Original Research Paper

Volume : 5 | Issue : 11 | November 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

A Study of Sexual Function in Women With Type 2 Diabetes Mellitus in India

Psychiatry

KEYWORDS: female sexual dysfunction, India, type 2 diabetes mellitus

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ABSTRACT

Objective: To study the prevalence and determinants of female sexual dysfunction in Type 2 Diabetes Mellitus in the Indian context. Methods: Cross-sectional comparison study. Sample size: 100 previously diagnosed type 2DM patients attending Outpatient Diabetic Clinic in a tertiary care hospital; aged 20-65years and 60 normal healthy female subjects for Control group. Data was collected with ethical approval over a period of 2 years. Tools Used: 1) Female Sexual Functioning Index (FSFI) 3) Arizona Sexual Experience Scale (ASEX-F) for female-for screening. 4) The Appraisal of Diabetes Scale (ADS). Results: There was significantly greater impairment in the sexual functioning of women with type 2 diabetes mellitus as compared to controls; both prevalence (62% vs 38.3%) and severity (p value < 0.01). Arousal (74.2% vs 53.3%), Desire (76.3% vs 50%) and Satisfaction (76.7% vs 63.7%) were most affected and 64.5% were affected in 2 or more domains. A negative illness appraisal on ADS correlated significantly with poor glycaemic control, higher rates of depression and also more severe female sexual dysfunction (p value< 0.05). Conclusion: Diabetes specific factors that correlated significantly with FSD in this study included the psychological appraisal of diabetes, duration of diabetes, presence of complications and BMI.

I. INTRODUCTION

Diabetes continues to be an important cause of morbidity, mortality and health care costs worldwide. India itself has the second largest diabetic population in the world which is expected to increase to 69.9 million by 2025 [1],[2].

The World Psychiatric Association defines sexual health as "a dynamic and harmonious state involving erotic and reproductive experiences and fulfilment, within a broader physical, emotional, interpersonal, social and spiritual sense of well-being, in a culturally informed, freely and responsibly chosen and ethical framework; not merely the absence of sexual disorders." Desire, arousal and orgasm are the three principle stages of sexual response cycle [3]. Women's sexual response cycle although initially conceptualized as a linear sequence of phases leading to orgasm, later the understanding of differences with respect to males in describing female sexuality led to a circular model by Basson. Female sexual disorders (FSD) are a complex set of conditions associated with multiple biological, medical, and psychological risk factors. There are a wide range of etiological factors such as age, relationship with partner, psychiatric and medical comorbid disorders as well as the use of psychotropic and other medications [4],[5],[6]. Impaired sexual functioning in men is a well-documented complication of diabetes. Sexual dysfunction is known to be one of the earliest signs and an indication of the patient's vascular status[7]. In contrast, the sexual problems of women with diabetes and associated risk factors are less clear and have not been examined from a bio-psycho-social construct; despite the fact that the risk for developing diabetic complications is much higher in women with diabetes.

The prevalence of FSD is as high as 35-60% in the general population in India. Type II DM, with its onset occurring during the productive period of adulthood in women can disrupt the stability of a couple and affect their relationship. Diabetic women are more prone to experience decreased sexual desire, dyspareunia, decreased sexual arousal and inadequate lubrication [8],[9],[10]. Cultural factors affect the expression of distress due to sexual dysfunction. Asian men and women rarely present for treatment in sex therapy clinics and have higher dropout rates than their western counterparts. This could be related to the sexually conservative social milieu in Asian societies and a reluctance of Asians to admit to sexual concerns supposedly due to embarrassment or anxiety. Optimal sexuality is an integral part of holistic health and poor psychological health impacts sexual function negatively [11]-[14]. Studies on prevalence and symptoms of sexual dysfunction in women with type II diabetes reported a range from 20% to 80% [15]. Erol et al reported 49% of diabetic women had difficulty reaching orgasm as compared to none in the control group [16]. Sexual pain has been found to form a component together with lubrication and orgasm domains among the women with diabetes, unlike those without diabetes where pain was a separate complaint. Studies conducted in several different ethnic groups have reported varied but higher prevalence of sexual dysfunction in women with type 2 DM. These data provide significant insight into the effect of various cultures, religions, lifestyle habits on sexual behavior. It is reported to be twice the rate as compared to those without diabetes and includes all the domains of sexual functioning [17]. A direct comparison between these studies is hampered by the lack of a uniform, validated questionnaire used during interview, characteristics of the study population, the method of assessment (self-rated questionnaire, personal interview, phone interview, mailed surveys), definitions of FSD and other methodological issues such as sample size and acquisition, response rate, recall bias, inclusion criteria and age groups included. These result in widely differing prevalence rates across studies, particularly between community and population based studies and hospital based studies. Sexual dysfunction in Indian diabetic women is a neglected area and there are no studies using validated questionnaires to assess for the same from India.One of the challenges in management of comorbid psychiatric issues among diabetics is a low rate of detection. Also gender discrimination is faced by women in India for access to services and support for diabetic complications [18]-[20]. Although many people with diabetes cope well and live healthy lives, several studies, including an international diabetes attitudes, wishes and needs (DAWN) study conducted across several countries emphasized that psychological support and coping is inadequate in women with diabetes. In India, Shobhana et al studied how well diabetic patients adjusted emotionally and accepted diabetes as a part of their lives in a study conducted in Chennai [22]. They found significant gender differences in depression, anxiety, energy and general sense of well-being; men fared much better than women subjects. The psychological well-being subscales did not correlate with metabolic and other medical indices implying that there is a greater psychological burden of diabetes in women [23].

II. RESEARCH DESIGN, PATIENTS AND METHODS

Aims: 1.To evaluate the sexual functioning and diabetes specific illness appraisal in Indian women with type 2 DM

2. To assess the effect of diabetes related variables on sexual dysfunction in the above patients.

Period of Study: From October 2012 to October 2014, a matched case control study (n = 160) was conducted in the Diabetic Out Patient Department of a tertiary care private hospital in South India after approval from the Ethical Committee. Inclusion criteria: Previously diagnosed cases of type 2 diabetes (n = 100) giving informed consent, operationally defined according to American Diabetic Association 2012 guidelines were identified consecutively and recruited into the study group. The diagnosis and reports recent HbA1c, FBS and PPBS values confirmed by documented proof only were considered.

Exclusion criteria: Patients taking insulin, those with missing records, refusal to participate or unable to give valid signed consent, pregnant and postpartum women, those taking hormonal contraceptives or subjects who were sexually inactive in the past 1 year were excluded from the study. Subjects previously diagnosed with any psychiatric disorder and taking treatment for the same including psychotic disorders or mental retardation, those with co-morbid dyslipidemia, cerebrovascular accident, Ischemic heart disease, thyroid dysfunction, other endocrine disorders, hypertension, severe complications of diabetes like vascular events, those receiving dialysis etc were not included.

Data Collection: Demographic data including age, BMI, type and duration of diabetes along with treatment details were recorded. The control consisted of 60 healthy, sexually active, age-matched group of women with regular male sexual partners attending the hospital out-patient clinic as patient attendants. They were subjected to a random blood glucose test to rule out Diabetes Mellitus and scales administered as applicable.

Tools used: 1. Arizona Sexual Experience Scale (ASEX) for female used as a screening tool for female sexual dysfunction. It is a 5 item scale with 5 domains – sex drive, arousal, lubrication, orgasm and satisfaction following orgasm. The scale evaluates sexual functioning in the past week including on the day of interview. A total ASEX score ≥ 19, any one item with a score ≥ 5 or any three items with a score ≥ 4 would indicate sexual dysfunction [24].

2. Female Sexual Functioning Index (FSFI) consists of 19 questions with 6 domains- Desire (2 questions), Arousal (4 questions), Lubrication (4 questions), Orgasm, Satisfaction and Pain (3 question each). The scale evaluates sexual functioning in the past 4 weeks and is scored using a Likert scale of 0 to 5 with lower scores indicating higher probability of sexual dysfunction [25].

The Appraisal of Diabetes Scale (ADS): measures the individual's appraisal of the illness in terms of his or her thoughts about diabetes. It has been used to assess patients' cognitive appraisal of diabetes. Lower scores indicate a more positive appraisal of diabetes. Strong relationships between the ADS and measures of anxiety, anger and diabetes-related hassles and a modest relationship with adherence to medications and glycaemic control support its validity. The scale reflects broadly 4 components namely; coping, loss of control, emotional disturbance and consequences of diabetes which is assessed by 7 questions scored 1-5 on a Likert scale with a max score of 33 (indicating negative appraisal) and minimum of 7 that reflects a positive regard of diabetes mellitus. Acceptable 1-week test-retest reliability ($r \geq 0.85$), internal consistency (Cronbach's ≥ 0.73) and convergent validity are reported for this scale [26].

The main model consisted of the following variables: demographic variables, age, menstrual status, Body Mass Index (BMI), clinical variables like presence of diabetic complications, glycaemic control, adherence to treatment and duration of disease, *etc.* Results were expressed as significant association and at 95 per cent confidence intervals (CI). Descriptive statistics and Students t test were applied. All statistical analyses were carried out using Statistical Package for Social Sciences (SSPS) (Version 21.0). Findings were taken to be statistically significant at p value <0.05.

III. RESULTS

A total of 210 subjects were reviewed out of which 200 met the inclusion criteria of the study. Finally after 160 of them gave consent, they were taken up for the study interview; 100 type2 DM patients and 60 controls. The mean ages of the participants in the diabetic and control group were 39.2 ± 6.9 years and 36.6 ± 7.3 years with a range between 20 to 59 years. 98.8% of them were married and all of them were sexually active in a stable heterosexual relationship. Majority of them were aged between 30 to 49 years and n= 8 aged more than 50 years. Both the study and control group were comparable with respect to age, education, occupation, religion, residence and menstrual status.

Table 1 shows the comparison of demographic variables between diabetics and controls. Results show that both samples are statistically similar in age, occupation, religion, residence and menstrual status. It also shows significant differences are present in body mass index between the two groups. Findings are statistically significant at p value <0.05. Majority of the study population belonged to rural area (65%) and were from lower middle (45%) or upper middle (43%) socio economic status. Half the study population (49.4%) consisted of women educated upto SSLC, also two thirds (62.5%) of the population was unemployed (housewives). 89.4% of the study population (90 % of cases and 88.3% of control group) consisted of subjects who were menstruating regularly whereas n=17 subjects had attained menopause. 68.8% of the subjects were overweight with BMI greater than 24.5 kg/m2. Mean BMI of the study group was 26.85.

The mean duration of type 2 diabetes in this study was 4.98 ± 2.53 years (range 3 months to 15 years). 64% of the test population was adherent to the advised treatment regimen while one-third (36%) were non compliant in the diabetic group. The HbA1c was poorly controlled in 50% of the study population. The mean value of HbA1c was 8.453 ± SD 1.68 in this study. 9% of the diabetic subjects had secondary chronic complications of diabetes; of these 3 subjects had been previously diagnosed with retinopathy, 4 persons with lower limb neuropathy and 2 with nephropathy. Mean score of the diabetic group on the scale for Appraisal of Diabetes was 14.33±1.5. Of the total, 44% patients had good (positive) manner of coping with diabetes, 55% average and 1% poor (negative appraisal). Results showed significant association between ADS scores and the glycaemic control as indicated by Hba1c values (p<.01). Table 2 shows a statistically significant association between positive illness appraisal and good glycaemic control, P value < 0.01.

All 100 subjects in test sample were initially screened for sexual dysfunction using ASEX-F. Of the total, 67% had significant sexual dysfunction with ASEX-F although contrary to predictions only 5% had subjectively complained of presence of any sexual distress prior to interviewing in detail. FSFI scale was then employed to identify the type of FSD and the severity. A total of 62 subjects with diabetes had dysfunction using the FSFI recommended cut off of 26.55. Among these, problems with desire, satisfaction and arousal were most prevalent and 64.5% (n=40) of them reported disturbance in 2 or more domains. Table 3 and Figure 1 highlight that female sexual dysfunction is significant in the individual domains of desire, pain and arousal on comparing persons with diabetes and the controls.

The control group was also assessed using ASEX-F and FSFI scales. On screening 45 % reported sexual dysfunction. This prevalence rate is similar to the findings of studies done in general population is reported in 26- 40% of the normal Indian female population. Studies from other low and middle income countries using FSFI have also reported rates between 43–70%. Comparison with the study group revealed statistically significant differences in prevalence of sexual dysfunction between diabetics and controls (62% vs. 38.3%) and also in the total mean scores (p value <0.05) which indicate severity.

IV. DISCUSSION

In the diabetic group, a positive correlation was seen between FSD

Volume : 5 | Issue : 11 | November 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

and duration of diabetes (t=2.373; p= 0.021). Patients with longer duration of diabetes are likely to experience psychological burnout and develop the complications of diabetes which may further contribute to the impaired sexual functioning [27]. Also a statistically significant association was seen between FSD and the presence of diabetic complications (p value < 0.01). Significant worsening of severity of FSD was seen with negative appraisal of Diabetes. Results in the present study showed significant association between FSFI mean and high ADS scores (p value < 0.05).

Female sexual dysfunction has repeatedly been shown to correlate with psychological distress. It could probably reflect that individuals who have successfully adapted to diabetes perceive their sexuality better because of a more generally positive view of the world. Indian diabetes patients are known to have one of the lowest levels of psychological well-being and also show a significantly higher perception of burden of social and personal distress associated with diabetes [28]-[30]. Significant ethnic and gender differences are known to exist in acceptance of the disease, receiving social support, disease knowledge, perceived difficulty in self-management behaviours, glycemic control and quality of life among Type 2 diabetic patients. This negative appraisal is independent of the duration of diabetes.

The ADS, which has previously been found to strongly predict both glycemic control and diabetes-related quality of life, may also indicate that a negative appraisal is another aspect of poor quality of life, analogous to satisfaction. Significant differences were also found between the mean BMI of diabetics and controls. 24.5 (range 21–30) in the control group and 29.5 (range: 21–35.5) in the diabetic group (p< 0.05). Altered body image in women with obesity can perpetuate the sexual dysfunction as well as depression. This can further decrease the individual's interest to follow a rigid physical activity schedule and diet advice leading to higher prevalence of obesity in this population [31],[32]. The increasing incidence of T2DM in part, is due to increase in prevalence of obesity therefore obesity, depression and diabetes make a vicious cycle that requires to be addressed in management. Only 1 patient had approached a physician regarding the same complaint of decreased interest and burning during intercourse. Some women reported their sexual experiences as a hurried act in a crowded cramped room lasting barely a few minutes with a marked absence of physical or emotional caressing. Some of them also reported that it was not something enjoyable, but more of a duty and an experience to be submitted to rather than to be initiated. Female sexual dysfunction may even exist without concomitant sexual distress as the expression of distress is closely related to the cultural context [33]. The subjects in this study were inhibited with respect to reporting of sexual complaints; however on considerate enquiry they reported they wanted improvement in this area of functioning for the well-being of self and family. Analysis of individual domains of sexual dysfunction revealed higher percentages and lower mean scores in the diabetic group as compared to controls. This indicates not only greater prevalence but also more severe dysfunction amongst the women with diabetes. Differences between the test and control groups in the various domains of sexual functioning were statistically significant only with respect to Arousal (74.2% vs. 53.3%), Desire (76.3% vs. 50%) and Pain (13.3% vs. 7.7%). This can be explained by the hypothesis that the different domains of female sexuality may not represent a linear progression. Similar findings from other studies showing significant differences in these domains have also been reported. Similar rates of prevalence of female sexual dysfunction in type 2 diabetes have been observed in various studies although a wide variation exists [34]. Several of the studies that reported lower rates did not take into account women's age, context, culture, individual and partner distress and medical and psychiatric co morbidities. Also self rated screening instruments were employed to diagnose FSDs without using confirmatory strategies or comparison with normal population [10].

In conclusion, our study showed high prevalence of sexual dysfunction in women with T2DM. Hence Diabetes specific factors that correlated with sexual dysfunction included the duration of diabetes, other long term complications of type 2 DM and illness specific psychological appraisal. However there was no significant association with adherence to treatment or glycaemic control in the study.

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