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Sexual dysfunction among women with type 2 diabetes and its relationship with well-being, anxiety and depression

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Summary

Aims: To examine whether Polish women with type 2 diabetes suffer from sexual dysfunction/dissatisfaction, and if so, to investigate an association between the severity of sexual problems and well-being, anxiety and depression in this group.

Material and Methods: We surveyed 60 women aged 42–76 years (M = 59.25, SD = 9.14), using the following questionnaires: the Arizona Sexual Experiences Scale (ASEX), Sexological Questionnaire Part B, the WHO-5 Well-Being Index (WHO-5), and the Brief Self-Rating Scale of Depression and Anxiety.

Results: Two-thirds of respondents (75%, N = 45) complained that they did not experience orgasm (anorgasmia), 63.3% (N = 38) showed a lack or loss of sexual desire, and 50% (N = 30) had no genital response to sexual stimuli and/or experienced sex aversion. There was no significant relationship between well-being, anxiety and depressive symptoms, and the severity of sexual dysfunction.

Discussion: Our findings indicate that sexual dysfunction is more prevalent than shown in other studies, but the study had significant limitations due to a small number of participants and lack of a pair-matched control group. The findings should be interpreted with caution and it would be important to confirm these results in future studies, with a larger group of participants

Conclusions: Polish women with type 2 diabetes commonly experience symptoms of sexual dysfunction. Well-being, depressive and anxiety symptoms appear to co-occur with symptoms of sexual dysfunction.

sexual dysfunction / type 2 diabetes mellitus / well-being / depression, anxiety

INTRODUCTION

Increasing prevalence of diabetes is a challenge for contemporary medicine and society alike. The International Diabetes Federation estimates that 355 million people suffer from this disease worldwide [1]. Microangiopathy and neuropathy, common complications of diabetes, can cause symptoms of sexual dysfunction. A com-

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prehensive review of the literature indicates that prevalence of erectile dysfunction among men with diabetes varies from 32 to 90%, dependent on the population studied, age, and the type and duration of diabetes [2]. Interestingly, the prevalence of sexual dysfunctions among women with diabetes is under-investigated, in spite of the fact that the first report on the higher prevalence of anorgasmia among women with diabetes compared with women without diabetes (35% vs. 6%) was published as early as 1971 [3]. A literature review of Medline and PubMed revealed that the number of publications on sexual dysfunction among women with diabetes is relatively low [3–9]. Studies were often based on a small number of participants or had unclear methods regarding symptom identification. A Jordanian study of 613 diabetic women reveals higher prevalence of sexual dysfunction compared with the control group, but patients had both type 1 and type 2 diabetes [4]. Only a few publications take into consideration psychopathological symptoms that also can cause sexual dysfunctions [5–9]. A Nigerian study of 58 women with type 2 diabetes concluded that psychological morbidity could be a determinant of sexual dysfunction [5]. An Italian study of 595 women with type 2 diabetes revealed that the prevalence of sexual dysfunction was 53.4% [6]. In both studies, depression and marital status were predictors of sexual dysfunction, and women with type 2 diabetes who also have depression were 1.86 times more likely to experience sexual dysfunction than women without depression [5,6]. In addition, married women were 1.59 times more likely to experienced sexual dysfunction than women who were not married [5,6]. The presence of depression was established by self-report along with the use of antidepressant medications and/or psychological counseling for depression; however, the severity of depressive symptoms was neither examined nor reported by the participants [6].

Of the studies reviewed, very few involved a representative group of participants and had the required psychometric qualities [7–9]. One of the studies selected as partially representative included a sample of patients with type 2 diabetes [8], but participants included both genders (male and female) [8]. A second study of Italian women only included both type 1 and type 2 diabetes [7]. Turkish studies on the relationship between depression and a perception of sexuality in patients with type 2 diabetes indicated a higher prevalence of psychiatric disorders, particularly depression and anxiety, in patients with diabetes compared with the general population [8]. In addition, a total of 53% of Turkish respondents declared that diabetes had a negative impact on their sex life, which may then have had an adverse effect on their quality of life and mental state [8]. An Iranian study of 150 women with type 2 diabetes was conducted using diagnostic methods with good reliability and validity, and a reported prevalence of total sexual dysfunction was 78.7%, with the most common complaint being inadequate lubrication (58%) [9]. 50% of the Iranian participants with sexual dysfunction complained of decreased sexual desire, while 50% had problems with arousal. Depressive and anxiety symptoms in Iranian women with type 2 diabetes and sexual dysfunction were estimated by the Hospital Anxiety and Depression Score (HADS) questionnaire, with reports of 58.7% co-occurrence of depression and 96.7% co-occurrence of anxiety [9]. The prevalence of depression was reported as significantly higher in the group with sexual dysfunction than in those without, however, there was no difference in reports of anxiety among women with and without sexual dysfunction [9].

OBJECTIVES

The aim of this study was to determine the prevalence of sexual dysfunction among Polish women with type 2 diabetes and its relationship with well-being and with symptoms of anxiety and depression.

METHOD

The study was carried out in the Diabetes Center of the Outpatient Clinic in Warsaw, Poland as part of a larger project: "Assessment of questionnaires and scales used for coping with diabetes monitoring". It was approved by the Bioethics Committee of the Medical University of Warsaw. Participants included a convenience sample

of consecutively enrolled women with type 2 diabetes. The women were invited into the study immediately after completing a routine medical evaluation that included a diabetes examination. An invitation to participate was verbally presented to each participant based on a standardized script that included a statement that the information obtained for the study would be fully anonymous with no identifying detail recorded. A fully anonymous protocol was selected based upon previous experiences with Polish women regarding obtaining sexual health-related (or other sensitive) information. Previous studies on the prevalence of sexual dysfunction showed that Polish women not only refuse to provide identifying information, they rarely agree to participate if they think that the information might be traced back to them individually in some manner [10,11]. Therefore, due to the constraints of the anonymity protocol, it was not possible for the researchers to obtain information from the participants' medical reports, or to contact the participant again for additional information. Out of 120 women invited to participate in the study, 60 (50%) agreed, resulting in a relatively small participant pool. The participants were Polish women aged 42 to 76 years (M= 59.25; SD = 9.14). Each participant signed informed consent that was approved by an internal review board, and each responded to a standardized questionnaire survey. Just over a half of the women surveyed (55%, N = 33) had had a sexual partner in the six months prior to the study.

Participants completed the following questionnaires:

- Sexological Questionnaire Part B. This is a screening tool [12] used for a preliminary diagnosis of sexual dysfunction. It is based on the *International Classification of Diseases* (ICD-10) criteria [13] and has sensitivity of 78% and specificity of 86% for sexual dysfunction.
- The Arizona Sexual Experiences Scale (ASEX) [14] was used for the assessment of the intensity of sexual dysfunction. It measures five items regarding sexual dysfunction. Each response is rated on a 6-point scale. The total score, ranging from 5 to 30, indicates the severity of the dysfunction (from absence to a high rate of sexual dysfunction respectively).
- WHO-5 Well-Being Index (http://www.who-5.org) [15–17] covers five items on a Likert-type scale related to the patient's well-being over the past two weeks. The WHO-5 is also useful as a screening tool for depression symptoms; it consists of 5 questions regarding basic symptoms of depression: the level of satisfaction, activity level, interests, and ability to feel relaxed and rested.
- Brief Self-Rating Scale of Depression and Anxiety [18–19] consists of 10 questions concerning the essential symptoms of depression (questions 1–5) and anxiety disorders (questions 6–10, based on ICD-10 criteria). Each response is rated on a 10-point Likert-type scale ranging from 0 to 10, where 0 is the lowest and 10 the highest severity of a measured characteristic. Scores are calculated separately according to sten norms, on two subscales: depressive symptoms intensity subscale (low: 0–2; average: 3–12; high: 13–50) and anxiety subscale (0–4; 5–14 and 15–50 respectively), as well as for the full scale (low: 0–8; average: 9–27; high: 28–100).

Three statements about well-being were included, with responses rated on a 5-point Likert scale. The questions were: 'Diabetes is a very burdensome disease for me', 'I have a very satisfying life' and 'My health is very good'.

The demographic information and additional data about the study were collected via verbal interviews with participants.

RESULTS

55 of 60 (91.3%) patients had symptoms of at least one sexual dysfunction in the six-month period prior to the study according to the Sexological Questionnaire. The most common were orgasmic dysfunction (female orgasmic disorder; N = 45, 75%) and lack or loss of sexual desire (hypoactive sexual disorder; N = 38, 63%). Detailed results are presented in Table 1.

Table 1. Subjectively assessed symptoms of sexual dysfunction according to ICD-10 among women with type 2 diabetes surveyed with the Sexological Questionnaire.

Sexual dysfunction	Prevalence based on N = 60 (100%)
Orgasmic dysfunction (absence of orgasm)	N=45 (75%)
Lack or loss of sexual desire	N=38 (63.3%)
Sexual aversion	N=30 (50%)
Failure of genital response (failure of lubrication)	N=30 (50%)
Dyspareunia	N=29 (48.3%)
Lack of sexual enjoyment	N=28 (46.7%)
Orgasmic dysfunction	N=28 (46.7%)
Excessive sexual drive	N=10 (16.7%)
Nonorganic vaginismus	N=9 (1%)
At least one dysfunction	N=55 (91.3%)

The Arizona Sexual Experiences Scale indicated that all women had symptoms of sexual dysfunction of at least low severity during the previous week. Detailed results are presented in Table 2.

Table 2. Occurrence and severity of symptoms of sexual dysfunction during the previous week according to ASEX

Severity of sexual dysfunction by points	Responses
5 points → no symptoms	–
6–13 points → low severity	N=1; 1.6%
14–20 points → average severity	N=26; 43.3%
21–30 points → high severity	N=33; 55%

The mean level of depression on the Brief Self-Rating Scale of Depression and Anxiety was 7.96 (SD 6.95) and the mean level of anxiety was 8.88 (SD 6.94). Comparing these scores to sten norms showed that 15 respondents (25%) had low severity of depression, 32 (53%) had average severity of depression, while 13 (22%) had high severity of depression. A total of 15 (25%) of the 60 women who were surveyed had low severity of anxiety; 34 (56%) had average severity of anxiety and 11 (18%) had high severity. According to the WHO-5 Well-Being Index, 31 of the 60 women (51.7%) had a raw score below 13 points, which indicates that a test for depression should be conducted. The raw score, calculated by adding up the points awarded for an answer to each of the 5 questions, falls within the 0–25 range, where 0 denotes the worst possible well-being and 25 denotes the best. The raw score multiplied by 4 gives the percentage score. 10 out of 60 women scored 7 points or less, which signals high risk of depression.

There was no statistically significant correlation between the severity of symptoms of sexual dysfunction and well-being measured by the WHO-5 ($r = 0.005$; $p = 0.971$), and anxiety ($r = 0.048$; $p = 0.713$) and depression ($r = 0.180$; $p = 0.168$) measured by the Brief Self-Rating Scale of Depression and Anxiety.

The severity of sexual dysfunction symptoms correlated moderately with scores on the one-item Likert-type scale assessing the burden of diabetes ($r = 0.340$, $p < 0.01$). There was a weak negative correlation between the perception of life satisfaction and intensity of sexual dysfunction symptoms which was below the level of statistical significance ($r = –0.236$, $p = 0.07$). There was no relationship between feeling of good health and severity of sexual dysfunction. The detailed data are shown in Table 3.

Table 3. Relationship between intensity of sexual dysfunction symptoms in ASEX and perception of diabetes and life satisfaction – Pearson correlation (r) analysis

	Severity of sexual dysfunction	
	r	p
Diabetes is a very burdensome disease for me	0.340	0.008
I have a very satisfying life	–0.236	0.070
My health is very good	–0.178	0.176

DISCUSSION

The current study is one of few European studies on sexual dysfunction prevalence among a homogenous, relatively representative sample (consecutive patients) of women with type 2 diabetes, conducted with diagnostic tools of reliable sensitivity and specificity. In addition, there is limited information in the literature considering psychological symptoms related to sexual dysfunction The study has significant limitations due to the small number of participants and the relatively high (50%) refusal rate, as well as lack of access to patients' medical records. The decision to keep the information fully anonymous was based on our previous experiences regarding sexual dysfunction among Polish female psychiatric patients that resulted in even smaller participation rate due to privacy concerns [10,11]. Discussions of sexual problems are considered extremely intimate and private, even shameful, therefore many individuals will decline to participate in a study of this type, which will limit the reliability of information obtained for the purpose of studying sexual dysfunction in Polish women in particular. The participants who signed the consent form were verbally assured, and often required additional assurances, that their names would not be included on any questionnaire; this may have somewhat skewed the information obtained. In addition, the women may have been ashamed to speak on this topic, or were following guidelines of the Catholic Church in Poland, which causes some people to be highly reluctant about discussing sexual matters. The Catholic religion prohibits masturbation and autoerotic practices have to be discussed during confession, which may have contributed to the feeling of shame around this topic. These cultural factors may explain the relatively high (50%) refusal rate.

The lack of a pair-matched control group is another limitation of the study. However, the results can be compared with findings of a study on sexuality among 900 Polish women over the age of 50 [20]. The 50% refusal rate is comparable with the 33% refusal rate in the latter study. Out of the participants who responded to questions about sexual dysfunction, 11.7% reported "low desire", 6.2 % reported problems with achieving orgasm, 3.3% reported experiencing pain during intercourse, and 43.1% reported no sexual problems, which is meaningfully more than 8.7% among the women with diabetes in the present study. A half (55%) reported high-intensity symptoms according to the ASEX Questionnaire U.S. norms (there are no Polish norms). The most commonly reported dysfunctions included: (a) absence of orgasm (75%), (b) lack or loss of or sexual desire (63.3%), (c) problems with vaginal lubrication (50%) and (d) sexual aversion/refusal (50%). The prevalence of sexual dysfunction in our study is higher than in previous studies on women with diabetes. For example, in a study by Duman carried out in Turkey, 26.2% of female participants confirmed experiencing sexual dysfunction, usually related to arousal (23.4%), desire (22.3%) and orgasm (20.2%) [21]. In a study by Hintistan & Cilingir on 80 Turkish women with type 2 diabetes, 68.8% reported sexual dysfunctions related to sexual desire, intercourse satisfaction, overall satisfaction, orgasm, clitoral sensation and vaginal lubrication [22].

The fact that our findings indicate a higher prevalence of sexual dysfunction than other studies described above seems meaningful. The differences should be interpreted with caution however, due to the reasons outlined above and also due to the use of different diagnostic instruments in other studies of comparable popu-

lations. The Polish Sexological Questionnaire is based on ICD-10 diagnostic criteria and is considered to have reliable indicators of sensitivity and specificity, and given that the tools used in other international studies do not exist in the Polish language, the possibility of using consistent testing instruments is limited.

Other studies that may be useful regarding interpretation of data obtained in this study, as well as for the purpose of comparing outcomes in this population, include the 2015 study by Elyasi et al. which indicated a higher prevalence of sexual dysfunction among diabetic women, especially those who also suffered from depression [9]. The 2013 study by Kucuk et al. showed that the presence of depressive and anxiety disorders had a negative effect on the sexual life of women with diabetes [8], and a 2013 study by Cortelazzi et al. concluded that depressive symptoms are more common in women with diabetes who also experience sexual dysfunction, but this relationship only occurred in women with type 1 diabetes [7].

A comparison of the prevalence of sexual dysfunction in a group of women who had a sexual partner in the previous 6 months (N = 33) and those who had no sexual partner (N = 27) did not reveal a statistically significant difference in occurrence of at least one sexual dysfunction (N = 2 (6.06%) vs. N= 3 (11.11%)) in the Sexological Questionnaire.

An interesting finding was that the results obtained in the current study did not confirm the hypothesis that depressive and anxiety disorders are more prevalent in women with sexual dysfunction and type 2 diabetes. Possibly, the women who participated in this study were not as affected by sexual dysfunction as women in other countries, or the baseline of perceived anxiety and depression symptoms is relatively low in the surveyed population (53% and 56% respectively based on standardized scales). Therefore, it would be important to include these factors in future studies, with a larger group of participants who report symptoms of depression and/or anxiety that are more severe, as well as to determine if persons with depression and/or anxiety are taking medications that can in some cases result in sexual dysfunction.

One might conclude that the mere fact of illness (diabetes) and/or feeling burdened by it may make sexual life of secondary importance. Nevertheless, these findings support the concern that sexual dysfunctions among women with type 2 diabetes represent a meaningful problem and could benefit from larger and more comprehensive studies. Screening of women with diabetes for sexual dysfunctions in the same manner as men appears justified by the evidence so far. If symptoms of sexual dysfunction are found, treatments should be made available to women.

To summarize, the following conclusions can be drawn from this study:

- Polish women with type 2 diabetes commonly experience symptoms of sexual dysfunction
- Well-being and depressive and anxiety symptoms appear to co-occur with symptoms of sexual dysfunction
- Polish women who assess their illness as a burden experience sexual dysfunction of greater severity
- Polish women who believe their lives are satisfying have less severe sexual dysfunction.

These findings should be replicated in more comprehensive studies. However, the data obtained suggest that women with type 2 diabetes may benefit from screening for sexual dysfunctions and that these screenings should also be conducted by health care practitioners who treat diabetes, both at initial appointments and during follow up visits.

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