Deficits in Sexual Interest Among Adults With Schizophrenia: Another Look at an Old Problem

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Objective: Despite the important impact of sexuality on quality of life in adults, there is a paucity of research on this topic for people with schizophrenia. This study examined predictors of sexual interest among adults with schizophrenia.

Methods: Using data from three studies with similar measures and participants with similar characteristics (N=231), the authors conducted a secondary analysis to examine the relationships among sexual interest, demographic characteristics (gender, age, living situation, and marital status), and clinical factors (sexual self-efficacy, symptom severity, and medications). Sexual interest was measured by using one item from the Scale to Assess Negative Symptoms. Binomial logistic regressions were conducted to explore factors most associated with level of sexual interest.

Results: Separately, cardiovascular medications, gender, age, sexual self-efficacy, and negative symptoms were associated with sexual interest. In a logistic regression model that included all of these factors, only sexual self-efficacy and gender were significantly associated with sexual interest. Higher levels of sexual self-efficacy were associated with lower levels of impairment in sexual interest (odds ratio [OR]=0.98, 95% confidence interval [CI]=0.98–0.99, $p<0.001$), and males were less likely than females to have impaired sexual interest (OR=0.38, 95% CI=0.20–0.73, p=0.004).

Conclusions: The strength of the relationship between sexual self-efficacy and sexual interest warrants development of interventions to address sexuality among people with serious mental illness, at least for those who are interested in developing or maintaining intimate relationships. An intervention that teaches skills needed to successfully pursue and navigate intimate relationships could positively influence overall quality of life for many.

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Sexual interest and activity are important and normal aspects of healthy adult functioning, but several illness-related factors may negatively affect these behaviors among adults with schizophrenia. These factors include antipsychotic medications, negative symptoms, interpersonal relationship dysfunction, and stigma. From 16% to 60% of individuals with schizophrenia who take antipsychotic medications experience sexual dysfunction (1), which negatively affects subjective quality of life (2–4). First-generation antipsychotic medications block dopamine receptors in the mesocortical pathway, causing an indirect increase of prolactin, which may be associated with sexual dysfunction (5, 6). In theory, second-generation antipsychotics should be associated with lower risk of sexual dysfunction (6, 7), given that they have an antagonistic effect on serotonin receptors in the orbitofrontal cortex, inhibiting prolactin by facilitating the release of dopamine (6). However, research has shown that sexual dysfunction is related to both first- and second-generation antipsychotics to varying degrees (4, 5, 8). Many individuals who experience sexual dysfunction, either as a real or a perceived side effect of medication, have lower rates of medication adherence, leading to destabilization and relapse (1, 9, 10).

Negative symptoms of schizophrenia are also associated with sexual dysfunction and deficits in sexual interest and activity (7). Specifically, hypodopaminergic activity in the frontal cortex related to negative symptoms may explain impairment in sexual desire (6). Finally, among individuals with schizophrenia, deficits in social functioning are associated with fewer long-term intimate relationships and lower rates of marriage (11–14). Nevertheless, many people with schizophrenia remain interested in establishing and maintaining intimate relationships. In a large-scale national survey of 1,825 Australian individuals with psychotic disorders (47.0%, schizophrenia; 16.1%, schizoaffective disorder; 36.9%, other psychotic disorder), 69.3% reported that their illness made it hard to maintain intimate relationships, but 47.5% of participants indicated a desire for intimacy (13).

Individuals with schizophrenia have identified sexuality as an essential part of human existence, and many desire involvement in romantic relationships (15–17). However, public stigma and self-stigma, and associated social isolation,

negatively affect sexual interest and activity (13, 16, 18, 19). Self-stigma may also increase fears associated with sexual behaviors, such as sexual inadequacy, and it may actively deter individuals with schizophrenia from forming new relationships or engaging in other desired social activity (13).

Complicating the picture, health care professionals are hesitant to discuss sexuality with people with schizophrenia, in spite of the potentially deleterious effect of sexual dysfunction on medication adherence and quality of life (1, 20). Clinician reluctance may be due to the sensitive nature of the topic, low value placed on sexuality in relation to other problems, the belief that sexual activity could be destabilizing, or the fear of triggering sexual delusions (1, 21–23). In a survey of psychiatrists' (N=76) attitudes toward sexuality among people with schizophrenia, only 17% felt confident in their ability to assess sexual dysfunction and 66% admitted that they do not regularly ask their patients about sexual functioning (24).

Given the positive value and importance of healthy sexual interest and functioning in adults, it is important to address sexuality among people with schizophrenia. Frank discussion of sexuality and healthy sexual interest and functioning could contribute to improved medication adherence, fewer relapses, and enhanced quality of life. The purpose of this study was to examine correlates and predictors of sexual interest in schizophrenia. Sexual interest was defined as an interest in or ability to enjoy sexual activities. Data were drawn from three randomized controlled trials (RCTs) with the same measures, which enrolled participants with similar characteristics (25–27).The primary aims of this secondary analysis were to examine the relationship between sexual interest and a variety of demographic and clinical factors and to explore predictors of sexual interest.

METHODS

Participants

Inclusion criteria for participation in the three studies (In SHAPE New Hampshire 2007–2008, In SHAPE Boston 2007–2011, and HOPES 2002–2004) from which the data were drawn were broad and have been previously published (25–27). Briefly, participants were ages 21 or older with a diagnosis of schizophrenia, schizoaffective disorder, bipolar disorder, or major depression (confirmed by the Structured Clinical Interview for DSM-IV [28]), with at least moderate impairment in functioning in multiple domains (e.g., self-care; instrumental activities of daily living; and social, community, and occupational functioning) and receipt of mental health treatment for at least 3 months at one of several participating community mental health centers offering similar services. All participants provided informed consent. All studies were approved and monitored by the New Hampshire Department of Health and Human Services and the Dartmouth College committees for the protection of human subjects.

These analyses included only participants with a diagnosis of schizophrenia or schizoaffective disorder. HOPES enrolled only adults ages 50 and older (25); however, the other two studies enrolled individuals ages 18 and older. The two In SHAPE studies required participants to have a body mass index (BMI) of greater than 25, whereas the HOPES study had no BMI requirements. Given the high rates of obesity among individuals with schizophrenia, this measure was not controlled for in these analyses (29).

Materials and Procedure

A common set of self-report and clinician-rated assessment instruments was administered to all study participants by experienced, trained research interviewers (25–27). These analyses included baseline data only.

Demographic characteristics. Demographic characteristics included in the analyses were gender (coded as 0 for male and 1 for female), age, race, ethnicity, education, living situation, and marital status. Level of education was categorized as either high school degree (or GED) or less than high school. Participants were coded as living in either a residence with privacy (e.g., living alone) or a residence with little to no privacy, including supported apartments with occasional professional staff visits to support functioning and congregate residences with varying levels of staff presence (e.g., staff on premises for 8 to 24 hours per day).

Sexual interest. Sexual interest was assessed with a single item from the Scale to Assess Negative Symptoms (SANS) (30). Following a semistructured inquiry, interviewers rated participants' self-reported drive and interest in sex on a 6-point scale, from 0 (no inability to enjoy sexual activities) to 5 (no interest in and/or derives no pleasure from sexual activities).

Sexual self-efficacy. One item from the Revised Self-Efficacy Scale (31), a 57-item measure that assesses confidence in ability to perform various social behaviors and to manage positive and negative symptoms of schizophrenia, was used to characterize sexual self-efficacy. Participants rated their level of confidence in their ability to have sex with someone in a way that they and the other person could enjoy on a scale from 0 (no confidence) to 100 (complete confidence).

Symptom severity. Symptom severity was measured by using the expanded Brief Psychiatric Rating Scale (BPRS) (32), and negative symptoms were measured with the SANS (30). The BPRS includes 24 items, each of which is rated based on a semistructured interview and a Likert scale, with responses ranging from 1 (absence of symptoms) to 7 (very severe symptoms). For this study, we used three of the four BPRS factors described in a factor analysis by Velligan and colleagues (33): depression/anxiety, psychosis, and activation. We excluded the retardation factor because of its redundancy with the SANS. The SANS includes 20 items rated

based on a semistructured interview and a Likert scale, with responses from 0 (no symptomatology) to 5 (severe symptomatology). Three of the four subscales from the SANS were used: affective flattening/blunting, alogia, and avolition/apathy. We did not use the anhedonia/asociality subscale given that the sexual interest item is contained within that subscale.

Depression. Depression was assessed by using the Center for Epidemiologic Studies Depression Scale (CESD) (34). This self-report measure includes 20 items assessing symptoms of depression, each of which is rated with a 4-point Likert scale ranging from 0 (rarely or none of the time) to 3 (most or almost all of the time).

Medication. Research interviewers asked participants to provide a list of all prescribed medications. Because of the differing mechanisms of action and influences on sexual interest and functioning (8, 35, 36), psychiatric medications were separated into three categories: antipsychotics, antidepressants, and mood stabilizers. Because sexual side effects have been associated with cardiovascular medications, these medications were also examined (37). A recent review was used as a reference to categorize antipsychotics according to relative risk of sexual dysfunction: low risk (aripiprazole; coded as 1), medium risk (quetiapine, ziprasidone, and perphenazine; coded as 2), and high risk (clozapine, olanzapine, risperidone, haloperidol, paliperidone, and fluphenazine; coded as 3) (5). Participants not taking an antipsychotic medication received a score of 0.

Analysis. Analyses were completed by using IBM SPSS Statistics 25. We used descriptive statistics to characterize the sample population and to test for homogeneity. We then controlled for baseline differences in our final model.

Because the dependent variable of sexual interest was not normally distributed, we created a dichotomous variable defined as adequate sexual interest (scores of 0, 1, 2, or 3) or very low/no sexual interest (scores of 4 or 5). We then ran bivariate tests using logistic regression. Variables that were significantly related to sexual interest ($p<.05$) were included in the final model.

RESULTS

The study sample (N=231) was 52% male, with a mean±SD age of 48.07±12.74. The majority of participants were non-Hispanic (88%) and white (68%). While we did not have information regarding BMI for the HOPES study (34% of sample), 22% (N=33) of the In SHAPE participants were overweight, and 78% (N=119) were obese (missing data on one participant). The mean level of sexual interest among all participants was 2.65±2.03, indicating mild to moderate impairment. Sexual interest was very low in 46% and unimpaired in 40% of the group; the remaining 14% of participants showed mild to moderate levels of impairment. Males had significantly higher levels of sexual interest than females. Mean sexual self-efficacy was relatively low (56.71±37.57).

Table 1 displays characteristics and type of medications for the entire sample as well as by study group. Study groups differed by race, ethnicity, living situation, marital status, and type of antipsychotic. The majority of participants were prescribed an antipsychotic associated with a high risk of sexual dysfunction (65%). Among users of high-risk antipsychotics, 40% (N=61) were taking risperidone; 25% (N=37), clozapine; 21% (N=32), olanzapine; 11% (N=17), haloperidol; 1% (N=2), paliperidone; and 1% (N=3), fluphenazine.

In the bivariate analyses, greater sexual interest was significantly associated with younger age, greater sexual self-efficacy, lower scores on the SANS subscale for affective flattening/blunting, and lower scores on the SANS subscale for alogia. Sexual interest was not significantly associated with marital status, education, living situation, overall psychiatric symptom severity, avolition/apathy, and use of antidepressants or mood stabilizers. Use of cardiovascular medications was significantly associated with having very little/no sexual interest (odds ratio [OR]=1.92, 95% confidence interval [CI]=1.11–3.30, p=0.019). Type of antipsychotic medication was not significantly associated with level of sexual interest.

The final model controlled for differences between study groups in race, ethnicity, living situation, and marital status. In this model, sexual self-efficacy was most significantly associated with sexual interest; specifically, as level of sexual self-efficacy increased, the likelihood of impaired sexual interest decreased (OR=0.98, 95% CI=0.98–0.99, $p<0.001$). Males were significantly less likely than females to have greater impairment in sexual interest (OR=0.38, 95% CI=0.20–0.73, p=0.004). The SANS subscales for affective/blunting and alogia, use of cardiovascular medications, age, race, ethnicity, living situation, and marital status did not explain any additional variability in sexual interest after the analyses accounted for sexual self-efficacy and gender. This model accounted for 31% (Nagelkerke R^2) of the variance in sexual interest ($\chi^2=57.34$, N=231, df=13, $p<0.001$). Additional models that explored a potential interaction between gender and sexual self-efficacy were not significant, in spite of the significant relationship between sexual self-efficacy and gender (males had significantly higher sexual self-efficacy compared with women).

DISCUSSION

The primary aims of this study were to examine the relationships between sexual interest and several demographic and clinical factors in a sample of adults with schizophrenia. Because the distribution of sexual interest was somewhat bimodal, with the greatest percentage of participants reporting either no problem with sexual interest or severe impairment in interest, we dichotomized this measure for the purpose of this study.

TABLE 1. Demographic characteristics and use of medications among participants with schizophrenia or schizoaffective disorder, by RCT group[a]

	Total sample (N=231)		In SHAPE New Hampshire (N=40)		In SHAPE Boston (N=113)		HOPES (N=78)				
Variable	N	%	N	%	N	%	N	%	Test statistic[b]	df	p
Gender									χ^2=.52	2	.772
Male	120	52	19	48	61	54	40	51			
Female	111	48	21	53	52	46	38	49			
Age (M±SD)	48.1±12.7		40.9±9.9		42.6±11		59.6±7.4		F=83.15	2, 228	<.001
Race									χ^2=56.12	10	<.001
White	157	68	35	88	52	46	70	90			
Black	52	3	1	2	45	40	6	8			
American Indian/Alaska Native	3	1	1	2	2	2	0	—			
Asian	6	3	0	—	5	4	1	1			
Native Hawaiian/Pacific Islander	3	1	0	—	3	3	0	—			
>1 race	10	4	3	8	6	5	1	1			
Ethnicity									χ^2=13.15	2	<.001
Hispanic	27	12	1	2	22	19	4	5			
Non-Hispanic	204	88	39	98	91	81	74	95			
Living situation									χ^2=19.86	2	<.001
Residence with privacy	135	59	35	88	65	58	35	45			
Residence with little/no privacy	95	41	5	13	47	42	43	55			
Marital status									χ^2=27.12	4	<.001
Never married	151	65	23	58	92	81	36	46			
Currently married	17	7	3	8	4	4	10	13			
Previously married	63	27	14	35	17	15	32	41			
Use of antipsychotic									χ^2=14.62	6	.023
No antipsychotic	14	6	1	3	9	9	4	5			
Antipsychotic with low risk for sexual dysfunction	13	6	6	16	7	7	0	—			
Antipsychotic with medium risk for sexual dysfunction	42	19	6	16	22	21	14	18			
Antipsychotic with high risk for sexual dysfunction	151	69	25	66	66	64	60	77			
Use of antidepressant	98	42	16	40	43	38	39	50	χ^2=2.81	2	.245
Use of mood stabilizer	37	16	7	7	19	17	11	14	χ^2=.33	2	.847
Use of cardiovascular drug	83	36	10	25	30	27	43	55	χ^2=18.88	2	<.001

[a] RCT, randomized controlled trial.
[b] Differences between groups in gender, race, living situation, marital status, and medications were tested by using chi-square test for independence. Difference between groups in age was tested by using one-way analysis of variance.

Males had significantly higher levels of sexual interest than females. A meta-analysis conducted by Petersen and Hyde (38) to examine gender differences in sexuality in the general population concluded that sexual attitudes, behavior, and interest are more similar in men and women than one might expect, with the exception of masturbatory behavior and use of pornography, which are higher in men. However, the authors noted that significant fear and reluctance continue to exist with respect to women's willingness to admit to sexual arousal, interest, and behavior, reflecting greater perceived stigma surrounding sexuality for women compared with men. Therefore, the gender differences found here may be consistent with the societal stigma that continues to surround female sexuality.

Mean sexual self-efficacy was relatively low. Because the data were drawn from studies that did not have a primary focus on sexuality, we can only speculate about why sexual interest and efficacy were low. Also, 60% of the sample had never been married, which may indicate a lack of experience with intimate relationships.

Sexual self-efficacy was significantly associated with sexual interest, and although males had higher self-efficacy than females, there was no interaction effect of gender × sexual self-efficacy on sexual interest. Therefore, the relationship between gender and sexual interest cannot be completely explained by higher sexual self-efficacy in men. Perhaps, as seen in the general population, males were simply more willing to admit having adequate sexual drive compared with women, who may have felt less comfortable admitting that. Or, the higher rates of sexual abuse among women with schizophrenia compared with men (39) may partially explain their lower level of sexual interest. A history of sexual abuse may increase the likelihood of avoiding

or being fearful of sexual relationships, which in turn may reduce the overall interest in sex (40).

Research in the general population has found a significant relationship between obesity and impaired sexual functioning (41), especially among women (41–43). Most of this sample was overweight or obese and a plurality were female, so dissatisfaction with body weight could have contributed to lower levels of sexual self-efficacy and sexual interest, although we could not test this association given the very high prevalence of obesity among people with schizophrenia.

Negative symptoms did not contribute significantly to level of sexual interest after the analyses accounted for gender and sexual self-efficacy. Surprisingly, avolition/apathy was not correlated with sexual interest, even in the bivariate analyses. Blunted affect and alogia were significantly associated with less sexual interest; however, blunted affect and alogia were not predictive of sexual interest after the analyses accounted for the effects of gender and sexual self-efficacy in the model.

Negative symptoms have been associated with hypodopaminergic activity in the frontal cortex, which adversely affects sexual activities (7); however, the hypodopaminergic activity associated with negative symptoms may be mitigated by the use of second-generation antipsychotics. Second-generation antipsychotics have been associated with less sexual dysfunction. For example, data from the Intercontinental Schizophrenia Outpatient Health Outcomes study (IC-SOHO) (44) were used to compare rates of sexual dysfunction among patients with schizophrenia who were treated for at least 1 year with either olanzapine (N=2,638), risperidone (N=860), quetiapine (N=142), or haloperidol (N=188). Those who were treated with olanzapine or quetiapine experienced significantly lower levels of sexual dysfunction compared with those using risperidone or haloperidol.

In this analysis, type of antipsychotic medication was not significantly associated with impairment in sexual interest; however, the effects of antipsychotics on sexual interest are complex and prone to individual variation (6). Similar to other research, this study found that participants taking cardiovascular medications were more likely to have very low or no sexual interest (37). Yet cardiovascular medications did not significantly affect sexual interest when negative symptoms, sexual self-efficacy, and gender were included in the model.

It is worth noting that although 46% of participants had a severe lack of interest in sex, 40% had no impairment at all. This finding, together with the strong relationship between sexual self-efficacy and sexual interest, warrants development of interventions to address sexuality among people with schizophrenia, at least for those who are interested in developing or maintaining intimate relationships. Vučić-Peitl and colleagues (44) found that compared with people without mental illness, people with schizophrenia had significantly lower levels of sexual satisfaction and higher levels of negative emotionality and insecurities about sexual abilities, perhaps stemming from feelings of fear, worthlessness, inadequacy, and self-stigmatization. An intervention targeting these areas could help to increase sexual self-efficacy.

Several limitations inherent in this analysis are noteworthy. First, data were collected from studies that aimed primarily to enhance overall health and psychosocial functioning, not sexuality. Second, sexual interest was measured by using only a single item from the SANS, and reasons for low interest were not explored. Third, the parent studies collected information on the name of the medication but not on the dose, limiting conclusions about the impact of medications. Fourth, this analysis focused on sexual interest and not actual sexual functioning. Finally, information on trauma history would have enhanced understanding of the study data, but no data were collected. Despite these limitations, this study expands upon the limited data that are currently available on sexuality in schizophrenia and therefore makes an important contribution to the literature. Future research should explore sexual interest among people with schizophrenia in more detail, including both sexual interest and sexual functioning as outcomes.

CONCLUSIONS

Findings from this analysis suggest that adults with schizophrenia have impairments in sexual interest that may be more pronounced among women but that are also significantly related to level of confidence in sexual ability. This suggests the need to develop interventions to address sexuality among people with schizophrenia, at least for those who are interested in developing or maintaining intimate relationships. An intervention that teaches people the skills needed to successfully pursue and navigate intimate relationships could positively affect confidence and ultimately lead to improvement in medication adherence and overall quality of life. A training module on sexuality could also cover topics such as contraception, safe sex, masturbation, pornography, homosexuality, medications to treat sexual dysfunction, online dating, and self-disclosure of schizophrenia. As mentioned previously, given health care professionals' reluctance to discuss sexuality with their patients, people with schizophrenia could also be trained to raise issues surrounding sexuality with their providers to ensure that deficits in sexual drive and functioning are appropriately addressed.

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