

Diabetes and Female Sexual Functioning: A State-of-the-Art

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Abstract

Progress in medical care has led to a shift in diabetes care and brought the issue of quality of life to the forefront. Sexuality, however, is an aspect of quality of life that has only recently gained more attention in clinical care. It is well known that diabetes can have an enormous influence on male

sexual functioning. But what is known about the influence of diabetes on female sexual functioning? This article presents a review of the state-of-the-art of this neglected issue and describes a recent study by the authors that revealed a specific pattern of female sexual dysfunction.

Introduction

The relationship between diabetes and sexual problems has long been recognized. Avicenna (960–1037 AD) was the first to mention the “collapse of sexual function” as a specific complication of diabetes in his medical encyclopedia.¹ In the next centuries, several authors confirmed this observation, which led Naunyn (1906) to his statement that impotence is one of the most common symptoms of the disease.¹

Although these observations suggested the existence of a relationship between diabetes and sexuality, Joslin did not mention sex, impotence, pregnancy, or marriage in the 1919 edition of his diabetes manuals for physicians or patients.² Indeed, Joslin would not mention impotence in his diabetes manual for physicians until 1946. When he did, he described it as “a rare complaint that is best purposely neglected because it may disappear with general improvement of therapy, or, if not, the less the attention of the patient is directed to it, the better.”² His purposely neglecting the issue of sexuality is not surprising, considering that discussing sexuality was still taboo in society at the time.

Consequently, he did not mention impotence in his manual for patients but did devote an entire chapter to marriage. After having listed the problems diabetes causes, he advised that “no diabetic boy or girl should get married until they are ready to face

the problems of diabetes with a smile.”² In his advice on pregnancy, he stated that “marriage involves no danger for the man, but parturition does involve danger for the woman,” while further providing the genetic advice that “two diabetics should not marry and have children.”²

Discussing Sexuality Is ‘Unheard Of’

The sexual problems of women who have a chronic illness are often still omitted from the literature. A possible explanation for this is that, in women, sexuality is still often viewed as equal to reproduction, which leaves the issue of sexual pleasure unaddressed.

The history of the study of sexual functioning of women with diabetes is prototypical in this respect. Before the advent of insulin in 1921, sexuality in general was simply not addressed in the literature. Not even pregnancy and its potential complications for women with diabetes were discussed. One explanation for this omission is that, before insulin, women with diabetes who could become pregnant were rare.² Concern about pregnancy, though not female sexuality, in women with diabetes seems to have arisen from the discovery of insulin. Insulin allowed women with diabetes to be healthy enough to become pregnant and brought with it the problems of pregnancy including pregnancy-induced hypertension, coma, and infant mortality. Thus, for the next few decades, the diabetes literature

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focused on the devastating effect of diabetes on both women with diabetes and their infants. This made it possible to entirely neglect the influence of diabetes on both male and female sexual functioning. The philosophy regarding both male and female sexual dysfunction seems to have been, "If you don't ask about it, it doesn't exist."

Beginning in the 1940s, medical textbooks reflected an increasing recognition of the important influence of diabetes on sexuality. However, this attention focused solely on male sexuality. In the 1950s, the focus in research widened from pregnancy in women with diabetes to sexual dysfunction in men with diabetes. The influence of diabetes on sexual functioning in diabetic women was neglected entirely until Kolodny's groundbreaking article in 1971.³

Literature Review

The fact that sexual functioning in women with diabetes still has not gained much attention in the literature is reflected in the small number of publications we identified that addressed this topic: only 25 articles (of which 15 were study reports) covered the field of female sexual dysfunction and diabetes. In the following paragraphs, we provide a brief overview of the most notable results of our literature review.

Some methodological remarks

While reviewing the literature, we made two important observations: 1) only a small number of studies have been performed regarding the influence of diabetes on female sexual functioning, and 2) the studies that have been done are plagued with major methodological flaws (e.g., small samples, absence of control groups, noncharacterization of diabetes type, lack of information about presence and extent of diabetes complications). Moreover, in most research, the psychological adjustment to diabetes was not taken into account as an influential factor in the development of sexual problems.

Some remarkable study results

In 1971, Kolodny³ compared 125 hospitalized women with diabetes to 100 hospitalized women without diabetes (control group). The age range of par-

ticipants was 18–42 years. The women were interviewed about their medical history, clinically examined, and interviewed about their sexual history, with a specific focus on presence or absence of orgasm during coitus. Kolodny found that, among the women with diabetes, 35% did not have orgasm during coitus, compared to 6% in the control group. He did not find an association with age, diabetes duration, or severity of neuropathy, but did link the anorgasmia to diabetes.

These results inspired Zrustova et al.⁴ to perform an anatomo-pathological study in which they studied the clitoral innervation of several women with diabetes. Their study revealed that a large number of anorgastic women had lesions in their clitoral innervation that were comparable to those found in the corpora cavernosa of men with erectile dysfunction. Although the results of both Kolodny and Zrustova et al. brought some evidence for the existence of secondary problems with orgasm in women with diabetes, this has been replicated only once in later studies.⁵

Jensen⁶ was the first study to compare women with diabetes to a normal control group. He compared 80 men and 80 women with diabetes to 40 men and 40 women without diabetes. Subjects were asked to fill out a questionnaire and were interviewed. This information was supplemented by data on the development of diabetes, social factors, gynecological history, and psychosocial factors. Jensen's study revealed no differences in the prevalence of sexual problems in women with diabetes (27.5%) and control women (25%). The most-reported problem in both groups was with arousal, as shown in a decreased vaginal lubrication. No association was found between diabetic neuropathy and sexual dysfunction.

In 1983, Schreiner-Engel⁷ reported that different types of diabetes can have a different influence on female sexual functioning. In her study, women with type 2 diabetes reported more sexual problems compared to women with type 1 diabetes and control subjects. The differential effect of both types of diabetes could not be explained by different somatic causes. Hence, Schreiner-Engel hypothesized that the difference in the age of onset

in both types of diabetes could be a part of the explanation. She suggested that women who are diagnosed with type 2 diabetes at an older age have more trouble accepting necessary changes in different areas of their lives, including their sexual lives.

Newman and Bertelson's 1986 study⁸ was methodologically very good and revealed that 47% of participating women reported sexual dysfunction. In order of importance, these women reported decreased sexual arousal (lubrication) (32%), decreased sexual desire (21%), pain disorders (dyspareunia) (21%), and problems with orgasm (15%). Eighty-nine percent of these women reported that their problems occurred after their diagnosis of diabetes. Again, this study found no association between sexual dysfunction and diabetes complications.

In 1989, Campbell⁹ suggested that it was obesity in women with type 2 diabetes rather than psychological or other factors that influenced their sexual functioning.

In the 1990s, studies by Slob et al.¹⁰ and Wincze et al.¹¹ were important because they supplemented self-reported data on sexual dysfunction with objective measurements. Slob used labiothermometry (assessing the temperature of the labia minora as a measure of arousal) in combination with visual erotic stimulation but could not find any difference in the level of arousal between women with diabetes and control subjects. Wincze used a vaginal plethysmography to objectively measure the level of arousal and did find a significant difference between women with and without diabetes.

A New Hypothesis

At first sight, these studies revealed very different results and gave the overall impression that diabetes does not have a significant influence on female sexual functioning. However, an in-depth analysis revealed important evidence that women with diabetes are at increased risk for sexual problems.¹² This evidence suggested that women with diabetes not only are prone to experience a decrease in sexual desire and more dyspareunia during sexual intercourse, but also are more likely to experience a decrease in sexual arousal involving slow or inad-

equate vaginal lubrication. Problems with orgasm were not found to be more frequent in diabetic women than in women without diabetes.

Given these findings, we formulated a new hypothesis that, just as diabetic men are at higher risk for erectile dysfunction, so too are diabetic women at higher risk for sexual dysfunction in which the arousal phase is predominantly affected.¹²

New Research Results

To test this hypothesis, our group undertook a study that aimed to:

1. examine the prevalence of sexual problems in women and men with type 1 diabetes;
2. compare the prevalence of sexual dysfunction in women with diabetes to that of an age-matched control group;
3. examine the influence of diabetes-related somatic factors on female sexuality;
4. measure the influence of psychological variables on the sexual functioning of both groups;
5. describe the relationship between descriptive variables, psychological variables, diabetic complications, and sexual dysfunction in women and men with diabetes; and
6. describe the predictors of sexual dysfunction in women and men with diabetes.

A total of 240 adult patients with type 1 diabetes who visited the outpatient diabetes clinic of a university hospital completed questionnaires evaluating psychological adjustment to diabetes, marital satisfaction, depression, and sexual functioning.^{13,14} Data on hemoglobin A1c, medication use, BMI, and early-onset microvascular complications were obtained from medical records. An age-matched control group of 180 healthy women attending an outpatient gynecological clinic for preventive routine gynecological assessment also completed the non-diabetes-related questionnaires.

Our study revealed that the prevalence rates of sexual dysfunction in diabetic men, diabetic women, and control women were 22, 27, and 15%, respectively. Taking into account the young age (< 40 years) of the sample, these prevalence rates are high but comparable to previously

reported data on sexual dysfunction in the general population and in patients with type 1 diabetes.

These results confirm our hypothesis that compared to women in the general population, diabetic women are at increased risk for sexual dysfunction (22 vs. 15%; $P = 0.04$). Diabetic women have this increased risk in common with diabetic men. Of note, this study revealed no significant differences between the number of sexual problems found in men and the number found in women with diabetes complications. A comparison of men and women without diabetes complications showed that diabetic women reported significantly more sexual problems than do diabetic men because of a higher prevalence of decreased sexual desire in the women.

Although statistical significance was found only for decreased sexual arousal ($P = 0.05$), our findings suggest that diabetes also can affect sexual desire ($P = 0.09$) and dyspareunia ($P = 0.15$) in women with diabetes. This confirms our hypothesis concerning the specific pattern of sexual dysfunction in diabetic women, with the arousal phase most at risk.

Although there is growing consensus about the etiological factors of sexual dysfunction in diabetic men, it remains unclear whether the same factors are involved in diabetic women. In our study, we attempted to provide insight into the correlates and predictors of sexual dysfunction in women and men with type 1 diabetes.

Our study revealed that in diabetic women, sexual dysfunction was related to lower marital satisfaction, more symptoms of depression, negative appraisal of diabetes, poorer emotional adjustment to diabetes, higher impact of diabetes treatment on daily life, and low satisfaction with treatment. In general, the findings suggest that in diabetic women, “disease acceptance” is a crucial factor related to sexual functioning. However, no association was found between sexual dysfunction and age, BMI, menopausal status, medication use (i.e., birth control pills, hormone replacement therapy), glycemic control, duration of diabetes, or diabetes complications. In a statistical prediction model, depression was the only significant predictor of self-reported sexual dysfunction in diabetic women.

Given the cross-sectional design of our study, we can not infer the causal relationship from our data. The overall impression emerging from our findings is that sexual dysfunction in diabetic women seems to be more related to psychological than to somatic factors.

In diabetic men, our study revealed that sexual dysfunction was also related to symptoms of depression, in addition to negative appraisal of diabetes, poorer emotional adjustment to diabetes, and a higher treatment impact on daily life. However, sexual dysfunction was not related to treatment satisfaction or marital satisfaction. In general, these findings suggest that, as with diabetic women, the “disease acceptance” of diabetic men is related to sexual functioning. Perhaps not surprisingly, important associations were found in men between sexual dysfunction and older age, higher BMI, poor glycemic control, longer duration of diabetes, and presence of complications. In a statistical prediction model, the predictors of sexual dysfunction in diabetic men were older age and the presence of complications, two factors known to be associated with erectile dysfunction. In diabetic men, overall, sexual dysfunction seems to be more related to somatic than to psychological factors.

In accordance with findings from the general population, diabetic women reported more symptoms of depression than did men, and more women than men (25 vs. 7%) reached a depression questionnaire score that was suggestive of clinical depression. However, sexual problems were related to symptoms of depression in both men and women with diabetes.

Conclusion

Sexuality is an important aspect of quality of life, and contrary to general opinion, women with diabetes are at increased risk for sexual problems. Sexual dysfunction can put a high psychological burden on patients with diabetes, and it can have a negative impact on marital relations already burdened by the presence of a chronic illness. Therefore, the recognition of the existence of sexual problems in women with diabetes should be an invitation for clinicians to address this issue during their consultations. Table

1 offers tips for addressing sexual functioning in women patients.

It is even possible that an arousal problem involving slow or inadequate vaginal lubrication in women with diabetes is an easily treatable complication of diabetes. Good psychosexual counseling in which patients can discuss their embarrassment about asking about, buying, and using vaginal lubricants, can help women overcome the painful sexual problems they may be facing.

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Table 1. Tips for Addressing Sexual Functioning With Diabetic Women

- Recognize the fact that women with diabetes are at increased risk for sexual dysfunction.
- Be aware that sexuality is not often a subject about which patients volunteer information.
- Think about your own capabilities of discussing sexual problems with patients.
 - If you feel comfortable and capable of addressing sexual issues:
 - Inform your patients about the sexual problems of women with diabetes.
 - Initiate the subject of sexual dysfunction in consultations.
 - Learn about different treatment options (e.g., psychosexual counseling, sex therapy, medication) and make a list of specialized colleagues to whom to refer your patients.
 - If you do not feel comfortable and capable of addressing sexual issues:
 - Make a list of specialized colleagues to whom you can refer patients who bring up questions about sexuality. This is important to prevent discouraging people who (dare to) bring up questions from doing so again in the future.

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