Male Sexual Dysfunction and Quality of Life in Schizophrenia

Mark Olfson, M.D., M.P.H.; Thomas Uttaro, Ph.D., M.S.; William H. Carson, M.D.; and Eskinder Tafesse, Ph.D.

Objective: To describe the prevalence and clinical correlates of sexual dysfunction in a sample of adult male outpatients with schizophrenia treated with olanzapine, risperidone, quetiapine, or haloperidol, focusing on associations between sexual dysfunction and patient-perceived quality of life.

Method: Sexual dysfunction was assessed in 139 outpatients with DSM-IV schizophrenia who were receiving olanzapine, risperidone, quetiapine, or haloperidol, but no other medications associated with sexual side effects. Structured assessments were made of psychiatric symptoms, quality of life, and relationships.

Results: Sexual dysfunction occurred in 45.3% of patients. Patients with and without sexual dysfunction did not significantly differ with respect to severity of psychiatric symptoms. However, as compared with patients without sexual dysfunction, patients with sexual dysfunction reported significantly lower ratings on global quality of life ($t = 2.4$, $df = 136$, $p = .02$) and the level of enjoyment in their life ($t = 2.5$, $df = 136$, $p = .01$). Patients with sexual dysfunction were significantly less likely than those without sexual dysfunction to report having a romantic partner (17.5% vs. 43.4%; $\chi^2 = 10.7$, $df = 1$, $p = .001$), though they were not significantly less likely to report difficulty making friends (27.0% vs. 32.9%; $\chi^2 = 0.57$, $df = 1$, $p = .45$). Among patients with romantic partners, those with sexual dysfunction reported significantly poorer quality of their relationships ($t = 2.3$, $df = 42$, $p = .02$) and were less likely to talk to their partner about their illness ($t = 2.0$, $df = 42$, $p = .047$).

Conclusions: Sexual dysfunction is common in men with schizophrenia who are treated with olanzapine, risperidone, quetiapine, or haloperidol and is associated with diminished quality of life, decreased occurrence of romantic relationships, and reduced intimacy when relationships are established. High prevalence and substantial interference with quality of life combine to make sexual dysfunction an important area for clinical assessment and appropriate intervention in the community management of schizophrenia.

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Received Sept. 3, 2004; accepted Jan. 20, 2005. *From New York State Psychiatric Institute, College of Physicians and Surgeons of Columbia University, New York (Dr. Olfson); South Beach Psychiatric Center, Staten Island, N.Y. (Dr. Uttaro); Otsuka Pharmaceutical Co. Ltd, Rockville, Md. (Dr. Carson); and Pharmaceutical Research Institute, Bristol-Myers Squibb Company, Wallingford, Conn. (Dr. Tafesse).*

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Corresponding author and reprints: Mark Olfson, M.D., New York State Psychiatric Institute, College of Physicians and Surgeons of Columbia University, 1051 Riverside Dr., Unit 24, New York, NY 10032 (e-mail: mo49@columbia.edu).

Sexual dysfunction, which often passes undetected,[1] is more common among adults with schizophrenia than among adults in the general population.[2,3] Whereas sexual dysfunction has been estimated to occur in 31% of men in the general population,[3] sexual dysfunction has been reported in up to 60% of men with schizophrenia.[4–6] In one study, sexual problems frequently reported by men with schizophrenia (N = 34) included absence of a desire for sexual intercourse (34%), diminished satisfaction with orgasm (33%), premature ejaculation (26%), and, less frequently, an inability to maintain an erection (9%).[2]

Several factors may complicate the assessment of sexual problems in schizophrenia. Common considerations include sexual side effects of antipsychotic medications[7–11] and other prescribed medications[12] as well as the effects of schizophrenia itself, other psychiatric disorders, and various endocrine, vascular, or genitourinary diseases.[13] A high rate of sexual dysfunction in the general population suggests that "primary sexual dysfunction" is also common. To clarify associations between schizophrenia and sexual dysfunction, it is useful to select patients with comparatively few well-defined confounding factors. For example, one study that compared the sexual function of men with schizophrenia treated with first-generation antipsychotic medications (N = 30) with that of medication-free patients (N = 30) reported that antipsychotic treatment was associated with improved sexual desire, but an increase in problems with erectile and orgasmic function and a decrease in sexual satisfaction.[8]

Little is known about associations between sexual dysfunction and the quality of the daily lives of adults with schizophrenia. In the general population, erectile dysfunction and low sexual desire are strongly associated with a low level of general happiness.[3] Some sense of the importance that men with schizophrenia attach to prob-

lems with sexual function emerges from a study in which patients with schizophrenia (N = 41) were asked to rate how much various psychiatric symptoms and antipsychotic side effects bothered them. Impotence was rated as more bothersome than any of the positive symptoms of schizophrenia.[14] In this study, impotence and ejaculatory problems together with painful urination were rated as the 3 most distressing medication side effects.[14] No information was provided concerning the specific antipsychotic treatment regimens. One survey of callers (N = 202) to a British mental health help line reported that sexual dysfunction was common among adults treated with first-generation (45.1%) and second-generation (46.2%) antipsychotic medications, and, when it occurred, sexual dysfunction was more likely to be highly distressing to men (68%) than women (49%).[15]

Few studies have examined the extent to which sexual dysfunction in schizophrenia is associated with problems in the formation and function of intimate relationships. In one small study of women with schizophrenia (N = 51), the patients' levels of sexual activity, sexual arousal, and orgasmic capacity were directly related to the overall quality of the relationships between patients and their partners.[16] However, a second study of schizophrenia patients (N = 100) treated with first-generation antipsychotic medications found that patients with and without sexual dysfunction did not significantly differ in partner distress ratings, except on the item that dealt directly with sexual problems in the partnership.[17] A shortcoming of the limited research in this area has been reliance on global measures of the quality of relationships that provide little insight into specific associations between sexual dysfunction and the formation or function of romantic relationships.

In the current study, the prevalence of sexual dysfunction was estimated in a population of male patients with schizophrenia who were receiving care at public outpatient mental health clinics. The study focused on patients treated with haloperidol, olanzapine, risperidone, or quetiapine and specifically excluded patients with several other common factors that predispose toward sexual dysfunction. Associations were examined between sexual dysfunction and psychiatric symptoms, global function, and quality of life with a focus on seeking to understand associations between sexual dysfunction and the occurrence and function of intimate relationships. A greater understanding of the extent, distribution, and interpersonal correlates of sexual dysfunction in men with schizophrenia may help to focus clinical efforts on addressing aspects of daily lives of patients with schizophrenia that may be closely related to sexual dysfunction.

METHOD

A cross-sectional study of sexual function was conducted of male outpatients with schizophrenia from 3 state psychiatric hospitals. The study examined the prevalence and clinical correlates of sexual dysfunction in schizophrenia outpatients treated with 4 antipsychotic medications: haloperidol, risperidone, olanzapine, and quetiapine. The study was approved by the institutional review boards of the New York State Psychiatric Institute, South Beach Psychiatric Center, and Bronx Psychiatric Center.

Eligibility

Eligible subjects were English-speaking, male outpatients between the ages of 18 and 70 years who had been treated with antipsychotic monotherapy with haloperidol, olanzapine, risperidone, or quetiapine for at least the last 60 days. Patients were excluded if they had been treated during the last 60 days with other medications associated with sexual side effects, including selective serotonin reuptake inhibitors, tricyclic antidepressants, monoamine oxidase inhibitors, lithium, clonidine, thiazide diuretics, spironolactone, methyldopa, reserpine, phentolamine, digoxin, clofibrate, cimetidine, or chlorambucil. Patients were also excluded if they had a current medical disorder associated with sexual dysfunction (e.g., multiple sclerosis, cerebrovascular accident, diabetes mellitus).

Subjects were entered into the study if they provided written informed consent, if they met criteria for schizophrenia or schizoaffective disorder according to the Structured Clinical Interview for DSM-IV (SCID),[18] and if they reported that at some point in their lives they experienced at least some sexual enjoyment or pleasure. For the sake of brevity, patients are referred to as having "schizophrenia" rather than "schizophrenia or schizoaffective disorder."

Subject Recruitment and Selection

Subject recruitment occurred in 3 phases: screening, consent, and diagnostic assessment. In the screening phase, clinical staff and research assistants reviewed the rosters of active outpatients with a clinical diagnosis of schizophrenia. A total of 269 patients with a clinical diagnosis of schizophrenia or schizoaffective disorder were found to meet the age, gender, medication, and medical illness criteria. Based on discussions with inpatient staff, 2.2% (N = 6) were eliminated who did not speak or understand English.

Of the 263 patients who were screened and eligible to receive the diagnostic interview, 178 (67.7%) agreed to be interviewed. Of the 178 patients who consented to the diagnostic interview, 82.0% (N = 146) met diagnostic criteria for either schizophrenia or schizoaffective disorder. Of the patients who met diagnostic criteria, 5% (N = 7) were excluded because they reported never having experienced at least some sexual enjoyment or pleasure from any source of arousal (e.g., masturbation, intercourse). The sample of 139 study patients and 124 non-

selected screened patients did not significantly differ in mean age or ethnic/racial background.

Assessments

Participating patients completed a structured assessment that spanned pharmacologic treatment, sexual function, clinical symptoms, global function, substance use disorders, quality of life, and sociodemographic characteristics. Antipsychotic treatment was assessed by self-report and medical record review. Antipsychotic dosages were classified as high, standard, or low according to ranges defined as adequate maintenance treatment for multiepisode patients by the Expert Consensus Guidelines.[19]

A research assistant assessed the sexual function of each patient with the Changes in Sexual Functioning Questionnaire (CSFQ)[20] (Appendix 1). The CSFQ spans sexual desire/frequency, desire/interest, pleasure, arousal, and orgasm. The CSFQ has a well-defined cut score for sexual dysfunction in men,[21] has high test-retest reliability,[22] and has established concurrent validity with the Derogatis Interview for Sexual Functioning.[22] Each of the 14 items that comprise the total score is rated on a 5-point Likert scale measuring the current quality or frequency of a specific aspect of sexual function. The CSFQ also includes several additional items that are not included in the total score. The CSFQ was selected for this population because it does not rely solely on patient-initiated self-report[23] and focuses specifically on changes in sexual functioning.[24]

Clinical symptoms were assessed with the Brief Psychiatric Rating Scale (BPRS)[25] and the Calgary Depression Scale for Schizophrenia (CDSS).[26] Global function was measured with the Global Assessment Scale (GAS),[27] and substance use disorders in the past 6 months were assessed using the Mini-International Neuropsychiatric Interview (MINI).[28] Previous research has demonstrated a high concordance between the MINI and the SCID for substance use disorders.[28] Quality of life was assessed on a 7-point Likert scale with items from the Quality of Life Interview.[29]

Analytic Strategy and Statistical Methods

The primary goals were to determine the prevalence and distribution of current sexual dysfunction in male patients with schizophrenia and to characterize the clinical correlates of sexual dysfunction. Current sexual dysfunction was defined as a total CSFQ score at or below a threshold of 47.[21]

Patients with and without sexual dysfunction were compared with respect to sociodemographic and clinical characteristics, self-reported quality of life, and social function. The groups were also compared with respect to pharmacologic treatment. Between-group comparisons of categorical variables were made with the χ^2 test, and between-group comparisons of continuous variables were made with the t test. Multivariate analyses were used to examine associations of sexual dysfunction with the clinical symptom, quality of life, and social function outcomes while sociodemographic factors (age, race/ethnicity) were controlled for.

The rate of sexual dysfunction was also examined across patients treated with haloperidol, olanzapine, risperidone, and quetiapine with 95% confidence intervals. The quality of relationships between subjects and their partners was assessed with a set of Likert response items developed for a previous study of the community treatment of schizophrenia.[30]

The rate of selected sexual problems was also examined, including a decrease in sexual pleasure, a decrease in sexual activity, and difficulty in maintaining an erection. Patients who reported a decrease in sexual pleasure or activity were asked to determine whether the problems were caused by their illness, a change in their situation, a change in relationships, getting older, their antipsychotic medication, or other causes. Patients who reported erectile problems were asked to determine whether the problems were related to their antipsychotic medication or situational factors such as being limited to certain partners. Rates of sexual problems and problem attributions were calculated. In addition, the rates of sexual dysfunction, antipsychotic-related sexual problems, and sexual dysfunction with antipsychotic-related sexual problems were compared across medication groups and medication dosages.

RESULTS

Patients With Sexual Dysfunction

Slightly less than one half (45.3%) of the patients met CSFQ criteria for current sexual dysfunction. Patients with and without current sexual dysfunction did not significantly differ on any of the sociodemographic characteristics examined, although there was a weak and statistically nonsignificant tendency for the patients with current sexual dysfunction to be older and to be white. Whereas the rate of sexual dysfunction among patients 55 years and older was 61.5%, the rate among younger patients was 41.6% ($\chi^2 = 3.4$, df = 1, p = .06).

Most patients in both study groups had never married, were currently unemployed, had not attended college, and were beneficiaries of the Medicaid program (Table 1). Patients with and without sexual dysfunction did not significantly differ in mean BPRS, GAS, or CDSS scores (Table 1). The 2 groups also did not differ in the proportion who met provisional DSM-IV/MINI criteria for a drug or alcohol use disorder. The rate of current sexual dysfunction in the sample without a drug or alcohol use disorder was 46.2%.

Patients with and without sexual dysfunction did not significantly differ in the mean number of weeks since the

Table 1. Sociodemographic and Clinical Characteristics of Male Outpatients With Schizophrenia by Sexual Dysfunction Status[a]

Characteristic	Patients With Sexual Dysfunction (N = 63)	Patients Without Sexual Dysfunction (N = 76)	Statistical Result	df	p
Age, mean (SD), y	45.6 (11.3)	42.9 (10.4)	t = 1.5	137	.15
Race/ethnicity, %			χ^2 = 6.9	3	.07
White	47.6	28.9			
Black	33.3	43.4			
Hispanic	19.0	23.7			
Other	0	3.9			
Marital status, %			χ^2 = 1.2	3	.74
Never married	79.4	75.0			
Married	6.3	9.2			
Separated/divorced	14.3	14.5			
Widowed	0	1.3			
Employment status, %			χ^2 = 0.8	2	.67
Competitive	11.5	16.4			
Supported	14.8	16.4			
None	73.8	67.2			
Education, highest, %			χ^2 = 3.7	3	.30
< High school	38.7	53.9			
High school graduate	25.8	15.8			
Some college	27.4	23.7			
College graduate	8.1	6.6			
Health insurance, %			χ^2 = 2.7	2	.27
Private	0	3.9			
Medicaid	85.7	84.2			
Other public	14.3	11.8			
Clinical characteristics					
Alcohol use disorder, %	3.2	5.3	χ^2 = 0.4	2	.55
Drug use disorder, %	1.7	5.9	χ^2 = 1.5	2	.22
BPRS score, total, mean (SD)	30.7 (8.7)	29.9 (9.0)	t = 0.6	137	.54
GAS score, current, mean (SD)	44.6 (6.8)	45.7 (8.9)	t = 0.1	136	.42
CDSS score, current, mean (SD)	2.7 (2.4)	2.5 (2.4)	t = 0.5	133	.60

[a]Sexual dysfunction was defined as a score of 47 or lower on the 14-item Changes in Sexual Functioning Questionnaire. Higher scores on the BPRS represent greater symptom severity, higher scores on the GAS represent more adaptive functioning, and higher scores on the CDSS represent more severe depression. Alcohol and drug use disorders were assessed with the Mini-International Neuropsychiatric Interview. Ns vary due to missing data.

Abbreviations: BPRS = Brief Psychiatric Rating Scale, CDSS = Calgary Depression Scale for Schizophrenia, GAS = Global Assessment Scale.

last change in dosage of oral or depot antipsychotic medication (53.5 weeks, SD = 86.3, vs. 71.4 weeks, SD = 96.6; t = 1.07, df = 119, p = .284).

As compared with patients without current sexual dysfunction, those with current sexual dysfunction reported significantly poorer general quality of life and significantly less satisfaction with the amount of enjoyment in their lives (Table 2). After the potentially confounding effects of patient age and race/ethnicity were controlled for, current sexual dysfunction was associated with significantly lower general quality of life (β = –0.491, p = .023) and lower levels of enjoyment in life (β = –0.60, p = .009).

Relationships of Patients With Sexual Dysfunction

Patients with sexual dysfunction were significantly less likely than those without sexual dysfunction to report that they had a romantic partner (Table 2). After patient age and race/ethnicity were controlled for, patients with current sexual dysfunction were approximately 3 times (odds ratio = 0.38, 95% CI = 0.15 to 0.44) less likely than patients without sexual dysfunction to have a romantic partner. Although few patients in either group were married, patients without sexual dysfunction were significantly more likely than those with sexual dysfunction to live with someone as though married or to have a romantic relationship with someone with whom they did not live (Table 2).

Patients with a spouse or other romantic partner were queried concerning the quality of their romantic relationships. In relation to patients without sexual dysfunction, patients with sexual dysfunction reported significantly less global satisfaction with the quality of their romantic relationships (Table 3). Although the 2 groups did not significantly differ in how satisfied they were with how they and their partners acted toward each other, the patients with sexual dysfunction reported significantly less satisfaction in how they felt about sexual relations with their partners. The patients with sexual dysfunction also reported that their partners were less likely to praise them and tended to be less likely to remind them to take their

Table 2. Quality of Life, Partner Relationships, and Social Function of Male Outpatients With Schizophrenia With and Without Sexual Dysfunction[a]

Characteristic	Patients With Sexual Dysfunction (N = 63)	Patients Without Sexual Dysfunction (N = 76)	Statistical Result	df	p
Quality of life rating, mean (SD)					
Global	5.0 (1.3)	5.5 (1.2)	t = 2.4	136	.02
Relaxation	5.5 (1.3)	5.7 (1.3)	t = 0.9	136	.40
Enjoyment	5.1 (1.5)	5.7 (1.2)	t = 2.5	136	.01
Spare time	5.2 (1.4)	5.4 (1.2)	t = 0.9	136	.38
Partner, %					
Any	17.5	43.4	$\chi^2 = 10.7$	1	.001
Spouse	17.5	9.2	$\chi^2 = 0.4$	1	.53
Live together	6.3	13.7	$\chi^2 = 4.4$	1	.04
Other	3.2	26.3	$\chi^2 = 5.1$	1	.02
Difficulty making friends, %	27.0	32.9	$\chi^2 = 0.57$	1	.45

[a]Sexual dysfunction was defined as a score of 47 or lower on the 14-item Changes in Sexual Functioning Questionnaire. Quality of life ratings range from terrible (1) to delighted (7). Ns vary due to missing data.

Table 3. Characteristics of Partner Relationships of Male Outpatients With Schizophrenia With and Without Sexual Dysfunction[a]

Characteristic	Patients With Sexual Dysfunction (N = 11), Mean (SD)	Patients Without Sexual Dysfunction (N = 33), Mean (SD)	t	df	p
Quality of relationship					
Global	4.8 (1.5)	5.9 (1.1)	2.3	42	.02
Act toward each other	5.4 (1.3)	5.9 (1.3)	1.2	42	.23
Sexual relations	4.4 (2.1)	5.7 (1.4)	2.1	40	.046
Relationship					
Share personal thoughts	3.0 (1.1)	3.8 (1.3)	1.8	42	.07
Talk about illness	2.6 (1.2)	3.7 (1.5)	2.0	42	.047
Educational support	3.4 (1.4)	4.0 (1.0)	1.6	42	.12
Understand illness	3.5 (1.0)	3.7 (1.4)	0.3	42	.74
Praise	3.1 (1.4)	4.3 (1.1)	2.9	42	.006
Criticize	1.8 (0.9)	2.0 (1.2)	0.5	42	.21
Remind to take medications	1.4 (0.5)	2.3 (1.6)	1.8	42	.07

[a]Analysis was limited to patients with a spouse or a partner. Sexual dysfunction was defined as a score of 47 or lower on the 14-item Changes in Sexual Functioning Questionnaire. Quality of relationship ratings range from terrible (1) to delighted (7). Relationship measures range from not at all (1) to very much (5).

medications (p = .07), although this association was not statistically significant (Table 3). In addition, as compared with the patients without sexual dysfunction, patients with sexual dysfunction were significantly less likely to talk with their partners about their illness and tended to be less likely to share personal thoughts with their partners (p = .07) (Table 3).

Sexual Problems

Nearly two thirds (61.9%) of study patients reported that their current level of sexual pleasure was below the highest level that they had ever experienced. Most commonly, these patients attributed their decline in sexual pleasure to getting older (34.9%) or their antipsychotic medications (25.6%), followed by a change in their relationship (14.0%), a change in their situation (12.8%), or their illness (11.6%).

Approximately one half (49.6%) of the study patients reported that they were currently less engaged in sexual activity than during the period when they were most satisfied sexually. These patients most commonly attributed their decline in sexual activity to getting older (40.6%) or their antipsychotic medications (36.2%) and somewhat less commonly attributed the decline to a change in their relationship (18.8%) or their illness (14.5%) or situation (14.5%).

Difficulty maintaining an erection was reported by approximately one half (49.6%) of the study patients. These patients commonly attributed their erectile problems to their antipsychotic medications (48.6%) and somewhat less commonly attributed these problems to situational problems with certain partners (30.1%).

Approximately 1 in 10 patients (11.5%), including 25.4% of those with sexual dysfunction and none of those without sexual dysfunction, reported that they never ejaculate. In addition, 28.1% of patients indicated that they either never or rarely were able to ejaculate when they wanted (sexual dysfunction, 58.8%, vs. no

Table 4. Rates of Sexual Dysfunction and Antipsychotic-Related Sexual Problems by Antipsychotic Medication and Dosage in Male Outpatients With Schizophrenia[a]

Treatment	Sexual Dysfunction, % (95% CI)	Antipsychotic-Related Sexual Problem, % (95% CI)	Sexual Dysfunction and Antipsychotic-Related Sexual Problem, % (95% CI)
All patients (N = 139)	45.3 (37.0 to 53.6)	36.0 (28.0 to 44.0)	20.9 (14.1 to 27.7)
Antipsychotic medication			
Haloperidol (N = 59)	38.9 (26.4 to 51.3)	38.9 (26.5 to 51.3)	20.3 (10.0 to 30.6)
Olanzapine (N = 39)	54.1 (38.0 to 70.2)	35.1 (19.7 to 50.5)	21.6 (8.3 to 34.9)
Risperidone (N = 33)	48.5 (31.4 to 65.5)	33.3 (17.2 to 49.2)	24.2 (9.6 to 38.8)
Quetiapine (N = 8)	50.0 (15.4 to 84.6)	37.5 (4.0 to 71.0)	12.5 (0 to 35.4)
Antipsychotic dosage			
High (N = 17)	52.9 (29.2 to 76.6)	35.2 (12.5 to 57.9)	11.8 (0 to 35.3)
Standard (N = 61)	47.5 (35.0 to 60.0)	44.3 (31.5 to 56.8)	26.2 (15.2 to 37.2)
Low (N = 61)	41.0 (28.7 to 53.3)	27.9 (16.6 to 39.2)	18.0 (8.4 to 27.6)

[a]Sexual dysfunction was defined as a score of 47 or lower on the 14-item Changes in Sexual Functioning Questionnaire. Antipsychotic-related sexual problems include patient attribution that antipsychotic medication caused erectile dysfunction or a decrease in sexual activity or pleasure. Antipsychotic dosage categories are based on Expert Consensus Guidelines (Kane et al.[19]).

sexual dysfunction, 2.6%; $\chi^2 = 53.7$, df = 1, $p < .0001$). This problem was usually due to premature ejaculation (74.4%). No patient attribution questions were asked concerning orgasmic function.

Antipsychotic-Related Sexual Problems

As described above, patients who reported a decrease in sexual pleasure, sexual activity, or erectile function were asked what they thought was the cause of this change. Fifty patients (36.0%) specifically indicated that they thought their antipsychotic medication was the cause of 1 or more of these sexual problems (Table 4).

Across the antipsychotic medication groups, the rate of sexual dysfunction ranged from 54.1% for patients treated with olanzapine to 38.9% for patients treated with haloperidol, and the rates of sexual problems attributed to antipsychotic medications ranged from 38.9% for patients treated with haloperidol to 33.3% for patients treated with risperidone (Table 4).

DISCUSSION

Sexual dysfunction is a widespread problem in this community sample of male outpatients with schizophrenia. Although these patients were selected to have few predisposing factors for sexual dysfunction, nearly one half of them reported current sexual dysfunction. None of the newer antipsychotic medications studied were associated with a significantly lower rate of sexual dysfunction than the reference conventional antipsychotic, haloperidol. In line with earlier research,[5] male patients with sexual dysfunction did not exhibit significantly more severe clinical symptoms than their counterparts without sexual dysfunction.

In the general population, currently unmarried men as compared with married men are significantly more likely to report trouble maintaining or achieving an erection, lack interest in sex, and report anxiety about sexual performance.[3] Although marital status and sexual dysfunction were not related in the current study, patients with sexual dysfunction were unlikely to have romantic partners.

Sexual dysfunction was not associated with self-perceived problems in forming new social, nonsexual relationships. Although a longitudinal study is necessary to establish that sexual dysfunction specifically interferes with the formation of romantic relationships in schizophrenia, it is possible that sexual dysfunction tends to compromise perceptions of sexual competence, increase performance anxiety in romantic situations, or contribute to withdrawal from or avoidance of seeking romantic relationships.

The overall importance of sexuality in the lives of patients with chronic schizophrenia is suggested by a significant inverse relationship between sexual dysfunction and global quality of life ratings. When sexual dysfunction is present, patients tend to report less satisfaction in their romantic relationships. Again, given the cross-sectional nature of the study findings, it is difficult to determine the direction of causality of this association. It is possible that sexual dysfunction amplifies problems between partners, or conversely discord between partners may contribute to sexual dysfunction.

The rates of sexual dysfunction of olanzapine- (54.1%), risperidone- (48.5%), and haloperidol-treated (38.9%) patients in the current study broadly resemble findings from earlier reports. Although strict comparisons are limited by differences in patient selection criteria and methods used to measure sexual function, one large study reported sexual dysfunction in 35.8% of men treated with olanzapine, 48.4% of men treated with risperidone, and 44.6% of men treated with haloperidol.[6] In a second study, the frequency of sexual disturbances in men treated with haloperidol varied from 19.5% for orgasmic dysfunction to

63.4% for diminished sexual desire.[11] Two other studies that included a small number of patients also reported common sexual disturbances in patients treated with risperidone,[31,32] olanzapine,[32] and haloperidol.[32] Although patients endorsed several factors as contributing to sexual problems, including advancing age, change in relationships, and schizophrenia itself, over one third of the patients reported a decrease in sexual pleasure, sexual activity, or erectile function and attributed this change to the antipsychotic medication that they were prescribed.

The current study has several limitations. With a goal of limiting the number of predisposing risk factors, several patient groups were excluded. These included patients treated with multiple antipsychotic medications, patients treated with other medications known to be associated with sexual dysfunction, and patients with general medical illnesses associated with sexual dysfunction. It is likely, therefore, that the results underestimate the overall prevalence of current sexual dysfunction in male schizophrenia patients in the study settings. Without information from complementary interviews with the sexual partners, it is difficult to evaluate the validity of the assessments of partner relations. In addition, the study relied solely on patient attributions of the cause of sexual dysfunction. Again, a multiple informant strategy might have yielded more accurate information. The presence of the interviewer might have inhibited some patients from acknowledging sexual dysfunction; a confidential self-completed questionnaire might have yielded a higher rate of sexual dysfunction. Because sexual dysfunction was not assessed before patients started the antipsychotic medications, caution should be used in attributing the observed sexual dysfunction to the antipsychotic medications. The study also did not include a sufficient number of subjects to test adequately hypotheses concerning antipsychotic medication group differences in sexual dysfunction and did not include patients taking the newer antipsychotic medications ziprasidone or aripiprazole or patients who were medication free. In addition, only limited information was available on length of antipsychotic treatment, which may contribute to the development of sexual dysfunction. Finally, the CSFQ gender-specific threshold score of 47 was developed from a study of healthy subjects compared with untreated depressed subjects,[22,33] and CSFQ ratings have not to our knowledge been reported specifically for patients with schizophrenia.[34]

Sexual dysfunction is common in men with schizophrenia who are treated with olanzapine, risperidone, quetiapine, or haloperidol. In this context, sexual dysfunction is linked with diminished quality of life, decreased formation of romantic relationships, and reduced intimacy when relationships are established. High prevalence and substantial interference with quality of life combine to make sexual dysfunction an important target for clinical intervention. At present, little is known about effective interventions to manage sexual dysfunction in this population. It is reasonable to engage patients who wish to become sexually active in an open discussion of sexual function and, when appropriate, provide culturally sensitive sexual education and rehabilitative interventions aimed at building intimacy skills. In combination with counseling, pharmacologic interventions including antipsychotic dosage reduction, switching medications, and use of specific pharmacologic interventions[35,36] may be useful in reducing deterioration of sexual function that is related to antipsychotic medications. Prospective longitudinal research is needed with large patient samples to help tease apart the myriad factors that may contribute to sexual dysfunction in schizophrenia. Hopefully, an increased understanding of the risks and consequences of sexual dysfunction in the community treatment of schizophrenia will lead to improved recognition and management of this common problem.

Drug names: aripiprazole (Abilify), chlorambucil (Leukeran), cimetidine (Tagamet and others), clonidine (Catapres, Duraclon, and others), digoxin (Lanoxicaps, Lanoxin, and others), haloperidol (Haldol and others), lithium (Lithobid, Eskalith, and others), methyldopa (Aldomet and others), olanzapine (Zyprexa), phentolamine (Regitine and others), quetiapine (Seroquel), reserpine (Serpalan and others), risperidone (Risperdal), spironolactone (Aldactone and others), ziprasidone (Geodon).

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Appendix 1. Changes in Sexual Functioning Questionnaire Items in Male-Specific Total Score[a]

Sexual desire/frequency
How frequently do you engage in sexual activity (sexual intercourse, masturbation) now?
How often do you desire to engage in sexual activity?
Sexual pleasure
Compared with the most enjoyable it has ever been, how enjoyable or pleasurable is your sexual life right now?
Sexual desire/interest
How frequently do you engage in sexual thoughts (think about having sex, sexual fantasies) now?
Do you enjoy books, movies, music, or artwork with sexual content?
How much pleasure or enjoyment do you get from thinking about and fantasizing about sex?
Sexual arousal
How often do you have an erection related or unrelated to sexual activity?
Do you get an erection easily?
Are you able to maintain an erection?
How often do you experience painful, prolonged erections? (reverse scored)
Sexual orgasm
How often do you have an ejaculation?
Are you able to ejaculate when you want to?
How much pleasure or enjoyment do you get from your orgasms?
How often do you have painful orgasm? (reverse scored)

[a]Reprinted with permission from Clayton et al.[22] All items are rated on a 5-point Likert scale measuring quality or frequency of a specific aspect of sexual functioning.