

RESEARCH REPORTS

Frequency and Risk Factors of Erectile Dysfunction in Males presenting to Urology Department of a Teaching Hospital in Lahore Pakistan

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ABSTRACT *The objective of this study was to assess frequency of erectile dysfunction (ED) and its risk factors among adult men in Lahore Pakistan. This study was conducted from July to August 2025, at Urology Outpatient Department of Chaudhary Muhammad Akram Teaching and Research Hospital, affiliated with Azra Naheed Medical College, Superior University Lahore Pakistan. A total of 136 male participants aged 20-70 years were included using a non-probability consecutive sampling. Patients with any associated urological disease such as urinary tract infection, chronic kidney disease, renal stones or previous urological surgeries were excluded. After informed consent, data was gathered on demographic variables, diabetes mellitus, hypertension, smoking, alcohol use and tea intake. ED was diagnosed according to DSM-5 criteria. Data analysis was performed using SPSS version 23.0. Mean age was 48.0 ± 12.5 years with 110 (80.9%) participants educated ≤ 10 standards and 132 (97.1%) had more than 50,000 PKR family income per month. Diabetes mellitus was present in 28 (20.6%) and hypertension in 38 (27.9%). Sixty (44.1%) patients were smokers, 12 (8.8%) used alcohol and 102 (75.0%) consumed tea >2 cups/day. ED was reported in 10 (7.4%) participants. Stratification of data using Chi-Square tests and Fisher's exact test revealed no significant statistical association of ED with age ($p=0.356$), education ($p=0.217$), employment ($p=0.642$), family income ($p=0.686$), diabetes mellitus ($p=0.575$), hypertension ($p=0.681$), smoking ($p=0.457$), alcohol use ($p=0.479$) or tea intake ($p=0.789$). In logistic regression analysis, age ($p=0.529$), education ($p=0.492$), employment ($p=0.411$), family income ($p=1.000$), diabetes mellitus ($p=0.999$), hypertension ($p=0.660$), smoking ($p=0.363$), alcohol use ($p=0.999$) or tea intake ($p=0.748$) were not found to be significant predictors of ED. Screening for ED may be considered as part of routine health assessments in men. Further research with a larger and more diverse sample is recommended to better understand the determinants of ED in similar populations.*

Keywords: *Erectile Dysfunction, Urology, Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) criteria, Lahore, Pakistan*

Introduction

Erectile dysfunction (ED) is defined as the persistent inability to achieve or maintain an erection sufficient for satisfactory sexual performance (Gan et al., 2021). It is a common condition among adult males and is increasingly recognized as a marker of underlying systemic diseases, particularly cardiovascular and metabolic disorders. The global prevalence of ED varies widely, with studies reporting rates ranging from 20% to 50%, depending on population demographics, assessment methods

and comorbid conditions (Sari Motlagh et al., 2021; Leslie & Sooriyamoorthy, 2025). ED is a multifactorial condition with physical, psychological and lifestyle-related contributors. Age is one of the most consistently reported risk factors, with the prevalence increasing significantly among older men (Corona et al., 2020; Hunt et al., 2021). Studies have shown that around 40% of men experience erectile difficulties by age 40, and this rises to approximately 70% by age 70 (Leslie & Sooriyamoorthy, 2025). Other well-established risk factors include diabetes mellitus, hypertension, obesity, smoking, dyslipidemia and sedentary lifestyle (Balasubramanian et al., 2020; Imprialos et al., 2021). In addition, psychosocial stressors, alcohol consumption and certain medications may also contribute to sexual dysfunction (Imprialos et al., 2021; Meirelles et al., 2020).

In addition to increasing age, the presence of other health conditions especially diabetes mellitus, low testosterone and cardiovascular disease further contribute to the likelihood of developing ED (Sari Motlagh et al., 2021; Butt et al., 2025; Hunt et al., 2021). Given demographic changes and the rising burden of chronic diseases, the global prevalence of erectile dysfunction is expected to increase substantially, with projections estimating over 320 million affected men worldwide by 2025 (Ayta et al., 1999). Many men with erectile dysfunction do not seek medical help, and healthcare providers often hesitate to discuss sexual health, making it difficult to determine the true prevalence of the condition (Fahmy et al., 2021; Arolfo et al., 2020). Current estimates suggest that about half of men aged 40 to 70 in the United States experience some degree of erectile dysfunction. Globally, the number of affected men is estimated to be between 150 million and over 300 million (Leslie & Sooriyamoorthy, 2025; Ayta et al., 1999). However, these figures may underestimate the actual prevalence due to factors such as social stigma, reluctance from physicians to inquire about sexual issues and patient embarrassment.

Rationale of the study

Despite its high prevalence and considerable impact on quality of life, ED remains underreported and underdiagnosed, especially in conservative societies where discussing sexual health is often stigmatized. In such settings, men may be reluctant to seek help because of lack of awareness, financial constraints, misconceptions, psychological factors or social stigma, leading to a lack of accurate epidemiological data. In Pakistan and similar developing countries, there is limited research exploring the prevalence of ED and its associated factors, particularly in general medical populations. Understanding the local prevalence and potential predictors of ED is essential for early identification, counseling, and management. This study was designed to determine the frequency of erectile dysfunction among adult men and to assess its association with demographic variables, comorbid conditions (such as diabetes and hypertension), and lifestyle factors (including smoking, alcohol use, and tea consumption) in a hospital-based population. Therefore, this study was undertaken to assess the prevalence of ED and examine its contributing factors among adult men attending the urology department of a teaching hospital in Lahore Pakistan.

Materials and Methods

Study design, setting and objective

This was an observational cross-sectional study conducted from July to August 2025 at the Urology Outpatient Department (OPD) of Chaudhary Muhammad Akram Teaching and Research Hospital, affiliated with Azra Naheed Medical College, Superior University, Lahore, Pakistan. The objective was to determine the frequency of erectile dysfunction (ED) among male patients and evaluate its association with selected demographic, clinical and lifestyle-related risk factors.

Operational definition, inclusion and exclusion criteria

ED was defined according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria as the persistent presence of at least one of the following symptoms, occurring on more than 75% of occasions of sexual activity, for a minimum duration of approximately six months: marked difficulty in obtaining an erection; marked difficulty in maintaining an erection until the completion of sexual activity; or a marked decrease in erectile rigidity (Segraves, 2010). Keeping a 5% margin of error and a 95% confidence level, a sample size of 136 was calculated using a previously reported prevalence rate of ED at 9.8% (Rosen et al., 2004). Inclusion criteria comprised men aged 20 to 70 years who visited the urology OPD during the study period. Exclusion criteria included patients with any known urological conditions such as urinary tract infections, chronic kidney disease, renal stones or a history of prior urological surgeries.

Data collection procedure

Participants were recruited using a non-probability consecutive sampling technique. Detailed informed consent was obtained from each participant prior to their enrollment. Data were collected using a structured questionnaire that recorded demographic details (age, education level, employment status and family income), clinical history (presence of diabetes mellitus and hypertension) and lifestyle habits (smoking, alcohol consumption and tea intake) followed by evaluation for ED according to DSM-5 criteria.

Data analysis

Data entry and analysis were performed using SPSS version 23.0. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize the demographic and clinical characteristics of the study population. The prevalence of ED was calculated as a proportion. Effect modifiers and confounders were controlled through stratification. Association of ED with demographic, clinical and lifestyle factors were analyzed using Chi-square tests and Fisher's exact test where appropriate followed by binary logistic regression analysis. A p-value ≤ 0.05 was considered statistically significant.

Ethics statement

This study was conducted after ethical approval from Institutional Ethical Review Committee of Azra Naheed Medical College, Superior University Lahore Pakistan prior to data collection. The study adhered to the ethical principles outlined in the 1964 Declaration of Helsinki, revised in the year 2000. Informed consent was

obtained from all participants prior to their inclusion in the study. Participant confidentiality and data privacy were strictly maintained throughout the research process. No personally identifiable information was collected or disclosed at any stage of the study.

Results

Demographic and clinical variables of the patients

Mean age of the participants was 48.0 ± 12.5 years with 68 (50.0%) patients aged ≤ 45 years. Majority of the participants were educated ≤ 10 standards (110, 80.9%) while 132 (97.1%) had more than 50,000 PKR family income per month as depicted in Table 1. Diabetes mellitus was present in 28 (20.6%) and hypertension in 38 (27.9%). Sixty (44.1%) patients were smokers, 12 (8.8%) used alcohol and 102 (75.0%) consumed tea >2 cups/day. Erectile dysfunction was reported in 10 (7.4%) of the 136 men enrolled in this study as shown in Figure 1.

Figure 1. Erectile dysfunction in the participants (N=136)

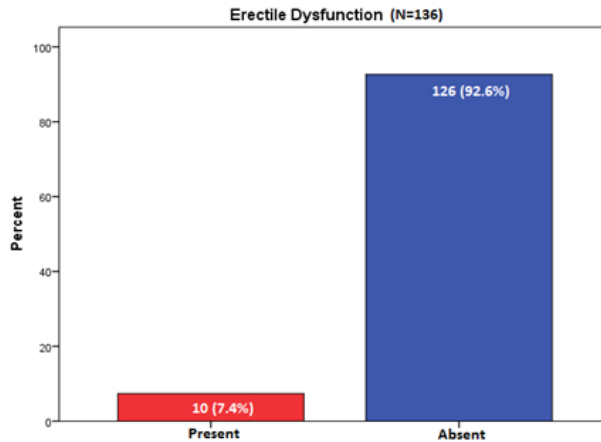


Table 1. Demographic and clinical variables of the patients (N=136)

Demographic and clinical variables		Frequency (n)	Percent (%)
Age	≤ 45 years	68	50.0
	≥ 46 years	68	50.0
Education Status	≤ 10 standards	110	80.9
	> 10 standards	26	19.1
Employment Status	Employed	68	50.0
	Unemployed	68	50.0
Family income	$\leq 50,000$ PKR/month	04	2.9
	$> 50,000$ PKR/month	132	97.1
Diabetes Mellitus	Present	28	20.6
	Absent	108	79.4
Hypertension	Present	38	27.9
	Absent	98	72.1

Smoking	Present	60	44.1
	Absent	76	55.9
Alcohol Use	Present	12	8.8
	Absent	124	91.2
Tea Intake	≤ 2 cups/day	34	25.0
	> 2 cups/day	102	75.0

Stratification of data using Chi-Square test

Stratification of data using Chi-Square tests and Fisher's exact test where appropriate revealed no significant statistical association of ED with age ($p=0.356$), education ($p=0.217$), employment ($p=0.642$), family income ($p=0.686$), diabetes mellitus ($p=0.575$), hypertension ($p=0.681$), smoking ($p=0.457$), alcohol use ($p=0.479$) or tea intake ($p=0.789$) as demonstrated in Table 2.

Table 2. Stratification of data with regards to Erectile Dysfunction (N=136)

Demographic and clinical Variables		Erectile Dysfunction		Pearson	
		Present	Absent	Chi-Square Value	p-value
Age	≤ 45 years	08 (11.8%)	60 (88.2%)	1.943	0.356
	≥ 46 years	02 (2.9%)	66 (97.1%)		
Education Status	≤ 10 standards	06 (5.5%)	104 (94.5%)	1.522	0.217
	> 10 standards	04 (15.4%)	22 (84.6%)		
Employment Status	Employed	04 (5.9%)	64 (94.1%)	0.216	0.642
	Unemployed	06 (8.8%)	62 (91.2%)		
Family income	≤ 50,000 PKR/month	0 (0.0%)	04 (100%)	0.164	0.686
	> 50,000 PKR/month	10 (7.6%)	122 (92.4%)		
Diabetes mellitus	Present	0 (0.0%)	28 (100%)	1.399	0.575
	Absent	10 (9.3%)	98 (90.7%)		
Hypertension	Present	02 (5.3%)	36 (94.7%)	0.169	0.681
	Absent	08 (8.2%)	90 (91.8%)		
Smoking	Present	06 (10.0%)	54 (90.0%)	0.552	0.457
	Absent	04 (5.3%)	72 (94.7%)		
Alcohol Use	Present	0 (0.0%)	12 (100%)	0.522	0.479
	Absent	10 (8.1%)	114 (91.9%)		
Tea Intake	≤ 2 cups/day	02 (5.9%)	32 (94.1%)	0.072	0.789
	> 2 cups/day	08 (7.8%)	94 (92.2%)		

Logistic regression analysis of the data

In logistic regression analysis, no patient variable including age ($p=0.529$), education ($p=0.492$), employment ($p=0.411$), family income ($p=1.000$), diabetes mellitus ($p=0.999$), hypertension ($p=0.660$), smoking ($p=0.363$), alcohol use ($p=0.999$) or tea intake ($p=0.748$) was found to be significant predictor of ED as shown in Table 3.

Table 3. Logistic regression analysis of data with regards to Erectile Dysfunction

Patient variables	Beta Coefficient (B)	S.E.	Wald	df	p-value	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Age	0.871	1.384	0.396	1	0.529	2.390	0.159	36.034
Education Status	-0.402	0.585	0.472	1	0.492	0.669	0.213	2.105
Employment Status	0.823	1.001	0.676	1	0.411	2.278	0.320	16.202
Family income	0.915	30766.104	0.000	1	1.000	2.497	0.000	-
Diabetes mellitus	-18.455	102826.274	0.000	1	0.999	0.000	0.000	-
Hypertension	0.646	1.469	0.193	1	0.660	1.908	0.107	33.979
Smoking	0.950	1.045	0.826	1	0.363	2.586	0.333	20.056
Alcohol Use	-17.347	16497.673	0.000	1	0.999	0.000	0.000	-
Tea Intake	0.393	1.224	0.103	1	0.748	1.482	0.134	16.335

Discussion

While ED is more commonly observed in older men, an increasing number of younger individuals are being diagnosed with the condition, which may negatively affect their quality of life (Yafi et al., 2016). Notably, among those presenting with newly onset ED, one in four is under the age of 40, and nearly half of these young patients suffer from severe forms of the disorder (Capogrosso et al., 2013). In Italy, 25% of men seeking treatment for ED are below 40 years of age, and since 2011, this demographic has shown a growing trend in seeking medical care for erectile issues (Rastrelli & Maggi, 2017). Between 2010 and 2015, the proportion of young men visiting clinics for ED rose from 5% to over 15%. Some projections now indicate that ED prevalence among younger men could be as high as 30% in the current population (Nguyen et al., 2017).

In the present study assessing the prevalence and determinants of ED among adult males, ED was reported in 7.4% of participants. This prevalence is notably lower than that reported in many regional and international studies, which may reflect cultural hesitancy in reporting sexual health issues, limited awareness or a relatively healthier cohort. In Pakistan, a growing number of men have begun reporting difficulties in achieving or maintaining an erection, reflecting increased awareness and concern about ED especially among men under the age of 40 (Sadiq & Warsi, 2025; Khanzada et al., 2017). Khanzada et al. (2017) found that 51% of men were affected by non-organic ED, with psychological factors playing a significant role. Furthermore, psychological causes were more frequently observed in patients younger than 40, accounting for approximately 70% of cases in that age group (Khanzada et al., 2017).

The present study explored a variety of demographic, clinical, and lifestyle factors including age, education level, employment status, monthly family income, presence of diabetes mellitus or hypertension, smoking, alcohol use and tea consumption. However, no statistically significant associations were found between ED and any of these variables using both bivariate (Chi-square and Fisher's exact tests) and multivariate (logistic regression) analyses. Although advancing age is a well-documented risk factor for ED in the literature (Leslie & Sooriyamoorthy, 2025; Corona et al., 2020; Hunt et al., 2021), our findings did not demonstrate a significant relationship between age and ED ($p=0.356$). This may be due to the

nearly equal age distribution in our sample, with 50% of participants being ≤ 45 years old and the overall small number of ED cases ($n=10$), which limits subgroup comparisons. Similarly, chronic conditions like diabetes mellitus and hypertension, both of which are established contributors to endothelial dysfunction and vascular complications leading to ED (Begum et al., 2024; Fafolu et al., 2014), were not found to be significantly associated with ED in this study. Interestingly, none of the 28 participants with diabetes reported ED, which may reflect underreporting or misclassification.

Lifestyle factors such as smoking and alcohol consumption have also been linked to ED through vascular, neurological and hormonal mechanisms (Balasubramanian et al., 2020; Imprialos et al., 2021; Meirelles et al., 2020). While 44.1% of participants were smokers and 8.8% used alcohol in our study, neither habit showed a statistically significant association with ED. This again may reflect insufficient sample size or underreporting of sensitive behaviors due to social desirability bias. The role of tea intake in ED is less clearly established in the literature, with some studies suggesting that polyphenols in tea may have vascular benefits (Xiang et al., 2024; Russo et al., 2021). In this study, 75% of participants consumed more than two cups of tea daily, but no association with ED was found.

Overall, the findings suggest that the prevalence of ED in this population is low, and commonly assumed risk factors did not emerge as significant predictors. These results must be interpreted with caution due to several limitations, including a small sample size, low event rate and potential cultural factors influencing reporting of ED. Previous studies in South Asia have reported higher prevalence rates of ED varying from as low as 20% to as high as 50% (Saeed et al., 2021; Debasis et al., 2020; Adeeb et al., 2025). These discrepancies may be due to differences in study design, inclusion criteria, or assessment tools. The low prevalence and lack of significant associations in this study suggest that ED may be underreported or influenced by factors not captured in the current dataset. Cultural stigma around discussing sexual health may have led to underreporting of symptoms. Healthcare providers should maintain a nonjudgmental and confidential environment to encourage disclosure of sexual health issues. Future research should employ validated screening tools, larger sample sizes and consider psychosocial and hormonal variables to gain a more comprehensive understanding of ED in similar populations.

Limitations of the study

The present study has certain limitations which should be considered. Based in a single institution using a non-probability consecutive sampling, the findings of our study may not be generalized to the broader male population. Secondly, the cross-sectional design limits the ability to establish causal relationships of risk factors with ED. The study did not include hormonal, metabolic or vascular assessments, such as testosterone levels, lipid profile, HbA1c or penile Doppler/hemodynamic evaluations, which limits the ability to understand the biological mechanisms underlying erectile dysfunction. Furthermore, we did not study the underlying cause or other well-recognized major global risk factors for ED, including obesity or overweight status, pelvic floor dysfunction and benign prostatic hyperplasia (BPH). Additionally, the study did not differentiate between psychogenic

and organic forms of erectile dysfunction, as psychological, neurological and medication-related contributors were not evaluated. These factors were not assessed in this study, which may restrict the scope of the findings. Other potential risk factors, such as psychological stress, medication use or hormonal levels, were not assessed. Self-reported data on ED may be subject to recall bias. The use of non-probability consecutive sampling may contribute to selection bias, reducing the representativeness of the study population. Due to the sensitive nature of sexual health topics, participants may have underreported sexual activity, psychological stress, alcohol use or other relevant behaviors, introducing potential social desirability and reporting bias. Lastly, the absence of objective clinical measures increases the risk of measurement bias and may have led to misclassification of erectile dysfunction status. However, this study significantly contributes to the limited data available on ED and its risk factors in adult males from Lahore, Pakistan. Further large-scale, multicenter, and longitudinal studies are recommended to build upon these findings and explore causal relationships especially in older adults and those with co-morbid conditions like diabetes and hypertension. It is also recommended to explore psychosocial and biological factors such as anxiety, depression, testosterone levels and medication use, which may have an association with ED. Routine screening in primary and outpatient care settings can aid in timely intervention, reduction in disease burden and potentially improve quality of life of ED patients.

Conclusions

The prevalence of ED was found to be 7.4% among male participants in our study. Despite evaluating a range of demographic, clinical and lifestyle factors, no statistically significant associations were identified with ED. These findings suggest that, within this study population, ED does not appear to be significantly influenced by the factors examined. While no associations were found in this study, healthcare providers should remain vigilant about the potential for ED in patients with diabetes, hypertension or lifestyle risk factors, given the established evidence in broader literature. Further research with a larger and more diverse sample is recommended to better understand the determinants of ED in similar populations. Screening for ED may be considered as part of routine health assessments in men, especially those with increasing age and chronic diseases.

Conflict of Interest

The authors declare that they have no conflicts of interest related to the publication of this manuscript.

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