Sexual Satisfaction and Quality of Life in Major Depressive Disorder Before and After Treatment With Citalopram in the STAR*D Study

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ABSTRACT

Objective: Major depressive disorder (MDD) patients often experience impaired sexual satisfaction (ISS) and poor quality of life (QOL). Selective serotonin reuptake inhibitors (SSRIs), the first-line treatment for MDD, can cause sexual dysfunction, potentially worsening ISS and QOL. This study examined the impact of MDD and the SSRI citalopram on sexual satisfaction and QOL in level 1 of the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) trial (July 2001–September 2006).

Method: A retrospective analysis was conducted of the change in sexual satisfaction, as measured by item 9 of the Quality of Life Enjoyment and Satisfaction Questionnaire, the primary outcome measure, in 2,280 patients with *DSM-IV-TR*–defined MDD who were treated with citalopram for 12 weeks. The Quick Inventory of Depressive Symptomatology-Self Report was used to evaluate the impact of depression ratings on impaired sexual satisfaction and on QOL.

Results: Impaired sexual satisfaction was present in 64.3% of MDD patients at pretreatment, but that percentage declined to 47.1% at posttreatment with citalopram ($P < .0001$). Those who achieved remission had less ISS and better QOL. The prevalence of ISS in remitters was 21.2% versus 61.3% in nonremitters ($P < 10^{-8}$). The mean ± standard deviation score for remitters increased from 2.32 ± 1.16 to 3.44 ± 1.23 ($P < 10^{-8}$; Cohen $d = 0.81$ [large effect size]), whereas in nonremitters it increased only from 1.99 ± 1.08 to 2.19 ± 1.19 ($P < 10^{-8}$; Cohen $d = 0.16$). The difference between remitters and nonremitters was highly significant ($P < 10^{-8}$). Regression analyses at pretreatment and posttreatment demonstrated significant associations between depressive symptoms and ISS ($P < .0001$) and between ISS and lower QOL ($P < .0001$) as well as an association between citalopram and increased probability of ISS and a poorer QOL in patients who continue to have moderate-to-severe depression.

Conclusions: A majority of MDD patients have impaired sexual satisfaction, a symptom associated with poor QOL. Despite the sexual side effects of the SSR citalopram, treating depression to full remission was associated with improvements in sexual satisfaction and QOL.

Trial Registration: ClinicalTrials.gov identifier: NCT00021528

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Major depressive disorder (MDD) has a lifetime prevalence of 16.5% and a 12-month prevalence of 6.7% in the adult population, with a median age at onset of 32 years old.[1,2] This debilitating illness results in substantial quality of life (QOL) impairments in both physical and mental domains.[3,4] One important medical condition frequently linked to MDD is sexual dysfunction, which entails disturbances in the sexual response cycle such as low desire, arousal difficulties, delayed ability or inability to achieve orgasm, and lack of pleasure from sex. In MDD, low sexual desire is the most commonly reported sexual symptom, followed by delayed orgasm and arousal difficulties.[5–10] Selective serotonin reuptake inhibitors (SSRIs), the treatment of choice for MDD, can unfortunately also cause sexual dysfunction, such as decreased desire, arousal difficulties, and delayed/absent orgasm, with an estimated incidence in 30% to 70% of treated patients, depending on the study.[11–15] Individuals experiencing sexual dysfunction secondary to SSRIs may prematurely discontinue medication, resulting in persistent depression and concomitant QOL deficiencies,[16] or suffer in silence from sexual dissatisfaction.

Sexual satisfaction is a broad construct that has recently gained momentum for assessing sexual contentment and impairment.[17] Sexual dysfunction measures are focused on trouble with desire, arousal, and orgasm, whereas sexual satisfaction encompasses subjective perception of one's overall sexual contentment with sexual functioning.[17] To assess the impact of MDD and SSRI treatment on sexual satisfaction and QOL, we analyzed data from the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) trial,[18] the largest prospective treatment study of MDD. The analyses reported intend to help clarify the relationships between sexual satisfaction, depressive symptoms, and QOL, at pretreatment and posttreatment with citalopram, an SSRI.

METHOD

Study Population

Funded by the National Institute of Mental Health (NIMH), the STAR*D study was conducted at 18 primary care and 23 psychiatric care settings in the United States, from July 2001 to September 2006, and enrolled 4,041 treatment-seeking 18- to 75-year-old outpatients with a primary diagnosis of MDD according to *The Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision. The study was registered at ClinicalTrials.gov (identifier: NCT00021528). Full details of the study methodology are described elsewhere.[18] We analyzed data from the 2,280 patients from level 1 of the STAR*D study who were treated with the SSRI citalopram for at least 12 weeks. The authors obtained the NIMH Data Use Certificate to use version 1 of the STAR*D Public data set.

Clinical Points

- Many patients with major depressive disorder have impaired sexual satisfaction and poor quality of life.
- Inquiring about and measuring sexual satisfaction are useful in treating depression.
- Treating depression to full remission could improve sexual satisfaction.

Main Outcome Measures

Severity of depressive symptoms, QOL, and sexual satisfaction were measured using the Quick Inventory of Depressive Symptomatology-Self Report (QIDS-SR),[19] the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q),[20] and item 9 of the Q-LES-Q (primary outcome measure), respectively. QIDS-SR scores range from 0 = not depressed to 27 = most depressed, with remission defined as a score of 5 or less. Quality of life was measured using the total score on the Q-LES-Q. Scores range from 0 to 100, with 0 the lowest QOL score and 100 the highest. Sexual satisfaction was measured, at pretreatment and posttreatment, by the score on item 9 of the Q-LES-Q, which asks: "Taking everything into consideration, during the past week how satisfied have you been with your sexual drive, interest, and/or performance?" Response options range from 1 to 5, with 1 = very poor, 2 = poor, 3 = fair, 4 = good, and 5 = very good.[20] Scores of 1 or 2 on item 9 of the Q-LES-Q were defined as indicating impaired sexual satisfaction (ISS). The use of sexual satisfaction in our analyses most closely represents "personal sexual satisfaction," a significant component of overall sexual satisfaction, and does not necessarily entail the relational components of sexual satisfaction.[17]

Statistical Methods

Summary values are expressed as means (standard deviations [SDs]) for continuous variables and frequencies (%) for categorical ones. Generalized linear models assuming either Gaussian or binomial distributions, as appropriate, were used for multivariate analyses, and χ^2 tests were used for the analyses of frequency data. Simple univariate tests of Gaussian-distributed data were conducted with dependent and independent *t* tests. All tests were 2-sided. *P* values of less than .05 were considered to indicate statistical significance. Analyses were performed using SAS software, version 9.2 (SAS Institute Inc, Cary, North Carolina) and the open source R programming language version 2.10.1 (The R Foundation for Statistical Computing, Vienna, Austria).

RESULTS

Study Population Demographics

The demographic characteristics of the patient sample are highlighted below. Compared to men, women were significantly more numerous ($P < 10^{-8}$), were somewhat less likely to be married/living with a partner ($P = .02$), and were on average 3.3 years younger ($P < 10^{-8}$) when they entered the study. About one-third of the population graduated from college, about one-half were employed, and about one-half were living with a spouse/partner at the time of entrance into the study.

Depressive Symptom Severity, Quality of Life, and Sexual Satisfaction Scores

Baseline and posttreatment scores for depressive symptom severity, QOL, and sexual satisfaction as measured by the QIDS-SR, Q-LES-Q, and item 9 of the Q-LES-Q, respectively, are displayed in Table 1 by gender. Men, women, and their combined group showed statistically significant improvements on all 3 measures ($P < 10^{-8}$). Women had somewhat worse pretreatment measures of depressive symptom severity and ISS and greater improvement on all 3 measures compared to men.

Prevalence of ISS

Impaired sexual satisfaction is defined as a score of 1 (very poor) or 2 (poor) on item 9 of the Q-LES-Q. Table 2 depicts the prevalence of ISS at pretreatment and posttreatment by gender. At pretreatment, the frequency of ISS was 64.3% (67.4% among female patients and 59.1% among male patients, $\chi^2_1 = 15.65$, $P < .0001$). At posttreatment, the frequency of ISS was 47.1% (46.5% among females and 48.0% among males), with no statistically significant difference between genders ($\chi^2_1 = 0.42$, $P = .52$). Impaired sexual satisfaction was more frequent in subjects who were married or living with a partner ($\chi^2 = 56.9$, $P < 10^{-8}$).

Sexual satisfaction, as measured by item 9 of the Q-LES-Q, was moderately but significantly correlated with severity of depression at pretreatment, while a greater correlation was found between these 2 measures at posttreatment. The correlations were not significantly different between genders. It is important to note that, overall, 43.4% of MDD patients in this sample reported sexual side effects (63.2% of females, 45.4% of males, $P < .0001$), obtained using the Patient-Rated Inventory of Side Effects (available at http://www.edc.gsph.pitt.edu/stard/public/assessment_forms.html) scores at posttreatment visits from level 1.

While the above results supported an association between severity of depression and ISS, the relatively modest values for the association suggested that a linear model assuming Gaussian distributions and a constant relationship between depression and ISS over the entire range of ratings from little/no symptoms to severe symptoms, at pretreatment and posttreatment, might not be the best model for this relationship. This led us to perform logistic regression analyses. In an initial analysis, the odds ratios (ORs) for the associations at pretreatment and posttreatment between ISS and severity of depression after adjusting for age, gender, ethnicity, and marital status were 1.13 (95% confidence interval [CI], 1.11–1.16, $P < 10^{-8}$) and 1.19 (95% CI, 1.1–1.21, $P < 10^{-8}$), respectively. We then took the further step of comparing remitted versus nonremitted patients.

Table 1. Mean (SD) Scores of Measures at Pretreatment and Posttreatment (N = 2,280)

	All (N = 2,280)			Male (n = 848)			Female (n = 1,432)			Male vs Female		
Measure	Pretreatment	Posttreatment	Change	Pretreatment	Posttreatment	Change	Pretreatment	Posttreatment	Change	Pretreatment	Posttreatment	Change
Severity of depression: QIDS-SR	15.64 (4.83)	9.45 (6.35)	6.19 (6.41) $P < 10^{-8}$	15.33 (4.69)	9.71 (6.40)	5.62 (6.36) $P < 10^{-8}$	15.82 (4.90)	9.43 (6.61)	6.38 (6.55) $P < 10^{-8}$	$P < .02$	$P = .32$	$P < .007$
Quality of life: Q-LES-Q	41.48 (14.20)	56.55 (21.93)	15.05 (19.13) $P < 10^{-8}$	41.49 (13.7)	55.30 (21.95)	13.81 (18.62) $P < 10^{-8}$	41.48 (14.4)	57.30 (21.9)	15.82 (19.85) $P < 10^{-8}$	$P = .99$	$P < .04$	$P < .02$
Sexual satisfaction: Q-LES-Q item 9[a]	2.11 (1.12)	2.63 (1.35)	0.52 (1.31) $P < 10^{-8}$	2.27 (1.10)	2.63 (1.35)	0.36 (1.32) $P < 10^{-8}$	2.01 (1.12)	2.63 (1.35)	0.62 (1.39) $P < 10^{-8}$	$P < 10^{-6}$	$P > .99$	$P < .00002$

[a]"Taking everything into consideration, during the past week how satisfied have you been with your sexual drive, interest, and/or performance?" Response options range from 1 to 5 with 1 = very poor, 2 = poor, 3 = fair, 4 = good, and 5 = very good. Impaired sexual satisfaction (ISS) is defined as scores of 1 or 2.
Abbreviations: QIDS-SR = Quick Inventory of Depressive Symptomatology-Self Report, Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire, SD = standard deviation.

Table 2. Prevalence of Impaired Sexual Satisfaction (ISS) as Defined by Subject Response on Item 9 of the Q-LES-Q,[a] at Pretreatment and Posttreatment (N = 2,280)

	Subjects With ISS, n (%)		Pretreatment vs Posttreatment
Subject Characteristic	Pretreatment	Posttreatment	χ^2 *P* Value
All	1,466 (64.3)	1,073 (47.1)	$< 10^{-8}$
Male	501 (59.1)	407 (48.0)	$< 10^{-5}$
Female	965 (67.4)	666 (46.5)	$< 10^{-8}$
Married or lives with a partner	717 (70.3)	514 (50.4)	$< 10^{-8}$
Never married, separated, divorced, or widowed	749 (59.4)	559 (44.4)	$< 10^{-8}$

[a]"Taking everything into consideration, during the past week how satisfied have you been with your sexual drive, interest, and/or performance?" Response options range from 1 to 5, with 1 = very poor, 2 = poor, 3 = fair, 4 = good, and 5 = very good. Scores of 1 or 2 defined ISS.
Abbreviation: Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire.

Impaired Sexual Satisfaction: Remission Versus Nonremission

Remission from MDD is defined as no or minimal depressive symptoms as evidenced by a score of 5 or less on the QIDS-SR.[18] The prevalence of ISS was significantly higher in patients who did not achieve remission after SSRI treatment (61.3%, 901 of 1469) compared to those who did (21.2%, 172 of 811, $\chi^2_1 = 336$, $P < 10^{-8}$). Males who achieved remission with citalopram had an ISS prevalence of 19.5% (55 of 282) as compared to 62.2% (352 of 566) in males who did not ($\chi^2_1 = 336$, $P < 10^{-8}$). Similarly, the prevalence of ISS was 22.1% (117 of 529) in females who achieved remission compared to 60.8% (549 of 903) in those who did not ($\chi^2_1 = 199$, $P < 10^{-8}$). There was no statistically significant difference between males and females ($P = .4873$), whether remitted or nonremitted.

Using a multivariable regression approach and change in item 9 response of the Q-LES-Q as the dependent variable, we tested for the effects of treatment outcome (remission vs nonremission) and gender. Statistically significant main effects for outcome ($F_{1,2276} = 263.5$, $P < 10^{-8}$) as well as gender (male vs female, $F_{1,2276} = 15.67$, $P < 10^{-4}$) were found, while the interaction term of outcome × gender was not significant ($F_{1,2276} = 0.116$, $P = .7$). Specifically, the mean ± SD score on item 9 of the Q-LES-Q for remitters increased from 2.32 ± 1.16 at pretreatment to 3.44 ± 1.23 at posttreatment ($t_{810} = 23.16$, $P < 10^{-8}$, effect size = 0.81) as compared to an increase from 1.99 ± 1.08 to 2.19 ± 1.19 in nonremitters ($t_{1468} = 6.05$, $P < 10^{-8}$, effect size = 0.16). Data for males and females are detailed in Table 3.

We also tested for the relationship between ISS and remission, using a logistic regression analysis. After treatment, the OR for the association between ISS and remission for all patients combined was 0.17 (95% CI, 0.14–0.21, $P < .0001$) adjusted for age, gender, ethnicity, and marital status. Overall, more severe depression, at pretreatment and posttreatment, and lack of remission correlated with higher rates of ISS. While the logistic regression analysis strongly suggests that remitted patients have a low probability of ISS, actual numbers may be more illustrative. Of the 811 patients who would eventually achieve remission, 460 reported ISS at pretreatment. Of these 460 remitters, only 137 (29.8%) reported ISS at posttreatment, whereas of the 351 remitters who did not report ISS at pretreatment, only 35 (10.0%) reported ISS at posttreatment.

The Effects of SSRIs on ISS

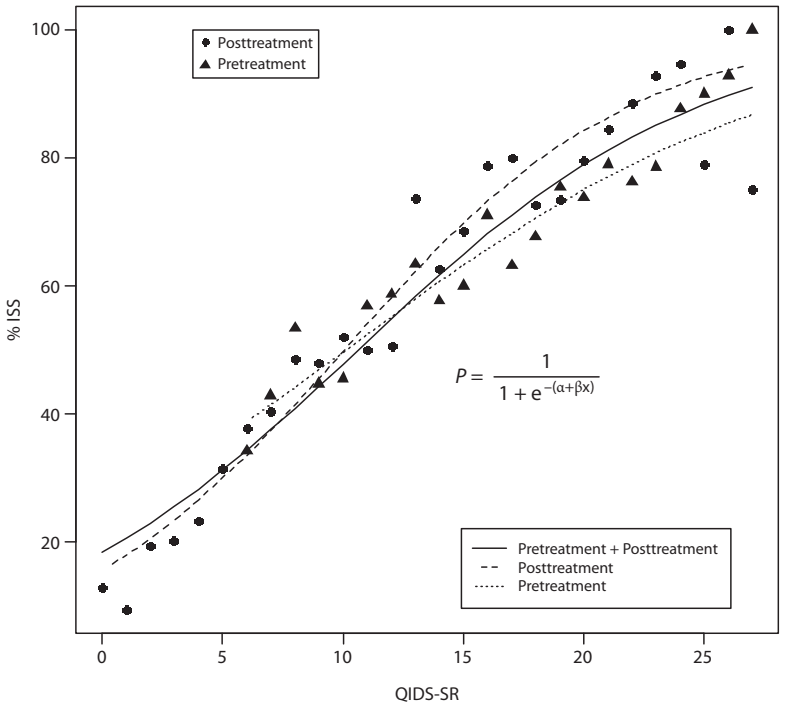
Because the above analyses considered pretreatment and posttreatment data separately, the possible direct effects of citalopram treatment at posttreatment could not be distinguished from its indirect effects mediated through symptom reduction. To test for the direct effects, we revisited the relationship between ISS and symptoms in the combined data set of pretreatment + posttreatment using logistic and multivariate regression analyses with ISS and item 9 of the Q-LES-Q as the dependent variables and QIDS-SR, drug status, and QIDS-SR × drug status as the independent variables. In both logistic and multivariate regression models, the 2 main effects and the interaction effect were found to be significant at $P < 10^{-8}$ (Figure 1). As suggested by Figure 1, the direct effects of citalopram in patients who remain with moderate-to-severe symptoms include ISS, ie, lowering the response scores on item 9 of the Q-LES-Q and increasing the probability of ISS.

Table 3. Sexual Satisfaction as Measured by Item 9 of the Q-LES-Q[a]: Remission Versus Nonremission Data for Male and Female Patients with Major Depressive Disorder

	Male (n = 848)						Female (n = 1,432)					
	Q-LES-Q Item 9 Score, Mean (SD)		Statistic				Q-LES-Q Item 9 Score, Mean (SD)		Statistic			
Remission status	Pretreatment	Posttreatment	*t*	*df*	*P*	Cohen *d*	Pretreatment	Posttreatment	*t*	*df*	*P*	Cohen *d*
Remitters	2.53 (1.08)	3.52 (1.20)	12.73	281	$<10^{-8}$	1.321	2.21 (1.18)	3.44 (1.25)	19.41	528	$<1\times10^{-15}$	0.844
Nonremitters	2.14 (1.08)	2.19 (1.19)	1.045	565	.3	0.044	1.90 (1.06)	2.19 (1.20)	6.805	902	$<10^{-8}$	0.226

[a]"Taking everything into consideration, during the past week how satisfied have you been with your sexual drive, interest, and/or performance?" Response options range from 1 to 5, with 1 = very poor, 2 = poor, 3 = fair, 4 = good, and 5 = very good.
Abbreviations: Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire, SD = standard deviation.

Figure 1. Logistic Regression Analysis of Impaired Sexual Satisfaction (ISS)[a]



[a]Logistic regression analyses illustrating the prediction of percentage of patients experiencing ISS as determined by a response of 1 or 2 on item 9 of the Q-LES-Q, on the basis of severity of depressive symptoms (QIDS-SR) at pretreatment and posttreatment. Logistic curves illustrate the best curve fits for the pretreatment, posttreatment, and combined pretreatment + posttreatment data. Differences between predictions at pretreatment and posttreatment reflect the statistically significant effects of citalopram on the intercept and slope of the logistic analysis, ie, a greater probability of ISS in patients receiving citalopram compared to patients not receiving citalopram when patients have an equal degree of moderate-to-severe depressive symptoms.
Abbreviations: QIDS-SR = Quick Inventory of Depressive Symptomatology-Self Report, Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire.

Quality of Life in Individuals With and Without ISS

We sought to clarify whether ISS makes a direct contribution to QOL in depressed patients. Patients who reported ISS at pretreatment had a mean Q-LES-Q (excluding item 9 of the Q-LES-Q) score of 36.4 (SD = 13.8) at pretreatment and 51.3 (SD = 21.6) at posttreatment ($P < .0001$), while patients who did not report ISS at pretreatment had a mean score of 45.7 (SD = 12.4) at pretreatment and 59.3 (SD = 19.3) at posttreatment ($P < .0001$). These differences were statistically significant in men and women, with no difference between genders.

In addition to the above frequency analysis, a multivariate regression analysis, with the total score on the Q-LES-Q (excluding item 9 of the Q-LES-Q) as the dependent variable and the presence or absence of ISS as the independent variable, was used to determine the impact of the presence of ISS on QOL. For all patients, the regression coefficients were −5.0 (95% CI, −6.0 to −4.0, $P < 10^{-8}$) and −8.1 (95% CI, −9.25 to −7.0, $P < .0001$) at pretreatment and posttreatment with SSRIs, respectively, adjusted for, age, gender, ethnicity, marital status, and severity of depression. A similar analysis, using the score on item 9 of the Q-LES-Q rather than the presence or absence of ISS, led to similar statistically significant results at pretreatment and posttreatment, identifying sexual satisfaction as an important contributor to QOL.

The Effects of SSRIs on QOL

We took the opportunity to also examine the effects of citalopram on QOL, independent of its effects on depression severity, by performing a multivariate regression with Q-LES-Q (excluding item 9 of the Q-LES-Q) as the dependent variable and the QIDS-SR, item 9 of the Q-LES-Q, and drug status as the independent variables, using the combined pretreatment and posttreatment data set. Statistically significant main effects were observed for all 3 variables as well as for the interaction term of QIDS-SR × drug status, all at a $P < 10^{-8}$ value. Just as patients with poor response to citalopram have increased rates of ISS, so they also have a poorer QOL while receiving citalopram than they might otherwise be expected to have based on their depression severity, compared to patients with better response to citalopram.

DISCUSSION

The major finding in this study is that, although MDD patients in this sample experienced sexual side effect prevalence rates with SSRI treatment that were similar to rates in prior studies,[13,21–26] response to citalopram treatment was accompanied by an improvement in sexual satisfaction

whether measured by the prevalence of ISS or by change in their response scores on the Q-LES-Q. In remitted patients, the mean posttreatment score for sexual satisfaction as measured by item 9 of the Q-LES-Q (1 = poor and 5 = very good) was 3.4 (SD = 1.2, $P < 10^{-8}$, Cohen *d* [effect size] = 0.8), whereas the community norms score is 3.9 (SD = 1.1).[20] Nevertheless, it is important to note, in this context, that some patients improve, others get worse, a number of patients stay unchanged, certain patients develop new-onset SSRI-induced sexual side effects, and others have sexual dysfunction unrelated to SSRI use or depression. Thus, understanding the cause(s) of ISS in each particular patient is paramount.

Our findings are partially consistent with an earlier small pilot study by Piazza et al[27] that found depressed women to have greater sexual dysfunction at pretreatment with an improvement in sexual functioning following treatment, whereas male sexual functioning worsened with SSRI treatment, especially in orgasm and satisfaction with orgasm. Similar to Piazza et al,[27] we found greater female sexual impairment at pretreatment, but our results differ in that we found SSRIs to have a positive effect on sexual satisfaction in men and women, especially those who achieved remission. Our findings therefore fall more closely in line with those of the study by Baldwin et al[28] that reported sexual improvement in 70 depressed patients taking either a serotonin-norepinephrine reuptake inhibitor or an SSRI. This might have been the result of an increase in libido, especially in patients who experienced significant reduction in depressive symptoms. Moreover, Montejo et al[29] reported, in a duloxetine treatment study of 514 patients, that the probability of continued sexual dysfunction was 77.9% for nonresponders and 53.2% for responders. The study concluded that sexual dysfunction seemed to be more closely associated with depression rather than treatment. Most recently, Gelenberg et al[30] confirmed that depressed patients who achieved remission were less likely to suffer from sexual dysfunction during treatment with venlafaxine or fluoxetine and had lower rates of new-onset sexual dysfunction than patients who did not achieve remission.

Although many studies have focused on sexual dysfunction as a result of MDD and SSRI treatment, very few have explored the relationship between ISS and QOL. However, a recent study, [31] albeit one with a smaller sample size than the STAR*D study, reported that depressive symptom severity had a significantly negative impact on sexual satisfaction and QOL and that female patients had significantly more functional and sexual impairment than males. While we were able to confirm these findings in a considerably larger patient population, we were also able to establish that depressive symptom severity was highly predictive of ISS not only at pretreatment but also at posttreatment. Furthermore, ISS was predictive of QOL even after controlling for the contributions of depressive symptom severity, age, gender, marital status, and ethnicity. These findings highlight the importance of addressing patient sexual satisfaction as an important aspect of QOL.

Limitations and Strengths

Limitations of our study include ones specific to this analysis and others related to the STAR*D study. It is important to note that ISS could be associated with sexual problems due to comorbid medical or psychiatric problems, other psychiatric or nonpsychiatric medications, as well as sexual problems unrelated to SSRIs or depressive symptoms. Therefore, examining the effects of comorbid medical and psychiatric conditions on ISS, concomitant medications, and pretreatment sexual functioning could provide valuable information about the complex interactions that influence sexual satisfaction.

An important limitation of the current study is the use of a single self-reported question (item 9) from a questionnaire (Q-LES-Q) that was not validated for the measurement of sexual satisfaction, undoubtedly, a complex construct encompassing desire, arousal, orgasm, and relationship with partner. Future studies using multidimensional questionnaires to elicit ratings of sexual satisfaction components with more details regarding personal/partner components, and/or incorporating a clinician-rated questionnaire, would provide a more in-depth assessment of overall sexual satisfaction.

STAR*D design limitations are also important to note here. High attrition rates, frequency of adverse events, variability of remission rate reporting, the lack of a placebo arm, and incomplete data on patients all add to the complexity of interpreting the data. In addition, the ability to generalize the results to other ethnic groups was limited by the fact that the vast majority of the patients were white. Given all of the above limitations, our analyses were meant to generate hypotheses that could be tested in future randomized controlled trials.

The major strengths of this study include the ability to analyze sexual satisfaction before and after uniform treatment with a first-line antidepressant and the use of a large group of treatment-seeking depressed outpatients across a wide range of primary care and psychiatry specialty care outpatient sites, making the findings more likely to be relevant and generalizable to current clinical practice.

CONCLUSION

Selective serotonin reuptake inhibitors are the first-line treatment for depression, and while they lack certain serious side effects and therefore do not require the same degree of monitoring that some other antidepressants require, they have a well-documented negative impact on sexual function. This retrospective analysis, with a large sample size, demonstrated an improvement in sexual satisfaction in treatment-seeking depressed outpatients at posttreatment with SSRIs. Patients who achieved remission from MDD with SSRI treatment had a lower prevalence of ISS and experienced much greater increases in sexual satisfaction compared to nonremitters. We also found that depressive symptom severity predicted ISS, that ISS predicted a poorer QOL, and that patients who continued to have moderate-to-severe depressive symptoms while receiving citalopram

may have a greater degree of ISS and a poorer QOL than patients with similar depressive symptoms before receiving citalopram treatment. Our analysis supports the need for physicians to treat depression rigorously until remission and to be cognizant of patient sexual satisfaction levels as an important factor in QOL. Randomized controlled trials are required to test the above findings prospectively.

Drug names: citalopram (Celexa and others), duloxetine (Cymbalta), fluoxetine (Prozac and others), venlafaxine (Effexor and others).

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Additional information: Requests for access to the STAR*D data set are made to the NIMH, sponsor of the trial. See http://www.nimh.nih.gov/trials/data sets/nimh-procedures-for-requesting-data-sets.shtml for information.

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