Research Paper

Prevalence and pattern of sexual dysfunction in married females receiving antidepressants: An exploratory study

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ABSTRACT

Objective: To study the prevalence and patterns of sexual dysfunctions in female patients receiving antidepressants. **Materials and Methods:** Eighty married female patients with a diagnosis of depressive disorder, currently in remission, and receiving a single antidepressant at least for 3 months, were assessed for sexual dysfunction on female sexual function index (FSFI) scale. **Results:** Thirty four patients (42.5%) receiving antidepressants had FSFI score less than 26.55 and were considered to have sexual dysfunction. When only the domain cutoff scores were used for the whole study sample (*n*=80), it was found that 95% had decreased desire, 60% had decreased arousal, 37.5% had decreased lubrication, 63.8 had decreased orgasm, 55% had decreased satisfaction and 25% had pain during sexual activity. **Conclusions:** To conclude, our study suggests that sexual dysfunction is quite prevalent in married female patients receiving antidepressants and all the domains of sexual functioning are impaired by antidepressants.

Key words: Antidepressants, depression, sexual dysfunction

INTRODUCTION

With the ever increasing pharmacopoeia, clinicians and patients have a choice of many antidepressants for the treatment of depression. However, an important limiting factor for the regular use of antidepressants is their side effects, one of which is sexual dysfunction. This problem affects the patient's quality of life and can lead to therapeutic non-compliance in long-term treatments.[1] Sexual dysfunction is recognized as a potential side effect of all classes of antidepressants (MAOIs, TCAs, SSRIs, SNRIs and newer antidepressants).[2]

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The incidences and prevalence rates of sexual dysfunctions have varied greatly across studies highlighting the differences in methodology (e.g., type of trial, psychiatric illness for which the drugs were prescribed, baseline control, etc.) and assessment methods (e.g., spontaneous reporting, open ended questions and validated assessment tools). However, the general consensus arrived at high incidence (range 30-65%) of sexual dysfunction in patients receiving selective serotonin reuptake inhibitors (SSRI),[1] serotonin norepinephrine reuptake inhibitors (SNRI)[3] and monoamine oxidase inhibitors (MAOI).[4] Further studies suggest that some of the antidepressants lead to impairment in the sexual functioning in all the phases of the sexual cycle.[5] Lower rates of sexual dysfunction (range 0-24%) have been reported with antidepressants like mirtazapine, reboxetine, bupropion

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and moclobemide.[1,6,7] Studies have also shown that besides antidepressants many other factors influence the incidence and prevalence of sexual dysfunction in patients with depression. These include, factors such as, depression itself, cultural and social factors and physical and psychiatric co-morbidities.[2]

Differences in frequencies and pattern of sexual dysfunctions between sexes have been found and reported by some studies. Montejo *et al*[1] found that women experienced greater intensity of decreased libido, delayed orgasm and anorgasmia as compared to men. However, most of the studies of drug induced sexual dysfunctions have clubbed data together for both the genders barring a few.[1,8,9] Very few studies have specifically focused on antidepressant induced sexual dysfunction in female patients.[1] It has been noted that because females are generally more reluctant than men to report sexual side effects, it is especially important to ask female patients regarding their sexual functioning after initiation of antidepressant drug treatment.[1]

There is very little work from India that has evaluated the prevalence of sexual dysfunction in subjects receiving psychotropic medications.[10-13] There is no study available that has specifically evaluated sexual dysfunction in female patients receiving antidepressants.

Indian society is traditionally considered to be conservative in nature, especially with respect to discussion of sexual matters by females. Nevertheless, a recent study from our center reported that majority of the married females have adequate sexual knowledge and a fairly liberal attitude towards sex.[14] Considering this fact and also the lack of enough data specifically for females, the present research was conducted with the aim to study the prevalence and patterns of sexual dysfunction in female patients receiving antidepressants.

MATERIALS AND METHODS

The study was conducted in a tertiary care teaching hospital located in North India. The study was approved by the Departmental Research Committee and all patients were recruited after obtaining written informed consent.

The study had a cross-sectional design and the sample was recruited by purposive sampling. Those women who were approached were attending the outpatient services of the department of psychiatry with the diagnoses of depressive disorder (first episode depression or recurrent depressive disorder). They were explained about the purpose of the study and were given freedom of choice, to accept or refuse to participate in the study. They were also informed that if they were found to have sexual dysfunction, then depending on their willingness will be provided help through their treating psychiatrist.

Those who provided written informed consent were included in the study. A control group of women (accompanying the patients attending various outpatient services of the hospital) were recruited with no history of sexual dysfunction as per self report after obtaining written informed consent. Those found to have sexual dysfunction as per self report or FSFI, were informed about the same and were offered help.

To be included in the study, patients with a diagnosis of depressive disorder (First episode or Recurrent Depression Disorder) according to the international classification of diseases-10[15] were required to be in remission (defined as a score of <7 on the Hamilton Depression Rating Scale)[16] at the time of intake, should be married and cohabitating with their husbands, on a stable dose of a single antidepressant for at least 3 months prior to inclusion in the study. Female patients who were single, divorced or separated were not included in the study. Those with history of sexual dysfunction either prior to onset of depressive disorder or as part of depression were excluded from the study. Patients with co-morbid psychiatric disorders, co-morbid diagnosis of substance dependence, consuming alcohol daily, organic brain syndrome, chronic co-morbid medical illness which could cause sexual dysfunction [hypertension, diabetes mellitus, thyroid dysfunction, cardiovascular disorders (angina, myocardial infarction), renal dysfunctions and neurological disorders (stroke, spinal cord lesions)] were also not included in the study. Such conditions were ruled out on the basis of history, physical examination and investigations, wherever needed. Patients who had attained menopause were also excluded. Patients receiving other concurrent medications which are known to cause sexual dysfunction on regular basis, those taking phosphodiesterase inhibitors or any other drugs including hormonal preparations which could increase the desire or improve the level of sexual functioning and whose spouse was suffering from sexual dysfunction (based on the history) due to any cause were also excluded.

The exclusion criteria for the control group were also similar to that for patient group.

Instruments

Sexual dysfunction was assessed using Female Sexual Function Index (FSFI) scale.[17-19] The scale is a 19-item questionnaire, developed as multidimensional self-report instrument for the assessment of the key dimensions of sexual functioning in women in last 1 month. It is psychometrically sound, easy to administer, and has demonstrated ability to discriminate between clinical and non-clinical populations. The items of the scale are divided into 6-domains which include desire (2 questions), subjective arousal (4 questions), lubrication (4 questions), orgasm (3 questions), satisfaction (3 questions) and pain (3 questions). Overall test-retest reliability coefficients are high for each of the individual domains (r = 0.79 to 0.86) and the scale has been reported to have high degree of internal

consistency (Cronbach's alpha values of 0.82 and higher) and good construct validity. The questionnaire is designed and validated for assessment of female sexual function in clinical trials and epidemiological studies. FSFI score of less than 26.55 is taken as an indicator of sexual dysfunction. The cutoff scores for sexual dysfunction in various domains are less than 4.28 for sexual desire, less than 5.08 for the arousal, less than 5.45 for the lubrication, less than 5.05 for the orgasm, less than 5.04 for the satisfaction and less than 5.51 for the domain of pain.[17-19]

Besides the use of FSFI, 5 questions were used to collect information with respect to any kind of self perceived sexual dysfunction after starting of antidepressants. These questions were as follows: Has your overall sexual functioning reduced since the start of treatment? Has your initiative reduced in sexual activity? Has your participation reduced in sexual activity? Do you feel less satisfied with your sexual activity/ participation? Has your partner complained that after start of treatment your sexual activity has reduced?

Other instruments that were used included 17 item hamilton depression rating scale[16] to rate the residual psychopathology and global assessment of functioning (GAF) scale to assess the overall level of functioning.[20]

Procedure

All female patients fulfilling the diagnosis of first episode depression or recurrent depressive disorder (as per ICD-10, Clinical Description and Diagnostic Guidelines) currently in remission (HDRS<7) were approached. Those who provided written informed consent were evaluated on the inclusion and exclusion criteria and those fulfilling the same were recruited. Socio-demographic and clinical data including treatment details were recorded on the basis of information obtained from patients, their spouses and treatment records. Eighty patients were rated on female sexual function index (FSFI) and global assessment of functioning scale by a female clinician (RS/AD). Similarly the data for the control group comprising of 30 subjects was also obtained. In order to have a more homogenous control group, those females who had FSFI total score of less than 26.55 were excluded from the analysis. This was done to ensure that subjects in the control group were not suffering from any sexual dysfunction, which they themselves may not be aware of. In the process, 2 subjects were excluded from the control group, which finally comprised of 28 females. As shown in Table 1, the mean total scores on FSFI and the mean scores on all the domains were compared with normative data available for the scale.[17,18] There was no significant difference in the mean total scores on FSFI and various domain scores between our data and the normative data reported for the scale. The mean age of the participants in the control group was 33.57 (SD- 5.16) years and the mean years of schooling was 10.89 (SD-4.95). Half of them (*n*=14; 50%) were Hindus, 8 (28.6%) were Sikhs, 2 (7.1%) were Christians, 1 (3.6%) was a Muslim and the remaining 3 (10.7%) followed other religions. Majority of them belonged to nuclear family (*n*=22, 73.3%) and were residing in urban area (*n*=25, 90%). A little over half of them were employed (*n*=15, 53.6%).

Table 1: FSFI scores on various domains in the control group of the present study and as reported in the original scale

	Present study (*n*=28) Mean ± SD	Cut off scores reported in original scale (*n*=244) Mean ± SD
Desire	4.24 ± 0.60	4.28 ± 1.12
Arousal	4.75 ± 0.56	5.08 ± 1.11
Lubrication	5.17 ± 0.58	5.45 ± 1.14
Orgasm	5.31 ± 0.54	5.05 ± 1.30
Satisfaction	5.41 ± 0.54	5.04 ± 1.19
Pain	5.57 ± 0.56	5.51 ± 1.29
Total score	30.47 ± 2.44	30.75 ± 4.80

For the present study, based on the control group data, sexual dysfunction was defined to be present if a female had a total score of less than 26.55 on FSFI, score less than 4.24 for sexual desire, less than 4.75 for the arousal, less than 5.17 for the lubrication, less than 5.31 for the orgasm, less than 5.41 for the satisfaction and less than 5.57 for the domain of pain.

Statistical analysis

Descriptive analysis was carried out using mean and standard deviation with range for continuous variables and in terms of frequency and percentage for categorical variables. The continuous variables of patients receiving antidepressants and the control group were compared using 't' test. The ordinal and nominal variables of the two groups were compared using the Chi-square test. Relationship between various domains of sexual dysfunction and other variables was studied by using Pearson correlation coefficient and if any variable had skewed distribution Spearman rank correlation was used.

RESULTS

Socio-demographic and clinical characteristics of the patient sample (n = 80)

The mean age of the patients was 37.66 (SD – 5.46) years. Mean years of schooling were 10.13 (SD – 5.40) years; 91.25 % of them were housewives, while the remaining 8.7 % were employed in work outside home. More than half (*n*=49; 61.3%) were Hindus, 30 patients (37.5%) were Sikhs and 1 patient (1.3%) was Muslim by religion. More than half of the patients belonged to nuclear family (*n*=46, 57.5%). Forty-nine patients (61.3%) were residing in an urban area.

Forty-five patients (56.3%) were assessed while receiving treatment for the continuation phase of the first episode of depression while the remaining 35 (43.7%) patients were

assessed while in continuation or maintenance phase of the treatment for recurrent depressive disorder. Fifty-five patients (68.8%) were on a SSRI [esctialopram (*n*=30), sertraline (*n*=13), fluoxetine (*n*=5) and paroxetine (*n*=7)], 12 patients (15.0 %) were on a SNRI [venlafaxine (*n*=11) and duloxetine (*n*=1)], 7 patients (8.8 %) were on a TCA and 6 patients (7.6 %) were on mirtazapine. The mean duration of antidepressant intake till the time of inclusion in the study was 22.43 (SD – 24.27, range 3-116) months. The mean HDRS score at the time of assessment was 0.91 (SD-1.63). The GAF score at the time of assessment was 84.35 (SD-6.9).

Sexual dysfunction as perceived by patients themselves

On the 5 questions asked about sexual dysfunction, 21% of patients themselves reported overall reduction in sexual functioning following start of treatment. Reduced initiative in sexual activity was reported by 20%, reduced participation in sexual activity by 13.8%, reduced self satisfaction by 11.2% and spouses of 15% complained that sexual activity of patient had decreased after the start of treatment. Overall 21.2% (*n*=17) of patients answered affirmatively to one of the five questions that they were asked to enquire for any kind of self perceived sexual dysfunction after starting treatment with antidepressants. Of these 14 patients (17.5%) gave positive response on 3 or more questions. Of the patients who perceived self dysfunction, 10 were receiving escitalopram, 3 were receiving paroxetine, 2 were receiving venlafaxine, and 1 each was receiving sertraline and mirtazapine. This gave a prevalence rate of self perceived sexual dysfunction to be 33% in patients receiving escitalopram, 27.3% in patients receiving venlafaxine, 28.57% in patients receiving paroxetine, 16.66 % in mirtazapine group and 7.7% in patients receiving sertraline.

Sexual dysfunction in patients receiving antidepressants as assessed on FSFI Total scores

The mean scores on various domains of FSFI in patients receiving antidepressants were as follows: desire (3.00; SD – 1.08), arousal (3.45; SD – 1.61), lubrication (4.58; SD –1.94), orgasm (4.12; SD – 1.95), satisfaction (4.59; SD – 1.66), pain (5.16; SD –1.76). The total mean score was 24.93 (SD – 8.71). Thirty four patients (42.5%) receiving antidepressants had FSFI score less than 26.55 and were considered to have sexual dysfunction. Of these 24 were receiving SSRIs, 6 were receiving SNRI, 3 were on TCAs and 1 was receiving mirtazapine. These figures gave a prevalence rate of sexual dysfunction to be 43.63% in patients receiving SSRIs, 50% with SNRI, 42.85% with TCAs and 16.66% with mirtazapine.

When only the domain cutoff scores were used for the whole study sample (*n*=80), it was found that 95% (*n*=76) of patients had decreased desire, 60% (*n*=48) had decreased arousal, 37.5% (*n*=30) had decreased lubrication, 63.8 (*n*=51) had decreased orgasm, 55% (*n*=44) had decreased satisfaction and 25% (*n*=20) had pain during sexual activity. In terms of number of domains affected only 4 patients had no dysfunction in any of the domains, 16 had dysfunction in only 1 domain, 11 had dysfunction in at least 2 domains, 7 had dysfunction in at least 3 domains, 13 had dysfunction in at least 4 domains, 17 had dysfunction in 5 domains and in 12 patients all the domains were affected.

In terms of association between antidepressant and sexual dysfunction as defined by cut off scores on various domains, but for SSRIs all other classes of antidepressants led to decrease in desire in all the patients receiving those antidepressants. It was seen in 91% of patients receiving SSRIs. Arousal dysfunction was seen in 75% patients on SNRI, 60% patients on SSRIs, 57% patients on TCAs and 50% patients on mirtazapine. Lubrication difficulties were also highest with TCAs (42.85%) followed by SNRI (41.7%), SSRIs (38.2%) and least with mirtazapine (16.66%). Problem with orgasm was most frequent with mirtazapine (83.33%), followed by SSRIs (65.45%), TCAs (57.14%) least with SNRI (50%). Most patients receiving SSRI (61.81%) had poor sexual satisfaction, followed by TCAs (57.14%), SNRI (33.33%) and mirtazapine (33.33%). Pain during sexual intercourse was most common with SSRIs (27.27%), followed by SNRIs (25%), mirtazapine (16.66%) and least with TCAs (14.28%).

Relationship of demographic and clinical variables with sexual dysfunction

As shown in Table 2, age in years was found to be negatively correlated with total FSFI score and score on the domains of 'desire' and 'arousal'. Residual psychopathology as indicated by total HRDS score had negative correlation with arousal and satisfaction domain. Interestingly all the domains of sexual dysfunction as per FSFI and total FSFI score had negative correlation with item no 14 of HDRS, higher scores on which indicate sexual dysfunction. Other sociodemographic (education, locality and type of family) and clinical variables (duration of antidepressant use) had no correlation with sexual dysfunction. There was positive correlation between total GAF scores and scores on the various domains of FSFI (except pain) and total FSFI mean score indicating that patients with antidepressant associated sexual dysfunction have poorer overall functioning level.

Relationship between self report sexual dysfunction and FSFI score

As shown in Table 3, there was significant correlation between self reported sexual dysfunction and most of the domain scores and total FSFI scores.

DISCUSSION

Most of the studies which have evaluated sexual dysfunction in patients receiving antidepressants have included heterogenous sample (i.e., single and married subjects), of both genders and

Table 2: Relation of demographic and clinical variables with sexual dysfunction

	Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain	Sexual dysfunction as per total score
Age in years	-0.293**	-0.257**					-0.222*
Total HDRS score			-0.227*		-0.275*		
Score on HDRS item no 14 #	-0.619**	-0.706**	-0.546**	-0.729**	-0.654**	-0.490**	-0.757**
GAF	0.306**	0.338**	0.240*	0.284*	0.287**	0.14	0.301**

item no 14 of HDRS taps sexual dysfunction. The relationship between the HDRS item no 14 and FSFI was studied using non-parametric (Spearman rank correlation was used) correlations *P<0.05, **P<0.01

Table 3: Relation of self report sexual dysfunction and FSFI score

	Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain	Sexual dysfunction as per total FSFI score
Overall sexual functioning reduced	0.639***	0.564***	0.281*	0.559***	0.596***	0.321**	0.577***
Reduced initiative	0.639***	0.564***	0.281*	0.559***	0.596***	0.321**	0.577***
Reduced participation	0.479***	0.465***	0.180	0.455***	0.496***	0.214	0.461***
Reduced satisfaction	0.471***	0.471***	0.231*	0.457***	0.460***	0.192	0.451***
Poor sexual functioning as perceived by partners	0.527***	0.473***	0.296**	0.468***	0.480***	0.188	0.485***

*P<0.05, **P<0.01, ***P<0.001 The values indicates correlation coefficient between self report sexual dysfunction and FSFI score

have not evaluated for other factors like psychopathology which could contribute to sexual dysfunction while receiving antidepressants.[21-23] Some of these studies had used spontaneous reporting, open ended questions or inconsistent and unvalidated measures of sexual dysfunction.

The present study by design included only married female patients who were in a heterosexual relationship so as to have accurate assessment of sexual dysfunction. Patients with sexual dysfunction prior to onset of depression were excluded. To minimize the confounding effect of depression, only patients in remission were included which was ensured by use of a well validated scale (i.e., HDRS). To ensure that the reported sexual dysfunction was due to antidepressant medication, patients who were receiving antidepressants for at least 3 months were included. Also patients who were receiving other concurrent medications which could cause sexual dysfunction were excluded. Scores of healthy control group on FSFI were used to define sexual dysfunction in the patient group, so as to have more socio-cultural specific cutoffs for the scale.

Although there is some data to suggest that females have fairly liberal attitude towards sex,[14] yet, in developing countries like ours discussing about sexual matters and sexual dysfunction is generally considered a taboo. Hence, although the patients may be having sexual dysfunction associated with antidepressants, they may not report the same spontaneously. So, reliance on only self reporting can lead to gross under-reporting of sexual side effects.[24] This was reflected in our findings too. Twenty one percent of patients themselves reported overall reduction in sexual functioning following start of treatment, but on FSFI about 42.5% patients scored less than 26.55 and were considered to have sexual dysfunction. This suggests that clinicians should not completely rely on self reporting or use of open ended questions to assess the self perceived sexual dysfunction. Use of structured instruments can be very useful in evaluating these side effects.

Studies from the West, which have evaluated sexual dysfunction in females using instruments like psychotropic-related sexual dysfunction questionnaire (PRSexSQ)[1] and change in sexual functioning questionnaire (CSFQ),[6] have reported overall sexual dysfunction rates to vary from 37% (reported together for subjects with both the genders)[6] to 57%.[1,9] Our finding of 42.5% based on the scores of FSFI is in this reported range and the differences in the rates can be understood in the light of differences in the assessing instruments and the type of antidepressants which were received by the subjects at the time of assessment.

When the domain cutoffs of FSFI were used, only 4 (5%) patients had no sexual dysfunction. Among the various domains, dysfunction in sexual desire was most common, followed by orgasmic dysfunction, decreased arousal, decreased satisfaction and pain during sexual intercourse. It was also seen that in overall sample, 75% of patients had dysfunction in at least 2 domains. These findings provide credence to the fact that antidepressants impair sexual functioning in all phases of sexual response cycle.[5]

The present study suggests that 46.63% of patients receiving SSRIs, 50% with SNRI, 42.85% with TCAs and 16.66% with mirtazapine have some kind of sexual dysfunction. These figures are generally in the range reported for these antidepressants.[1]

The present study suggests that reduction in desire occurs in almost all patients irrespective of the antidepressant used. The finding of impaired desire in 95% of patients in the present study is much higher than that reported by Kennedy *et al*[3]

who assessed patients after 8 or 14 weeks of antidepressant therapy using Sexual Functioning Questionnaire, version 1.[3] They reported impairment in drive/desire items in 26 to 32% of their female subjects. However, another study from India which used FSFI and reported decreased desire in 77.2% of patients attending the medical outpatients.[25] Whether decreased desire is common otherwise too in Indian population or it manifests more with the use of antidepressants, needs further study.

In the present study, problem with orgasm was seen in at least 50% of patients, irrespective of the antidepressant used and is supports the existing literature.[1] The rates of lubrication difficulties found in the present study are supported by the previous study.[1]

The lack of relationship between antidepressant associated sexual dysfunction and most of the sociodemographic and clinical variables in the present study suggests that the prevalence figures of sexual dysfunction can at best be attributed to antidepressants alone. It was found that the prevalence of sexual dysfunction specifically so in the domains of 'desire' and 'arousal' increased with age. Berman *et al*[26] noted that female sexual dysfunction is age-related and progressive. Montejo *et al*[1] noted a positive correlation between patient's age and a lower tolerance for sexual dysfunction and suggested that increasing age makes the patient more concerned about sexual dysfunction.

This study is limited by small sample size and a cross-sectional design. It focused only on female patients attending tertiary care hospital, who were married and receiving antidepressants for underlying depressive illness. We did not attempt to assess the couple's marital adjustment prior to starting antidepressants and also did not collect the specific data with respect to discordance between the partners on various issues. The influence of antidepressant associated sexual dysfunction on treatment compliance and adherence, marital adjustment and distress in spouse were also not assessed. There were very few patients on some of the antidepressants in the present study; hence, the prevalence rates found in this study cannot be generalized. Further it must be remembered that FSFI is not a diagnostic instrument. Future studies with large sample size and should overcome some of these limitations.

CONCLUSION

To conclude our study suggests that 42.5% of married female patients experience antidepressant associated sexual dysfunction. All the domains of sexual functioning were impaired by antidepressants. The prevalence of antidepressant associated sexual dysfunction depended on type of antidepressant, the so-called 'class effect', and was not influenced by socio-demographic and clinical variables. Hence, while choosing antidepressants for female patients, clinicians should take this fact into account.

REFERENCES

1. Montejo AL, Llorca G, Tzquierdo JA, Rico-Villademoros F. Incidence of sexual dysfunction associated with antidepressant agents: A prospective multi-centre study of 1022 outpatients. J Clin Psychiatry 2001;62:10-22.
2. Montgomery SA, Baldwin DS, Riley A. Antidepressant medications: A review of the evidence for drug-induced sexual dysfunction. J Affect Disord 2002;69:119-40.
3. Kennedy SH, Eisfeld BS, Dickens SE, Bacchiochi JR, Bagby RM. Antidepressant-induced sexual dysfunction during treatment with moclobemide, paroxetine, sertraline, and venlafaxine. J Clin Psychiatry 2000;61:276-81.
4. Harrison WM, Rabkin JG, Ehrhardt AA, Stewart JW, McGrath PJ, Ross D, *et al*. Effects of antidepressant medication on sexual function: A controlled study. J Clin Psychopharmacol 1986;6:144-9.
5. Outhoff K. Antidepressant-induced sexual dysfunction. SA Fam Pract 2009;51:298-302.
6. Clayton AH, Pradko J, Croft H. Prevalence of sexual dysfunction among newer antidepressants. J Clin Psychiatry 2002;63:357-66.
7. Clayton AH, Montejo A. Major depressive disorder, antidepressants and sexual dysfunction. J Clin Psychiatry 2006;67:33-7.
8. Kennedy SH, Rizvi S, Fulton K, Rasmussen J. A double-blind comparison of sexual functioning, antidepressant efficacy, and tolerability between agomelatine and venlafaxine XR. J Clin Psychopharmacol 2008;28:329-33.
9. Zajecka J, Mitchell S, Fawcett J. Treatment-emergent changes in sexual function with selective serotonin reuptake inhibitors as measured with the Rush Sexual Inventory. Psychopharmacol Bull 1997;33:755-60.
10. Nagaraj AK, Nizamie SH, Akhtar S, Sinha BN, Goyal N. A comparative study of sexual dysfunction due to typical and atypical antipsychotics in remitted bipolar I disorder. Indian J Psychiatry 2004;46:261-6.
11. Nagaraj AK, Pai NB, Rao SA. Comparative study of sexual dysfunction involving risperidone, quetiapine, and olanzapine. Indian J Psychiatry 2009;51:265-71.
12. Nebhinani N, Grover S, Avasthi A. Sexual dysfunction in male subjects receiving trifluoperazine, risperidone and olanzapine: Does the prevalence vary with assessment questionnaire. Prim Care Companion CNS Disord 2012; 14:e1-e7.
13. Krishna K, Avasthi A, Grover S. Prevalence and psychological impact of Antidepressant associated sexual dysfunction: A study from North India. J Clin Psychopharmacology 2011;31:457-62.
14. Avasthi A, Kaur R, Prakash O, Banerjee A, Kumar L, Kulhara P. Sexual behavior of married young women: A preliminary study from North India. Indian J Comm Med 2008;33:163-7.
15. World Health Organization. The ICD-10 Classification of Mental and Behavioural Disorders – Clinical Description and Diagnostic Guidelines. Geneva: WHO; 1992.
16. Hamilton M. A rating scale for depression. J Neurol Neurosurg Psychiatry 1960;23:56-62.
17. Meston CM. Validation of the Female Sexual Function Index (FSFI) in Women with Female Orgasmic Disorder and in Women with Hypoactive Sexual Desire Disorder. J Sex Marital Ther 2003;29:39-46.
18. Wiegel M, Meston C, Rosen R. The Female Sexual Function Index (FSFI): Cross-validation and Development of Clinical Cutoff Scores. J Sex Marital Ther 2005;31:1-20.
19. Female Sexual Function Index [homepage on the Internet]. Bayer AG, Zonagen, Inc. and Target Health Inc.; © 2000 Available from: http://www.fsfiquestionnaire.com/. [Last cited on 2009 Mar 23].
20. Endicott J, Spitzer RL, Fleiss JL, Cohen J. The global assessment scale. A procedure for measuring overall severity of psychiatric disturbance. Arch Gen Psychiatry 1976;33:766-71.
21. Moreira ED, Glasser DB, Nicolosi A, Duarte FG, Gingell C, GSSAB Investigators' Group. Sexual problems and help-seeking behaviour in adults in the United Kingdom and continental Europe. BJU Int 2008;101:1005-11.

22. Pollack MH, Reiter S, Hammerness P. Genitourinary and sexual adverse effects of psychotropic medication. Int J Psychiatry Med 1992;22:305-27.
23. Delgado P, Brannan S, Mallinckrodt C, Tran PV, McNamara RK, Wang F, *et al*. Sexual functioning assessed in 4 double-blind placebo- and paroxetine-controlled trials of duloxetine for major depressive disorder. J Clin Psychiatry 2005;66:686-92.
24. Montejo-González AL, Llorca G, Izquierdo JA, Ledesma A, Bousoño M, Calcedo A, *et al*. SSRI-induced sexual dysfunction: Fluoxetine, paroxetine, sertraline, and fluvoxamine in a prospective, multicenter, and descriptive clinical study of 344 patients. J Sex Marital Ther 1997;23:176-94.
25. Singh JC, Tharyan P, Kekre NS, Singh G, Gopalakrishnan G. Prevalence and risk factors for female sexual dysfunction in women attending a medical clinic in south India. J Postgrad Med 2009;55:113-20.
26. Berman JR, Berman L, Goldstein AI. Female sexual dysfunction: Incidence, pathophysiology, evaluation and treatment options. Urology 1999;54:385-91.

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