

Frequency of Erectile Dysfunction in people with Type-2 Diabetes Mellitus at a Tertiary Care Centre

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ABSTRACT

Introduction: Erectile Dysfunction (ED) is a distressing complication of diabetes among male patients. It has a physical, psychological and social impact not only on the affected individual but also on the family and society in general. Despite being a serious concern affecting sexual health, this problem is seldom discussed by patients with physicians in developing countries. The worldwide prevalence of erectile dysfunction among male diabetic patients varies from 20% to 85%.

Objective: The aim of this study was to determine the prevalence of erectile dysfunction and associated risk factors in Type 2 diabetic men attending the tertiary care hospital in Karachi, Pakistan.

Methodology: A cross-sectional study was conducted on selected 210 adult diabetic male patients attending tertiary care hospital from Nov 2024 to Jan 2025. Simple random sample technique was used to select study participants. An international index of erectile dysfunction questionnaire, also known as the Sexual Health Inventory of Men (SHIM) containing five questions was used to assess the presence and severity of erectile dysfunction. Bivariate and multivariable binary logistic regression analysis were performed to identify factors associated with erectile dysfunction. Statistical significance was declared at p-value <0.05.

Results: In this study, we found that the overall prevalence of Erectile dysfunction among T2DM male patients was 79.04%, with 25.3% suffering from mild, 34.9% mild to moderate, 31.3 % moderate and 8.4% severe erectile dysfunction. Higher Age group patients, longer duration of diabetes were the factors most associated with erectile dysfunction.

Conclusion: This study has revealed a high magnitude of erectile dysfunction among male diabetic patients and its association with higher age, and longer duration of diabetes. Thus, assessment and management for erectile dysfunction should be part of routine medical care for adult male diabetic patients.

KEY WORDS: Erectile Dysfunction; International index of erectile dysfunction; Type 2 Diabetes Mellitus; Prevalence.

INTRODUCTION

Diabetes mellitus can simply be described as a group of diseases characterized by high levels of blood glucose resulting from defects in insulin production, insulin action, or both.¹ The American Diabetes Association (ADA) classifies diabetes

into several types: this category has type 1, type 2, gestational diabetes, and other specific types that may be attributable to congenital syndromes, certain drugs, diseases, and others.² The global estimates by the International Diabetes Federation (IDF) shows that the prevalence of diabetes was 537 million people in

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2021 and is predicted to reach 783 million in 2045.³ The World Health Organization, forecast that the total diabetes population will double in the next thirty years.⁴ Type 2 Diabetes is a chronic and progressive metabolic disorder characterized by insulin resistance and relative insulin deficiency, leading to persistent hyperglycemia.⁵ It represents health challenge due to its high prevalence and associated serious complications including cardiovascular disease, stroke, peripheral arterial disease, neuropathy, nephropathy, retinopathy, non-traumatic lower extremity amputations, blindness and sexual dysfunction.⁶ Effective glycemic control is paramount to mitigate these complications and improve the quality of life for individuals with T2DM.⁷ The rising number of diabetic patients in Pakistan highlights the need for more studies on complications, particularly erectile dysfunction (ED), which remains underreported. Recent research has begun addressing this gap, emphasizing the prevalence of ED among men with Type 2 Diabetes Mellitus (T2DM).⁸ Discussing sexual health is a very sensitive issue in Pakistan, masking the real magnitude of problem in the population with diabetes.⁹ It is even found that little research has been conducted in the cities of Pakistan especially in Karachi, and knowing its current magnitude and determining factors may be important for early detection of the problem, managing the problem and hence improving the quality of life of the people living with diabetes.¹⁰ Therefore, this study seeks to gather information with the aim of assessing the prevalence of erectile dysfunction and associated factors among patients with diabetes attending tertiary care hospital Karachi, Pakistan.

METHODOLOGY

This study employs a cross-sectional design to assess the frequency of erectile dysfunction among married male type 2 diabetic patients aged 18 -75 years. The study was conducted in the outpatient department of Baqai Institute of Diabetes and Endocrinology at Karachi, Pakistan. This setting was chosen to ensure access to a diverse patient population, representing various demographic and socioeconomic backgrounds. The study was conducted over three months from Nov 2024 to Jan 2025, including participant recruitment, data collection, and analysis after Ethical approval from the Institutional review board.

Inclusion Criteria: Adult males aged between 18 - 75 years with diagnosis of T2DM.

Exclusion Criteria: Patients with severe hepatic or renal impairment, psychiatric illnesses or on psychiatric drugs. Patients with uncontrolled or acute CVDs within last 3 months.

Sample Size: The sample size was determined by using the single population estimation formula by considering margin of error of 5%, confidence level of 95%, and the proportion of ED among patients with

DM of 85.5%. The calculated sample size was 191, and by adding 10% non-response rate, the final sample became 210.

The patients were asked to complete a questionnaire with regards to sexual health and ED symptoms. The questionnaire was first prepared in English and then translated to urdu language.

Privacy and confidentiality were maintained. After obtaining written consent from patient to enter the study, demographic information such as age, clinical information such as duration of diabetes, diabetes control, diabetes complications, current treatment and life style factors such as smoking, alcohol consumption, physical activity level, dietary habits with psychological and emotional well-being were collected. Informed consent was obtained from all participants, and confidentiality of the collected data was ensured.

Data Analysis: Data were entered and analyzed using SPSS software. Prevalence rates were calculated and correlation between ED and diabetes -related factors were assessed using chi-square tests and regression analysis. A confidence level of 95% was used, and a p-value < 0.05 was considered statistically significant.

RESULTS

A total of 210 adult male diabetic patients were included in the study. The majority of participants were in the age group of 46–59 years (38.09%), followed by those aged over 60 years (34.28%), 31–45 years (22.85%), and 18–30 years (4.76%) (Table 1). In terms of diabetes duration, 51.42% (n=108) had diabetes for less than 5 years, 31.42% (n=66) for 5–10 years, and 17.14% (n=36) for more than 10 years (Table-I).

The overall prevalence of erectile dysfunction (ED) among the participants was 79.04% (n=166), while 20.96% (n=44) reported no ED. Among those with ED, 25.3% (n=42) had mild ED, 34.9% (n=58) had mild to moderate ED, 31.3% (n=52) had moderate ED, and 8.4% (n=14) had severe ED (Table-II).

Table-I: Baseline characteristics of study participants.

Age (Years)	Frequency	Percentage
18-30	10	4.76%
31-45	48	22.85%
46-59	80	38.09%
60 or more	72	34.28%
Duration of DM (Years)		
<5	108	51.42%
5-10	66	31.42%
>10	36	17.14%

Table-II: Frequency of Erectile Dysfunction and its severity among adult male diabetic patients.

Severity of ED	Cases	Prevalence
ED (yes)	166	79.04%
ED (No)	44	20.96%
Mild	42	25.30%
Mild to Moderate	58	34.93%
Moderate	52	31.32%
Severe	14	8.43%

Logistic regression analysis (Table-III) demonstrated a significant association between age and ED. Among participants aged 46–59 years, 90% (n=72/80) had ED, while 88.9% (n=64/72) of those aged >60 years reported ED. In contrast, only 55.5% (n=20/36) of men aged 31–45 years and 60% (n=6/10) of those aged 18–30 years experienced ED. Participants in the 46–59 and >60 age groups were approximately 2.5 times more likely to report ED compared to those under 45 years of age.

A similar trend was observed with duration of diabetes. Among those with a diabetes duration of more than 10 years, 88.9% (n=32/36) had ED, compared to 90.9% (n=60/66) in the 5–10 year group and 77.8% (n=84/108) in the <5 year group. Participants with diabetes duration greater than 10 years were found to be three times more likely to have ED compared to those with a duration of 5 years or less.

DISCUSSION

This study explored the frequency and associated factors of erectile dysfunction (ED) among adult male patients with diabetes mellitus attending a tertiary care hospital in Karachi, Pakistan. The findings revealed a high prevalence of ED at 79.04%, underscoring a significant and under-recognized complication of diabetes in this population. This figure is consistent with similar studies conducted globally, reflecting the pervasive nature of ED in individuals with diabetes.

Comparatively, the prevalence observed in our study is in line with findings reported from Ethiopia (85.5%), India (78.7%), and Nepal (76.87%), suggesting a broadly consistent burden of ED in male diabetic populations across various low- and middle-income countries.¹¹⁻¹³ These findings reinforce the notion that ED is a common but often neglected complication of diabetes, particularly in resource-limited settings. The similarities may also be due to comparable levels of healthcare access, delayed diagnoses, under-treatment, and sociocultural barriers to seeking medical help for sexual health issues.

On the other hand, the prevalence in our study was notably higher than that reported in studies from Sri Lanka (68%), Jamaica (64%), and Tanzania (55.1%).¹⁴⁻¹⁶ Several reasons could account for this variation. First,

Table-III: Variable logistic regression analysis for factors associated among adult male diabetic patients.

Variables	Erectile Dysfunction	
Age (Years)	Yes	No
18-30	6	4
31-45	20	28
46-59	72	8
>60	64	8
Duration of DM		
<5	84	24
5-10	60	6
>10	32	4

methodological differences, including the use of different assessment tools, definitions of ED, and thresholds for diagnosis, may influence reported prevalence rates. Second, the population characteristics, including age distribution, glycemic control, comorbidities, and access to diabetes education and care, vary across studies and may impact outcomes. Most importantly, sociocultural factors play a critical role in the reporting and recognition of ED.

In countries like Sri Lanka and Tanzania, where there is a more open attitude toward sexual health discussions, individuals may be more willing to report symptoms and seek timely medical attention. In contrast, in Pakistan, discussing sexual health remains a sensitive and stigmatized subject, often perceived as taboo. This cultural inhibition may lead to underreporting of early or mild symptoms and delayed diagnosis and management. By the time patients do present with ED, they may have more severe or advanced dysfunction, contributing to higher observed prevalence in clinical settings. Additionally, healthcare providers in conservative societies may also hesitate to proactively screen or discuss sexual health, further compounding the problem.

The study also demonstrated a significant association between age and ED. Older adult males, particularly those aged 60 years and above, were found to be 2.5 times more likely to experience ED compared to those younger than 45 years. This finding aligns with studies conducted in Turkey and Ethiopia, which have similarly identified advanced age as a strong predictor of ED in men with diabetes.^{17,18} Aging is a well-established risk factor for ED, even in the general population, and its impact is compounded in individuals with diabetes.

Physiologically, aging contributes to reduced testosterone levels, endothelial dysfunction, and decreased penile arterial inflow. In diabetic individuals, age-related changes are accelerated by chronic

hyperglycemia, which promotes oxidative stress, inflammation, and microvascular complications, all of which impair erectile function. Neuropathy, one of the most common complications of longstanding diabetes, also plays a critical role in the pathogenesis of ED by affecting autonomic and sensory innervation to the penile tissue.

Another important finding from this study is the association between duration of diabetes and ED. Participants who had been living with diabetes for more than 10 years were found to be three times more likely to have ED compared to those with a duration of five years or less. This is in agreement with prior research, such as a study conducted in Saudi Arabia, which reported a similar pattern—men with longer diabetes duration had significantly higher rates of ED.¹⁹

The link between diabetes duration and ED is biologically plausible and multifactorial. Over time, poor glycemic control leads to cumulative damage to the vascular and nervous systems, both of which are critical for normal erectile function. Prolonged hyperglycemia causes endothelial dysfunction, decreased nitric oxide availability, and peripheral neuropathy, all contributing to impaired vascular dilation and reduced penile erection. Additionally, prolonged diabetes increases the likelihood of other comorbidities such as hypertension, dyslipidemia, and cardiovascular disease, which are independent risk factors for ED.²⁰

Notably, the high burden of ED in diabetic men also reflects the complex interplay between physiological, psychological, and social factors. Diabetes is a chronic condition that affects not just physical health but also emotional well-being. Depression, anxiety, and relationship stress are common among individuals with diabetes and are known contributors to sexual dysfunction.²¹ Unfortunately, these aspects are often overlooked in routine diabetes care, especially in settings where mental health services are limited or stigmatized.

In this context, the current study highlights a critical gap in the holistic management of diabetes. Despite the high prevalence of ED, routine screening for sexual dysfunction is not a standard part of diabetes management in many primary care or specialist settings in Pakistan. This is partly due to time constraints, lack of training among healthcare providers, and the cultural discomfort associated with discussing sexual issues.²⁰

There is a need to integrate sexual health assessment into routine diabetes care, particularly in male patients presenting with long-standing diabetes, poor glycemic control, or psychological distress. Tools such as the International Index of Erectile Function (IIEF) questionnaire can be used as standardized, non-invasive, and patient-friendly instruments to assess the presence and severity of ED. Training programs for healthcare professionals should also include modules on sexual health counseling, communication skills, and cultural sensitivity to help break the silence around this important but often neglected issue.

Moreover, public health campaigns and patient education initiatives are essential to increase awareness about the relationship between diabetes and ED. Community-based interventions, media engagement, and culturally sensitive education materials can help normalize conversations around sexual health and encourage early help-seeking behavior. Engaging religious and community leaders as health ambassadors may also be beneficial in societies where religious and cultural norms shape public discourse.

Importantly, addressing ED in diabetic patients also has implications for quality of life and treatment adherence. Men who experience ED may suffer from low self-esteem, reduced marital satisfaction, and psychological distress, which can in turn affect their motivation to adhere to diabetes treatment regimens.²² Recognizing and treating ED as part of comprehensive diabetes care could therefore have broader benefits beyond sexual health, including improved patient engagement, better glycemic outcomes, and enhanced overall well-being.

This study contributes valuable local data on ED among diabetic men in Pakistan, but it is not without limitations. The cross-sectional design precludes the establishment of causality. The data were collected from a single tertiary care center, which may limit generalizability to the broader diabetic population in the community. Additionally, sensitive information on sexual function may have been underreported due to social desirability bias, despite efforts to ensure confidentiality and comfort during interviews.

Future research should focus on longitudinal studies to explore the progression of ED in diabetic men over time and the impact of interventions. Comparative studies across different regions in Pakistan can help identify geographic and cultural differences in prevalence and help inform region-specific health strategies. Furthermore, qualitative studies exploring patient and provider perspectives on discussing and managing ED in diabetes care would provide deeper insights into the barriers and facilitators to effective management.

CONCLUSION

The current study highlights a high prevalence of erectile dysfunction among male patients with diabetes in Karachi, with significant associations with increasing age and longer duration of diabetes. These findings highlight the need for greater awareness, early screening, and integrated management of sexual health in diabetes care. Addressing sociocultural barriers, enhancing provider communication skills, and implementing patient-centered interventions are essential steps toward improving the sexual and overall health of men living with diabetes in Pakistan and similar settings.

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Ethical Consideration: Informed consent was obtained from all participants and confidentiality of the collected data was assured.

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Author Contribution:

Dr. Zubair Akhtar contributed to the conceptualization, data collection, analysis, and drafting of the manuscript as part of his Postgraduate Diploma work. Dr. Zahid Miyan supervised the project, providing guidance on study design, data interpretation, and critical revision of the manuscript.

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