



A COMPARATIVE STUDY OF FEMALE SEXUAL DYSFUNCTION AMONG WOMEN ON PAROXETINE, SERTRALINE AND ESCITALOPRAM VISITING A RURAL TERTIARY HOSPITAL

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Abstract

Background

Female Sexual Dysfunction (FSD) is a common clinical issue globally, linked to various medical, gynaecological, psychiatric conditions, and medications. With increased psychotropic use, particularly SSRIs, drug-induced FSD is becoming more prevalent. SSRIs are well-known to impair sexual function, which may reduce adherence, worsen underlying conditions, and negatively impact quality of life and relationships. This study aims to assess the prevalence, incidence, and extent of FSD among SSRI users, along with the specific domains of sexual function affected.

Aim

To study and compare the female sexual dysfunction among patients on Sertraline, Paroxetine and Escitalopram.

Methods

This cross-sectional study included 100 female subjects in remission from primary depressive or anxiety disorders, treated with Paroxetine, Sertraline, or Escitalopram. A semi-structured proforma was used to gather sociodemographic data and premorbid sexual functioning. Female Sexual Dysfunction was assessed using the Female Sexual Function Index (FSFI).

Results

The prevalence of Female Sexual Dysfunction (FSD) was 46.66%, highest with Paroxetine, followed by Sertraline and Escitalopram. All six FSFI domains were affected, with the most common being loss of desire (45%), delay/lack of orgasm (29%), and difficulty with arousal (14%). Paroxetine caused significantly more orgasmic dysfunction compared to Escitalopram. No significant differences were found across other domains or among sociodemographic variables.

Interpretation And Conclusion

The prevalence of drug induced Sexual Dysfunction is of clinical significance which can adversely affect drug compliance and it is an often-underreported side effect. Clinicians must be trained adequately to identify and manage the resultant adverse effects.

Keywords: Female Sexual Dysfunction; Escitalopram; Paroxetine; Sertraline; SSRI emergent sexual dysfunction.

1. Introduction

Human sexual activity, or human sexual behavior, refers to a wide range of physical and psychological actions that involve sexual arousal, desire, and satisfaction. [1]

Human sexual function is an essential component of life, both in species propagation as well as quality of life [2]. Male sexual function and dysfunction is addressed blatantly, and they often seek help in the event of sexual dysfunction. Whereas Female Sexual Dysfunction (FSD) is more complex and difficult to categorize due to a woman's perception about sex when compared to males.[3]

Sexual dysfunction is a highly prevalent clinical entity that has been reported in all geographical communities.

Female Sexual Dysfunction (FSD) is a multifaceted disorder, having anatomical, psychological, physiological, as well as social-interpersonal counterparts. Throughout society, sexual disorders for women are influenced by health related as well psychosocial factors. Taken together, this dynamic is associated with impaired quality of life and interpersonal relationships [3].

As per Diagnostic and Statistical Manual of mental disorders- V (DSM-V) SD can be defined as clinically significant disturbance in a person's ability to respond sexually or to experience sexual pleasure. As per International Classification of Diseases (ICD- 10), FSD is 'the various ways in which a woman is unable to participate in a sexual relationship as she would wish' [4].

Types of sexual side effects include reduced sexual desire, reduced sexual satisfaction, anorgasmia, and reduced sexual excitement [5]. Use of psychotropics is one of the major contributors to the existing problem [5]. FSD as an adverse effect, may itself exacerbate the underlying illness, thus making drug compliance difficult.

Depression is a major risk factor for sexual dysfunction, and vice versa [6]. In comparison, women are more prone to develop sexual dysfunction as well as depression [7].

Selective Serotonin Reuptake Inhibitors (SSRIs) are first line antidepressants for a wide array of psychiatric disorders.

It is hypothesized that many side effects of SSRIs are attributed to the increase of Serotonin at specific Serotonin receptor subtypes, especially in other areas of the body [8]. Specifically, an increase in Serotonin may affect other hormones and neurotransmitters, such as Testosterone and Dopamine [8]. This may lead to side effects of Sexual Dysfunction, as Testosterone may affect sexual arousal and dopamine plays a role in achieving orgasm [8].

The frequency of side effects is higher with higher SSRI doses [8] .

Medications with greater effect on Serotonin are associated with significantly higher rates of treatment-emergent Sexual Dysfunction than medications with predominantly Noradrenergic, Dopaminergic, or Non monoaminergic effects [9].

2. Aims And Objectives

Aim:

1. To study and compare the female sexual dysfunction among patients on Sertraline, Paroxetine and Escitalopram.

Objectives:

1. To study the socio demographic profile and its association with female sexual dysfunction.
2. To assess the extent and nature of SSRI induced sexual dysfunction among female patients who are diagnosed with mood disorders/ neurotic spectrum disorders in remission.

3. To determine the occurrence of SSRI induced sexual dysfunction among female patients who are diagnosed with mood disorders/ neurotic spectrum disorders in remission.
4. To determine the difference in prevalence of FSD that is spontaneously reported and that is reported only after questioning.

3. Materials And Method

Cross sectional comparative study

Source Of Data:

Female subjects visiting the Psychiatry outpatient department at MVJ Medical College and Research Hospital who fulfil the criteria of mood disorders/ neurotic spectrum disorders according to International Classification of Diseases-10 (ICD -10) currently in remission on drugs like Escitalopram, Paroxetine or Sertraline.

Sampling Procedure:

Convenience sampling was used for selecting the participants of the study.

Method

- Female subjects fulfilling the ICD-10 criteria for mood disorders/ neurotic spectrum disorders were included in this study after obtaining written and informed consent in patient's vernacular language.
- Female subjects with mood disorders, currently in remission as per Hamilton Rating Scale for Depression (HAM-D) with a Score < 10 and female subjects with neurotic spectrum disorders in remission as per Hamilton rating scale for Anxiety (HAM-A) score <7
- Self-reported pre-morbid sexual functioning assessed using socio demographic proforma

Inclusion Criteria:

- Female subjects diagnosed with mood disorders/ neurotic spectrum disorders according to ICD-10 criteria
- Female subjects who are asymptomatic from current psychiatric illness for at least past 1 month
- Age ranging from 18-45 years
- Female subjects on exclusive treatment with one SSRIs only (monotherapy)
- Female subjects who have given informed consent to participate in the study.

Exclusion Criteria:

- Bipolar disorder
- Female sexual dysfunction secondary to underlying general medical condition and on other drugs known to cause sexual dysfunction.
- Subjects on combination therapy (antipsychotics/ mood stabilizers/ benzodiazepines)
- Substance induced mood disorders
- Female subjects not willing to give consent to participate in the study.

The basic sociodemographic information was collected using a semi structured proforma. The socio-economic status was calculated using Modified Kuppuswamy Socio-economic Status scale 2022. International Classification of Diseases-10 (ICD-10) criteria was used for the diagnosis of mood disorders/ neurotic spectrum disorders. Diagnostic and Statistical Manual V (DSM V) for diagnosis and classification of female sexual dysfunction. Later, HAM-A and HAM-D scales were applied to confirm the remission status from the primary psychiatric illness. Premorbid sexual functioning was assessed using a semi structured proforma. Female Sexual Function Index (FSFI) scale was applied to ascertain type and degree of female sexual dysfunction.

Tools:

- Informed consent form
- Semi structured proforma for socio demographic profile
- Semi structured proforma to assess premorbid sexual functioning
- ICD-10
- DSM-V
- HAM-A
- HAM-D
- FSFI

Informed Consent

An informed consent was used to obtain the written informed consent which explained the nature of the study.

Semi Structured Proforma For Sociodemographic Details

Was used which assessed details like age, education, occupation, residence, type of family, drug compliance before and after SSRI use, self-report of FSD.

Semi Structured Proforma To Assess Premorbid Sexual Functioning

Was used to assess details like sexual orientation, frequency of intercourse , past history of SD.

Hamilton Rating Scale For Anxiety (Ham-A)

It is a psychological questionnaire used by clinicians to rate the severity of a patient's anxiety [10] . It is a practitioner observation-based assessment. Being one of the first anxiety rating scales to be published, the HAM-A remains widely used by clinicians [11] . It has a total of 14 items. The responses on the scale are measured on a 5-point Likert scale: 0 (symptoms not present), 1 (mild symptoms), 2 (moderate symptoms), 3 (severe symptoms) and 4 (very severe symptoms). The final score is the total summation [10] . The maximum score is 56. Has an adequate internal consistency (Cronbach's $\alpha = 0.921$) [66]. The scale has a sensitivity of 17.81% and specificity of 94.44% [12] .

Hamilton Depression Rating Scale (Ham-D)

The Hamilton Depression Rating Scale (also known as the HAM-D) is the most widely used clinician-administered depression assessment scale. The original version contains 17 items. The symptoms are rated based on their presence for at least the last one week [13] . Reliability analysis showed that Cronbach's alpha of the HAMD-17 is 0.829 [14] . HAMD-17 items adopt the 5-level scoring method from 0 to 4 points. The scale has a sensitivity of 92% and a specificity of 91% [15] .

Female Sexual Function Index (Fsfi)

The FSFI is a 19-item, self-report measure of female sexual function that provides scores on overall levels of sexual function as well as the primary components of sexual function in women, including sexual desire, arousal, orgasm, pain, and satisfaction [16] . The 19 items of the FSFI use a 5-point Likert scale ranges from 1-5. To score each measure, the sum of each domain score is first multiplied by a fixed domain factor ratio (0.6 for desire; 0.3 for arousal; 0.3 for lubrication; 0.4 for orgasm; 0.4 for satisfaction; and 0.4 for pain). Finally, the summation of all domains gives the total FSFI score [16] . The scale assesses the degree and extent of sexual dysfunction over the last 4 weeks. The grading system classifies women into five categories based on total scores as follows : severe (score: 2–7.2), moderate (score : 7.3–14.4), mild to moderate (score: 14.5–21.6), mild (score: 21.7- 28.1) cut-off value and no FSD (28.2 – 36) [17] . This scale has a high internal consistency – Cronbach's $\alpha = 0.856$ [18] . Has a sensitivity of 71.4% and specificity of 92.2% [19] .

Statistical Analysis

- Data was collected by using a semi-structured proforma.

- Data was entered in MS excel sheet and analysed by using SPSS 24.0 version IBM USA.
- Qualitative data was expressed in terms of percentages and proportions.
- Quantitative data was expressed in terms of Mean and Standard deviation.
- Association between two qualitative variables was seen by using Chi square/ Fischer's exact test.
- Descriptive statistics of each variable was presented in terms of Mean, standard deviation, standard error of mean.
- Comparison of mean and FSD between all groups was done by using one way ANOVA test. If ANOVA comes significant, then Post Hoc Duncan test was carried out to assess whether the mean difference between a pair of groups is significant or not
- Linear regression analysis was done to assess the presence of correlation among sociodemographic variables and FSD.
- A p value of <0.05 was considered as statistically significant whereas a p value <0.001 was considered as highly significant.

5.Results

Socio-Demographic Distribution Of Study Participants

TABLE 1. Age distribution of study participants

		Group ESCITALOPRAM		Group PAROXETINE		Group SERTRALINE		Total
		No.	%	No.	%	No.	%	
AGE	18-26	8	26.7	11	36.7	8	26.7	27
	27-35	11	36.7	11	36.7	12	40.0	34
	36-45	11	36.7	8	26.7	10	33.3	29
Total		30	100.0	30	100.0	30	100.0	90

The majority of the individuals 37.77% (n = 34) belonged to age group 27-35 years followed by 32% in 36- 45 years age group and 30% in 18-26 years age group.

In the Escitalopram group, both groups of ages 27-35 years and 36-45 years had equal number of participants of 36.7%. Similar findings in the individuals of Paroxetine group having 36.7% belonging to age group 18-26 years and 27-35 years. The highest number of participants amounting to 40% were in the sertraline group belonging to age group 27-35 years.

In this study over 58 % individuals had high school education followed by 18% having middle school education, 10% being graduates, 9% with an intermediate / diploma degree and 2% having professional degree and 3 % having basic primary school education. When compared within the drug groups, maximum of 70% individuals had high school degree in both the Sertraline and Paroxetine group where in Escitalopram group, maximum study participants of over 23% had an intermediate / graduate degree.

TABLE 2. Distribution of study participants based on Education

		Group ESCITALOPRAM		Group PAROXETINE		Group SERTRALINE		Total
		No.	%	No.	%	No.	%	
EDUCATION	Profession/Honors	0	0.0	1	3.3	1	3.3	2
	Graduate	7	23.3	1	3.3	1	3.3	9
	Intermediate/diploma	7	23.3	1	3.3	0	0.0	8
	High school certificate	10	33.3	21	70.0	21	70.0	52
	Middle school certificate	6	20.0	6	20.0	4	13.3	16
	Primary school	0	0.0	0	0.0	3	10.0	3
	Illiterate	0	0.0	0	0.0	0	0.0	0
Total		30	100.0	30	100.0	30	100.0	90

TABLE 3. Distribution of study participants based on Occupation

		Group ESCITALOPRAM		Group PAROXETINE		Group SERTRALINE		Total
		No.	%	No.	%	No.	%	
OCCUPATION	Professionals	3	10.0	0	0.0	2	6.7	5
	Technicians and assistant professionals	3	10.0	0	0.0	0	0.0	3
	Clerks	8	26.7	1	3.3	1	3.3	10
	Skilled workers and market and shop sales	3	10.0	4	13.3	1	3.3	8
	Skilled agricultural & fisheries worker	10	33.3	20	66.7	10	33.3	40
	Craft and trade	1	3.3	4	13.3	9	30.0	14
	Plant and machine operators	0	0.0	0	0.0	2	6.7	2
	Elementary occupation	2	6.7	1	3.3	5	16.7	8
Total		30	100.0	30	100.0	30	100.0	90

In this study, maximum study participants were skilled agricultural workers amounting to 45% (n=40) followed by 16% in craft and trade, 10% as clerks, 9% each in sales category and professional jobs, 6% in manager rank and 2% as machine / plant operators. The maximum number of participants in the Escitalopram group were clerks (26.7%), in the Paroxetine group were skilled agriculturists (66.7%) and traders (30%) in the Sertraline group.

TABLE 4. Distribution of study participants based on Residence

		Group ESCITALOPRAM		Group PAROXETINE		Group SERTRALINE		Total
		No.	%	No.	%	No.	%	
RESIDENCE	rural	23	76.7	25	83.3	19	63.3	67
	urban	7	23.3	5	16.7	11	36.7	23
Total		30	100.0	30	100.0	30	100.0	90

Over 74% of the residents belonged to rural backgrounds while only 26 % hailed from urban background. When compared within the three different drug groups, maximum study participants were hailing from rural background. 76.7% in Escitalopram group, 83.3% in paroxetine group and 63.3% in sertraline group all hailed from rural background.

TABLE 5. Distribution of the study participants of the Socio-Economic Status

		Group ESCITALOPRAM		Group PAROXETINE		Group SERTRALINE		Total
		No.	%	No.	%	No.	%	
SOCIOECONOMIC STATUS	Upper	0	0.0	1	3.3	0	0.0	1
	Upper middle	3	10.0	3	10.0	3	10.0	9
	Lower middle	25	83.3	21	70.0	20	66.7	66
	Upper lower	2	6.7	5	16.7	7	23.3	14
Total		30	100.0	30	100.0	30	100.0	90

73.33 % of the study participants belonged to the lower middle class followed by 15.55% belonging to Upper lower class. 10% belonged to upper middle class. There were no participants in the lower-class group. In the lower middle-class group, which is the largest cohort in this subtype, maximum study participants were on escitalopram followed by Paroxetine and Sertraline respectively.

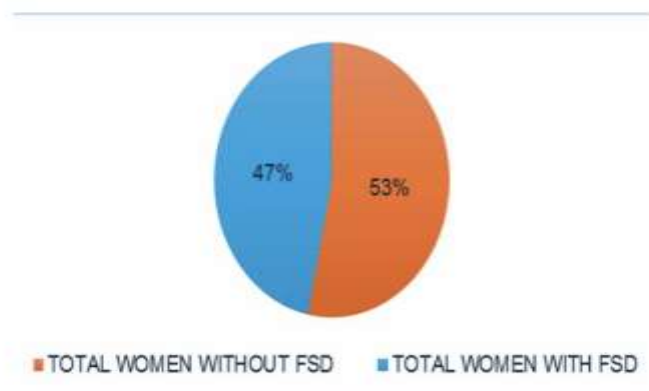
Prevalence Of Ssri Emergent Fsd

From the above study sample, over 47% of the women who were on either of the 3 study drugs reported of female sexual dysfunction.

TABLE 6. Total number of women with FSD irrespective of drug group

	Number of women	(%)
With FSD	42	46.66%
Without FSD	48	53.33%

FIGURE 1. The prevalence of FSD among the study participants



All the 90 study participants were equally divided into 3 drug groups based on the type of SSRI they were prescribed. Among the three groups, women in the Paroxetine group had more frequency of developing sexual dysfunction followed by Sertraline and Escitalopram with the prevalence being 42.85% , 33.33% and 23.8% respectively.

TABLE 7. Prevalence of FSD among the three drug groups

	ESCITALOPRAM	SERTRALINE	PAROXETINE
Number of women with FSD	10	14	18
(%)	23.80%	33.33%	42.85%

Based on the FSFI scale, we also tried to find out the extent and severity of the FSD. Based on the overall score, the participants were classified into four groups namely “mild”, “mild to moderate”, “moderate” and “severe” category. It was estimated that most of the participants who scored a total score of < 28.2 (cut off for FSD as per FSFI scale) fell in the mild category (score: 21.7-28.1) followed by mild to moderate category (score: 4.5-21.6) and finally in moderate category (score : 7.3-14.4) . None of the study participants experienced significant symptoms to be put into the severe category (score: 2-7.2) .

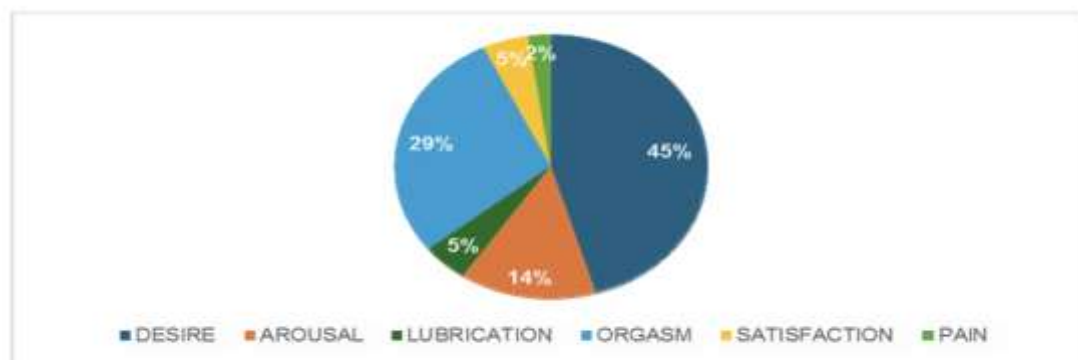
TABLE 8. Severity of FSD based on total score obtained in the FSFI

SEVERITY	MILD	MILD TO MODERATE	MODERATE	SEVERE
Number of women with FSD	32	8	2	0
(%)	76.19%	19.04%	4.76%	0

76.19% of the study participants reported of “mild” form of FSD followed by 19.04% reporting of “mild to moderate” degree of FSD and 4.96% reporting of “moderate” degree of FSD.

The FSFI measures the various domains of sexual functioning that can get affected. These domains include desire, arousal, lubrication, orgasm, overall satisfaction and pain. In our study, over 45.2% of the women reported to lack of desire / libido, 28.75% experienced delay / lack of orgasm , 14% faced difficulty with arousal , 4.76% had reduced lubrication and overall reduced satisfaction each and 2.3% had pain.

FIGURE 2. Various domains of sexual functioning that have been affected in this study as per the FSFI



We used one way ANOVA (Analysis of variables) test to ascertain if the target drugs have caused significant differences in the prevalence of dysfunction in the various domains of sexual functioning as mentioned above.

The prevalence of loss of desire/ libido caused by the three different drug groups namely Escitalopram, Paroxetine and Sertraline are all somewhat comparable and the difference is not statistically significant.

There is no significant difference in the degree of arousal difficulty caused by the target drug groups. The prevalence in the difference of arousal difficulty caused by all the three drugs is comparable and not statistically significant.

All the three drug groups caused comparable amount of lubrication difficulty and the difference in the prevalences are not statistically significant.

There are significant differences in the means and standard deviations of the three drug groups in causing delay or lack of orgasm. The most difficulty is seen with Paroxetine (mean: 3.71 +/- 1.66 SD) followed by Sertraline (mean : 4.24 +/- 1.43 SD) and Escitalopram (mean : 4.61 +/- 1.05 SD). This signifies that the orgasm difficulties caused by Paroxetine is statistically significant compared to the two other drugs ($p < 0.05$). The similar result was found on applying Post Hoc analysis (Duncan test) where the orgasm dysfunction was significantly more for Paroxetine than Escitalopram.

TABLE 9. ANOVA test to compare the prevalence of delay/ lack of orgasm among the drug groups

		N	Mean	Std. Deviation	F	p	Inference
Orgasm	Group ESCITALOPRAM	30	4.61	1.05	3.164	0.047 (<0.05)	Significant
	Group PAROXETINE	30	3.71	1.66			
	Group SERTRALINE	30	4.24	1.43			
	Total	90	4.19	1.44			

TABLE 10. Post Hoc analysis (Duncan test) depicting the significant difference between paroxetine and escitalopram in causing orgasm dysfunction

Group	N	Subset for alpha = 0.05	
		1	2
Paroxetine	30	3.7067	
Sertraline	30	4.2400	4.2400
Escitalopram	30		4.6133
Significance		0.145	0.306

The three drug groups however did not show any statistically significant differences in the satisfaction domain.

The three drug groups did not show any statistically significant differences in the pain domain and the scores were comparable.

When the total score of the FSFI was computed, the means of the total FSD score was observed to be lowest for Paroxetine (mean: 26.52 +/- SD 4.91), followed by Sertraline (mean: 27.33 +/- SD 4.97) followed by Escitalopram (mean : 28.43 +/- SD 3.38) which had relatively highest score in this study population.

Relation Of Socio-Demographic Co-Relates With Fsd

Linear regression analysis was used to determine the presence of any correlation of socio-demographic variables with the presence of FSD. In this study the various socio-demographic variables that were compared includes age, education, occupation and socioeconomic status. In this study we did not find any statistically significant correlation among the said variables with Female Sexual Dysfunction. This was again cross-verified by applying Pearson's Chi square test and similar results were obtained.

TABLE 11. Linear regression analysis depicting no statistical correlation between sociodemographic variables and FSD

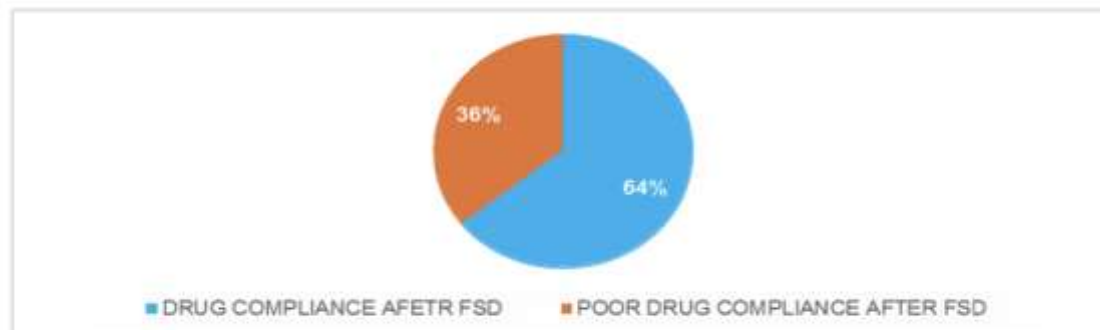
	Unstandardized coefficients		Standardized coefficient	t	P value
Sociodemographic variables	B	Std. Error			
Constant	27.653	5.469	-	5.056	0.000
Age	-0.487	0.805	- 0.103	0.606	0.549
Education	-0.388	0.629	-0.116	0.617	0.541
occupation	0.151	0.408	0.073	0.370	0.714
Socio-economic status	0.224	1.122	0.036	0.199	0.843

Above table stated that there is no correlation among Socio-demographic variables and FSD.

Drug Compliance Following Ssri Emergent Fsd

In this study we also attempted to find out the prevalence of drug discontinuation following the development of FSD. Over 35.71% of the study participants who developed FSD secondary to SSRI use were not compliant with medications later after development of the adverse effect.

FIGURE 3. Drug compliance after development of FSD



Self Report Of Ssri Emergent Fsd

During routine follow-ups, only 23% of the women spontaneously reported of some difficulty in their sexual functioning post SSRI use whereas the others reported of the same only after being questioned by the clinician.

5.Discussion

This study was undertaken to study the sexual dysfunction emergent due to SSRIs. The study participants were divided into three groups based on the SSRI that they were prescribed. A total of 90 female patients attending psychiatry OPD who fulfilled the inclusion criteria were considered as the study sample. The stringent exclusion criteria guaranteed that patients with other general medical conditions that can cause FSD were not included in the study.

The three study groups are Escitalopram, Paroxetine and Sertraline. It has been reported that one in eight people have consumed one of the SSRIs in the past 10 years [20]. The most frequently reported adverse effects of the SSRIs are gastrointestinal side effects, insomnia, headache and sexual side effects, which negatively affect the compliance of the treatment and can even lead to drug withdrawal [21]. The extent and degree of FSD in them was assessed using the Female Sexual Function Index which is a gold standard tool for the assessment of Sexual functioning [8].

SOCIODEMOGRAPHIC PROFILE:

The age of the study participants was between 18-45 years. This particular age group was chosen so that the effect of menopause did not modify the results of the study. There was no correlation between sociodemographic variables and the presence of FSD which was confirmed using two different kinds of statistical analysis. This was however in contrast to another study by Jahan et al [22] which stated positive correlation between age, lower educational status and FSD. The reason for this difference could be probably because the study participants in the other study were closer to menopausal age group. Another study by Erdos et al found that lower educational status had positive correlation with FSD. A probable reason for lower education status experiencing more FSD could be that the control group (higher grades of education) received sex education [23].

Female Sexual Dysfunction:

The overall prevalence of FSD in this study group is 46.66% which is similar to the findings in other studies like the ones done by Roy et al [24] where the prevalence was between 10-80%, by Jing et al where the prevalence was between 40% to 65% [25] and between 25% to 73% in a study by Modell et al [26]. The prevalence in this study is however lesser than the result obtained in a study by Shetageri et al on women of rural Karnataka which observed a prevalence of 82.35% [5]. The reason for this finding could be the small sample size in that study.

The majority of the women (76.19%) reported of mild degree of sexual dysfunction based on the FSFI.

Escitalopram:

23.80% of this study population in the Escitalopram group reported of FSD which was least compared to the other two study drugs. This finding can be comparable with the findings of the studies done by Montejo et al and Roy et al where Escitalopram was the SSRI least associated with FSD [8], [25] . The reason for similar findings could be the comparable dosages of the drugs prescribed and the same assessment tools used.

Paroxetine:

In our study, Paroxetine (43%) was observed to cause more sexual dysfunction across all the domains compared to Sertraline (33%) and Escitalopram (24%). Similar findings were replicated in various other studies – to name a few studies by Arlas et al [27] and Hytell et al [28] where Paroxetine caused more degree of FSD than other SSRIs.

Arlas et al reported that Paroxetine is associated with having the greatest risk for causing reduced desire, anorgasmia and inadequate lubrication in women [27] . In our study too, Paroxetine was observed to have desire, orgasm, arousal and satisfaction difficulties. But we didn't observe significant anomalies in the lubrication domain and this finding cannot be explained.

Sertraline:

33.33% of this study population reported of FSD following SSRI usage. The degree and extent of sertraline induced FSD was similar to paroxetine with effect on similar domains like desire, arousal, orgasm and satisfaction. This is similar to the findings of Modell et al where paroxetine and sertraline had almost similar prevalence [26] .

Domains Of Sexual Functioning:

In this study, the mean score across the various domains of the FSFI namely- desire, orgasm, satisfaction and pain was lowest for Paroxetine compared to the two other study drugs.

It was observed that the most common domain of sexual functioning that was affected in this study was loss of libido/ desire (45%) followed by delay/ absence of anorgasmia (29%) and difficulty with arousal (14%), difficulty with satisfaction and lubrication at 5% each and 2% of the study population experienced pain.

Similar findings of the same magnitude of SSRI induced lack of desire were obtained in a study by Corona et al in 2009 [29] . Anorgasmia is also a common finding [15] which was found in various other studies and also replicated in our study where orgasm difficulty followed second just after loss of desire. All the SSRIs studied caused some dysfunction across all domains of the female sexual response cycle. But statistical significance was discovered only in the difference in the prevalence of delay/lack of orgasm - seen highest in Paroxetine followed by Sertraline and Escitalopram. Based on a study by Goldstein et al, lubrication difficulties were commonly observed with paroxetine but however, no such findings were obtained in this study [30] .

Self Report Of Fsd & Drug Compliance:

In this study, there was a significant difference in the number of women who spontaneously reported of the perceived sexual side effect post SSRI treatment compared to the number of women who reported of the same side effects only after close ended questioning. The prevalence of self-reported FSD this study is 23% compared to subpopulation of nearly 47% of the women who had trouble in their sexual functioning. This finding was reported in another study by Montejo et al where only 2% - 7% of the study participants spontaneously reported of sexual side effects with SSRI therapy when in reality, the incidence of sexual dysfunction rose to 55% for SSRIs after clinician-initiated interview [31] . Reason for such findings can be explained by the taboo , stigma and limitations due to the

existing cultural norms which may have limited the women from spontaneous reporting of their perceived FSD. Kennedy et al conducted a similar study about the difference in the prevalence of self-reported FSD following psychotherapy use where over 85% of the women reported that it was very important to be questioned about sexual functioning [32] .

In this study it was also a significant observation that or 36% of the women who developed SD, were not fully compliant with the treatment following the development of the aforementioned adverse effect. This finding is like the findings of the study by Rosenberg et al in whose study, sexual adverse effects were the main reason for poor drug compliance. The explanation could be due the lack of knowledge about medications and its requirement.

6.Conclusion

SSRI-induced female sexual dysfunction (FSD) is a well-documented side effect of selective serotonin reuptake inhibitors (SSRIs), a class of medications commonly used to treat depression and anxiety. The condition can manifest as decreased libido, difficulty achieving orgasm, or reduced genital sensation.

The aim of the study was to assess the degree and extent of FSD among female patients who were prescribed Escitalopram, Paroxetine and Sertraline and the sociodemographic correlation.

From this study we can conclusively say that the prevalence of FSD following SSRI use is high and particularly higher for Paroxetine. SSRIs affect all domains of female sexual functioning like desire, arousal, lubrication, orgasm, satisfaction and pain. When the functioning is significantly disturbed, it can lead to poor drug adherence which could ultimately lead to worsening of their primary psychiatric condition.

The number of women who report of difficulty in their sexual functioning is also much lesser in comparison with women who report of the same difficulties only if they were interviewed by the clinician.

It's crucial for individuals experiencing SSRI-induced FSD to discuss symptoms openly with their healthcare provider. Treatment decisions should be personalized based on the severity of symptoms, overall health, and individual preferences.

7.Strengths And Limitations

Strenghts:

This study was one of a kind in considering sexual function of the women of rural India as sexuality and their functioning is not an openly discussed topic in this cohort.

The degree and extent of FSD was assessed using the Female Sexual Function Index which is a gold standard assessment tool.

The interviewer is herself a married women thus making it easier for the study participants to confide in her.

This study compares the three drugs with each domain of Female sexual functioning.

Limitations:

The cross-sectional nature of this study limited further follow-up of patients.

The presence of cultural norms and taboos may have produced some kind of bias during the interview process.

The interpersonal relationship between the study participants and their spouses was not considered as non-congenial relationships could itself lead to poor sexual functioning.

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9.Confliuct Of Interest : Nil

10.Ethical Approval: This study was approved by the ethics committee

11. References

1. Smith J. Human Sexual Activity | Factors, Stages & Types. Human Sexual Activity | Factors, Stages & Types Study.com.2009;
2. Allahdadi KJ, Tostes RC, Webb RC. Female sexual dysfunction: therapeutic options and experimental challenges. *Cardiovascular & Hematological Agents in Medicinal Chemistry (Formerly Current Medicinal Chemistry-Cardiovascular & Hematological Agents)*. 2009 Oct 1;7(4):260-9.
3. Hatzimouratidis K, Hatzichristou D. Sexual dysfunctions: classifications and definitions. *J Sex Med*. 2007;4:241.
4. The ICD-10 classification of mental and behavioural disorders: Diagnostic criteria for research. Geneva: World Health Organization, 1993.
5. Shetageri VN, Bhogale GS, Patil NM, Nayak RB, Chate SS. Sexual dysfunction among females receiving psychotropic medication: a hospital-based cross-sectional study. *Indian Journal Psychological Medicine*. 2016 Sep;38(5):447-54.
6. Lorenz T, Rullo J, Faubion S. Antidepressant-induced female sexual dysfunction. In *Mayo Clinic Proceedings* 2016 Sep 1 (Vol. 91, No. 9, pp. 1280-1286). Elsevier.
7. Laumann EO, Paik A, Rosen RC. Sexual dysfunction in the United States: prevalence and predictors. *JAMA*. 1999;281(6): 537–544.
8. Montejo-gonzález AL, Llorca G, Izquierdo JA, Ledesma A, Bousoño M, Calcedo A, Carrasco JL, Ciudad J, Daniel E, De LA Gandara J, Derecho J. Fluoxetine, paroxetine, sertraline, and fluvoxamine in a prospective, multicenter, and descriptive clinical study of 344 patients. *Journal of Sex & Marital Therapy*. 1997 Sep 1;23(3):176-94.
9. Serretti A, Chiesa A. Treatment-emergent sexual dysfunction related to antidepressants: a meta-analysis. *J Clin Psychopharmacol*. 2009;29(3):259–266.
10. Hallit S, Haddad C, Hallit R, Akel M, Obeid S, Haddad G, Soufia M, Khansa W, Khoury R, Kheir N, Hallit CA. Validation of the Hamilton anxiety rating scale and state trait anxiety inventory a and B in Arabic among the Lebanese population. *Clinical epidemiology and global health*. 2020 Dec 1;8(4):1104-9.
11. Maier W, Buller R, Philipp M, Heuser I. The Hamilton Anxiety Scale: reliability, validity and sensitivity to change in anxiety and depressive disorders. *Journal of affective disorders*. 1988 Jan 1;14(1):61-8.
12. Tung VS, Thong NV, Mai NT, Linh LT, Son DC, Ha TT, Hoa NT, Long NT, Tuan NV. Diagnostic Value in Screening Severe Depression of the Hamilton Depression Rating Scale, Hamilton Anxiety Rating Scale, Beck Depression Inventory Scale, and Zung's Self-Rating Anxiety Scale Among Patients with Recurrent Depression Disorder. *Acta Informatica Medica*.2023;31(4):249.
13. Hamilton M. A rating scale for depression. *J Neurol Neurosurg Psychiatry* 1960; 23:56–62.
14. Ma S, Yang J, Yang B, Kang L, Wang P, Zhang N, et al. The Patient Health Questionnaire-9 vs. the Hamilton Rating Scale for Depression in Assessing Major Depressive Disorder. *Frontiers in Psychiatry [Internet]*. 2021 Nov 4;12.
15. Yusuf M, Abera M, Getnet M, Dawud B. Psychometric properties of Hamilton Depression Rating Scale among people with epilepsy in Jimma University Medical Center, Neurology Clinic, Southwest Ethiopia, 2020: cross-sectional study. *BMJ open*. 2023 May1;13(5):e070835.
16. Rosen, C. Brown, J. Heiman, S. Leiblum, C. Meston, R. Shabsigh, D. Ferguson, R. D'Agostino R. The Female Sexual Function Index (FSFI): a multidimensional self- report instrument for the assessment of female sexual function. *Journal of sex & marital therapy*. 2000 Apr 1;26(2):191-208.
17. Ismail SA, Abdel-Azim NE, Saleh MA, Mohamed AA, Yosef AH, Abbas AM. A new grading system for female sexual dysfunction based on the female sexual function index in Egyptian women: a cross-sectional study. *African Health Sciences*. 2021 Aug 2;21(2):835-41.

18. Maroufizadeh S, Riazi H, Lotfollahi H, Omani-Samani R, Amini P. The 6-item Female Sexual Function Index (FSFI-6): factor structure, reliability, and demographic correlates among infertile women in Iran. *Middle East Fertility Society Journal*. 2020 Jan;24:1-6.
19. Meston CM, Freihart BK, Handy AB, Kilimnik CD, Rosen RC. Scoring and interpretation of the FSFI: what can be learned from 20 years of use?. *The journal of sexual medicine*. 2020 Jan;17(1):17-25.
20. Csoka A, Bahrack A, Mehtonen OP. Persistent sexual dysfunction after discontinuation of selective serotonin reuptake inhibitors. *The journal of sexual medicine*. 2008 Jan;5(1):227-33.
21. Bet PM, Hugtenburg JG, Penninx BW, Hoogendijk WJ. Side effects of antidepressants during long-term use in a naturalistic setting. *European neuropsychopharmacology*. 2013 Nov;23(11):1443-51.
22. Jahan MS, Billah SM, Furuya H, Watanabe T. Female sexual dysfunction: facts and factors among gynecology outpatients. *Journal of Obstetrics and Gynaecology Research*. 2012 Jan;38(1):329-35.
23. Erdős C, Kelemen O, Pócs D, Horváth E, Dudás N, Papp A, Paulik E. Female sexual dysfunction in association with sexual history, sexual abuse and satisfaction: A crosssectional study in Hungary. *Journal of Clinical Medicine*. 2023 Jan 31;12(3):1112.
24. Jing E, Straw-Wilson K. Sexual dysfunction in selective serotonin reuptake inhibitors (SSRIs) and potential solutions: A narrative literature review. *Mental Health Clinician*. 2016 Jul;6(4):191-6.
25. Roy P, Gupta B, Tripathi A, Nischal A, Dalal PK, Kar SK. Sexual functioning in females with depression in remission receiving escitalopram. *The Indian Journal of Medical Research*[Internet]. 2019 Dec 1;150(6):606–11.
26. Modell JG, Katholi CR, Modell JD, DePalma RL. Comparative sexual side effects of bupropion, fluoxetine, paroxetine, and sertraline. *Clinical Pharmacology & Therapeutics*. 1997 Apr;61(4):476-87.
27. Arlas F, Padin JJ, Rivas MT, Sánchez A. . Sexual dysfunctions induced by serotonin reuptake inhibitors. *Aten Primaria*. 2000; 26 6: 389- 94.
28. Hyttel J. Pharmacological characterization of selective serotonin reuptake inhibitors (SSRIs). *International clinical psychopharmacology*. 1994 Mar 1;9:19-26.
29. Corona G, Ricca V, Bandini E, Mannucci E, Lotti F, Boddi V, Rastrelli G, Sforza A, Faravelli C, Forti G, Maggi M. Selective serotonin reuptake inhibitor-induced sexual dysfunction. *The journal of sexual medicine*. 2009 May;6(5):1259-69.
30. Goldstein BJ, Goodnick PJ. Selective serotonin reuptake inhibitors in the treatment of affective disorders—III. Tolerability, safety and pharmacoeconomics. *Journal of Psychopharmacology*. 1998 Jul;12(4):55-S87.
31. Montejo AL, Llorca G, Izquierdo JA. Sexual dysfunction with SSRIs: a comparative analysis. In 149th Annual Meeting of the American Psychiatric Association. 1st ed. Washington DC: American Psychiatric Association 1996 May 9 (pp. 266-267).
32. Kennedy SH, Rizvi SJ, Fulton K, Ellis J, Quilty LC, Ravindran L. The sex effects scale: pilot validation in a healthy population. *Psychopharmacol Bull*. 2010 Jan 1;43(3):15-25.