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Original Article

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Sexual Dysfunctions and High-Risk Sexual Behaviors in Women with Severe Psychiatric Disorders

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Abstract

Background: Sexual Dysfunctions (SDs) and High-Risk Sexual Behaviors (HRSBs) are highly prevalent and substantial issues among patients with severe psychiatric disorders. However, studies exploring them are still infrequent. This study was conducted to evaluate SDs and HRSBs in women with severe psychiatric disorders.

Methods: Female inpatients and outpatients of the Iran Psychiatry Hospital were selected if they were 18-60 years old, able to read, and diagnosed with schizophrenia, schizoaffective disorder, or type one Bipolar Disorder (B1D). After the initial interviews, the outcomes were assessed using the Female Sexual Function Index (FSFI), Youth Risk Behavior Surveillance System (YRBSS), and Sexual Risk Survey (SRS) questionnaires.

Results: The mean (standard deviation) age of the 159 patients was 36.9 (10.1). B1D, schizophrenia, and schizoaffective disorder were diagnosed in 98, 53, and eight patients, respectively. FSFI evaluations demonstrated that several SDs, including pain and decreased sexual desire, are highly prevalent in them. Based on the results of YRBSS and SRS evaluations, the most predominant HRSBs were sexual behaviors without leading to complete intercourse, having sex without a barrier or effective contraception, using alcohol and drugs before sex, and impulsive sexual intercourse with inadequately known partners.

Conclusion: All evaluated SDs had a high prevalence attributable to the pathophysiology of severe psychiatric disorders and related medications. HRSBs were also widespread due to impaired judgment, poor knowledge, or sexual characteristics of the disorders. These results support the need for further educating these patients concerning safe sexual behaviors and interactions of contraceptive medications with specific psychiatric medicines, including carbamazepine and sodium valproate.

Keywords: Epidemiology, Mental disorders, Psychotic disorders, Sexual behavior, Sexual dysfunction

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Introduction

One of the most significant components of quality of life and satisfaction in intimate relationships is proper sexual functioning (1). Sexual Dysfunctions (SDs) are a group of prevalent conditions in the general population, affecting 43% of women and 31% of men in the United States population (2). Most patients with SD do not seek professional help, primarily due to embarrassment or not viewing the issue as a medical condition, despite these conditions' commonness and substantial impact on their lives. SDs are even more prevalent in patients with psychiatric disorders, particularly those treated with psychotropic medications (1). Based on the type of dysfunction, up to approximately 80% of under-treatment patients with schizophrenia (3), anxiety disorders (4), or depression (5) are suffering from SD. Schizophrenia, schizoaffective disorder, and type one Bipolar Disorder (B1D) are some of the conditions that commonly cause disturbances in the life, work performance, and sexual function of patients. For example, patients with schizophrenia can have sexual experiences, including sensory hallucinations of sexual nature, erotomania, delusions related to their sexual identity, and hypersexuality, during an acute psychotic episode (6-8). Patients with bipolar disorder commonly experience hypersexuality and an elevated tendency to High-Risk Sexual Behaviors (HRSBs) during manic or hypomanic episodes. Additionally, SD, including decreased sexual desire, is expected during depressive episodes (9). It is also prevalent among patients with depressive disorders (10). These examples support the importance of regular assessments of HRSBs and SDs in psychiatric patients, educating patients regarding safe sexual behaviors, and conducting studies concerning these issues.

Female Sexual Dysfunction (FSD) is a major, prevalent category of SDs (11). One of the challenges in treating FSDs is the scarce information about the physiological and psychological reasons behind them. The primary reasons contributing to this problem are the lack of well-defined endpoints and outcomes and controversies regarding the related definitions and diagnostic methods (12). Accordingly, different indices, surveys, and questionnaires have been developed, including the Female Sexual Function Index (FSFI), Sexual Risk Survey (SRS), and Youth Risk Behavior Surveillance System (YRBSS). Concisely, FSFI evaluates various aspects of the sexual functionality of women (12), SRS assesses HRSBs in the past six months (13), and YRBSS appraises high-risk behaviors of different kinds (14).

Conducting reliable studies on SDs and HRSBs is complicated. Despite the recent studies on the sexual side effects of psychotropic medications, clinical and psychotherapeutic studies in these fields are still infrequent (15). In addition, there is still no related nationwide study in Iran. On the other hand, healthcare providers and policymakers need information on the prevalence and mechanisms of SDs and HRSBs among patients with severe psychiatric disorders to better shape their perspectives toward these patients' needs and provide required services accordingly. As a result of all aforementioned challenges, we conducted a study evaluating SDs and HRSBs in certain female inpatients and outpatients of Iran Psychiatry Hospital using FSFI, YRBSS, and SRS evaluations to help with assessing the current situation of these issues in Iranian women with severe psychiatric disorders, encouraging future therapeutic studies, and eventually, increasing these patients' quality of life.

Materials and Methods

Study design and setting

This is a descriptive cross-sectional study. The female inpatients and outpatients of Iran Psychiatry Hospital passing the study's eligibility criteria from December 22nd, 2019, up to March 20th, 2021, were selected for the study. Subsequently, each patient, or if experiencing a psychotic episode, their legal guardian was thoroughly and transparently informed about this study's method and goals. An informed consent form was then read and signed by the patients or their legal guardian, guaranteeing complete respect for the privacy and confidentiality of the patients throughout the study.

Participants

A convenience non-probability sampling method was used for consecutively selecting the patients until the calculated sample size was reached. The eligibility criteria for the patients in this study are as follows: (I) female gender, (II) 18–60-year-old age,

(III) ability to read the questionnaires, (IV) diagnosis of schizophrenia, schizoaffective disorder, or B1D through a semi-structured clinical interview based on the fifth edition of the diagnostic and statistical manual of mental disorders (DSM-5), and (V) signing the informed consent form by the patient or the legal guardian to enter the study. Notably, organic disorders of the reproductive system, such as menopause attributable to drugs or hysterectomy, and psychiatric comorbidities, including substance abuse or anxiety disorders, did not exclude the patients from the study. The patients were excluded only from the related behaviors' statistics when not answering at least one question.

Variables and measurement methods

he variables and outcomes evaluated in this study are as follows: (I) participants' characteristics (age group, education level, marital status, sexual partner status, recent substance abuse, psychiatric diagnosis, severity of the condition, medical and other comorbidities, and current pharmacotherapies) and (II) outcomes (results of FSFI, SRS, and YRBSS questionnaires). A patient characteristics checklist was designed and used for the related variables. The valid, translated-to-Persian versions of FSFI by Fakhri *et al* (11), SRS with modifications based on Iranian culture by Kouhestani, and HRSBs-related questions of YRBSS also by Kouhestani (16) were used for assessing the outcomes.

The FSFI evaluation includes 19 questionnaire items categorized into six domains, including sexual desire (two items), arousal (four items), lubrication (four items), orgasm (three items), satisfaction (three items), and pain (three items). Each item can range from zero to five, with higher scores demonstrating more satisfactory sexual function. Each domain's score is calculated by summing the related items' scores. The modified SRS evaluation consists of 17 questions derived from the 23 items in the original SRS questionnaire. These modified questions evaluate four domains in the past six months: sexual intercourse without knowing the partner, initiating sexual behaviors in society, high-risk sexual intercourse, *etc.* Each question can get answered with "zero times," "once or twice," "three or four times," or "five times or more." The used domain of YRBSS evaluation includes nine multiple-choice questions assessing several HRSBs in the patients. These questionnaires can be found in the supplementary document as Survey S1 to S3.

The diagnostic interviews were conducted by a trained psychiatry resident, who used the Brief Psychiatric Rating Scale (BPRS) (17) to evaluate the condition's severity. The inpatients were given the questionnaires at the end of their hospitalization period to answer them before discharge or the first follow-up visit. The outpatients answered the questionnaires in a dedicated, quiet environment in the hospital while being alone.

Study size and statistical methods

The minimum sample size for this study (150 patients) was calculated using the "$n=P(1-P)\frac{Z_{1-\frac{\alpha}{2}}^2}{d^2}$" formula considering p=0.5, α=0.05, and d=0.08. There was no minimum or limitation for the number of patients with a particular diagnosis, and convenience sampling was terminated when the target sample size was reached. The Statistical Package for Social Sciences (SPSS), version 22 (IBM Corp., Armonk, New York, USA) was utilized for obtaining the descriptive statistics.

Results

Participants' characteristics

A total of 159 patients entered this study. The mean (standard deviation) age was 36.9 (10.1) years, with a median of 36.6 and a range of 18-60 years. Schizophrenia, schizoaffective disorder, and B1D were diagnosed in 53 (33.3%), eight (5.0%), and 98 (61.6%) patients, respectively. The mean (standard deviation) BPRS score was 36.9 (13.0), with a median of 26 and a range of 18-67. The complete list of participants' characteristics and current pharmacotherapies can be found in tables 1 and 2, respectively.

Outcomes

Female Sexual Function Index (FSFI)

Based on the results obtained from the FSFI evaluation (Table 3), the most prevalent SD was decreased sexual desire, and the least prevalent one was pain. However, all SDs were highly prevalent among the patients.

Table 1. The participants' characteristics

Variable category	Variable name	Variable groups	Frequency (percentage)	Variable category	Variable name	Variable groups	Frequency (percentage)
Demographic characteristics	Age group	<20 y (#)	2 (1.3%)	Clinical characteristics	Psychiatric comorbidities	B personality disorder	12 (7.5%)
		20-29 y	40 (26.3%)				
		30-39 y	46 (30.3%)			Obsessive-compulsive disorder	6 (3.8%)
		40-49 y	43 (28.3%)			Intellectual disability	5 (3.1%)
		≥50 y	21 (13.8%)			Panic disorder	1 (0.6%)
	Education level	Illiterate	4 (2.5%)		Other medical comorbidities	Hypothyroidism	29 (18.2%)
		Elementary and middle school	45 (28.3%)			Amenorrhea or menstrual irregularity	22 (13.8%)
		High school and diploma	74 (46.5%)			Hyperlipidemia	11 (6.9%)
		University and academic	35 (22.0%)			High blood pressure	10 (6.3%)
	Marital status	Single	75 (47.2%)			Diabetes	10 (6.3%)
		Married	56 (35.2%)			Urogenital infection	8 (5.0%)
		Divorced or separated	22 (13.8%)			Polycystic ovary syndrome	4 (2.5%)
		Widowed	6 (3.8%)			Convulsions	4 (2.5%)
	Sexual partner status	Unknown	3 (1.9%)			Liver disorders	2 (1.3%)
		No sexual partner	86 (54.1%)			Anemia	2 (1.3%)
		One persistent sexual partner	61 (38.4%)			Asthma	2 (1.3%)
		Multiple persistent sexual partners	3 (1.9%)			Gastroesophageal reflux disease	2 (1.3%)
		Multiple inconstant sexual partners	6 (3.8%)			Gout and hyperuricemia	2 (1.3%)
Clinical characteristics	Recent substance abuse	Metham-phetamine	4 (2.5%)			Hematologic or coagulative disorders	2 (1.3%)
		Hashish	3 (1.9%)			Hyperthyroidism	1 (0.6%)
		Alcohol	4 (2.5%)			Migraine	1 (0.6%)
		Opioids	2 (1.3%)			Parkinson's disease	1 (0.6%)

Abbreviation: (#) y, year[s].

Table 2. The participants' current pharmacotherapies

Drug family	Medication name	Frequency (percentage)	Drug family	Medication name	Frequency (percentage)
Antipsychotics	Typical drugs	61 (38.4%)	Cardiovascular drugs	Propranolol	27 (17.0%)
	Risperidone	69 (34.4%)		Antihypertensives	9 (5.7%)
	Olanzapine	12 (7.5%)	Endocrine drugs	Metformin	9 (5.7%)
	Quetiapine	10 (6.3%)		Other antidiabetic drugs	9 (5.7%)
	Aripiprazole	10 (6.3%)		Levothyroxine	29 (18.2%)
	Clozapine	6 (3.8%)		Blood lipid lowering drugs	8 (5.0%)
Mood stabilizers	Lithium	30 (18.9%)		Allopurinol	1 (0.6%)
	Sodium valproate	54 (34.0%)	Other drugs	PPIs (£)	5 (3.1%)
	Carbamazepine	13 (8.2%)		Biperiden and Trihexyphenidyl	61 (38.4%)
Antidepressants	SSRIs (#)	14 (8.8%)		Amantadine	1 (0.6%)
	SNRIs ($)	2 (1.3%)		Salbutamol	1 (0.6%)
	Trazodone	4 (2.5%)		Piracetam	1 (0.6%)
	TCAs (@)	1 (0.6%)		Tetrabenazine	1 (0.6%)
	Bupropion	1 (0.6%)		Oxybutynin	1 (0.6%)
	Mirtazapine	1 (0.6%)		Famotidine	1 (0.6%)
Sedatives-hypnotics and anticonvulsants	Benzodiazepines	41 (25.8%)		Clopidogrel	1 (0.6%)
	Topiramate	7 (4.4%)		Buspirone	1 (0.6%)
	Clonidine	7 (4.4%)		Varinicline	1 (0.6%)
	Gabapentin and Pregabalin	5 (3.1%)			
	Antihistamines	11 (6.9%)			

Abbreviations: (#) SSRI, selective serotonin reuptake inhibitor; ($) SNRI, serotonin and norepinephrine reuptake inhibitor; (@) TCA, tricyclic antidepressant; (£) PPI, proton pump inhibitor.

Table 3. Descriptive statistics Obtained from the participants' answers to FSFI evaluation

Sexual dysfunction area	Frequency (percentage)	Severity score		
		Mean (standard deviation)	Median (interquartile range)	Range
Sexual Desire	158 (99.4%)	2.9 (1.5)	3.0 (1.2-3.6)	0.6-6.0
Arousal	149 (93.7%)	1.3 (1.8)	0 (0-2.9)	0-6.0
Lubrication	147 (92.4%)	1.2 (1.6)	0 (0-3.0)	0-5.1
Orgasm	145 (91.2%)	1.2 (1.7)	0 (0-3.2)	0-5.6
Satisfaction	145 (91.2%)	1.6 (2.1)	0 (0-3.6)	0-6.0
Pain	143 (89.9%)	0.9 (1.4)	0 (0-1.6)	0-5.6
Total score		9.3 (9.0)	4.1 (1.8-18.9)	0.6-27.9

Table 4. The participants' answers to YRBSS evaluation

Number of question	Question and answers	Frequency (percentage)	Number of question	Question and answers	Frequency (percentage)
1	Have you ever had sex?		6	Did you (or your partner) use a condom the last time you had sex?	
	Yes	113 (71.1.%)		I have never had sex before	46 (28.9%)
	No	46 (28.9%)		Yes	26 (16.4%)
2	At what age did you have sex for the first time?			No	87 (54.7%)
	I have never had sex before	46 (28.9%)	7	What birth control method did you (or your partner) use the last time you had sex?	
	≤11 years old	2 (1.3%)		I have never had sex before	46 (28.9%)
	12-14 years old	11 (6.9%)		We did not use any contraceptive method	23 (14.5%)
	15-16 years old	13 (8.2%)		Birth control pills	12 (7.5%)
	≥17 years old	87 (54.7%)		Condom	23 (14.5%)
3	How many people have you had sex with in your lifetime?			Intrauterine contraceptive device (IUD) or implant	8 (5.0%)
	I have never had sex before	46 (28.9%)		Injection, skin patch or birth control ring	2 (1.3%)
	One person	79 (49.7%)		Withdrawal	35 (22.0%)
	Two persons	12 (7.5%)		Male vasectomy or female tubectomy	5 (3.1%)
	Three persons	7 (4.4%)		I am not sure	5 (3.1%)
	Four or five persons	4 (2.5%)	8	How many times have you been pregnant?	
	Six or more persons	11 (6.9%)		Never	91 (57.2%)
4	How many people have you had sex with in the last three months?			Once	25 (15.7%)
	I have never had sex before	46 (28.9%)		Twice or more	41 (25.8%)
	I have had sex so far, but not in the last three months	50 (31.4%)		I am not sure	2 (1.3%)
	One person	52 (32.7%)	9	Who have you had sex with in your lifetime?	
	Two or three persons	4 (2.5%)		I have never had sex before	46 (28.9%)
	Four or more persons	7 (4.4%)		Women	0 (0%)
5	Did you use alcohol or drugs the last time you had sex?			Men	109 (68.6%)
	I have never had sex before	46 (28.9%)		Both	4 (2.5%)
	Yes	17 (10.7%)	10	Which one best describes you?	
	No	96 (60.4%)		Heterosexual	125 (78.6%)
				Homosexual (lesbian)	0 (0%)
				Bisexual	4 (2.5%)
				I am not sure	30 (18.9%)

Table 5. The participants' answers to SRS evaluation and the related descriptive statistics

Question number	Each answer's frequency (percentage)				Descriptive statistics of participants' answers		
	Zero times	Once or twice	Three or four times	Five times or more	Mean (standard deviation)	Median (interquartile range)	Range
1	78 (49.1%)	72 (42.3%)	3 (1.9%)	6 (3.8%)	0.86 (1.63)	1 (0-1)	0-16
2	152 (95.6%)	5 (3.1%)	2 (1.3%)	0 (0%)	0.09 (0.47)	0 (0-0)	0-4
3	151 (95.0%)	5 (3.1%)	2 (1.3%)	1 (0.6%)	0.12 (0.61)	0 (0-0)	0-5
4	155 (97.5%)	2 (1.3%)	2 (1.3%)	0 (0%)	0.07 (0.45)	0 (0-0)	0-4
5	155 (97.5%)	1 (0.6%)	3 (1.9%)	0 (0%)	0.08 (0.48)	0 (0-0)	0-4
6	151 (95.0%)	5 (3.1%)	2 (1.3%)	1 (0.6%)	0.14 (0.69)	0 (0-0)	0-6
7	133 (83.6%)	12 (7.5%)	10 (6.3%)	4 (2.5%)	0.51 (1.50)	0 (0-0)	0-22
8	148 (93.1%)	6 (3.8%)	3 (1.9%)	2 (1.3%)	0.22 (1.05)	0 (0-0)	0-11
9	114 (71.7%)	13 (8.2%)	9 (5.7%)	23 (14.5%)	1.54 (3.03)	0 (0-2)	0-48
10	144 (90.6%)	9 (5.7%)	1 (0.6%)	5 (3.1%)	0.36 (1.55)	0 (0-0)	0-12
11	147 (92.5%)	5 (3.1%)	3 (1.9%)	4 (2.5%)	0.31 (1.33)	0 (0-0)	0-10
12	145 (91.2%)	6 (3.8%)	4 (2.5%)	4 (2.5%)	0.31 (1.27)	0 (0-0)	0-10
13	156 (98.1%)	1 (0.6%)	0 (0%)	2 (1.3%)	0.08 (0.62)	0 (0-0)	0-6
14	153 (96.2%)	3 (1.9%)	1 (0.6%)	2 (1.3%)	0.13 (0.73)	0 (0-0)	0-6
15	157 (98.7%)	0 (0%)	1 (0.6%)	1 (0.6%)	0.06 (0.57)	0 (0-0)	0-6
16	148 (93.1%)	6 (3.8%)	1 (0.6%)	4 (2.5%)	0.26 (1.32)	0 (0-0)	0-10
17	149 (93.7%)	4 (2.5%)	2 (1.3%)	4 (2.5%)	0.24 (1.14)	0 (0-0)	0-10

Questions concerning the past six months: 1. How many partners have you engaged in sexual behavior with but not had sex with?; 2. How many times have you left a social event with someone you just met for the intention of having sexual intercourse?; 3. How many times have you picked up someone you did not know for "fun" in your car, or have you got in their car?; 4. How many times have you picked up someone you did not know with the intention of " sexual intercourse" in your car, or have you got in their car?; 5. How many times have you picked up someone you did not know in your car, or have you got in their car, which led to "sexual intercourse"?; 6. How many times have you gone to a party or social event with the intention of finding someone to have sex with?; 7. How many times have you had an unexpected sexual experience?; 8. How many times have you willingly had sex with someone but later regretted it?; 9. How many times have you had vaginal sex without using a condom?; 10. How many people have you had sex with without entering into an intimate relationship with them?; 11. How many times have you had sex with someone you did not know well, or someone you just met?; 12. How many times have you or your sexual partner used alcohol or drugs before or during sex?; 13. How many times have you had sex with a new sexual partner before discussing their sexual history, injecting drug use history, illnesses, and other current sexual partners?; 14. As far as you know, how many times have you had sex with someone who has had multiple sexual partners?; 15. How many times have you had sex without a condom with a person who has not been tested for AIDS or sexually transmitted diseases?; 16. How many people have you had sex with without trusting them?; 17. How many times have you had sex with someone who had sex with other people in the same period of time?

Ethics statement

This study was conducted in accordance with the principles outlined in the Declaration of Helsinki and was approved by the Iran University of Medical Sciences, School of Medicine, Institutional Research Ethics Committee, with the approval ID of "IR.IUMS.FMD.REC.1399.262". Informed consent was obtained from all the participants prior to their inclusion in the study. The study was designed to minimize any potential harm or discomfort to the participants, and confidentiality and anonymity were maintained throughout the study. Any data obtained from the study was used solely for research purposes and will not be disclosed to any unauthorized individuals or entities. The results of this study have the potential to advance scientific knowledge and contribute to the betterment of human health and wellbeing.

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Youth Risk Behavior Surveillance System (YRBSS)

The YRBSS evaluation results can be found in table 4. These results imply a relatively high prevalence of certain HRSBs, especially not using a condom during sex.

Sexual Risk Survey (SRS)

The participants' answers to the SRS evaluation and the related descriptive statistics can be found in table 5. The most prevalent behavior repeated at least four times during the last six months was having vaginal sex without a condom. Having sexual behaviors without a complete sexual intercourse was the most prevalent behavior overall, done by 72 (42.3%) patients once or twice during the last six months.

Discussion

In order to correctly appraise SDs in psychiatric patients, it is crucial to consider baseline sexual performance, psychiatric and other medical diagnoses, and concomitant pharmacotherapies. SD might accompany several psychiatric or physical disorders or even be their first symptom, markedly decreasing quality of life. Knowledge of the prevalence and mechanisms of SDs in psychiatric patients improves treating doctors' perspective toward such issues in these patients and eventually leads to an increase in the acceptance of treatment by patients.

Therefore, this study was conducted to assess the current state of SDs and HRSBs in female inpatients and outpatients of the Iran Psychiatry Hospital with severe psychiatric disorders using FSFI, YRBSS, and SRS evaluations. A total of 159 patients were evaluated throughout the study who were affected predominantly by B1D, followed by schizophrenia, and at last schizoaffective disorder. The patients were mainly in the 30-39 years old age group while single without a sexual partner, identifying as heterosexual. The following groups were 40-49 years old age group, marital status reported as married, one persistent sexual partner, and unsure about sexual preference. Approximately, a third of the patients were receiving particular antipsychotics or mood stabilizers, followed by sedative-hypnotics and anticonvulsants in more than a fourth, and anti-depressants in around a tenth.

Regarding SDs, Similar results to our FSFI evaluations have been reported in previous studies, stating that satisfaction with sexual life is generally lower in patients with psychiatric disorders compared with the general population (18,19). There can be multiple reasons causing these SDs. For example, typical antipsychotics and Selective Serotonin Reuptake Inhibitors (SSRIs), which have established negative impacts on sexual performance, were used by 38.4 and 8.8% of the patients, respectively. Using SSRIs was less frequent than expected due to not including the patients with Major Depressive Disorder (MDD) only. A study on patients with schizophrenia reported that SDs were more dominant in older female patients receiving first-generation antipsychotics (20). In another study, a significant correlation between the duration of treatment with antipsychotics and the severity of SD was reported. Notably, the strongest correlation was with amisulpride (21). Additionally, studies have demonstrated that SDs can affect patients with depressive disorders in 17-70% of cases (22) and schizophrenia in 30-80% of female and 45-80% of male patients (23). Thus, a part of SDs can be attributable to the pathophysiology of these disorders.

The results of YRBSS and SRS evaluations represented that certain HRSBs are rather prevalent among the patients, particularly having sex without using a condom or other effective contraceptive methods, sexual behaviors without complete sexual intercourse, unpredicted sexual relationships with inadequately known partners, using drugs or alcohol before sex, and being unsure about sexual orientation. The predominance of not using any contraception in the latest sexual relationship can be due to these patients' impaired judgment, poor knowledge, or the high prevalence of not using barriers generally in them. On the other hand, around a tenth of the patients used oral contraceptive pills, hormonal drugs, patches, and injectable contraceptives. These medications have severe interactions with carbamazepine and sodium valproate, which can eliminate the contraceptive effects. Therefore, educating these patients about safe sexual behaviors and the drug interactions is very important.

Around 4.4% of the patients have had sex with at least four persons in the last three months. It can be attributable to mood disorders such as manic episodes,

certain lifestyles such as being a sex worker, drug addictions, or baseline personality disorders. Other possible reasons include the relatively large number or insufficient understanding of questions, concrete thinking, and impaired cognition attributable to the disorder, medications, or recent Electroconvulsive Therapy (ECT). After all, these results are justifiable using the psychopathologic domains of the BPRS evaluation.

Previous studies have reported that more than 3% of patients with mental disorders are identified as homo- or bisexual (24). In contrast, none of the patients in our study were identified as homosexual, and 2.5% identified as bisexual. This difference can be due to the concreteness of the patients in our study or that they first had sex with men and then with women due to dissatisfaction. Also, there was no other accurate question regarding the sexual orientation of the patients in the questionnaires. Further interviews with well-planned questions could help with this issue. Interestingly, a study has reported that both bisexual women and men had significantly lower odds of complete mental health compared with respective heterosexual groups based on fully adjusted models. Nevertheless, there was no significant difference between the likelihood of complete mental health of homosexual and heterosexual women (25).

Although the frequencies of patients with psychiatric comorbidities and drug abuse were lower than expected, we ensured that all selected patients had severe psychiatric disorders through baseline interviews and evaluations. Other medical comorbidities were also less prevalent than expected, which can be due to the source population attending a single-specialty psychiatry hospital. Unfortunately, the source population and convenience sampling method can be sources of selection bias. The patients attending or especially hospitalized at a single-specialty psychiatry hospital may have relatively more severe and more diverse psychiatric disorders than similar patients attending multi-specialty hospitals. Moreover, answering questions concerning the patients' intimate life, particularly in Iran's cultural environment, can result in information bias. We addressed this issue by clearly guaranteeing the confidentiality of the answers in the interview with each patient. Ultimately, we recommend that more extensive studies in the form of multi-center, multi-group, long-term analytical observational or randomized interventional studies concerning the prevalence of SDs and HRSBs among patients with psychiatric disorders, the pathophysiologies behind these issues, and appropriate therapeutic approaches be conducted in the future.

Conclusion

Various SDs and HRSBs are more or less prevalent among patients with severe psychiatric disorders. The most and least widespread SDs were decreased sexual desire and pain. However, all evaluated SDs were highly common, which can be attributed to the pathophysiology of these disorders and the medications used to treat them. On the other hand, having sex without a barrier or effective contraception, using alcohol and drugs before sexual relationships, sexual behaviors without leading to complete intercourse, and impulsive sexual intercourse with inadequately known partners are some of the prevalent HRSBs. These behaviors can originate from impaired judgment, poor knowledge, or sexual characteristics of the disorders and support the need for further educating these patients concerning safe sexual behaviors and interactions of contraceptive medications with specific psychiatric pharmacotherapies. However, further studies are required so that the actual state of SDs and HRSBs in patients with psychiatric disorders will be better known and suitable therapeutic and educational methods can be developed accordingly.

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Conflict of Interest

The authors declare there is no conflict of interests, whatsoever.

References

1. Zemishlany Z, Weizman A. The impact of mental illness on sexual dysfunction. Adv Psychosom Med 2008;29:89–106.

2. Laumann EO, Paik A, Rosen RC. Sexual dysfunction in the United States: prevalence and predictors. J Am Med Assoc 1999;281(6):537-44.

3. Peuskens J, Sienaert P, De Hert M. Sexual dysfunction: the unspoken side effect of antipsychotics. Eur Psychiatry 1998;13(SUPPL.1):23–30.

4. Letourneau EJ, Schewe PA, Frueh BC. Preliminary evaluation of sexual problems in combat veterans with PTSD. J Trauma Stress 1997;10(1):125–32.

5. Osváth P, Fekete S, Vörös V, Vitrai J. Sexual dysfunction among patients treated with antidepressants - - a Hungarian retrospective study. Eur Psychiatry 2003;18(8):412–4.

6. Akhtar S, Thomson JA. Schizophrenia and sexuality: a review and a report of twelve unusual cases. Part I. J Clin Psychiatry 1980 Apr;41(4):134–42.

7. Jacobs P, Bobek SC. Sexual Needs of the Schizophrenic Client. Perspect Psychiatr Care 1991;27(1):15–20.

8. Connolly FH, Gittleson NL. The relationship between delusions of sexual change and olfactory and gustatory hallucinations in schizophrenia. Br J Psychiatry 1971;119(551):443–4.

9. Montejo AL, Montejo L, Baldwin DS. The impact of severe mental disorders and psychotropic medications on sexual health and its implications for clinical management. World Psychiatry 2018;17(1):3–11.

10. Feldman HA, Goldstein I, Hatzichristou DG, Krane RJ, McKinlay JB. Impotence and its medical and psychosocial correlates: results of the Massachusetts male aging study. J Urol 1994 Jan;151(1):54–61.

11. Fakhri A, Pakpour AH, Burri A, Morshedi H, Zeidi IM. The Female sexual function index: translation and validation of an Iranian version. J Sex Med 2012;9(2):514–23.

12. Rosen R, Brown C, Heiman J, Leiblum S, Meston C, Shabsigh R, et al. The female sexual function index (Fsfi): a multidimensional self-report instrument for the assessment of female sexual function. J Sex Marital Ther 2000;26(2):191–205.

13. Turchik JA, Garske JP. Measurement of sexual risk taking among college students. Arch Sex Behav 2009;38(6):936–48.

14. Brener ND, Kann L, McManus T, Kinchen SA, Sundberg EC, Ross JG. Reliability of the 1999 youth risk behavior survey questionnaire. J Adolesc Heal 2002;31(4):336–42.

15. Waldinger MD. Handbook of Clinical Neurology. 1st ed. Elsevier B.V.; 2015. Psychiatric disorders and sexual dysfunction; p. 469-89.

16. Kouhestani P. Psychometric evaluation of sexual assessment questionnaires including Sexual Addiction Screening Test - Revised (SAST-R), Sexual Risk Survey (SRS), Kinsey Rating Scale and related sections of Youth Risk Behavior Surveillance System (YRBSS). Iran University of Medical Sciences; 2019.

17. Overall JE, Gorham DR. The Brief Psychiatric Rating Scale. Psychol Rep 1962 Jun;10(3):799–812.

18. Laxhman N, Greenberg L, Priebe S. Satisfaction with sex life among patients with schizophrenia. Schizophr Res 2017;190:63–7.

19. Abdollahi E, Shokrgozar S, Sheerojan M, Golshahi M, Zare R. Relationship between sexual satisfaction and mental health in married older women. J Guilan Univ Med Sci 2021 Apr 1;30(1):14–27.

20. Hou CL, Zang Y, Rosen RC, Cai MY, Li Y, Jia FJ, et al. Sexual dysfunction and its impact on quality of life in Chinese patients with schizophrenia treated in primary care. Compr Psychiatry 2016;65:116–21.

21. Malik P, Kemmler G, Hummer M, Riecher-Roessler A, Kahn RS, Fleischhacker WW. Sexual dysfunction in first-episode schizophrenia patients: Results from european first episode schizophrenia trial. J Clin Psychopharmacol 2011;31(3):274–80.

22. Werneke U, Northey S, Bhugra D. Antidepressants and sexual dysfunction. Acta Psychiatr Scand 2006;114(6):384–97.

23. Baggaley M. Sexual dysfunction in schizophrenia: focus on recent evidence. Hum Psychopharmacol. 2008 Apr;23(3):201–9.

24. Semlyen J, King M, Varney J, Hagger-Johnson G. Sexual orientation and symptoms of common mental disorder or low wellbeing: Combined meta-analysis of 12 UK population health surveys. BMC Psychiatry 2016;16(1):1–9.

25. Gilmour H. Sexual orientation and complete mental health. Heal Rep 2019;30(11):3–10.