

PREVALENCE AND RISK FACTORS OF SEXUAL DYSFUNCTION AMONG MALE AND FEMALE DIABETIC PATIENTS IN SAUDI ARABIA: A REVIEW

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ABSTRACT

Diabetes can cause a wide range of physical, mental, and sexual problems in both men and women. One of these is sexual dysfunction, which can progress into a major social and psychological condition and has an impact on therapy's efficacy as well as marital relationships. Determining the prevalence and risk factors of sexual dysfunction among Saudi Arabian diabetics was, thus, the goal of this study. This review collected data from Science Direct, Scopus, and PubMed. Data for this study was gathered from multiple databases between 2000 and 2023. Ten of the 230 papers that were assessed and included in the study since they satisfied the requirements. Saudi Arabia had the greatest rate of sexual dysfunction. Sexual dysfunction was very common in males compared to females. Patients with sexual dysfunction were more likely to have type 2 diabetes mellitus. The prevalence of sexual dysfunction varied according to the research participant's location, type of diabetes, and sex. Consequently, male participants in the type 2 diabetes mellitus study experienced higher rates of sexual dysfunction. The prevalence of sexual dysfunction varied according on the type of diabetes and the sex. The results suggest that individuals with diabetes who are experiencing sexual dysfunction should be screened and given the proper treatment.

KEYWORDS: Sexual dysfunction, Diabetes mellitus, Family medicine, Prevalence, Saudi Arabia.

INTRODUCTION

Elevated blood sugar levels caused by insufficient or improper insulin synthesis are the hallmark of diabetes mellitus, a chronic metabolic illness.^[1,2] It affects around 2-3% of people in affluent nations and is one of the most common and dangerous chronic illnesses in the world.^[3,4] It is anticipated that 380 million individuals would have diabetes by 2025, compared to the 246 million cases that are now recorded worldwide.^[5] Apart from its widely recognized effects on several organs and systems, diabetes can also have an impact on sexual health, resulting in sexual dysfunction in individuals of both sexes.^[6] Problems that can occur at any stage of the sexual response cycle and prevent an individual or a couple from feeling fulfilled after engaging in sexual activity are referred to as "sexual dysfunction".^[7]

Sexual dysfunction can take many different forms. These include disorders like premature and delayed ejaculation, as well as erectile dysfunction (ED: inability to maintain or achieve an erection) and female sexual dysfunction (Problems with arousal, desire, orgasm, or pain during intercourse).^[8,9] People with diabetes sometimes worry

about sexual dysfunction. Diabetes can cause problems with sexual function in both men and women.^[10] Multifactorial factors, such as physiological, psychological, and interpersonal aspects, can contribute to sexual dysfunction in people with diabetes.^[11]

According to study, diabetes is a common health problem in Saudi Arabia and has become more common recently.^[11] Diabetes is known to cause sexual dysfunction, which can impact both men and women.^[12] This study investigates the frequency, risk factors, and treatment of sexual dysfunction in female and male diabetic patients. This study attempts to fill this vacuum in the existing literature by integrating and assessing the influence of sexual health, which is a serious topic and may be too personal for patients to bring up with their doctors. Finding out how common SD was among Saudi men and women with diabetes diagnoses was the aim of this study. The study's findings will close any gaps in operational plans and provide clinicians and other interested parties with vital information that they need to effectively manage and treat individuals with sexual disorders in both settings.

Methods

The standard PRISMA was used in this systematic review^[13] investigation to ascertain the prevalence of sexual dysfunction in Saudi Arabia.

Search strategy

The Boolean operators "OR" and "AND," along with keywords, phrases, and/or MeSH, were used to construct these searches.

Data Strategy

The Cochrane Library, Science Direct, Scopus, and PubMed databases were used in this investigation. The database of PubMed in 2023. To locate pertinent papers, the search phrases "sexual dysfunction," "diabetic," and "Saudi Arabia" were employed. After then, these ideas were combined with keywords using the Boolean operator "OR". PubMed Search Builders were created as a result of the usage of certain terms, such as "sexual dysfunction," "Diabetes," "diabetes," and "diabetes mellitus," as indicated in Table 1.

Once the keywords were collected from PubMed, they were joined with their corresponding search builder using the Boolean operator "OR". In addition, limitations on themes centered on keywords were put into place. Together with the Boolean operator "AND," all concepts and keywords were combined to construct the final search strategy, as Table 1 illustrates.

Inclusion

1. All studies that were interventional, retrospective, cross-sectional, or longitudinal were included.
2. Language requirements: The work should have been published in English. A study produced in a language other than English is evaluated for its non-English title and abstract. If the full text is deemed relevant to the study outcomes of interest, an attempt is made to translate it.
3. The publication year must have been in the range of 2000 to 2023. Because researchers have only recently looked into the health effects of the building business, the last 23 years were considered.

Exclusion

1. Studies from reviews, conference abstracts, and other sources.
2. Articles that are not published in English
3. Articles that provide insufficient context
4. Prior to the year 2000

Screening of articles

Once the relevant articles have been obtained from all the databases, remove the duplicates. After that, the abstracts, titles, and readings of the entire texts were used to evaluate the papers. Ultimately, ten papers were selected for additional review and quality assessment.

Quality appraisal tools

In a systematic review, factual analysis and an assessment of the evidence's dependability are required. The CASP technique must be applied in order to evaluate the data's dependability as well as each study's inherent biases.^[16] The appropriate risk of bias score was determined by accounting for the construction of timelines, measurement mistakes, blinding, partial evaluations, selective the efficacy of, and other biases.

Data synthesis strategy

PRISMA guidelines were followed in the reporting of the findings. The study's conclusions were distilled into a narrative description using themes found in the data that was retrieved. It was conducted using a methodology that includes an initial synthesis of the research findings from the studies that were included, an analysis of the relationships between the studies, and a rating of the strength of the synthesis.

RESULTS

The process of selecting studies resulted in the creation of 230 distinct publications. Figure 1 shows the systematic review, elimination, and article selection procedures. A total of thirty-two publications underwent full-text assessments, and fourteen were rejected based only on their abstracts or titles. After applying the exclusion criteria and assessing the quality of the research, ten were discovered. One study was omitted since it lacked identifying information. Part of the already-highlighted point is that the comprehensive synthesis of the key concerns fully met the predetermined goals of the current systematic review. Identify the prevalence of SD in Saudi men and women who have been diagnosed with diabetes, as they are important subjects related to the goals of the current systematic review shown in Table 2.

Theme 1: Prevalence of sexual dysfunction with Diabetes

Al-Turki et al., (2007) found that 11.2% of patients with diabetes experienced total and severe ED, whereas 64% of them complained of moderate ED that was interfering with their marriage.^[6] According to a cross-sectional study carried out in 2022 by Alenezi et al., 10.45% of married Saudi males suffered from ED overall, along with medical problems such as hypertension, diabetes mellitus, and hypercholesteremia.^[5] Male Saudi diabetic patients had a significant prevalence of ED, according to AlMogbel's (2014) research.^[11] In the age category over 50, 92% of patients showed an increase in age when SD was present, according to AlMogbel et al. (2017).^[15] The prevalence of SD increases with age in Saudi women with type 2 diabetes.

Among individuals with type 2 diabetes, ED is a very common illness.^[14] According to the ASEX score, one-third (32.5%) of the patients in the study population have FSD, indicating the high prevalence of the condition. The highest ASEX score is associated with type 1

diabetes.^[3] According to EL-Sakka and Tayeb (2003), the prevalence of ED was 25% in individuals under 50 and 75% in those over 50.^[17] According to Faraj (2013), 63.5% of people have ED overall.^[10]

Hassan et al. (2014) reported that 86.7% of diabetic males with low testosterone levels (8–12 nmol/L) had ED.^[9] Rakkah (2021) discovered that among patients with both Type-1 and Type-2 diabetes who had symptomatic autonomic neuropathy, there was the highest link between the incidence of impotence and a consistent increase with age (approximately 80%). The most frequent type of sexual dysfunction identified in these neuropathic patients was other ED, indicating a significant frequency of sexual dysfunctions in long-term diabetic neuropathic men.^[4]

Theme 2: Factors sexual dysfunction with diabetes

Alenezi et al. (2022) state that age, health issues, physical activity, and a lower educational attainment are the variables linked to ED. Smoking was not statistically significant in study, nevertheless. In a hospital-based primary care context, adult diabetes patients experienced ED fairly frequently.^[6] The results of Almigbal and Schattner's (2018) study indicate that age and the severity of ED were the two primary variables linked to a readiness to talk about ED. When it came to discussing ED with their doctors, people over 60 were 70% less likely than those under 60. Furthermore, compared to individuals with moderate ED, those with severe ED were 75% less likely to share their condition with their doctors.^[14]

According to AlMogbel (2014), 83% of male Saudi people with diabetes reported having ED. The findings indicate that the age and length of diabetes were significantly correlated with the presence of ED. The patients' occupation, family income, and educational attainment are significantly correlated with ED.^[11,15] Lower BMIs are seen in FSD patients, and there is a negative correlation between BMI and sexual dysfunction.^[3] Nephropathy, CAD, retinopathy, and hypertension are additional independent risk factors. Nearly one-third of diabetic people who experience ED notify their doctors. Treatment for ED is only given to a tiny proportion of patients.^[4,10] When Saudi males with type 2 diabetes have low testosterone levels, most of them also exhibit hypogonadistic symptoms. In Saudi type 2 diabetic patients, obesity is linked to low testosterone levels and ED.^[9]

Theme 3: Management of diabetes

Diabetes care has always been a significant aspect of general practitioners' jobs. The primary healthcare provider and entry point to additional services for a large number of diabetics is their general practitioner. Therefore, better medical professionals' understanding of the functional and social components of diabetes mellitus will result in higher-quality patient treatment. For certain patients, restoration of sexual function may be achieved

by education, support, and assurance. However, other treatments for sexual dysfunction should be tested with other patients. Wife participation in therapy decisions, especially if it is done subtly (keeping in mind cultural customs and beliefs), is likely to boost patients' spirits and assist them in accepting and managing their illness. Since most diabetic patients are reluctant to voice their concerns during consultations, it is critical for primary care physicians to identify the condition and provide early guidance to these patients.

DISCUSSION

According to the study result, diabetes causes a wide range of physical, emotional, and sexual problems in both men and women. One of these is sexual dysfunction, which can become a major social and psychological condition and has an impact on therapy's efficacy as well as marital relationships. The prevalence of sexual dysfunction varied according to the research participant's location, type of diabetes, and sex. Consequently, male participants in the type 2 diabetes mellitus study experienced higher rates of sexual dysfunction.

There are various ways that the current study may affect clinical practice. First off, a significant issue for individuals with diabetes is sexual dysfunction, which is often disregarded by medical professionals despite the fact that most of these patients are open to talking about it. The conversation should be started by the doctors who are treating these individuals. Second, those with diabetes who are elderly and experience significant sexual dysfunction are less likely to talk to their doctors about it. It should be beneficial to target this patient subgroup with education and to foster stronger patient-physician connections. Thirdly, there are a number of obstacles that keep people with diabetes from talking to their doctors about sexual dysfunction; these could be lessened by improving patient education and addressing psychological issues.

There is some usefulness to this research as well. Compressive electronic web search engines were used initially. Secondly, this review should have included the primary research with the grey literature. The prevalence of sexual dysfunction in Saudi Arabia was also mentioned. This study has various restrictions. At first, evaluating the results of this study is challenging because no similar previous research has been done. Second, only English-language papers that were authored and published were accepted. Thirdly, the cross-sectional design of all the included studies raises the possibility that the outcome variable could be impacted by other confounding variables. Because the study only included data from one nation, it might not be generalizable. Furthermore, the findings showed correlations—rather than necessarily causative relationships—between a number of variables and the readiness to talk about sexual dysfunction. Nonetheless, the results provide valuable insight into this delicate matter for diabetic

individuals. Furthermore, this country has not produced any comparable research, making it significant for the nation's healthcare system.

Figure legends

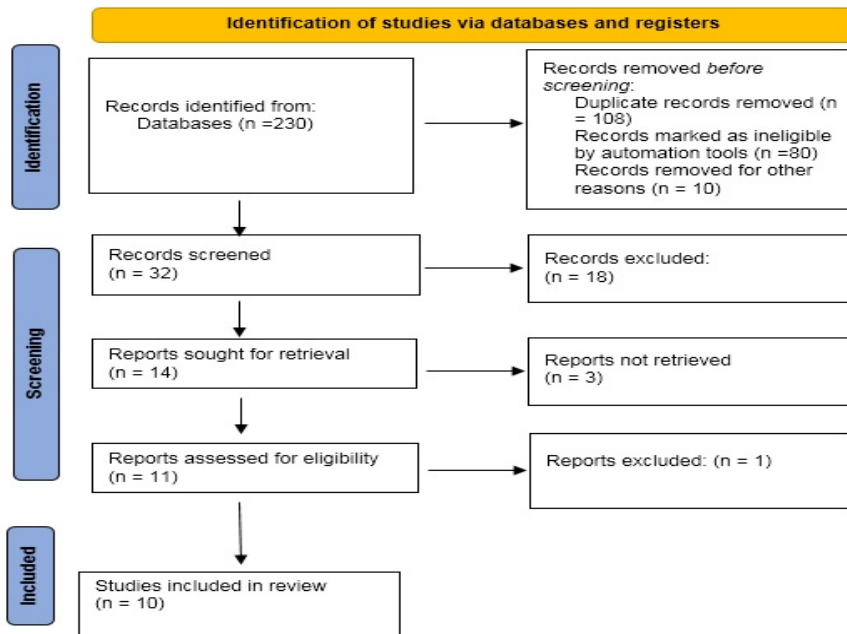


Fig. 1: Prisma diagram.

Table 1: Keywords.

Topic	Keywords	Search
Prevalence of sexual dysfunction among male and female diabetic in Saudi Arabia	Sexual dysfunction, Diabetes, Saudi Arabia	Prevalence: "epidemiology"[Subheading] OR "epidemiology"[All Fields] OR "prevalence"[All Fields] OR "prevalence"[MeSH Terms] OR "prevalance"[All Fields] OR "prevalences"[All Fields] OR "prevalence's"[All Fields] OR "prevalent"[All Fields] OR "prevalently"[All Fields] OR "prevalents"[All Fields] sexual dysfunction: "sexual dysfunctions, psychological"[MeSH Terms] OR ("sexual"[All Fields] AND "dysfunctions"[All Fields] AND "psychological"[All Fields]) OR "psychological sexual dysfunctions"[All Fields] OR ("sexual"[All Fields] AND "dysfunction"[All Fields]) OR "sexual dysfunction"[All Fields] OR "sexual dysfunction, physiological"[MeSH Terms] OR ("sexual"[All Fields] AND "dysfunction"[All Fields] AND "physiological"[All Fields]) OR "physiological sexual dysfunction"[All Fields] diabetic: "diabete"[All Fields] OR "diabetes mellitus"[MeSH Terms] OR ("diabetes"[All Fields] AND "mellitus"[All Fields]) OR "diabetes mellitus"[All Fields] OR "diabetes"[All Fields] OR "diabetes insipidus"[MeSH Terms] OR ("diabetes"[All Fields] AND "insipidus"[All Fields]) OR "diabetes insipidus"[All Fields] OR "diabetic"[All Fields] OR "diabetics"[All Fields] OR "diabets"[All Fields] Saudi Arabia: "saudi arabia"[MeSH Terms] OR ("saudi"[All Fields] AND "arabia"[All Fields]) OR "saudi arabia"[All Fields]

Appendix 2

Table 2: Data extracted.

No.	Author and year	Aim	Design	Sample	Key Findings
1	(Al-Turki, 2007)	the proportion of males with diabetes mellitus who have ED.	cross sectional	186 diabetic patients Saudi	11.2% of the patients severe ED.
2	(Alenezi et al., 2022)	prevalence of erectile dysfunction (ED)	cross-sectional	Saudi, 313 male	ED in married male Saudi citizens is 10.45%.
3	(Almigbal &	The prevalence of type 2	cross-	309 Saudi men	ED was present in 89% of

	Schattner, 2018)	diabetic men in Saudi Arabia	sectional		them, and Severe ED affected 28% of the patients.
4	(AlMogbel, 2014)	the frequency of ED among Saudi individuals with type 2 diabetes.	Cross-sectional	376 Saudi men	ED prevalence is high.
5	(AlMogbel et al., 2017)	SD's frequency in Saudi females with type 2 diabetes.	cross-sectional	275 Saudi women	the existence of SD and the 92% rise in patient age in the over-50 age group.
6	(Alshehri et al., 2022)	prevalence of FSD	cross-sectional	253 female Saudi patients	The highest ASEX score is seen in people with diabetes.
7	(El-Sakka & Tayeb, 2003)	The frequency of erectile dysfunction and its associated factors	cross-sectional	562 male diabetic Saudi patients	50 years old ED was 25%; over 50 years old to 75%.
8	(Faraj, 2013)	prevalence of erectile dysfunction in the diabetic patients	cross-sectional	181 diabetic male patients	diabetic male patients ED was 63.5%.
9	(Hassan et al., 2014)	the prevalence and etiology of erectile dysfunction	cross-sectional	429 Saudi male patients	86.7% of diabetic males had erectile dysfunction (ED).
10	(Rakkah, 2021)	the incidence of erectile impotence and sexual dysfunctions	cross-sectional	250 Saudi male patients	Significant frequency of sexual dysfunction in men who have long-term diabetes and neuropathic pain.

CONCLUSION

Sexual dysfunction affects both men and women with diabetes in Saudi Arabia quite frequently. It rises with advancing age and length of diabetes. In Saudi type 2 diabetes individuals, obesity is linked to low testosterone levels and ED. Additionally, a relationship was discovered between the prevalence of SD and age, but not between SD and glycemic control. As with any other diabetes complication, it is advised that family doctors and diabetologists routinely check for this problem in their diabetic patients. It is advised that more studies be conducted to assess the influence of other risk factors and determine if sexual dysfunction in diabetics is a biological or psychological consequence of the illness itself. In diabetes follow-up clinics, sexual dysfunction should be identified and treated as a common medical issue. Particularly while treating chronic diseases, individuals with diabetes should have their sexual dysfunction constantly checked by medical professionals.

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Conflict of interest statement

The author has no conflicts of interest to declare.

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Author contributions

Author 1 designed the experiments and analyzed the data. Author 1 analyzed the data and prepared the manuscript. Author 1 approved the final manuscript.

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