



Prevalence and Associated Factors of Sexual Dysfunction in Patients with Mental Illness Receiving Psychotropic Medication

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Abstract

Background: There has been an increase in the prevalence of sexual dysfunction in the general population especially among mentally ill patients. This seems to be neglected problem in low-income countries. This study aims at establishing the prevalence of sexual dysfunction and associated risk factors in mentally ill patients attended at psychiatric outpatient of Dessie Referral Hospital.

Method: Institution based cross sectional study was conducted at Dessie Referral Hospital. Interviewer administered questionnaire of socio demographic, morisky adherence questionnaire, PHQ-9, suicidal behavior assessment questionnaires and change in Sexual Functioning Questionnaires were used. Logistic regressions were used further analysis.

Result: Prevalence of global sexual dysfunction among patients with mentally illness is 58.2%. It is slightly more prevalent among males (64.1%) than that of females (50.8%). Age, marital status, current substance use, suicidal ideation, type of DSM-5 diagnosis, at least one history of relapse, non-adherence and current level of depression were significantly associated with sexual dysfunction.

Conclusion: We concluded that sexual dysfunction is highly prevalent among patients receiving psychotropic medication; as such inquiries about sexual function should be routinely carried out by clinicians decrease relapse rate and non-adherence as result, we may increase quality of life.

Keywords: Sexual dysfunction; Adherence; Psychotropic; Mental illness

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Abbreviations

CSFQ: Changes in Sexual Functioning Questionnaires; ED: Erectile Dysfunction; FSD: Female Sexual Dysfunction; MMAS: Massachusetts Male Aging Study; PHQ-9: Patients Health Questionnaire Nine; SCID: Structured Clinical Interview for DSMIV Axis Disorder; SD: Sexual Dysfunction; SMI: Severe Mental Illness; SPSS: Statistical Package of Social Science; USA: United States of America; SR: Sustained Release; XR: Extended Release; CI: Confidence Interval; OR: Odds Ratio; PRISMA-P: Preferred Reporting Items for Systematic Reviews and Meta-Analysis; WHO: World Health Organization

Introduction

Sexual dysfunction is extremely prevailing in psychiatric patients than general population and may be related to both the psychopathology and the pharmacotherapy [1]. The natures of the illness itself, for example in schizophrenia the negative symptoms like volition, anhedonia and blunted affect limit the capability for interpersonal and sexual relationships.

Unwanted effect of the medication they are taking for the illness (by effect on prolactin secretion and obesity) which limits the capability of forming interpersonal and sexual relationships [2]. The first-generation antipsychotics cause further deterioration in erectile and orgasmic function. Due to their weak antagonistic activity at D2 receptors, second-generation antipsychotics are associated with fewer sexual side effects, and thus may provide an option for schizophrenia patients with sexual dysfunction [3,4].

Therapeutic approach to sexual dysfunction in schizophrenia patients includes, adjusting medication to minimal effective dose, switching to atypical antipsychotics: (quetiapine, olanzapine, ziprasidone or clozapine), psychotherapy: (couple/family intervention to restore relationship), in

males, addition of a PDE-5 inhibitor [5,6].

From psychopathology depression and anxiety are a cause for sexual dysfunction that may be aggravated by antidepressants, especially Selective Serotonin Reuptake Inhibitors (SSRIs). Sexual dysfunction in various studies reported to affect from 25% to 78% of patients with unipolar depression, and its prevalence appears to be correlated with the severity of depression [7,8]. Another case control study on depressed cases and non-depressed control, the mean score on the SFQ was 20.5 for patients, 12.6 for normal controls and 21.5 for controls from the sexual dysfunction clinic [9]. Meta-analysis studies suggest that between 30% and 60% of SSRI-treated patients may experience some form of treatment-induced sexual dysfunction [10]. Among SSRI-induced sexual dysfunction spontaneous resolution may occur in some patients, but modifications to therapy can be employed to eliminate undesirable side effects, these include reducing drug dosages, altering timing of drug dosages, taking drug holidays, adding an adjunctive drug, and switching to alternative antidepressants [11,12]. One comparative study on newer and old antidepressants reported that, the prevalence of sexual dysfunction ranged from 7% to 30%, with the odds of having sexual dysfunction 4 to 6 times greater with SSRIs or venlafaxine XR than with bupropion SR [13].

Sexual dysfunction is also confirmed to have association with other psychiatric disorders and to their treatment modality like PTSD and related disorders, OCD and related disorders, eating disorders and personality disorders, mainly borderline personality disorder, are also associated with sexual dysfunction [2,14]. Sexual dysfunctions and their association with comorbid drug and alcohol use is also common with different sexual dysfunction components [15].

Sexual dysfunction in these cases stems from impaired interpersonal relationships and may respond to adequate psychosexual therapy. It is mandatory to identify the specific sexual dysfunction and to treat the patients according to his/her individual psychopathology, current pharmacotherapy and interpersonal relationships [16].

Sexual dysfunction has many effects on patients with psychiatric illness. It has direct or indirect association with quality of life, adherence, difficulty to form and manage family, and finally may develop suicidality [17].

Although sexual dysfunctions are frequently comorbid with many chronic diseases and their treatments, until recently, these dysfunctions have been neglected in both research and clinical practice. Despite the significance and high prevalence of the problem, this patient does not describe the problem either due to feeling of discomfort or for the reason that they do not view it as a treatable problem [18].

Psychiatrists and other specialists significantly undervalue or even neglect the prevalence of the problem probably due to embarrassment of talking about with patients, lack of time and viewing difficulties in this area as minor compared to psychotic symptoms. Due to these realities there are limited researches conducted in this country regarding sexual dysfunction and its influence on patients with mental illness in Ethiopia as well as study area.

Only one study we found in Ethiopia which were done only on schizophrenic patients, they showed that the prevalence of sexual dysfunction among schizophrenic male and female patients was 84.5

and 78.6% in Addis Ababa respectively [19].

So the current research assesses the prevalence and factors associated with sexual dysfunction among patients with mentally ill at DRH and this study will be used as a base line and referee for related stakeholders.

Methodology

Institutional based cross-sectional study was conducted from April 01st to May 07th, 2019 G.C. This study was conducted at Dessie referral hospital, Dessie town, South Wollo zone, North East Ethiopia. Dessie referral hospital is located 401 km north east of Addis Ababa with an altitude of 2,600 m. Dessie Referral Hospital currently serves as a referral ion of 5 to 7 million people around its area, specifically in its psychiatric OPD serves 1,045 patient per month still have no psychiatric beds. All patients with mental illness receiving psychotropic at least for the last one month and who were on follow up at Dessie referral hospital are the source populations. People with mental illness in the age group 18 & above who were on treatment psychotropic for greater than a month during the study period were the study population.

Patient with diagnosis of a sexual disorder before the start of psychotropic treatment, uncontrolled psychiatric disorder, diabetes mellitus; history of stroke, congestive heart failure, unstable cardiac condition, arrhythmia, or myocardial infarction within the last 6 months- Can cause sexual dysfunction, and current use of other therapies or medications to treat sexual dysfunction; and use of hormone therapy excluded from the study.

In this study, sample size is determined using single population proportion formula. 95% CI, 5% marginal error and 10% non-response rate were added to increase the power and compensate for non-response rate. A study conducted by taking proportion 50%, final sample size with non-response rate was 423.

Consecutive sampling technique will be used to select the participants of patients with mental illness came for follow up during data collection period.

Study variables

The outcome variable for this study was sexual dysfunction. Socio-demographic factors, duration of the illness, duration on treatment, medication, dosage and frequency, comorbid known chronic medical illness, history of admission and relapse, adherence to drug, suicide, depression and history of substance use were explanatory variables for this study.

Data collection

The data were collected through interview by administering structured questionnaires and by using gold standard instrument which was structured clinical interview for DSM-V-Axis I disorders (SCID) were used to confirm the diagnosis of mental illness. Sexual dysfunctions were measured by using Changes in Sexual Functioning Questionnaires (CSFQ-14). It has separate forms for female (CSFQ -F-C) and for Male (CSFQ-M-C) Clinical Version [20]. It contains 14 items and is use to assess the presence/absence of sexual dysfunction in study participants. The tool can also measure the sexual dysfunction components: Pleasure (Item 1), Desire/frequency (Item 2 and 3), Desire/interest (Item 4, 5 and 6), Arousal/erection (Item 7, 8 and 9) and Orgasm/ejaculation (Item 11, 12 and 13) and Internal consistency for CSFQ-14 was checked and demonstrated Cronbach's

Table 1: Distribution of participants by socio-demographic factors and clinical factors.

No	Variables	Variable category	Frequencies	Present (%)
1	sex	male	234	55.3
		female	189	44.7
2	age	18-24	28	6.6
		25-34	165	39
		35-44	119	28.1
		>45	111	26.2
3	Marital status	single	90	21.3
		married	244	57.7
		Divorced/windowed	89	21
4	Religion	orthodox	203	48
		Muslim	220	52
5	Educational status	Illiterate	42	9.9
		Read and write	194	45.9
		01-Aug	75	17.7
		09-Dec	56	13.2
		college and above	56	13.2
6	Occupation	Farmer	104	24.6
		Merchant	83	19.6
		Employed	139	32.9
		Jobless	55	13
		Other	42	9.9
7	Current living with	with family	409	96.7
		alone	14	3.3
8	Substance use	Current substance use	145	34.3
		chat	95	22.5
		cigar rete	14	3.3
		alcohol	8	1.9
		others	28	6.6
9	Current diagnosis	psychosis	231	54.6
		MDD	137	32.4
		BPD	55	13
		others		
10	Duration of the illness in year	≤ 5 years	395	93.4
		6-10 years	28	6.6
11	History of admission	0	395	93.4
		1	14	3.3
		2	14	3.3
12	History of relapse	0	395	93.4
		1	28	6.6
13	Type of current medications	Typical antipsychotics	161	38.1
		Atypical antipsychotics	84	19.9
		SSRI	40	9.5
		TCA	83	19.6
14	Dose of medication	less than therapeutic level	64	15.1
		Therapeutic level	345	81.6
		greater than therapeutic level	14	3.3

15	Frequency of medication intake	Morning	54	12.8
		Noct	355	83.9
		BID	14	3.3
17	Depression level	non depressed	264	62.4
		depressed	159	37.6
18	Drug adherence	low adherence	287	67.8
		good adherence	136	32.2
19	Suicidal behaviors	Suicidal ideation	110	26
		Suicidal attempt	82	19.4

NB: others=GAD, OCD and PTSD; mood stabilizers and benzodiazepine; daily laborer, student, cardiac, epilepsy, CKD

alpha of 0.92 and 0.83 for women and men respectively.

Dichotomous version of Morisky 8 item self-report scale will measure non adherence for treatment [21]. PHQ-9 used to measure depression in patients with schizophrenia. This instrument has sensitivity of 86% and specificity of 67% in diagnosing depression [22]. Suicidal ideation and attempts as well as substance use assessment also included in questionnaire. The English version of the instruments were translated to local Amharic language and back retranslated to English by language professionals and psychiatrists.

Data quality control

To assure quality of data, properly designed data collection tools were used. Pre-test has been conducted two days before the start of actual data collection to whether the questionnaire used is understandable to the study participants or not. Participants were informed about the objectives of the study and they were told about confidentiality. Data collectors cleaned and checked for completeness and consistency.

Data processing and analysis

First the collected data were checked for completeness and consistency, and stored in a secured place to maintain confidentiality and then coded. The coded data were entered into SPSS version 20 software program for analysis. Data were presented by using numbers, frequency, table, charts and figures. Logistic regression analyses were conducted to identify associated factors. Descriptive statistical analyses were used to estimate the frequencies and percentages of the variables. The strength of the association were measured by odds ratio with 95% CI and P-value less than 0.05 will considered as statistically significant.

Ethical consideration

Ethical clearances were obtained from the Institutional Review Board of Wollo University College of medicine and health science and an official letter of cooperation were obtained from Dessie Referral Hospitals. The study subjects were approached individually and give information regarding the purpose of the study and then written consent was obtained for the study and the four items Abbreviated Mental Test (AMT4) was used to measure the capacity of the patient to give consent. Then the importance and confidentiality of the information gather were explained to each of the competent participant before the start of interview.

Results

Descriptions of socio demographic variables

A total of 423 patients with mental illness participated on the study with response rate of 100%. Among the participants 234 (55.3%)

were male and 189 (44.7%) were female in gender. The mean age of the participants is 36.24 with ± 12.203 standard deviation. Majority of the participants 382 (90.3%) were married. The most frequently diagnosed disorder was psychosis 231 (54.6%) followed by major depression disorders 137 (32.4%).

Typical antipsychotics 161 (38.1%) followed by tricyclic antidepressants 83 (19.6%) is the most frequently prescribed drug among the medications ordered for psychiatric conditions. Most of the participants take their medications night time 355 (83.9%) and in the morning 54 (12.8%) (Table 1).

Description of behavioral factors among patient with mental illness

Among the study participants 145 (34.3%) are substance users, of these 95 (22.5%) use cigarette, 8 (1.9%) use alcohol and 14 (3.3%) use khat. Most of the participants' duration of illness is less than 5 years. Most of the participants 395 (93.4%) have no at least one history of admission (Table 1).

Prevalence of global sexual dysfunction among mentally ill

Prevalence of global sexual dysfunction among patients with mentally illness is 58.2%. It is slightly more prevalent among males (64.1%) than that of females (50.8%).

In each domain; prevalence of sexual pleasure and desire frequency problem among male mentally ill patients is higher; 29.5% and 29.1% respectively; and sexual orgasm/completion problem is lowest; 6%; than other domains (Figure 1). Sexual desire/frequency problem is the least prevalent; 41.3% for females domain of sexual dysfunction categories. Other domains are highly prevalent among female mentally ill patients. The prevalence in clinical variable was shown in Table 4.

Factors associated with sexual dysfunction among patient with mental illness

The binary logistic (crude analysis) was done separately for each gender on socio demographic variables (Age, marital status, occupation, educational status), clinical variables (type of diagnosis, psychotropic drugs, number of episodes, history of relapse, and duration of the illness) and behavioral variables (current alcohol use, khat use, cigarette use).

For both genders mentally ill patient's variables that found to be p-value of less than 0.25 in univariate logistic regression are taken in to multivariable logistic regression. In male mentally ill patients age, marital status, current substance use, type of DSM-5 diagnosis, at least one history of relapse, non-adherence and current level of depression

Table 2: Association between sexual dysfunctions and socio demographic, clinical and medication-related variables in male participants.

Explanatory variables	Variables category	Bivariate and Multivariate Analysis		P-Value
Age	18-34	1.139 (0.608-2.133)	1.160 (0.275-4.899)	0.030
	35-44	0.373 (0.175-0.796)	0.146 (0.477-5.677)	
	>45	1	1	
Marital status	single	2.780 (1.111-6.956)	1.671 (0.611-4.573)	0.018
	married	0.889 (0.433-1.827)	0.180 (0.033-2.394)	
	Divorced/widowed	1	1	
Substance	Current use	Yes	2.732 (1.406-5.309)	0.031
		No	1	
DSM-5 diagnosis	psychosis	1.018 (0.444-2.333)	4.122 (1.404-12.914)	0.010
	MDD	0.173 (0.068-0.439)	0.066 (0.024-1.942)	
	others	1	1	
Type of psychotropic	antipsychotics	1.625 (0.213-3.023)	1.023 (0.023-3.025)	0.568
	antidepressants	2.687 (1.023-4.258)	1.352 (1.102-5.025)	
	Other	1	1	
At least one history of relapse	yes	13.512 (1.784-15.361)	5.401 (3.178-7.903)	0.027
	No	1	1	
Adherence to treatment	Good	0.356 (0.179-0.710)	0.172 (0.072-0.438)	0.001
	Poor	1	1	
Current depression	Yes	4.036 (2.090-7.793)	2.128 (1.055-8.291)	
	No	1	1	

NB: others=GAD, OCD and PTSD; mood stabilizers and benzodiazepine

Table 3: Association between sexual dysfunctions and socio demographic, clinical and medication-related variables in female participants.

Explanatory variables	Variables category	Bivariate and Multivariate Analysis		P-Value
Age	18-34	2.876 (1.956-1.687)	5.914 (0.606-6.631)	0.026
	35-44	1.378 (1.023-2.743)	5.304 (1.037-11.144)	
	>45	1	1	
Marital status	single	2.780 (1.111-6.956)	1.495 (0.120-2.046)	0.033
	married	0.889 (0.433-1.827)	0.506 (0.090-1.530)	
	Divorced/widowed	1	1	
Current Substance use	Yes	2.53 (0.121-4.781)	1.845 (0.341-5.960)	0.043
	No	1	1	
DSM-5 diagnosis	psychosis	1.047 (0.821-2.021)	2.128 (0.985-5.036)	0.231
	MDD	1.273 (1.101-3.204)	0.635 (0.012-3.036)	
	others	1		
Type of psychotropic	antipsychotics	5.662 (2.230-11.023)	1.235 (0.312-5.032)	0.250
	antidepressants	1.256 (0.235-6.235)	2.354 (0.218-4.945)	
	Other	1		
Suicide Ideation	Yes	21.176 (7.633-58.753)	14.411 (11.388-19.186)	0.001
	No	1	1	
Adherence to treatment	Good	0.540 (0.129-0.960)	0.232 (0.012-0.928)	0.001
	Poor	1	1	
Current depression	yes	2.541 (1.370-4.713)	4.059 (1.184-13.918)	0.026
	No	1	1	

NB: others=GAD, OCD and PTSD; mood stabilizers and benzodiazepine

and in female mentally ill patients age, marital status, current substance use, suicidal ideation, non-adherence and current level of depression found to be significant in multiple logistic regressions (Table 2, 3). Furthermore as shown in Table 4 the cross tabulation

with the clinical variable shows significant association as well.

In male the odds of developing sexual dysfunction decreased by 85.4%; (AOR=0.146, 95% CI=0.477 to 5.677); among participants in

Table 4: Prevalence of SD among clinical variables in male and female mentally ill patients.

Clinical variables		Female			Male		
		Sexual dysfunction		p-value	Sexual dysfunction		p-value
		No	Yes		No	Yes	
DSM 5 diagnosis	psychosis	45.80%	54.20%	0.119	56.10%	43.90%	0.001
	MDD	64.30%	35.70%		85.30%	14.70%	
	others	51.90%	48.10%		45.10%	54.90%	
Adherence	Poor adherence	52.00%	48.00%	0.277	49.70%	50.30%	0.001
	Good adherence	35.70%	64.30%		64.10%	35.90%	
Type of psychotropic	antipsychotics	45.80%	54.20%	0.112	55.90%	44.10%	0.001
	antidepressant	64.30%	35.70%		0	100%	
	others	51.90%	48.10%		52.90%	47.10%	
Dose of psychotropic	Under therapeutic	27.80%	72.20%	0.003	50.00%	50.00%	0.001
	Therapeutic level	56.20%	43.80%		29.20%	70.80%	
Presence of medical illness	No	57.10%	42.90%	0.001	38.00%	62.00%	0.020
	Yes	14.30%	85.70%		0%	100.00%	
Current Substance use	No	55.70%	44.30%	0.086	58.10%	41.90%	0.003
	Yes	44.60%	55.40%		20.90%	79.10%	
Current depression symptoms	No	73.00%	27.00%	0.001	45.80%	54.20%	0.001
	Yes	19.20%	80.80%		17.30%	82.70%	

NB: others=GAD, OCD and PTSD; mood stabilizers and benzodiazepine

the age group 35 to 44. But it increased 1.160 times; (AOR=1.160, 95% CI=1.21 to 8.67); among the age group 18 to 34. In female the odds of developing sexual dysfunction increased by 5.914 times; (AOR=5.914, 95% CI=0.606 to 6.631) and 5.304 times; (AOR=5.304, 95% CI=1.037 to 11.144) in the age group 18 to 34 and 35 to 44 respectively.

The odds of developing sexual dysfunction is decreased by 49.4%; (AOR=0.506, 95% CI=0.090 to 1.530); and 82%; (AOR=0.180, 95% CI=0.033 to 2.394); among married participants in female and male respectively. But it is increased by 1.495 times (AOR=1.495, 95% CI=0.120 to 2.046) and 1.671 times (AOR=1.671, 95% CI=0.611 to 4.573) in single female and male participants respectively.

In the variable DSM-5 diagnosis, the odds of developing sexual dysfunction is increased 4.122; (AOR=4.122, 95% CI= (1.404 to 12.914)); times among patient with psychosis when it compared with the patient with GAD, OCD and PTSD in male participants and it was decreased by 93.4% (AOR=0.066; 95% CI=0.024 to 1.942) in patients with depression disorders when it compared with the patient with GAD, OCD and PTSD in male participants. But it has no significant association in female participants.

The odds of developing sexual dysfunction is 5.401; (AOR=5.401, 95% CI=3.178 to 7.903); times increased among patients having one history of relapse when it compared with people without history of relapse in male participants.

Patient with good psychotropic medication adherence decreases the odds of developing sexual dysfunction by 82.8% (AOR=0.172, 95% CI= (0.072 to 0.438)); and 77.8%; (AOR=0.232, 95% CI=0.012 to 0.928) in male and female participants respectively.

In both male and female participants, current (in the last one month) substance use increases the odds of developing sexual dysfunction by 1.685 times (AOR=1.685; 95% CI=0.648 to 4.380) and 1.845 times (AOR=1.845; 95% CI=0.341 to 5.960) respectively.

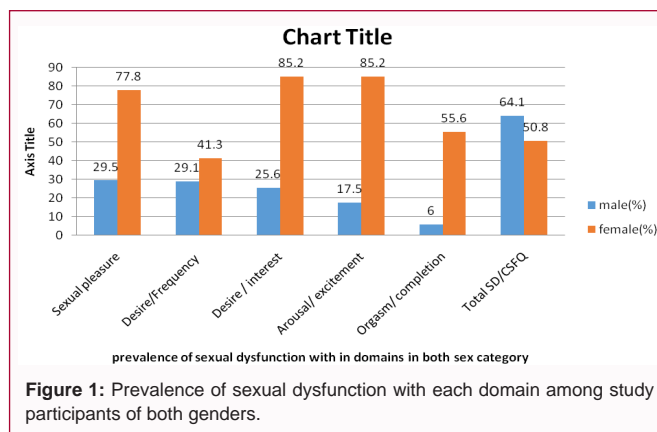


Figure 1: Prevalence of sexual dysfunction with each domain among study participants of both genders.

The odds of developing sexual dysfunction is increased by 2.128 times (AOR=2.128, 95% CI=1.055 to 8.291); and 4.059 times (AOR=4.059, 95% CI=1.184 to 13.918); among those who have current depressive symptoms in male and female patients respectively. In female suicidal ideation increases the odds developing sexual dysfunction by 14.411 times (AOR=14.411, 95% CI=11.388 to 19.186) which has no significant association in male participants.

However, in this study there is no significant association identified between the occupations, educational status, duration of illness, number of episodes, type of medication, comorbid medical illness, (Table 2, 3).

Discussion

Data presented in this paper revealed a sexual dysfunction prevalence rate of approximately 58.2%, regardless of gender, which was slightly more prevalent among males (64.1%) than that of females (50.8%). This result was consistent with earlier published reports [23].

This finding is lower when compared with the study conducted

in England (82% of men and 96% of women with schizophrenia) [24] and in Ethiopia general sexual dysfunction was 82.7%, in male and females 84.5 and 78.6% respectively [19]. The possible reason might be differences in; study design (those studies use case and control in England), and variance in socioeconomic characteristics of participants.

On the other hand our finding is slightly higher than study done in 2010 among psychotic patients (46%) [25]. The difference might be due to tool they used (PRSexDQ and SalSex), mental illness diagnosis that they used DSM IV and study subject's socio-demographic difference. In addition in this study they reported the prevalence across gender as, 50% in males and 37% females which is different from our finding.

In male mentally ill patients age, marital status, current substance use, type of DSM-5 diagnosis, having at least one history of relapse, non-adherence and current level of depression and in female mentally ill patients age, marital status, current substance use, suicidal ideation, non-adherence and current level of depression found to be significant in multiple logistic regressions.

Sexual dysfunctions were significantly associated with age, that the age group 18 to 44 years, as compared to greater than 45, increases sexual dysfunction in both genders. Which is consistent with other reports [26,27].

As it were reported by previous studies [28], higher incidence of sexual dysfunction was significantly associated with marital status of patients. Current finding shows; being single increases sexual dysfunction by 1.495 times in females and 1.671 times in males. This might be due to that patient with sexual dysfunction may not marry due fear of the dysfunction.

In line with other previous studies [29], current finding shows significant association with drug adherence and current level of depression. Sexual dysfunction has consequential effects on the affected person's sense of well-being, self-esteem and sexual relationships which intern affect adherence to drugs.

Current substance use also has significant association with sexual dysfunction in both genders. Which is consistent with previous studies [15]. This might be the outcome or cause for sexual dysfunction.

As other studies type of DSM-5 diagnosis and having history of relapse have significant association in males but not in females. And also suicidal ideation associate only in females. Possible reason might be number of patients with the above factors. In line with other studies [30,31], diagnosis of psychosis increases sexual dysfunction by 4.122 times. The possible explanation is patient with psychosis deserve to take antipsychotic; the mechanism by which antipsychotic drugs may cause sexual dysfunction includes histamine, dopamine, and cholinergic and α -adrenergic alpha receptors antagonisms.

Conclusion

Although the prevailing Ethiopian socio-cultural background presents silence in discussion of sexual behavior and function, the prevalence of medication-induced sexual dysfunction is quite high and impairing. Understanding both the impact of a disorder and the effects of its treatment on both the patient and their partner are critical to provide good clinical care. Thus it is important for all healthcare professionals to acknowledge and encourage discussion as well as the impact of drugs on sexual function for drug adherence

and safe solutions. More attention is warranted in this area as it may provide opportunities for improved quality of life and adherence to treatment for patients.

Strength and Limitations

The present findings must be interpreted mindful of study strengths and limitations. Strengths include recruitment of a large sample of male and female psychiatric outpatients. Use of research-quality psychiatric and substance use diagnoses; use of multiple markers of sexual risk assessed with a detailed and psychometrically-validated method. Several limitations should be noted. Research on sexual behavior involves the use of self-report, which can be affected by memory errors, social stigma, embarrassment, and other factors. Continued research is needed to understand better the psychological and social factors that increase the prevalence of sexual dysfunction among psychiatric patients with specific type of medication. Such research and dissemination efforts will benefit from partnerships among administrators, clinicians, and scientists working to promote the sexual as well as the mental health of psychiatric patients.

Declarations

Ethics approval and consent to participate

Ethical clearances were obtained from the institutional review board of Wollo University College of medicine and health science and an official letter of cooperation were obtained from Dessie Referral Hospitals. Four items Abbreviated Mental Test (AMT4) was used to measure the capacity of the patient to give consent. Then the purpose, importance and confidentiality of the information gathered were explained to each of the competent participant before the start of interview. Their willingness to participate in the study was asked and written consent was obtained.

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