while non-tobacco users had a prevalence of 74.8% (95% CI: 73.6-76.0). In non-diabetic individuals, obesity was associated with a higher prevalence of sexual dysfunctions, reaching 84.6% (95% CI: 83.8-84.6). High blood pressure showed a strong association with sexual dysfunctions in both diabetic (83% with 95% CI: 81.9-83.4) and non-diabetic (70% with 95% CI: 67.7-70.1) groups. Individuals with diabetes for more than five years had a higher rate of sexual dysfunction as 87.8% (95% CI: 86.6-89.0) with 100% in men and 79% in women. However, there was no significant difference in the prevalence of sexual dysfunctions related to obesity and alcohol consumption between diabetics and non-diabetics.

Conclusions: The research highlights a noteworthy association of sexual dysfunctions with individuals with diabetes, male sex, tobacco use, and hypertension. The observed high prevalence of sexual dysfunctions in both diabetic and non diabetic people is a public health concern, emphasizing the need for culturally tailored approaches to address the sexual health of the affected individuals.

Keywords: Diabetes; hypertension; lifestyle factors; sexual dysfunctions.

Correspondence: Khem B Karki, Department of Community Medicine and Public Health, MMC IOM TU, Maharajganj, Kathmandu Nepal Email: khemkarki9n@gmail.com, Phone: +9779851054190.

INTRODUCTION

Sexual dysfunctions (SD) means having trouble enjoying sex, causing distress.^{1,2} SDs are widespread worldwide and become more common with age in both men and women.³ Globally, around 40-45% of adult women and 20-30% of adult men experience some kind of sexual disorders.⁴ Sexual dysfunction is a common complication of diabetic mellitus. The systematic review shows that the prevalence of ED among diabetic men varies from 35% to 90%.⁵ Among Saudi women with diabetes, 88.7% reported experiencing sexual dysfunction.⁶ Limited data on sexual dysfunction in Nepal includes only a thesis report estimating a 58% prevalence of erectile dysfunction among diabetic men. Studying sexual dysfunction in both diabetic and non-diabetic individuals highlights the need for targeted public health efforts to address the often overlooked issue of painful sexual experiences among those with diabetes. This research aims to uncover the prevalence and factors influencing sexual dysfunction in both men and women, with and without diabetes.

METHODS

A cross-sectional comparative study was conducted at Tribhuvan University Teaching Hospital in Kathmandu, Nepal. The study specifically targeted literate individuals between the ages of 30 and 70 who were attending the medical outpatient department. The literate individuals were chosen because they were required to complete the self-administered checklist assessing their status of sexual functions. The study population was divided into two groups: individuals aged 30-70 years diagnosed with diabetes mellitus for the past six months, and a similar group without diabetes. The individuals living with diabetes for a six month as a substantial period, allowing for a more comprehensive understanding of the potential impact of diabetes on sexual functions over time. It helps in capturing chronic effects and patterns that may not be as evident in individuals with more recent diabetes diagnoses. This approach enhances the study's ability to draw meaningful conclusions about the association between diabetes and sexual dysfunction. Data collection took place over one month, from February 20th to March 19th, 2020.

The sample size was determined using Epi InfoTM⁷, taking into account a 20% prevalence of sexual dysfunction (SD) among people without diabetes (unexposed group, denoted as p₀)⁷ and 34% prevalence among people with diabetes (exposed group, denoted as p₁).⁸ Maintaining a 1:1 ratio between exposed and unexposed individuals, with 80% power and an expected non-response rate

of 20%, the sample size was calculated to be 412 (206 in each stratum). However, only 350 participants, equivalent to 85% of the calculated sample size, were participated in the study.

The participants for the study were chosen through a systematic random sampling technique within specific strata. To initiate the selection, the first case was determined using a lottery method. Subsequently, every third case from the total registrations for that particular day was included in the study. This meticulous process was consistently applied until the desired sample size was achieved, ensuring a fair and unbiased representation of participants.

Structured interview schedules were utilized to gather socio-demographic data, while self-administered questionnaires were employed to assess sexual dysfunction. For male participants, the International Index of Erectile Function (IIEF-5) was used⁹, and for female participants, the Female Sexual Function Index (FSFI-6) was employed¹⁰ to collect data on sexual functions.

The internationally acknowledged instruments, specifically the IIEF-5 and FSFI-6, underwent a meticulous translation process into Nepali. Subsequently, a back translation into English was conducted by an individual independent of the research team to assess the accuracy of the translation. Adjustments were made to the Nepali version based on this back translation. Furthermore, the translated Nepali versions underwent pre-testing, and adjustments were made based on the feedback received and used in the study. Similarly, socio-demographic inquiries underwent a similar validation process, involving pre-testing with individuals from the hospital's outpatient department. After finalization, these questions were incorporated into the study.

Additionally, physical measurements including height, weight, and blood pressure were meticulously recorded. Height was measured using a portable stature meter. Participants were instructed to remove footwear and headgear, look straight ahead, and maintain eye and ear alignment. The recorded height was in centimeters. Similarly, Weight was assessed using a portable digital scale made in Seca Germany kept in the outpatient department. Participants positioned themselves on the scale with one foot on each side, facing forward, and arms resting idly at their sides. They remained on the scale until instructed to step off, and the recorded weight was in kilograms. Blood pressure was measured using BPset made in Swiss by Rossmax® with a universal

size cuff. Prior to measurements, participants were instructed to sit quietly with legs uncrossed for 15 minutes. Three readings of systolic and diastolic blood pressure were taken, with a three-minute rest interval between each reading. The mean of the second and third readings was calculated. The cuff was placed on the left arm, positioned 1.2 to 2.5 cm above the inner side of the elbow joint artery mark positioned directly over the brachial artery. Participants were asked to rest their forearm on a table with the palm facing upward, and any clothing on the arm was removed or rolled up. The cuff was set at the same level as the heart. Prior to each participant's measurement, the equipment was calibrated to ensure accuracy and reliability.

According to the WHO STEP survey protocol, participants were inquired about their dietary practices, with a specific emphasis on the consumption of fruits and vegetables. The WHO recommends that a healthy diet consists of approximately 400 grams or five servings of fruits and vegetables.¹¹

Participants were required to answer all six questions of the FSFI-6 tool for women, essential for calculating the overall FSFI-6 scores. The total scores on FSFI-6 range from 2 to 30, with higher scores indicating better sexual function. A validated FSFI-6 score of ≤ 19 was classified as female sexual dysfunction.¹² The scoring system for FSFI-6 was based on individual domain scores, where responses to each question were graded on a scale from 0 (no sexual activity) to 1 (indicative of dysfunction) to 5 (indicative of normal sexual activity).

Similarly, the scoring system for IIEF-5 relied on individual scores, with responses to each question graded on a scale from 0 (no sexual activity) to 1 (indicative of dysfunction) to 5 (indicative of normal sexual activity). Total IIEF-5 scores ranged from 1 to 25, with higher scores reflecting better sexual function.

For the classification of sexual dysfunction in men, particularly erectile dysfunction, the following criteria were employed:

Severe ED: Participants who scored 1-7 out of 25 points.

Moderate ED: Participants who scored 8-11 out of 25 points.

Mild to Moderate ED: Participants who scored 12-16 out of 25 points. Mild ED: Participants who scored 17-21 out of 25 points.¹³

Data were entered into Epidata 3.1 and transferred into IBM SPSS version 26 for data cleaning and analysis. The tables are generated to demonstrate the prevalence of sexual dysfunction among diabetic and non-diabetic people and association of sexual dysfunction with age, sex, and diabetic condition, use of tobacco, alcohol consumption, unhealthy diet, high blood pressure and obesity are measured. During the data collection process, a dedicated room was provided to respondents to address the sensitive nature of the topic. Written informed consent was obtained from each participant, and official permission was granted by the hospital. Additionally, ethical approval for the study was obtained from the Institutional Review Committee of the Institute of Medicine in Kathmandu, Nepal.

RESULTS

A total of 350 individuals, comprising 176 men and 174 women aged between 30 and 70 years, took part in the study. The participants had a mean age of 48.3 years (standard deviation 11.074) and a median age of 49 years. The majority of the participants were married (88%) and identified as Hindu (83%). In terms of ethnicity, 56% belonged to the Brahman/chhetri group, followed by Aadhivashi/janajati (Table 1). Among the respondents, 184 individuals (52.6%) had diabetes, including 103 women and 81 men (Table 2). Table 3 displays the rates of sexual dysfunction in both diabetic and non-diabetic individuals. Among those with diabetes, 81.5% (95% CI: 80.6-81.5) experienced sexual dysfunction, while in the non-diabetic group, the prevalence was 65.2% (95% CI: 63.5-65.2). The data demonstrates a substantial increase in sexual dysfunction with advancing age in both diabetic and non-diabetic populations which is statistically significant too. The table 4 shows that 73.3% (95% CI: 72.4-73.7) of all participants experienced sexual dysfunction, with a breakdown of 63.6% (95% CI: 63.5-65.2) in women and 83.9% (95% CI 83.1-84.7) in men.

Table 4 also illustrates that 69% (95% CI: 67.5-70.3) of women with diabetes and 97.5% (95% CI: 97.4-97.6) of men with diabetes reported experiencing at least one type of sexual dysfunction. Similarly, among non-diabetic participants, 56.2% (95% CI: 54.4-58.0) of women and 72% (95% CI: 70.7-73.3) of men. In both groups, men were more affected than women. This reveals that more men were experiencing sexual dysfunctions than women in both diabetic and non diabetic group.

Table 1. Socio-demographic characteristics of the respondents n=350

Characteristics	Women		Men		Total	
	n	%	n	%	n	%
Age-Group						
30-39	43	24.4	42	24.1	85	24.3
40-49	39	22.2	55	31.6	94	26.9
50-59	61	34.7	47	27.0	108	30.9
60 and above	33	18.8	30	17.2	63	18.0
Ethnicity						
Brahmin or Chhetri	93	52.8	103	59.2	196	56.0
Aadibashi or Janajati	63	35.8	62	35.6	125	35.7
Madheshi	6	3.4	5	2.9	11	3.1
Dalit	5	2.8	3	1.7	8	2.3
Other	9	5.1	1	0.6	10	2.9
Marital Status						
Unmarried	1	0.6	7	4.0	8	2.3
Married	147	83.5	162	93.1	309	88.3
Divorce or separated	5	2.8	2	1.1	7	2.0
Widow or Widower	23	13.1	3	1.7	26	7.4
Don't disclose	0	0.0	0	0.0	0	0.0
Religion						
Hindu	147	83.5	142	81.6	289	82.6
Buddha	17	9.7	20	11.5	37	10.6
Muslim	0	0.0	1	0.6	1	0.3
Kirant	7	4.0	2	1.1	9	2.6
Christian	5	2.8	7	4.0	12	3.4
Other	0	0.0	2	1.1	2	0.6
Education						
Below primary level	69	39.2	27	15.5	96	27.4
Primary level	27	15.3	32	18.4	59	16.9
Secondary level	41	23.3	43	24.7	84	24.0
Higher secondary level	17	9.7	41	23.6	58	16.6
Bachelor level	21	11.9	20	11.5	41	11.7
Post graduate level	1	0.6	11	6.3	12	3.4
Total	176	100.0	174	100.0	350	100.0

Table 2. Age and sex-wise distribution of participants with and without diabetes

Age Group	Women				Men				Total			
	Diabetes											
	Yes		No		Yes		No		Yes		No	
	n	%	n	%	n	%	n	%	n	%	n	%
30-39	20	46.5	23	53.5	6	14.3	36	85.7	26	30.6	59	69.4
40-49	20	51.3	19	48.7	20	36.4	35	63.6	40	42.6	54	57.4
50-59	37	60.7	24	39.3	28	59.6	19	40.4	65	60.2	43	39.8
60 and above	26	78.8	7	21.2	27	90	3	10	53	84.1	10	15.9
Total	103	58.5	73	41.5	81	46.6	93	53.4	184	52.6	166	47.4

Table 3. Age-wise distribution of the sexual dysfunction among participants n=350

Age-group	Diabetes											
	Yes			No			Total					
	n	%	95% CI	n	%	95% CI	n	%	95% CI			
30-39	12	46.2	44.2 - 46.2	29	49.2	47.2 - 49.2	41	48.2	46.2 - 48.2			
40-49	31	77.5	76.4 - 77.5	36	66.7	65.2 - 66.8	67	71.3	69.9 - 71.4			
50-59	54	83.1	82.2 - 83.1	34	79.1	78.1 - 79.1	88	81.5	80.6 - 81.5			
60 and above	53	100	100.0 - 100.0	9	90	89.5 - 90.0	62	98.4	98.3 - 98.4			
Total	150	81.5	80.6 - 81.5	108	65.1	63.5 - 65.2	258	73.7	72.4 - 73.7			

Table 4. Sex-wise Distribution of the sexual dysfunctions among participants both with and without diabetes

Sex	Diabetes											
	Yes			No			Total					
	n	%	95% CI	n	%	95% CI	n	%	95% CI			
Women	71	68.9	67.5 - 70.3	41	56.2	54.4 - 58.0	112	63.6	62.0 - 65.2			
Men	79	97.5	97.4 - 97.6	67	72	70.7 - 73.3	146	83.9	83.1 - 84.7			
Total	150	81.5	80.6 - 82.4	108	65.1	63.5 - 66.7	258	73.7	72.4 - 75.0			

Table 5. Percentage distribution of Sexual dysfunctions among tobacco user participants with and without diabetes

Use of Tobacco	Diabetes								
	Yes			No					
	n	%	95% CI	n	%	95% CI			
Tobacco users	61	93.8	93.5 - 94.1	50	76.9	75.8 - 78.0			
Tobacco non users	89	74.8	73.6 - 76.0	58	57.4	55.6 - 59.2			
Total	150	81.5	80.6 - 82.4	108	65.1	63.5 - 66.7			

Table 6. percentage distribution of Sexual dysfunctions among participants with and without diabetes, who consume alcohol

Alcohol consumption	Diabetes								
	Yes			No					
	n	%	95% CI	n	%	95% CI			
Ever	66	80.5	79.2 - 81.8	41	60.3	58.0 - 62.6			
Never	84	82.4	81.2 - 83.6	67	68.4	66.4 - 70.4			
Total	150	81.5	80.2 - 82.8	108	65.1	63.0 - 67.2			

Table 7. Percentage distribution of sexual dysfunctions, according to BMI category of participants with and without diabetes.

BMI category	Diabetes								
	Yes			No					
	n	%	95% CI	n	%	95% CI			
Normal	63	91.3	90.8 - 91.3	58	67.4	65.9 - 67.5			
over weight	72	78.3	77.2 - 78.3	39	58.2	56.4 - 58.2			
obese	15	65.2	63.6 - 65.3	11	84.6	83.8 - 84.6			
Total	150	81.5	80.6 - 81.5	108	65.1	63.5 - 65.2			

Table 8. Sexual dysfunctions among participants who has high blood pressure with and without diabetes

History of BP	Diabetes				No			
	yes							
	n	%	95% CI		n	%	95% CI	
Yes	85	84.2	83.4	84.2	32	76.2	75.0	76.2
No	57	77	75.9	77.0	61	62.2	60.5	62.3
Total	142	81.1	80.1	81.1	93	66.4	64.9	66.5
Blood pressure Measured during data collection (High= systolic 140 and above and diastolic 90 and above or any one)								
Normal	93	80.9	79.3	81.0	35	57.4	54.4	57.5
High	20	83.3	81.9	83.4	7	70	67.7	70.1
Total	113	81.3	79.7	81.4	42	59.2	56.3	59.3

Table 9. Percentage distribution of the sexual dysfunctions according to the duration of diabetes mellitus.

Diabetes Duration	Women			Men			Total					
	n	%	95% CI	n	%		n	%				
<=5years	34	61.8	58.6	65.0	37	94.9	94.4	95.4	71	75.5	73.2	77.8
>=5 years	37	77.1	75.0	79.2	42	100	100.0	100.0	79	87.8	86.6	89.0
Total	71	68.9	66.2	71.6	79	97.5	97.2	97.8	150	81.5	79.7	83.3

Diabetic individuals who used tobacco exhibited a substantially higher prevalence of sexual dysfunctions with 93.8% (95% CI: 93.5-94.1) compared to non-tobacco users which was 74.8% (95% CI:73.6-76.0). Similarly, among non-diabetic individuals, tobacco users had a significantly elevated rate of sexual dysfunctions (76.9% with a 95% CI: 75.8-78.0), than non-tobacco users as 57.4% (95% CI:55.6-59.2) (Table 5). This underscores that the use of tobacco significantly contributes to sexual dysfunction regardless of diabetic status.

The data also demonstrates that nearly all survey participants, whether they had diabetes or not, reported consuming an unhealthy diet. Moreover, a significant number of these individuals experienced sexual dysfunctions, with 149 out of 184 in the diabetic group(80.9%) and 106 out of 166 in the non-diabetic group(63.8%).

Table 6 illustrates the occurrence of sexual dysfunctions among participants who consume alcohol. The data shows that individuals who never consumed alcohol had a slightly higher rate of sexual dysfunction in both categories. However, it is worth noting that the prevalence of sexual dysfunction was significantly higher in non-alcohol users and non-diabetic individuals, reaching 68.3% with a 95% confidence interval of 66.4-70.4, compared to those who ever consumed alcohol and were non-diabetic (60.3% with 95% CI: 58.0-62.6).

This discovery appears paradoxical and calls for further investigation. One possible explanation could be the limited number of participants, which might have influenced the outcomes.

In the context of Body Mass Index (BMI) categories, diabetic individuals with a normal BMI exhibited a higher prevalence of sexual dysfunctions (91.3% with a 95% CI: 90.8-91.3) compared to those who were overweight or obese. This observation could potentially be attributed to weight loss among diabetic individuals. Conversely, among non-diabetic individuals, those who were obese had a greater occurrence of sexual dysfunctions (84.6% with a 95% CI: 83.8-84.6) as shown in Table 7.

Among people with diabetes who also had a history of high blood pressure, a large percentage experienced sexual dysfunction (84.2% with a 95% CI: 83.4-84.2). The same trend was observed in non-diabetic individuals, where 76.2% (with a 95% CI: 75.0-76.2) of those with a history of high blood pressure also reported sexual dysfunction, as indicated in Table 8. Additionally, participants who were found to have high blood pressure during measurements showed a higher rate of sexual dysfunctions in both groups, with 83% in the diabetic group and 70% in the non-diabetic group. Table 8 clearly demonstrates that sexual dysfunction is linked to hypertension even in the absence of diabetes. Both diabetes and hypertension are associated with causing

sexual dysfunctions.

In this study, we observed that the longer a person has been living with diabetes, the higher the likelihood of experiencing sexual dysfunction. Table 9 illustrates this trend, particularly among diabetic individuals who have had diabetes for five years or more. Among women in this group, the rate of sexual dysfunction was 77.1% (with a 95% CI: 75.0-79.2), and among men, it was 100%, as depicted in Table 9

DISCUSSION

Prevalence of sexual dysfunctions in our study came out to be 73.3% with the breakdown of 63.6% in women and 83.9% in men. However global estimate of sexual dysfunction is around 40-45% of adult women and 20-30% of adult men.⁴ In urban China, data reveals that 35% of women and 21% of men have at least one sexual dysfunction.¹⁴ A study in US also estimated the prevalence of sexual dysfunction among men up to 52% and 63% of women.¹⁵ So the prevalence of sexual dysfunctions differ in different communities. This study also reveals that among diabetic individuals, prevalence of sexual dysfunctions is 81.5% and in non diabetic individuals, it is 65.2%. Sexual dysfunction is a common complication of diabetic mellitus. Among American men, between the ages of 40 to 70 years, prevalence of erectile dysfunction (ED) is 52% where as among men with diabetes ranges from 35% to 75%, occurring at an earlier age.¹⁶ Among men with diabetes in Bangladesh, the prevalence of the ED is 60%.¹⁷ The systematic review shows that the prevalence of ED among diabetic men varies from 35% to 90%.⁵ Among Saudi women with type 2 diabetes, 88.7% reported experiencing sexual dysfunction.⁶ This study also demonstrates an association between sexual dysfunction and advancing age, a universally observed phenomenon supported by the majority of existing researches.⁽¹⁵⁻¹⁸⁾

This research unveils that individuals with diabetes who use tobacco exhibit a significantly higher prevalence of sexual dysfunctions, reaching 93.8% which was 74.8% among non tobacco users diabetic people. Moreover, even among non-diabetic individuals, among tobacco users its 76.9 % and non tobacco users, it was 57%. It reveals that tobacco causes sexual dysfunction even there is no diabetes but tobacco triggers more among diabetics. A study conducted among Caucasian men in the United States revealed that individuals in their forties who smoke face nearly three times the risk of experiencing sexual dysfunction (odds ratio: 2.74).²² A review article additionally affirms that smoking doubles

the chances of experiencing moderate or complete erectile dysfunction. This risk remains consistent for both current and former smokers.²³ Evidence has also been discovered that supports the positive impact of quitting smoking on the recovery of erectile function.²⁴ So, the findings of this study remains consistent with other studies in the world.

Nearly 81% of participants with diabetes who followed an unhealthy diet reported experiencing sexual dysfunctions, while among non-diabetic individuals, the percentage was 63.8%. Consuming an unhealthy diet, which can contribute to obesity and overweight conditions, may elevate the risk of erectile dysfunction by 30-90% in men compared to those with normal weight. This association also applies to women.²⁵ In this research, non-diabetic individuals who are obese exhibit a higher prevalence of sexual dysfunctions (84.6% with a 95% CI: 83.8-84.6), whereas among diabetics, the occurrence is higher in individuals with normal weight. This can be attributed to the weight loss caused by diabetes.

Alcohol consumption, in this study, is not associated with the sexual dysfunctions. It might be due to the setting of the study as respondents are from hospitals who visited for some kind of ailments. Person who had problem, they might have already quit the alcohol consumption. However in other studies, alcohol consumption is significantly associated with sexual dysfunction (OR 1.12, 95% CI: 1.03-1.3).^{26, 27}

This study illustrates that diabetic individuals with a history of five years or more had sexual dysfunction by 88%(95% CI: 86.6-89.0) A study done in Nepal also highlights that the duration of the diabetes is associated with the severity of sexual dysfunction.²⁷ In this research, individuals with high blood pressure exhibited a higher prevalence of sexual dysfunctions in both groups, with rates of 83% in the diabetic group and 70% in the non-diabetic group. Additional studies indicate that the occurrence of sexual dysfunctions is seven times higher among individuals with hypertension, with a relative risk ranging from 1.3 to 6.9.^{7, 28} The majority of the individuals with sexual dysfunctions have a longer duration of diabetes than those without sexual dysfunctions.²⁹

CONCLUSIONS

The study findings reveal a higher prevalence of sexual dysfunctions among participants than the global average, underscoring cultural and behavioral

differences. Individuals with diabetes, particularly men, face an increased risk of sexual dysfunctions. Factors such as aging, tobacco use, high blood pressure, and poor dietary habits are linked to sexual dysfunctions in both diabetic and non-diabetic individuals. An integrated approach addressing behavioral risk factors, including tobacco use and unhealthy diet, coupled with the management of blood pressure and diabetes, can help reduce sexual dysfunctions. It's crucial to recognize that addressing sexual dysfunctions may also contribute to the long-term management of diabetes and high blood pressure, among other non-communicable conditions. The prevalence of sexual dysfunctions in this study is very high as it is hospital based study. So, a further population based study is indicated for population prevalence of sexual dysfunctions.

COMPETING INTERESTS

None.

REFERENCES

1. ICD-11 for Mortality and Morbidity Statistics [Internet]. [cited 2023 Nov 8]. Available from: <https://icd.who.int/browse11/l-/en#/http%3a%2f%2fid.who.int%2fcd%2fentity%2f160690465>
2. Sexual Dysfunction [Internet]. [cited 2023 Nov 8]. Available from: <https://www.plannedparenthood.org/learn/sex-pleasure-and-sexual-dysfunction/sexual-dysfunction>
3. De Rogatis LR, Burnett AL. The Epidemiology of Sexual Dysfunctions. *J Sex Med* [Internet]. 2008 Feb [cited 2023 Sep 25];5(2):289-300. [Article]
4. Lewis RW, Fugl-Meyer KS, Bosch R, Fugl-Meyer AR, Laumann EO, Lizza E, et al. Epidemiology/Risk Factors of Sexual Dysfunction. *J Sex Med* [Internet]. 2004 Jul 1 [cited 2023 Sep 25];1(1):35-9. [Article]
5. Malavige LS, Levy JC. Erectile Dysfunction in Diabetes Mellitus. *J Sex Med* [Internet]. 2009 May [cited 2023 Nov 8];6(5):1232-47. [Article]
6. AlMogbel TA, Amin HS, AlSaad SM, AlMigbal TH. Prevalence of sexual dysfunction in Saudi women with Type 2 diabetes: Is it affected by age, glycemic control or obesity? *Pak J Med Sci* [Internet]. 2017 [cited 2023 Nov 8];33(3):732-7. [Article]
7. Nicolosi A, Glasser DB, Kim SC, Marumo K, Laumann EO, Group GI. Sexual behaviour and dysfunction and help-seeking patterns in adults aged 40-80 years in the urban population of Asian countries. *BJU Int* [Internet]. 2005 [cited 2023 Nov 8];95(4):609-14. [Article]
8. Bebb R, Millar A, Brock G. Sexual Dysfunction and Hypogonadism in Men With Diabetes. *Can J Diabetes* [Internet]. 2018 Apr 1 [cited 2023 Nov 8];42:S228-33. [Article]
9. Rosen RC, Riley A, Wagner G, Osterloh IH, Kirkpatrick J, Mishra A. The international index of erectile function (IIEF): a multidimensional scale for assessment of erectile dysfunction. *Urology* [Internet]. 1997 Jun [cited 2023 Nov 8];49(6):822-30. [Article]
10. Rosen CB, Heiman S, Leiblum C, Meston R, Shabsigh D, Ferguson R, D'Agostino R. The Female Sexual Function Index (FSFI): A Multidimensional Self-Report Instrument for the Assessment of Female Sexual Function. *J Sex Marital Ther* [Internet]. 2000 Apr 1 [cited 2023 Nov 8];26(2):191-208. doi: <https://doi.org/10.1080/009262300278597>
11. Healthy diet [Internet]. [cited 2023 Nov 9]. Available from: <https://www.who.int/news-room/fact-sheets/detail/healthy-diet>
12. Isidori AM, Pozza C, Esposito K, Giugliano D, Morano S, Vignozzi L, et al. Original Research—Outcomes Assessment: Development and Validation of a 6-Item Version of the Female Sexual Function Index (FSFI) as a Diagnostic Tool for Female Sexual Dysfunction. *J Sex Med* [Internet]. 2010 Mar 1 [cited 2023 Nov 9];7(3):1139-46. [Article]
13. Rosen R, Cappelleri J, Smith M, Lipsky J, Peña B. Development and evaluation of an abridged, 5-item version of the International Index of Erectile Function (IIEF-5) as a diagnostic tool for erectile dysfunction. *Int J Impot Res* [Internet]. 1999 Dec 1 [cited 2023 Nov 9];11(6):319-26. [Article]
14. Parish WL, Laumann EO, Pan S, Hao Y. ORIGINAL RESEARCH—EPIDEMIOLOGY: Sexual Dysfunctions in Urban China: A Population-Based National Survey of Men and Women. *J Sex Med* [Internet]. 2007 Nov [cited 2023 Sep 25];4(6):1559-74. [Article]

-
15. Heiman JR. Sexual dysfunction: Overview of prevalence, etiological factors, and treatments. *J Sex Res* [Internet]. 2002 Feb [cited 2023 Nov 2];39(1):73-8.[\[Article\]](#)
 16. Chu NV, Edelman SV. Erectile dysfunction and diabetes. *Curr Diab Rep*. 2002 Feb;2(1):60-6.
 17. Mahbub MI, Kamrul-Hasan AB, Selim S, Mir AS, Saifuddin M, Pathan MF. Frequency and Predictors of Erectile Dysfunction in Bangladeshi Men with Type 2 Diabetes Mellitus: Experience from a Tertiary Center. *Mymensingh Med J MMJ*. 2019 Jan;28(1):137-43.[\[Article\]](#)
 18. DeRogatis LR, Burnett AL. The Epidemiology of Sexual Dysfunctions. *J Sex Med* [Internet]. 2008 Feb [cited 2023 Sep 25];5(2):289-300.[\[Article\]](#)
 19. Athey RA, Kershaw V, Radley S. Systematic review of sexual function in older women. *Eur J Obstet Gynecol Reprod Biol*. 2021 Dec;267:198-204.[\[Article\]](#)
 20. Heiman JR. Sexual dysfunction: Overview of prevalence, etiological factors, and treatments. *J Sex Res* [Internet]. 2002 Feb [cited 2023 Nov 10];39(1):73-8.[\[Article\]](#)
 21. Lewis RW, Fugl-Meyer KS, Bosch R, Fugl-Meyer AR, Laumann EO, Lizza E, et al. Epidemiology/Risk Factors of Sexual Dysfunction. *J Sex Med* [Internet]. 2004 Jul 1 [cited 2023 Nov 8];1(1):35-9. doi: <https://doi.org/10.1111/j.1743-6109.2004.10106.x>
 22. Gades NM, Nehra A, Jacobson DJ, McGree ME, Girman CJ, Rhodes T, et al. Association between Smoking and Erectile Dysfunction: A Population-based Study. *Am J Epidemiol* [Internet]. 2005 Feb 15 [cited 2023 Nov 10];161(4):346-51. doi: <https://doi.org/10.1093/aje/kwi052>
 23. McVARY KT, Carrier S, Wessells H. SMOKING AND ERECTILE DYSFUNCTION: EVIDENCE BASED ANALYSIS. *J Urol* [Internet]. 2001 Nov 1 [cited 2023 Nov 10];166(5):1624-32.[\[Article\]](#)
 24. Verze P, Margreiter M, Esposito K, Montorsi P, Mulhall J. The Link Between Cigarette Smoking and Erectile Dysfunction: A Systematic Review. *Eur Urol Focus* [Internet]. 2015 Aug 1 [cited 2023 Nov 10];1(1):39-46.[\[Article\]](#)
 25. Esposito K, Giugliano F, Ciotola M, De Sio M, D'Armiento M, Giugliano D. Obesity and sexual dysfunction, male and female. *Int J Impot Res*. 2008;20(4):358-65.[\[Article\]](#)
 26. Li S, Song JM, Zhang K, Zhang CL. A Meta-Analysis of Erectile Dysfunction and Alcohol Consumption. *Urol Int*. 2021;105(11-12):969-85.[\[Article\]](#)
 27. Tamrakar D, Bhatt DS, Sharma VK, Poudyal AK, Yadav BK. Association Between Erectile Dysfunction and Type 2 Diabetes Mellitus. *J Nepal Health Res Counc*. 2021 Sep 6;19(2):378-83.[\[JNHRC\]](#)
 28. McKinlay JB. The worldwide prevalence and epidemiology of erectile dysfunction. *Int J Impot Res*. 2000 Oct;12 Suppl 4:S6-11.[\[Article\]](#)
 29. Nutalapati S, Ghagane SC, Nerli RB, Jali MV, Dixit NS. Association of erectile dysfunction and type II diabetes mellitus at a tertiary care centre of south India. *Diabetes Metab Syndr*. 2020;14(4):649-53.[\[Article\]](#)