RJNMSR
Review Journal of Neurological & Medical Sciences Review

Volume 4, Issue 2, 2026

PREVALENCE AND DETERMINANTS OF FEMALE SEXUAL DYSFUNCTION AMONG TYPE 2 PATIENTS OF DIABETES IN HYDERABAD, PAKISTAN: A CROSS-SECTIONAL STUDY

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DOI: https://doi.org/10.5281/zenodo.18859504

Received	Accepted	Published
29 December 2025	13 February 2026	28 February 2026

ABSTRACT

The purpose of this study was to identify the prevalence and associated risk factors of female sexual dysfunction (FSD) in women with Type 2 diabetes mellitus (T2DM) in Hyderabad, Pakistan. This cross-sectional analytical survey was conducted among 170 married women who were registered in outpatient clinics for T2DM at a hospital in Hyderabad. A standardized questionnaire was used as the primary means of collecting demographic and clinical information about each participant, as well as using the FSFI test to screen for sexual dysfunction; the Patient Health Questionnaire (PHQ) to assess depressive symptoms; and recent HbA1c levels to determine glycemic control. Multiple logistic regression analyses were conducted to examine the association between participant characteristics and sexual dysfunction. The overall prevalence of FSD among the study population was 62.9%. The FSFI domain with the most dysfunction was sexual desire (69.2%), followed by arousal (64.5%); the least dysfunctional domain was pain (38.3%). Significant predictors of FSD identified by multivariable analysis were: age of ≥40 years (AOR = 1.97; 95% CI, 1.10-3.54), diabetes duration of ≥5 years (AOR = 1.76; 95% CI, 1.01 -3.08), glycemic control of (HbA1c ≥7.0%) (AOR = 2.21; 95% CI, 1.25-3.92), diabetic complications (AOR = 1.88; 95% CI, 1.05–3.36) and depressive symptoms (AOR = 2.67; 95% CI = 1.42-5.01). Additionally, women who had completed secondary education or higher were less likely to have FSD (AOR = 0.58; 95% CI, 0.33-0.99).

Keywords: *Female sexual dysfunction; Type 2 diabetes mellitus; Education; Prevalence; Determinants; Pakistan*

Introduction

Background of Study

Type 2 diabetes mellitus (T2DM) has rapidly become the leading non-communicable disease (NCD) in terms of increasing prevalence and appears to be concentrated in lower-middle income nations. According to a recent review of estimates from several different countries, there are millions of adults around the world living with diabetes, indicating a substantial increase over the past 10 to 20 years (WHO, 2023), which will require greater focus on both metabolic control and complications from long-term exposure to high blood glucose due to T2DM (Zhou et al., 2024). In Pakistan, however, the burden of diabetes is particularly severe, with very high levels of diabetes prevalence as reported by the International Diabetes Federation (IDF) (2025), and millions of adults are currently living with diabetes in that country, making it one of the most severely impacted countries in the world regarding diabetes.

Although managing blood glucose levels and vascular problems related to diabetes is usually the focus of diabetes professionals, the impact of living with diabetes on a person's sexual health is also very important (but often neglected) in terms of both physical and emotional factors that contribute to their quality of life. The term female sexual dysfunction refers to a wide-ranging set of symptoms associated with female sexual dysfunction, including decreased libido (desire), problems achieving arousal, inadequate lubrication, difficulty reaching orgasm, lack of satisfaction (frustration), and experiencing pain/discomfort during sexual activity (Navriya et al., 2025). The symptoms of female sexual dysfunction should be addressed by healthcare providers when they become persistent and cause distress to the individual. Female sexual dysfunction has been found not only to be a "psychological" disorder but an increasingly recognized Biopsychosocial disorder in women with diabetes, impacting their physical and mental health and quality of life (Navriya et al., 2025).

Research has shown that women with T2DM are more likely than women without diabetes to develop sexual issues (FSD) (Rosen et al., 2000). The different studies, reviews, and meta-analyses have shown there is significant variability in the prevalence of FSD among women diagnosed with T2DM; however, the aggregate prevalence rate is reported to be quite high (Rahmanian et al., 2019). There are many biological pathways that can contribute to FSD in women with T2DM, including chronic elevated blood glucose levels (hyperglycemia), insulin sensitivity/resistance (IR), compromised vascular systems leading to impaired blood flow to the pelvic area (genital area) due to poor circulation, as well as other factors, including diabetic neuropathy, hormone changes, and inflammation (Pontiroli et al., 2013). Furthermore, the biological pathways are influenced by several psychosocial factors, including depression, diabetes distress, relationship stressors, and cultural barriers to seeking help (Laumann et al., 1999). As such, FSD in women with T2DM should be viewed as a multifaceted issue impacted by multiple interconnected factors rather than isolated as being the result of a single cause (Ahmed et al., 2023).

Research has demonstrated that several factors are increasingly reported to be associated with sexual dysfunction (FSD) among women who have type 2 diabetes mellitus (T2DM). These factors include advanced age and menopause, long history of T2DM, inadequate blood sugar (i.e. glycated hemoglobin A1c or HbA1C), complications of T2DM, anti-hypertensives used along with hypertension, and symptoms of anxiety and depression (Pasaribu et al., 2023). The limited research on FSD in women with T2DM indicates that sexual dysfunction is common in the populations studied in Pakistan and was associated with psychopathology (i.e. anxiety and depression) and other socio-demographic and clinical variables (Gul et al., 2021). Despite the high burden of diabetes in Pakistan, the limited number of available studies has limited geographic areas included, and therefore there may be some meaningful disparities or differences among determinants of FSD based on educational attainment, socio-economic status, gender roles, access to T2DM care, mental health stigma, and openness to discussing sexual problems with their provider in the future (Sabtain, 2022).

Aim of Study

This study aims to explore the prevalence rates and the socio-demographic, clinical, and psychosocial factors that affect female sexual dysfunction in a sample of women with type two diabetes mellitus within Hyderabad, Pakistan (Figure 1). By establishing local evidence regarding the factors associated with female sexual dysfunction, this study will have a better understanding of how individualized diabetes management to patients.

Hypothesis of Study

H1: There is a significant association between age and female sexual dysfunction among women with type 2 diabetes mellitus.

H2: There is a significant association between duration of type 2 diabetes mellitus and female sexual dysfunction.

H3: There is a significant association between glycemic control and female sexual dysfunction among women with type 2 diabetes mellitus.
H4: There is a significant association between presence of diabetic complications and female sexual dysfunction among women with type 2 diabetes mellitus.
H5: There is a significant association between depressive symptoms and female sexual dysfunction among women with type 2 diabetes mellitus.
H6: There is a significant association between educational attainment and female sexual dysfunction among women with type 2 diabetes mellitus.
H7: There is a significant association between domain of sexual dysfunction (sexual desire and arousal) and overall presence of female sexual dysfunction among women with type 2 diabetes mellitus.

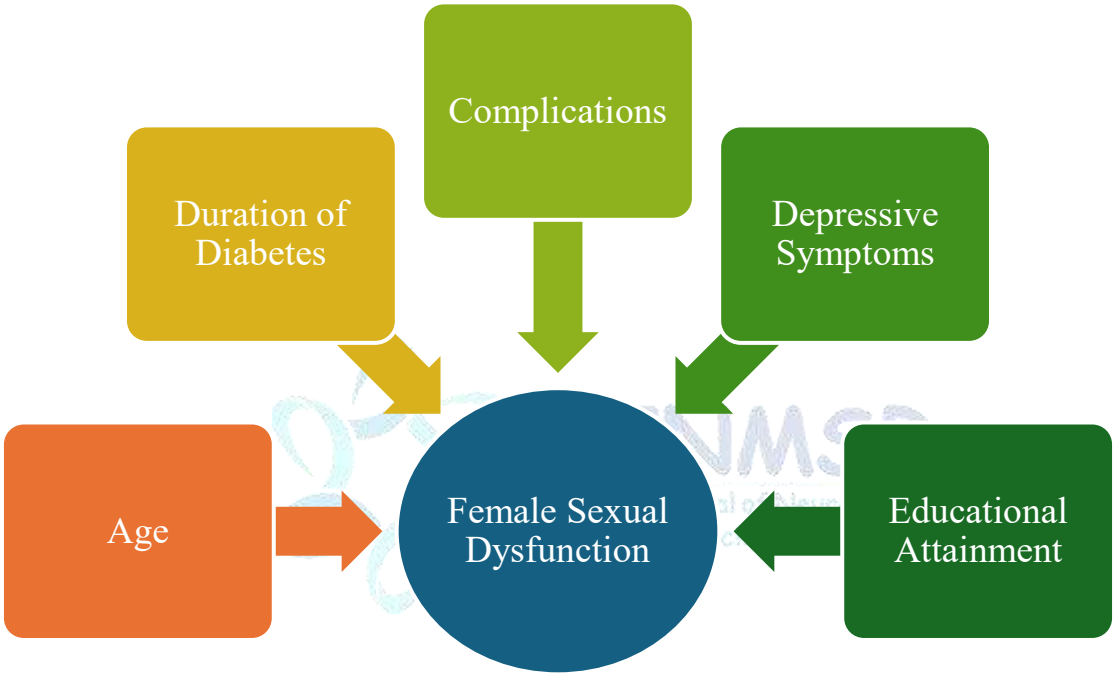

Figure 1 Conceptual Framework

Research Methodology

Research Design

The study conducted an analysis of the causal relationship between female sexual dysfunction (FSD) and its associated factors, using a cross-sectional research design. A cross-sectional design was the most appropriate for measuring prevalence and identifying the associations between FSD and its associated factors among women diagnosed with type 2 diabetes mellitus (T2DM).

Study Setting

The research was performed in Hyderabad, Sindh, Pakistan, at several diabetes and medical clinics that have affiliations with tertiary-level hospitals. The participating clinics provide routine diabetes health care for women from different socioeconomic and educational backgrounds; thus, they fit well into the overall design objectives of this investigation.

Study Population

Women who have type 2 diabetes mellitus are a part of the study sample. Data was collected from women who were receiving outpatient clinical care at the time data collection occurred.

Inclusion Criteria

Women who were married, had been diagnosed with diabetes mellitus type 2 for a minimum of twelve months and were at least 18 years old were

included as potential subjects for the study. To qualify as a subject of the study, participants had to have been cohabitating with their spouse, be capable of reading and responding to the questionnaire, and sign written informed consent.

Exclusion Criteria

The study excluded women if they were diagnosed with type 1 diabetes mellitus or gestational diabetes, were currently pregnant or in their post-partum period, had a past diagnosis of a major psychiatric disorder (other than depression), and if they had a diagnosis of a known gynecological malignancy, or if they have a diagnosis of a severe chronic illness that is not related to diabetes, and that may affect sexual function were also excluded.

Sample size and Sampling Technique

A single population proportion formula was used to calculate the sample size with an assumed prevalence of female sexual dysfunction in women with type 2 diabetes mellitus (T2DM) as indicated by earlier studies, at a 95% confidence level, with a 5% margin of error on the results. Once adjusted for estimated non-responses, the final number of women needed was 170. A non-probability, consecutive sampling design was applied to invite eligible women seen in the clinics during collecting data until the target sample size was reached.

Data collection Instruments

Data collection was conducted through a strictly structured questionnaire given in-person in a confidential and secure environment supporting participant comfort. The questionnaire included four segments:

1. Socio-Demographic Characteristics

The section included information on age, education, employment status and marital duration.

2. Clinical Characteristics

Clinical information such as how long a person has had diabetes, what type of treatment they are currently receiving to treat it, whether they have any complications of diabetes (such as neuropathy, retinopathy, and nephropathy), and how well their blood sugar levels are controlled were all included. The last recorded HbA1c test results (within 3 months) were collected from the individual's medical file. HbA1c equal to or greater than 7% points towards poor glycemic control.

3. Assessment of Female Sexual Dysfunction

The evaluation of female sexual function was performed using the FSFI (Female Sexual Function Index), a self-reported, validated 19-item assessment tool measuring sexual desire, arousal, lubrication, orgasm, satisfaction, and pain. The FSFI total score was derived following standardized scoring methods and compared to a validated cutoff score to categorize participants as being diagnosed with or without female sexual dysfunction.

4. Assessment of Depression Symptoms

Depressive symptoms were measured utilizing an established and reliable depression assessment tool (for example, the Patient Health Questionnaire-9 [PHQ-9]). Depressive symptoms were classified as present for persons who scored greater than a set threshold point.

Data Analysis

Statistical Package for the Social Sciences (SPSS) version 23 was used to enter and analyses data. Descriptive statistics summarized the participants' attributes and estimated the prevalence of FSD in females. To examine the relationships between independent variables and FSD, bivariate analysis was used. Multivariable logistic regression modelling was used to identify independent determinants of FSD, with variables having a p-value of < 0.20 on bivariate analysis included in the regression modelling. The AOR with 95% CIs was reported, and a p-value of < 0.05 was considered statistically significant.

Ethical Consideration

Prior to data collection, written informed consent was obtained from all individuals who participated in this study and ethical approval was obtained from the Institutional Review Board/Ethics Committee of the appropriate institution. All research data collected were maintained in a

confidential manner using unique identification numbers for each participant and limiting access to the research team only.

Methodological Rigor

Validated instruments were used for data collection from the study's participants to guarantee accuracy in the collected data and maintain uniformity for interviewers during the training session on administering pre-test questionnaires prior to data collection. When available, medical records will be consulted for clinical variables as part of the validation process

Result

Table 1Socio-Demographic and Clinical Characteristics of Participants (n=170)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	< 40	68	40.0
	≥ 40	102	60.0
Educational Attainment	Primary or less	94	55.3
	Secondary or above	76	44.7
Duration of Diabetes	< 5 years	71	41.8
	≥ 5 years	99	58.2
Glycemic Control (HbA1c)	< 7.0% (Good)	63	37.1
	≥ 7.0% (Poor)	107	62.9
Diabetic Complications	No	77	45.3
	Yes	93	54.7
Depressive Symptoms	Absent	64	37.6
	Present	106	62.4
Female Sexual Dysfunction (FSD)	Absent	63	37.1
	Present	107	62.9

The study included a total of 170 women with Type 2 Diabetes Mellitus (table 1). Most of the women were aged over 40 years (60.0% of participants), with 40.0% of participants being less than 40 years of age. When looking at educational attainment, more than half of the women had Primary Education or lower (55.3% of study sample), whereas 44.7% of women had Secondary Education or higher. With respect to the clinical characteristics of females with Type 2 Diabetes, 58.2% of women had been living with Diabetes for at least 5 years, and 41.8% of women reported living with Diabetes for less than 5 years. In terms of glycemic control, most women with Type 2 Diabetes (62.9%) were classified as having Poor Glycemic Control (HbA1c ≥ 7.0%), as compared to 37.1% of women who maintained Good Glycemic Control. In total, over half the participants (54.7%) had at least one diabetic complication; and 62.4% of women demonstrated signs of Depression in the screening. Female sexual dysfunction existed in a majority (62.9%) of the study population, while 37.1% of study participants reported no sexual dysfunction.

Table 2 Domain-Specific Prevalence of Female Sexual Dysfunction (n =107)

FSFI Domain	Affected (n)	Percentage (%)
Sexual Desire	74	69.2
Arousal	69	64.5
Lubrication	58	54.2
Orgasm	55	51.4
Satisfaction	49	45.8
Pain	41	38.3

In table 2 of the 107 women diagnosed with female sexual dysfunction, their sexual desire was the most affected area (69.2%), with the next most common area being sexual arousal (64.5%). Over half (54.2%) of the women had issues with lubrication, and over one half (51.4%) of the women have difficulty achieving an orgasm. Additionally, 45.8% of the participants experienced less than optimal sexual satisfaction and 38.3% of the women reported experiencing pain while having sex; therefore, pain is considered the most clear-cut example of sexual dysfunction in the women who were diagnosed with female sexual dysfunction.

Table 3 Multivariable Logistic Regression Analysis of Factors Associated With Female Sexual Dysfunction

Variable	(AOR)	95% CI		p-value
		LL	UL	
Age ≥ 40 years	1.97	1.10	3.54	0.023
Duration of diabetes ≥ 5 years	1.76	1.01	3.08	0.047
Poor glycemic control (HbA1c ≥ 7.0%)	2.21	1.25	3.92	0.006
Presence of diabetic complications	1.88	1.05	3.36	0.034
Depressive symptoms	2.67	1.42	5.01	0.002
Secondary education or above	0.58	0.33	0.99	0.046

Note: AOR= Adjusted Odds Ratio, CI = Confidence Interval

Through multivariable logistic regression analysis (table 3), the study identified various factors that significantly contribute to female sexual dysfunction among women diagnosed with type 2 diabetes. Age (≥40 yrs) was associated with the female sexual dysfunction (AOR = 1.97, 95% CI= 1.10-3.54, P = 0.023), as was a duration of type 2 diabetes greater than five years, which also significantly contributed to female sexual dysfunction (AOR= 1.76, 95% CI= 1.01-3.08, P = 0.047). Poor glycemic control (HbA1c ≥7.0%) was significantly associated with female sexual dysfunction (AOR=2.21 95% CI= 1.25-3.92, P=0.006). Diabetic complications were also significantly associated with female sexual dysfunction (AOR=1.88, 95% CI= 1.05-3.36, P=0.034). Depressive symptoms were strongly associated with female sexual dysfunction (AOR=2.67, 95% CI = 1.42 - 5.01, P=0.002). Higher educational attainment was also associated with female sexual dysfunction, but in the opposite direction (AOR=0.58, 95% CI: 0.33-0.99, P=0.046).

Discussion

The study's cross-sectional design demonstrated a strikingly high prevalence of female sexual dysfunction (FSD) (62.9% prevalence) among female patients with Type 2 Diabetes Mellitus (T2DM) living in the city of Hyderabad, Pakistan. The prevalence rates documented in this study for FSD are in line with those documented in the literature, from both local and international studies; however, the specific findings for FSD vary widely depending on the population studied, the measurement tools used, and the socio-cultural context (Gebeyehu et al., 2023). Previous systematic reviews and pooled analyses have documented the existence and extent of sexual dysfunction among populations diagnosed with diabetes throughout the world; for females, the estimates of prevalence for sexual dysfunction often fall within the same range as those documented in the present study. The high prevalence of FSD documented in this study is also consistent with previous reports from the region of Pakistan indicating that sexual dysfunction is a significant concern among women with T2DM and therefore it requires attention from clinicians treating these patients (Gul et al., 2021). The present study's finding of a high prevalence of FSD among women with T2DM should be viewed considering these previous studies; together, they indicate that sexual dysfunction represents a substantial but often unrecognized decrease in

quality of life for women with T2DM in this region.

Sexual desire and arousal were reported by 69.2% and 64.5%, respectively, as being the most affected domains of Women with FSD (female sexual dysfunction). Pain was the least represented of the sexual functioning domains. The reporting patterns presented by these women follow a trend seen in many reports of women with diabetes, where sexual desire and sexual arousal were more often reported than concern about sexual pain or discomfort, although this varies by context and the tools used to assess sexual function (Rakh et al., 2025). A clinical interpretation of this distribution makes sense because the physiological pathways involved in the relationship between diabetes and sexual function all contain mechanisms that affect sexual desire and arousal (e.g., additional disturbances in the normal vascular and neurologic pathways supporting sexual functions, and other metabolic disturbances that occur). In addition, psychological and relational factors may have a particular effect on the ability of women with diabetes to experience sexual desire and sexual arousal.

According to adjusted analyses, sexual dysfunction (FSD) has been shown to have a larger association with age of ≥40 years or more than five years in diabetes duration. Further According to adjusted analyses, sexual dysfunction (FSD) has been shown to have a larger association with age of ≥40 years or more than five years in diabetes duration. Furthermore, age of increase over time and length of disease duration shows adverse sexual function for women with Diabetes. These associations are likely a reflection of continual exposure to high metabolic stress, progressive vascular and neural changes, a consequence of maturity menopause for some women, and the accumulated long-term psychosocial burden experienced by those with chronic diseases (Gupta et al., 2024). Importantly, the fetches data suggest that there is a significant difference between FSD and various demographic factors for the Future; however, due to the study's cross-sectional design (it does not establish chronological sequence), this data suggest that there should be consistent routine screenings based on chronology and disease duration in diabetes follow-up visits. ore, age of increase over time and length of disease duration show adverse sexual function for women with Diabetes. These associations are likely a reflection of continual exposure to high metabolic stress, progressive vascular and neural changes, a consequence of Maturity Menopause for some women, and the accumulated long-term psychosocial burden experienced by those with chronic diseases. Importantly, the fetches data suggest that there is a significant difference between FSD and various demographic factors for the Future; however, due to the study's cross-sectional design (it does not establish chronological sequence), this data suggest that there should be consistent routine screenings based on chronology and disease duration in diabetes follow-up visits (Petolicchio et al., 2025).

There was also a relationship between glycemic dysregulation (HbA1c ≥ 7.0%) and female sexual dysfunction (FSD) independent of the previous associations above. These results are consistent with the clinical literature that report an increase in the number of women reporting sexual problems as HbA1c levels increase and the literature reporting a strong correlation between glycemic measures and sexual outcomes. A hypothesis for these findings is that chronic high blood sugars (hyperglycemia) may lead to endothelial complications and neuropathy which in turn may cause a decrease in the flow of blood to the genitalia, decrease in the sensitivity of the genitalia and results of Fatigue, Stress and Diabetes Distress combined have a cumulative effect on sexual function. On the other hand, there also exists research with contradictory findings in some populations suggesting that glycemic management interacts with other psychosocial and clinical factors in conjunction with impaired sexual function (FSD).

Diabetic complications are significantly correlated with FSD, supporting the clinical evidence that microvascular and neuropathic complications can affect sexual health outcomes. Past studies have identified neuropathy pathways and the overall degree of complication burden as predictors of sexual dysfunction symptoms and related

psychological distress (Zamponi et al., 2020). Thus, this finding indicates that women experiencing complications of diabetes may be a priority population for proactive screening and combined treatment for physical complications and quality of life issues (Fang & Mushtaque, 2024).

Although it is important to note that the findings support a strong association between depressive symptoms and FSD, they also mirror evidence based in Pakistan regarding the correlation of sexual dysfunction and depressive disorders in type 2 diabetic females (Hashim et al., 2023). Furthermore, the ability to associate the burden of depressive symptoms with decreased sexual well-being for diabetic individuals is evident from research conducted in many international locations. The relationship between the two disorders could be considered bidirectional; depression may affect an individual's ability to engage in sexual activities via reduced interest or motivation, perceived inadequacies, relationship strains or through neurobiological pathways. At the same time, sexual dysfunction can produce a substantial amount of psychosocial strain on an individual, and therefore, the relationship between the two (depression and sexual dysfunction) is potentially bidirectional in that they may exacerbate the impact of one another. The importance of including both mental health screening and referral options within the framework of routine diabetes care for female diabetic patients is emphasized by this body of evidence (Gherbon et al., 2020).

In the adjusted model, higher education (≥ secondary education) was found to have an independent association with lower FSD (AOR < 1). One explanation might be because educated women have more knowledge regarding disease states, use better communication skills to communicate with medical providers, have greater access to health care, feel more empowered to seek care when needed, and are better able to manage diabetes and comorbidities effectively when experiencing distress (Alshehri et al., 2022). While education-health gradients are widely recognized among many health outcomes, the relationship between women's education and their ability to recognize signs and symptoms of ill health, to seek help and/or receive appropriate counselling regarding sexual health, is not widely documented. Education is likely to be particularly important for women in culturally sensitive areas such as sexual health where they need to engage in a respectful and informed manner with their health care providers.

Limitations

Some of the key limitations of this study should be recognized. First, the cross-sectional nature of this study limits our ability to draw causal conclusions about T2DM amongst females. Secondly, the fact that participants were recruited from a clinical setting may limit generalizability of findings to all female T2DM patients in the community. Thirdly, sensitive topics may yield reporting bias even though confidentiality and privacy safeguards were put in place. Nonetheless, the results of adjusted analyses provide additional confidence that the relationships observed in this study were not simply due to the confounding effects of other variables included in the analyses.

Implications

Based on the results, it appears that FSD (female sexual dysfunction) is present in a significant number of women diagnosed with Type 2 Diabetes Mellitus (T2DM) in Hyderabad, whereas common associated factors include socio-demographic factors (such as age and educational level), clinical factors (time since diagnosis, HbA1c and complication rates) and psychosocial factors (such as depression). National guidelines and systematic reviews indicate that when treating women with diabetes who are also experiencing FSD, clinicians should adopt a "whole person perspective" to managing these patients, including providing optimal diabetes control, evaluating complication severity, assessing overall mental health and providing ongoing routine care.

Conclusion

This research identifies a high prevalence of sexual dysfunction amongst women diagnosed with type 2 diabetes? but only approximately 66% of women living with type 2 diabetes in Hyderabad (Pakistan) report experiencing sexual dysfunction

within the past 12 months of survey enrollment. The two most reported areas of dysfunction are desire and arousal; therefore, this demographic is experiencing a higher prevalence of sexual response-related disturbances during the ability to experience sexual desire and arousal compared to their counterparts without diabetes. Women living with type 2 diabetes tend to report a high degree of sexual dysfunction, and this impacts the degree to which their overall quality of life is affected by living with diabetes. Further analysis demonstrates that age, duration of diabetes, poor blood glucose control, the presence of complications related to diabetes, depressive symptoms, and the level of education are all significantly associated with the development of female sexual dysfunction in women diagnosed with type 2 diabetes. Finding both the physical (biomedical) and psycho-behavioral determinants influences the understanding of how complex female sexual dysfunction can be; however, together these determinants collectively contribute to the complicated nature of female sexual dysfunction and therefore, ultimately provide opportunities for the provision of positive sexual health and mental health care/therapy to women who currently live with type 2 diabetes. The authors emphasize that for healthcare professionals to properly address the whole patient and to deliver the best possible care to their patients living with diabetes, the routine assessment of sexual health and the mental health of all patients living with diabetes should occur in addition to providing ongoing blood glucose management. In addition, by placing a standardized screening tool for sexual health and providing psycho-behavioral information within standard diabetes care practices, improvements in women's overall quality of life (and health) who live with type 2 diabetes will occur in this community.

References

Ahmed, S., Rosario Yslado Méndez, Naveed, S., Akhter, S., Mushtaque, Malik, M. A., Ahmad, W., Roger Norabuena Figueroa, & Younas, A. (2023). Assessment of hepatitis-related knowledge, attitudes, and practices on quality of life with the moderating role of internalized stigma among hepatitis B-positive patients in Pakistan. *Health Psychology and Behavioral Medicine*, *11*(1). https://doi.org/10.1080/21642850.2023.2192782

Alshehri, K. M., Althobaiti, R. A., Alqurashi, A. I., Algethami, N. E., & Alswat, K. A. (2022). Prevalence of Sexual Dysfunction in Women with Type 1, 2 Diabetes and Thyroid Disorder: A Cross-Sectional Study in Taif City, Saudi Arabia. *International Journal of Women's Health*, *Volume 14*, 385–394. https://doi.org/10.2147/ijwh.s343065

Derosa, G., Romano, D., D'Angelo, A., & Maffioli, P. (2023). Female sexual dysfunction in subjects with type 2 diabetes mellitus. *Sexuality and Disability*, *41*(2), 221–233. https://doi.org/10.1007/s11195-022-09765-6

Fang, S., & Mushtaque, I. (2024). The Moderating Role of Health Literacy and Health Promoting Behavior in the Relationship Among Health Anxiety, Emotional Regulation, and Cyberchondria. *Psychology Research and Behavior Management*, *Volume 17*, 51–62. https://doi.org/10.2147/prbm.s446448

Gebeyehu, N. A., Molalegn Melese Gesese, Kirubel Dagnaw Tegegne, Kebede, Y., Gizachew Ambaw Kassie, Misganaw Asmamaw Mengstie, Melkamu Aderajaw Zemene, Berihun Bantie, Sefineh Fenta Feleke, Malik, T., Endeshaw Chekol Abebe, Denekew Tenaw Anley, Anteneh Mengist Dessie, Wubet Alebachew Bayih, & Getachew Asmare Adella. (2023). Global prevalence of sexual dysfunction among diabetic patients from 2008 to 2022: Systematic review and meta-analysis. *Metabolism Open*, *18*, 100247–100247. https://doi.org/10.1016/j.metop.2023.100247

Gherbon, A., Frandes, M., Roman, D., Anastasiu-Popov, D., & Timar, R. (2020). Risk factors for sexual dysfunction in Romanian women with type 1 diabetes mellitus and chronic autoimmune thyroiditis: a comparative cross-sectional study. *Diabetology & Metabolic Syndrome*, *12*(1). https://doi.org/10.1186/s13098-020-00602-7

Gul, R., Khan, A., Yasmin, R., & Nadeem, S. (2021). Sexual dysfunction: Prevalence and relationship with depression and socio-demographic factors among women with type 2 diabetes mellitus in Pakistan. *Journal of the Pakistan Medical Association, 71*(5), 1326–1331.

Gupta, P., Doherty, L., Temprosa, M., Pop-Busui, R., Gadde, K. M., Singh, P., Owora, A. H., Wessells, H., & Sarma, A. V. (2024). Prevalence and predictors of female sexual dysfunction among sexually active women in the diabetes prevention program outcomes study. *Neurourology and Urodynamics*, *43*(4), 977–990. https://doi.org/10.1002/nau.25436

Hashim, R., Forde, R., Davide Ausili, & Forbes, A. (2023). Prevalence and associated factors of sexual dysfunction in premenopausal women with type 1 diabetes: A systematic review and meta-analysis. *Diabetic Medicine*, *40*(11). https://doi.org/10.1111/dme.15173

International Diabetes Federation. (2023). *IDF diabetes atlas* (10th ed.). https://diabetesatlas.org

Laumann, E. O., Paik, A., & Rosen, R. C. (1999). Sexual dysfunction in the United States: Prevalence and predictors. *JAMA, 281*(6), 537–544. https://doi.org/10.1001/jama.281.6.537

Petolicchio, C., Spacco, G., Delle Chiaie, E., Calevo, M. G., Minuto, N., Maggi, D. C., Ferone, D., Bassi, M., & Cocchiara, F. (2025). Glycometabolic Control Does Not Affect Sexual Function in a Cohort of Women with Type 1 Diabetes: Results of an Observational Pilot Study. *Endocrines*, *6*(2), 25. https://doi.org/10.3390/endocrines6020025

Pontiroli, A. E., Cortelazzi, D., & Morabito, A. (2013). Female sexual dysfunction and diabetes: A systematic review and meta-analysis. *The Journal of Sexual Medicine, 10*(4), 1044–1051. https://doi.org/10.1111/jsm.12065

Rahmanian, E., Salari, N., Mohammadi, M., & Jalali, R. (2019). Evaluation of sexual dysfunction and female sexual dysfunction indicators in women with type 2 diabetes: A systematic review and meta-analysis. *Diabetology & Metabolic Syndrome, 11*, Article 73. https://doi.org/10.1186/s13098-019-0468-8

Rakh, S., Jadhav, B., Bardhan, N., Poudwal, Y., & Nasikkar, N. (2025). Assessment of Sexual Dysfunction and Its Correlates in Females Living with Type 2 Diabetes Mellitus. *Journal of Psychosexual Health*. https://doi.org/10.1177/26318318251406755

Rosen, R., Brown, C., Heiman, J., Leiblum, S., Meston, C., Shabsigh, R., Ferguson, D., & D'Agostino, R. (2000). The Female Sexual Function Index (FSFI): A multidimensional self-report instrument for the assessment of female sexual function. *Journal of Sex & Marital Therapy, 26*(2), 191–208. https://doi.org/10.1080/009262300278597

Sebtain, A. (2022). Sexual dysfunction in female patients with type 2 diabetes mellitus presenting to a tertiary care hospital. *Journal of Postgraduate Medical Institute, 36*(1), 32–35.

World Health Organization. (2023). *Diabetes*. https://www.who.int/news-room/fact-sheets/detail/diabetes

Zamponi, V., Mazzilli, R., Bitterman, O., Olana, S., Iorio, C., Festa, C., Giuliani, C., Mazzilli, F., & Napoli, A. (2020). Association between type 1 diabetes and female sexual dysfunction. *BMC Women's Health*, *20*(1), 73.

https://doi.org/10.1186/s12905-020-00939-1

Zhou, B., Lu, Y., Hajifathalian, K., Bentham, J., Di Cesare, M., Danaei, G., ... NCD Risk Factor Collaboration (NCD-RisC). (2024). Worldwide trends in diabetes prevalence and treatment from 1990 to 2022: A pooled analysis of 1,108 population-representative studies. *The Lancet*. https://doi.org/10.1016/S0140-6736(23)02776-0