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Prevalence of Premature Ejaculation among Patients with Type 2 Diabetes in Abha City, Saudi Arabia

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ABSTRACT

Background/Objectives: Premature ejaculation (PE) is a common sexual disorder, particularly among patients with type 2 diabetes mellitus (T2DM). The objective of this study was to assess the prevalence and severity of PE among married men with T2DM in Abha City, Saudi Arabia, and determine the sociodemographic and personal factors for PE.

Methods: A cross-sectional study using a self-completion questionnaire was carried out between January 2024 and July 2024 among married men aged 18 years and older with established T2DM who live in Abha City, Saudi Arabia. PE was assessed by the valid and reliable Arabic Index of the Premature Ejaculation Scale (AIPE). The values of Intravaginal Ejaculation Latency Time (IELT) were used in assessing the level of severity among the participants.

Results: There were 344 patients in the study. PE was highly prevalent in the study, and 33.4% of them had moderate PE, while 63.4% had mild-to-moderate PE. Severe PE was found in 2% of the participants. AIPE and IELT scores indicated the extent of distress caused by PE, especially from the age group 31-40 years and in participants who were in the age group 25-30 years. Sociodemographic variables such as age, education, occupation, and income were independently associated with PE severity.

Conclusion: High prevalence of probable PE was found among Saudi diabetic patients in this study. Increased awareness and targeted interventions are needed to enable management of PE among T2DM patients.

Keywords: *Premature Ejaculation, Type 2 Diabetes Mellitus, Saudi Arabia, Arabic Index of Premature Ejaculation (AIPE).*

1. INTRODUCTION

Preejaculation or premature ejaculation (PE) is a common male sexual disorder that describes early ejaculation with minimal sexual stimulation, causing distress and interpersonal difficulty [1]. According to the International Society for Sexual Medicine (ISSM), it fails to postpone ejaculation sufficiently before or within 60 s after fulfilling sexual intercourse, resulting in negative sexual outcomes [2]. Globally, the incidence of PE has been estimated to range from 10.4% to 42.7%3 and is one of the most common male sexual disorders. PE has also been generally reported in Arab countries; however, data are often sparse due to sexual health sensitivity issues and culture 4. Studies conducted in Egypt reported a PE prevalence of 26.67% 5; 36.2% was reported in a study conducted in Qatar6. PE was found in a different study in Saudi Arabia, with a prevalence of 50.8%7. Apart from its prevalence, PE is typically underreported due to cultural stigma and the sensitive nature of the condition [4]. PE can have significant psychological and relational effects, affecting the quality of life of individuals and their partners. PE men suffer from low self-esteem, embarrassment, and frustration [8]. Not only do emotional effects influence the individual, but also the partner, who may feel ignored, blamed for dysfunction, or discontented [9]. The ensuing relationship tension manifests as reduced intimacy, increased conflict, and an overall reduction in sexual satisfaction for both partners. Over time, these issues can erode the emotional bonds between couples and lead to generalized relationship problems [10].

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disease that has become a global level 11. It is characterized by insulin resistance and hyperglycemia, and is associated with a multitude of complications, including cardiovascular diseases, neuropathy, and sexual dysfunction [12]. The International Diabetes Federation (IDF) projects that approximately 10.5% of adults aged 20-79 years lived with diabetes in 2021, which will increase to 46% by 2045.[13] In Saudi Arabia, T2DM incidence is particularly alarming, and the rates are among the highest globally. Economic development, urbanization, and lifestyle have caused a sharp increase in the number of diabetes cases over the past few decades [14]. The prevalence rate of diabetes in Saudi Arabia is approximately 17.7%, and approximately 4.2 million adults are affected, as indicated in a 2021 IDF report [15]. Sexual dysfunction, including PE, has been found in patients with T2DM owing to the effect of hyperglycemia on nerve function and blood flow [16]. Additionally, the psychological tension of living with a chronic condition such as diabetes can also cause stress and anxiety, which are known risk factors for PE [17]. For instance, in one study by Majzoub A. et al. reported a high prevalence of PE among type 2 DM patients (78.9%) compared with non-diabetic controls (47.4%) [18]. Despite the heavy burden of T2DM and the possibility of PE influencing the lives of patients, there is limited evidence on the prevalence of PE among Saudi patients with T2DM, particularly in Abha City. The present study aimed to fill this gap by assessing the prevalence of PE in men with T2DM in Abha, Saudi Arabia.

2. METHODS

Study population: From January 2024 to July 2024, a cross-sectional descriptive study was conducted on all participants aged 18 years or above with a confirmed diagnosis of T2DM living in Abha City, Saudi Arabia. The participants were married and did not use any selective serotonin reuptake inhibitors (SSRIs).

The city of Abha, located in the Asian region of Saudi Arabia, presents a unique demographic and health profile that makes it an ideal location for studying the prevalence of premature ejaculation (PE) among patients with type 2 diabetes mellitus (T2DM). Abha's diverse population, encompassing various socioeconomic backgrounds and lifestyles, provides a comprehensive sample for understanding the prevalence of PE.

Sample size:

The sample size was calculated using the Epi-Info statistical package.[19] The criteria used for sample size calculation were as follows: 95% confidence limit, 80% power of the study, and 27.5 % %expected prevalence of PE among T2DM patients[20]. The minimum sample size based on the previously mentioned criteria was 307. They were approached by stratified sampling using a self-administered online questionnaire sent directly to participants targeting Primary Health Care and Family Health Care units across different areas in Abha City, Saudi Arabia.

Data collection tool: A self-administered questionnaire was developed to assess the prevalence of premature ejaculation (PE) in patients with type 2 diabetes mellitus (T2DM) in Saudi Arabia. The participants were given a clear and concise explanation of the study objectives. *The questionnaire consists of three parts:*

The first part included socio-demographic data (age, marital status, nationality, occupation, educational level, income, history of T2DM, and presence of psychological distress).

The second part was a seven-item Arabic Index of Premature Ejaculation (AIPE) to determine the level of premature ejaculation. Each AIPE item was scored on a five-point ordinal scale, where lower values represent poorer sexual function. Thus, a response of 1 to a question was considered the least functional, whereas a response of 5 was considered the most functional. AIPE scores ranged from 7 to 35. A cutoff score of 30 was used as a cutoff point to diagnose PE. PE severity was classified into the following five categories based on the AIPE scores: severe (7–13), moderate (14–19), mild to moderate (20–25), mild (26–30), and no PE (31–35) [21]. Concerning reliability, the scale showed good internal consistency, with a Cronbach's alpha of ($\alpha = 0.607$).

A pilot test was conducted on 30 participants to test the study tools for clarity, feasibility, applicability, and the time required to complete the questionnaires. Based on the pilot study results, necessary modifications and improvements were made before data collection.

Data management and analysis plan:

Data were analyzed using the Statistical Package for the Social Sciences" SPSS 22.0 software (IBM Microsoft, NY, USA). Kolmogorov's test was used to test the normality of quantitative data. Qualitative variables were presented as numbers and percentages; the chi-square test was used for analysis or Fisher's exact test and Monte Carlo exact test (if more than 20% of the expected cell value was less than 5). Numerical variables are expressed as median (IQR), and the Mann-Whitney U-test or Kruskal-Wallis test was used to compare groups. P-value (< 0.05) was set at $p < 0.05$.

3. RESULTS

Table 1 shows the sociodemographic and personal characteristics of the 344 study participants. The age distribution indicated that the majority of participants (66.30%) were aged 40 years or older, while the smallest age group was 18-24 years, comprising only 4.70% of the sample. Regarding nationality, 57.00% of participants were Saudi nationals. The marital status

distribution revealed that the vast majority of participants (95.30%) were married, with a small percentage being widowed (3.50%) or divorced (1.20%).

In terms of educational level, a significant proportion of participants had a university education (68.60%), and only 3.50% of participants had primary education or postgraduate studies. Occupational data showed that 59.30% of the participants were government sector employees, while 29.0% were either not working or retired. The income level of participants indicated that the majority (55.80%) earn between 5000 and 15000 (SR) per month. Finally, the prevalence of psychological disorders among the participants was relatively low, with 5.80% reporting the presence of psychological disorders.

Table 2 presents the prevalence and severity of premature ejaculation (PE) among the study participants along with their corresponding AIPE (Arabic indices of premature ejaculation (AIPE) and IELT (Intravaginal Ejaculation Latency Time (IELT) scores. Severe PE was diagnosed in seven participants (2%), with a median AIPE score of 13 (IQR: 12-13) and a median IELT score of 2 (IQR: 1-2). Moderate PE was more prevalent, affecting 115 participants (33.4%) who had a median AIPE score of 18 (IQR: 18-19) and a median IELT score of 2 (IQR: 2-3). The largest group, consisting of 218 participants (63.4%), experienced mild to moderate PE, with a median AIPE score of 21 (IQR: 20-22) and a median IELT score of 3 (IQR: 2-5). Mild PE was observed in only 4 participants (1.2%), characterized by a median AIPE score of 26 (IQR: 26-26) and a median IELT score of 3 (IQR: 3-3). Notably, none of the participants had PE.

Figure 1. illustrates the distribution of scores for each AIPE Item with a degree of response variability; most items, including "Q1, Q2, and Q4," have a median score of 3.00 with an IQR of 2.00 to 3.00. Items "Q5 and Q6" showed slightly higher and consistent scores with an IQR of 3.00 4.00. "Q7" has a lower median of 2.00 (IQR: 2.00-3.00), while "Q3" has a median of 3.00 with a broader IQR of 2.00 to 4.00.

Figure 2. illustrates the AIPE scores across different age groups. The median AIPE score for participants aged 18-24 years was 19.50 (IQR: 16.5-21.5). Participants aged 25-30 years demonstrated a higher median AIPE score of 21.00 (IQR: 20.0-22.0). Similarly, participants aged 31-40 years had a median AIPE score of 20.00 (IQR: 19.0-22.0). For participants over 40 years old, the median score remained stable at 20.00 (IQR: 19.0-21.0).

Table 3 shows the association between sociodemographic and personal characteristics and the severity of premature ejaculation (PE) among the study participants. Age (P value = 0.001), educational level (P value ≤ 0.0001), occupation (P value = 0.035), and income level (P value = 0.047) were significantly associated with PE severity. Severe PE was most prevalent in the 31-40 age group and among those with only primary education, while moderate and mild to moderate PE were more common in participants aged 40 years or older and those with university education. Severe PE was also more frequent among participants who were not working or retired and those earning less than 5000 SR per month. No significant associations were found between PE severity and nationality, marital status, or presence of psychological disorders.

Table 4 compares the Intravaginal Ejaculation Latency Time (IELT) scores based on the sociodemographic and personal characteristics of the study participants. Significant differences were observed in terms of age (P = 0.001), nationality (P = 0.039), and occupation (P = 0.030). Participants aged 18-24 years had a median IELT score of 2(IQR: 1.5-3), while the rest of the age groups had medians of 3. Saudis had a median IELT score of 3(IQR: 2-4) compared with 3 (IQR: 2-3) for non-Saudis. Government employees had a median IELT score of 3 (IQR: 2-3), private sector employees 2.5 (IQR: 2-3), military personnel 3 (IQR: 3-5), students 2 (IQR: 2-2), and those who were not working or retired 3 (IQR: 2-4). No significant differences were found in marital status, education level, income, or the presence of psychological disorders.

4. DISCUSSION

In this study, we investigated the prevalence of premature ejaculation (PE) in Saudi Arabian patients with type 2 diabetes mellitus (T2DM). To our knowledge, it is the first work that has discussed the prevalence of (PE) in Saudi Arabian patients with type 2 diabetes mellitus (T2DM).

The findings point towards a significant incidence of moderate PE (33.4%) and mild to moderate PE (63.4%), which indicates that PE is a prevalent condition among the sample groups. Severe PE cases with low AIPE and IELT scores (2%) signify an urgent need for targeted intervention. The absence of participants without PE underscores the prevalence of this condition within the sample population. These results are consistent with the results of a Middle East and North Africa study with the AIPE questionnaire, in which they found an increased prevalence of PE in patients with type 2 DM (78.9%) than in non-diabetic controls (47.4%) [18].

In contrast, our study revealed a much higher prevalence than that reported by El-Sakke (32.4%) and Owiredu et al. (56.6%) among Egyptian type 2 diabetic patients22,23. This high variation in reported prevalence might be due to the varied methodologies used to identify PE, such as questionnaires, self-reports, and expert panel definitions. Furthermore, varying lifestyles among different populations may directly affect sexual function and prevalence rates.

There were high correlations between sociodemographics, such as age, education level, occupation, level of income, and severity of PE in our study. Previous studies have revealed that age is a precipitating cause of PE24–26. A cross-sectional study of 2126 adult male participants reported that in men aged at least 20 years, ED affected almost one in five of the survey

respondents, with sharply rising prevalence rates with advancing age[27]. Contrary to our results, no significant correlation between age and PE20 was observed in a study conducted in Nigeria.

In the present study, a greater prevalence of severe PE in the age group of 31-40 years, along with a greater AIPE median score in participants aged 25-30 years, reflects higher distress or psychological load in this age group. The identical scores in older age groups may reflect adaptation to age or underreporting due to social causes or because of the chronicity of their diabetes management. Furthermore, the more common severe PE in people with primary schooling, non-working or retired persons, and those with lower economic status highlights the socio-economic factors influencing PE and underscores the need for special educational interventions. Another meta-analysis on the relationship between erectile dysfunction (ED) and premature ejaculation (PE) concluded that poor education enhanced PE risk among individuals [28].

The findings of the present study emphasize the need for increased awareness and proactive management of PE in diabetic patients with T2DM in Saudi Arabia. Given that the prevalence of moderate and mild-to-moderate PE is quite high, healthcare providers should include routine screening for PE as part of the management of diabetic patients. The use of standardized questionnaires, such as the AIPE, during routine follow-up visits can enable early identification and treatment. Furthermore, because of the high distress levels in cases of severe PE, health practitioners must include counseling and psychological support as part of diabetes management, especially among 25–40-year-olds who are noted to be more vulnerable.

The correlation between lower educational levels and more severe PE highlights the significance of targeted educational interventions. These activities should raise sexual health consciousness regarding the link between diabetes and sexuality, and provide information on how one can control and seek help for PE. Launching these activities in community centers, diabetes clinics, and public health programs is bound to ensure better reach. Sexual health should be added to the national health policy as part of diabetes management to address the high rate of PE among diabetic patients.

Limitations and Strengths

This study had some limitations that need to be addressed. First, the cross-sectional design limited the causality between PE and T2DM. Self-reported questionnaires are subject to potential reporting bias because participants might underreport or overreport their symptoms. In addition, while the demographic focus on Abha City is valuable, the findings may not be completely generalizable to other regions. However, this study also had important strengths. First, it encompasses a variety of socioeconomic statuses and lifestyles of patients with diabetes. Use of the Arabic Index of Premultiply Ejaculation (AIPE), a reliable and valid instrument, ensures precise measurement of PE severity.

5. CONCLUSION

In conclusion, our study suggests a troubling prevalence of PE in diabetic patients in Saudi Arabia, with all participants having at least one degree of PE. With the closure of gaps identified and the inclusion of holistic sexual health care in diabetic management, we can improve the quality of life of T2DM patients in Saudi Arabia.

Table 1. Socio-demographic and Personal Characteristics of the Study Participants:

Studied variables		**(N=344)**	**%**
Age (years)	18-24	16	4.70%
	25-30	40	11.60%
	31-40	60	17.40%
	≥ 40	228	66.30%
Nationality	Saudia	196	57.00%
	Non-Saudia	148	43.00%
Marital status	Married	328	95.30%
	Widowed	12	3.50%
	Divorced	4	1.20%
Completed educational level	Primary education	12	3.50%
	Secondary education	84	24.40%

	University education	236	68.60%
	Postgraduate studies	12	3.50%
Occupation category	Government Sector Employee	204	59.30%
	Private Sector Employee	20	5.80%
	Military Sector Employee	12	3.50%
	Student	8	2.30%
	Not working/ Retired	100	29.0%
Income Level per month	< 5000 SR	90	26.20%
	5000-15000 SR	192	55.80%
	≥ 15000 SR	62	18.00%
Presence of psychological disorders	Yes	20	5.80%
	No	324	94.2%

Table 2. Prevalence of Premature Ejaculation among the Study Participants:

PE diagnosis	**Prevalence**	**AIPE score**	**ILET score**
	N (%)	***Median (IQR)***	***Median (IQR)***
Severe PE	7(2%)	13(12-13)	2(1-2)
Moderate PE	115(33.4%)	18(18-19)	2(2-3)
Mild to moderate PE	218(63.4%)	21(20-22)	3(2-5)
Mild PE	4(1.2%)	26(26-26)	3(3-3)
No PE	0(0%)	-	-

Table 3: Association between Socio-demographic& Personal Characteristics and Severity of Premature Ejaculation among the Study Participants:

Studied variables		**PE (AIPE score ≤ 30)**				**P-value** [MC]
		Severe PE (N=7)	**Moderate PE (N=115)**	**Mild to moderate PE (N=218)**	**Mild PE (N=4)**	
Age (years)	18-24	0(0%)	8(7%)	8(3.7%)	0(0%)	0.001*
	25-30	0(0%)	6(5.2%)	34(15.6%)	0(0%)	
	31-40	4(57.1%)	17(14.8%)	35(16.1%)	4(100%)	
	≥ 40	3(42.9%)	84(73%)	141(64.7%)	0(0%)	
Nationality	Saudia	5(71.4%)	66(57.4%)	121(55.5%)	4(100%)	0.286
	Non-Saudia	2(28.6%)	49(42.6%)	97(44.5%)	0(0%)	
Marital status	Married	7(100%)	112(97.4%)	205(94%)	4(100%)	0.549

	Widowed	0(0%)	3(2.6%)	9(4.1%)	0(0%)	
	Divorced	0(0%)	0(0%)	4(1.8%)	0(0%)	
Completed educational level	Primary education	4(57.1%)	4(3.5%)	0(0%)	4(100%)	≤0.0001*
	Secondary education	0(0%)	31(27%)	53(24.3%)	0(0%)	
	University education	3(42.9%)	76(66.1%)	157(72%)	0(0%)	
	Postgraduate studies	0(0%)	4(3.5%)	8(3.7%)	0(0%)	
Occupation category	Government Sector Employee	2(28.6%)	71(61.7%)	131(60.1%)	0(0%)	0.035*
	Private Sector Employee	0(0%)	6(5.2%)	14(6.4%)	0(0%)	
	Military Sector Employee	0(0%)	0(0%)	12(5.5%)	0(0%)	
	Student	0(0%)	5(4.3%)	3(1.4%)	0(0%)	
	Not working/ Retired	5(71.4%)	33(28.7%)	58(26.6%)	4(100%)	
Income Level per month	< 5000 SR	2(28.6%)	33(28.7%)	51(23.4%)	4(100%)	0.047*
	5000-15000 SR	4(57.1%)	62(53.9%)	126(57.8%)	0(0%)	
	≥ 15000 SR	1(14.3%)	20(17.4%)	41(18.8%)	0(0%)	
Presence of psychological disorders	Yes	0(0%)	8(7%)	12(5.5%)	0(0%)	0.809
	No	7(100%)	107(93%)	206(94.5%)	4(100%)	

*Significant

Table 4: Comparison of Intravaginal Ejaculation Latency Time (IELT) Based on Socio-Demographic and Personal Characteristics of Study Participants:

Studied variables		**ILET score**	**P-value**
		Median (IQR)	
Age (years)	18-24	2(1.5-3)	0.001*
	25-30	3(2-4)	
	31-40	3(2-5)	
	≥ 40	3(2-3)	
Nationality	Saudia	3(2-4)	0.039*
	Non-Saudia	3(2-3)	
Marital status	Married	3(2-4)	0.558
	Widowed	2(2-3.5)	
	Divorced	3(3-3)	
Completed educational level	Primary education	2(2-3)	0.102
	Secondary education	3(2-3)	
	University education	3(2-4)	

	Postgraduate studies	5(1-5)	
Occupation category	Government Sector Employee	3(2-3)	0.030*
	Private Sector Employee	2.5(2-3)	
	Military Sector Employee	3(3-5)	
	Student	2(2-2)	
	Not working/ Retired	3(2-4)	
Income Level per month	< 5000 SR	3(2-3)	0.326
	5000-15000 SR	3(2-3)	
	≥ 15000 SR	3(2-5)	
Presence of psychological disorders	Yes	2(2-3)	0.156
	No	3(2-4)	

*Significant

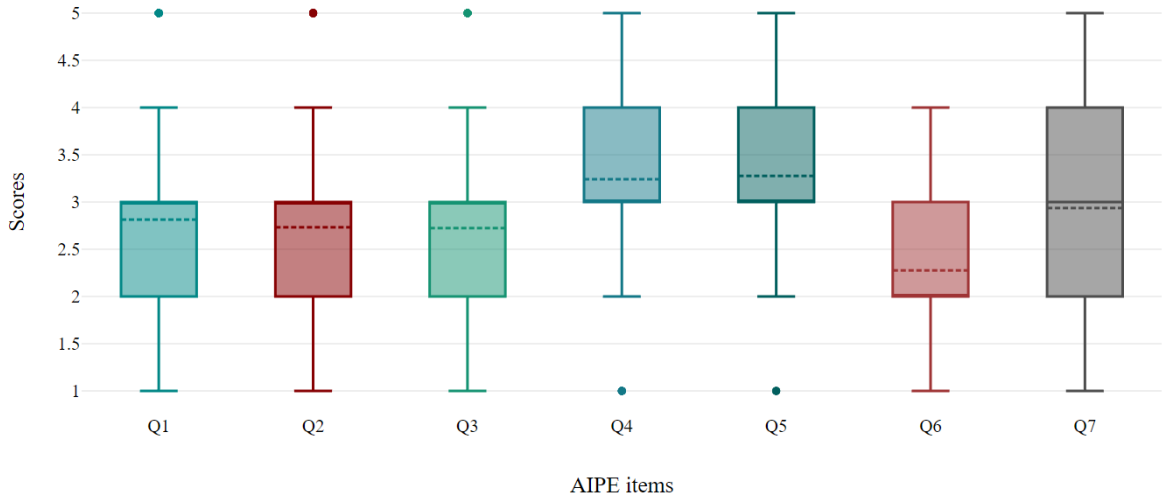

Figure 1: Box Plot Showing the Distribution of Scores for Each AIPE Item

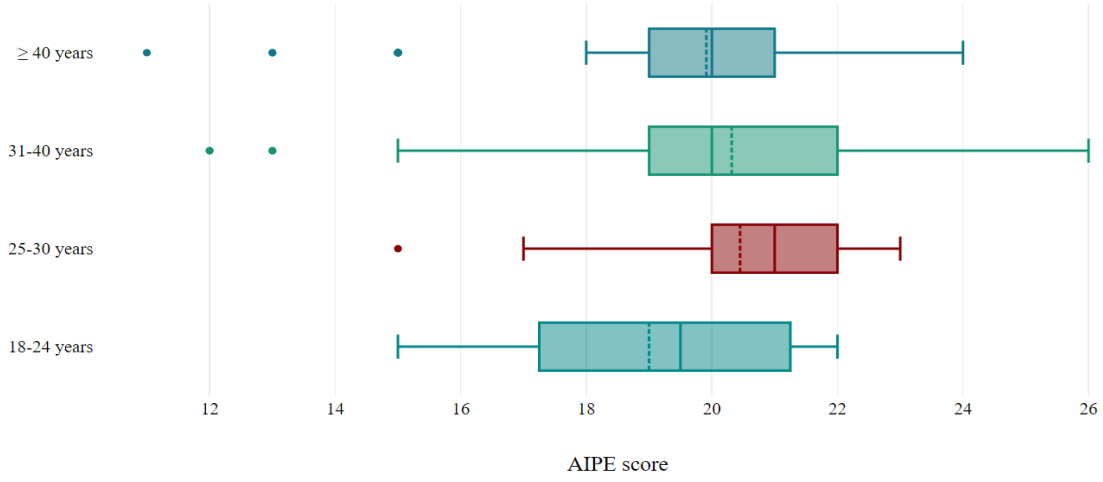

Figure 2: Box Plot Showing the Distribution of the AIPE Scores According to Age.

Abbreviations

PE	Premature Ejaculation
T2DM	Type 2 Diabetes Mellitus
AIPE	Arabic Index of Premature Ejaculation
ILET	Intravaginal Ejaculation Latency Time
ED	Erectile Dysfunction
ISSM	International Society for Sexual Medicine
IDF	International Diabetes Federation
SSRIs	Selective serotonin reuptake inhibitors

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Declarations of interest:

Consent for publication (consent statement regarding publishing an individual's data or image): Not Applicable.

Data Availability: All data are available upon request from the first author.

Competing Interests: The authors declare no conflicts of interest.

Authors' Contributions: All authors contributed to data analysis, drafting, or revising the article; gave final approval of the version to be published; agreed to the submitted journal; and agreed to be accountable for all aspects of the work.

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Ethical Statement

This research titled "Prevalence of Premature Ejaculation among Patients with Type 2 Diabetes in Abha City, KSA" was read and approved by King Khalid University Research Ethics Committee (Approval No. ECM#2024-1604). The study was conducted strictly following the approved protocol and ethical requirements. Informed consent was obtained from all participants prior to their enrollment in the study. All procedures were conducted in accordance with the ethical standards established by the National Committee of Bioethics of the (of Saudi).

Ethical Compliance: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Word count:4522 words, excluding references.

Author Contributions

T.A.A.G. contributed to the conception and design of the study, data acquisition, drafting of the Results section, and final approval. M.M.A. contributed to the study design, manuscript drafting and revision, reference checking, and final approval. A.S.A. participated in study design, initial data analysis, drafting, revision, and final approval. R.N.A. contributed to study design, manuscript drafting, reference verification, and final approval. A.O.A.A. participated in the data analysis, manuscript drafting and revision, and final approval. A.A.F.A. was responsible for data analysis, statistical testing, and final approval. contributed to the data analysis, statistical testing, final language revision, and reference validation. B.A. contributed to the data analysis, statistical testing, final language revision, and reference validation. A.A. contributed to study design, statistical analysis, final revision, and reference validation. All authors have read and approved the final manuscript and agree to be accountable for all aspects of this work.

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