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Sexual dysfunctions in a sample of male psychiatric patients compared to medically ill patients

Sameh I. Abdelatti¹, Reda M. Ismail² and Rania A. Hamed^{2*}

Abstract

Background: Many of the psychiatric disorders and other medical conditions may affect the sexual function of the patients. The present study aims to investigate the frequency of sexual dysfunctions in male psychiatric patients compared to other medically ill patients.

Results: Sexual dysfunction among psychiatric patients (51.2%) was significantly higher than among other medical patients (21%). Among the psychiatric patients, those with schizophrenia (75%) had the highest prevalence rate of sexual dysfunctions. The patients with bipolar disorders, depressive disorders, and anxiety disorders had the following rates respectively: 55%, 45%, and 30%. Among the other medical patients, those with the cardiac diseases (35%) had the highest prevalence rate of sexual dysfunctions. The patients with hepatic diseases, diabetes, urologic diseases, and respiratory diseases had the following rates respectively: 25%, 20%, 15%, and 10%. Prolactin level among psychiatric patients was significantly higher than among the other medical patients, while there was no significant difference between the psychiatric and other medical patients regarding total testosterone level.

Conclusion: Considering the significant relative frequency of sexual dysfunctions in psychiatric patients, more emphasis is recommended to be placed on the prevention and proper treatment of these disorders.

Background

Sexuality is more than a mere drive or instinct. Bonding with a sexual partner is a matter of far greater importance than just the gratification of lust [1].

Having pleasurable sexual intercourses plays a major role in marital life satisfaction [2]. Dissatisfaction of the couples in this respect may have the root of various physical, mental, and social problems. Also, many of the medical and psychiatric disorders may affect the sexual function of the patients [3].

The sexual relationship is a complex one, and the factors responsible for problems are not only quite numerous, but in most cases, multiple causes are present. They can be fairly crudely divided into three categories: physical factors, individual psychological factors, and relationship factors [4]. Many sexual problems that are psychological in nature stem from the self- and other-

evaluative component of sexual response (hence the common reference to sexual “performance”) [5].

Sexual dysfunction is common in people with schizophrenia and other psychotic disorders. It is known to affect all domains of sexual function, including desire, arousal, erection, ejaculation, and orgasm [6], and despite being known to be a major cause of poor quality of life and non-adherence to medication, it is generally underestimated, often neglected, and poorly managed [7]. So far, sexual dysfunction has been largely attributed to the deleterious effect of antipsychotic medication [8], although recent data suggest that it may be a consequence of the disease itself and may also be related to symptom severity [9].

Objectives

The present study aims to investigate the relative frequency of sexual dysfunctions in male psychiatric patients compared to other medically ill patients and to determine the underlying factors, also, to highlight the role of different psychiatric disorders and other medical

* Correspondence: drrania96@gmail.com

²Department of Psychiatry, Faculty of Medicine (for girls), Al-Azhar University, Cairo, Egypt

Full list of author information is available at the end of the article

Table 1 Sociodemographic data among patients of groups I and II

Sociodemographic data	Group I, N = 80	Group II, N = 100	Significance test	P value
Age range/years (mean \pm SD)	29–57 years (43.3 \pm 7.73)	34–58 years \pm 8.19)	Student's <i>t</i> test, <i>t</i> = 0.33	0.739 (N.S.)
Educational level			Chi-square test, χ^2 = 2.30	0.511 (N.S.)
Illiterate	10 (12.5%)	21 (21%)		
Read and write	22 (27.5%)	24 (24%)		
Middle education	35 (43.8%)	41 (41%)		
High education	13 (16.2%)	14 (14%)		
Occupation			Chi-square test, χ^2 = 4.26	0.115 (N.S.)
Jobless	41 (51.25%)	37 (37%)		
Manual workers	29 (36.25%)	51 (51%)		
Professional workers	10 (12.5%)	12 (12%)		

conditions in causing sexual dysfunctions in those patients.

Methods

Study design

This study is a descriptive-analytical cross-sectional study.

Site of the study

The study was carried out on a consecutive series of male psychiatric (group I) and other medical patients (group II) attending outpatient psychiatric clinics of the Abbassia Mental Health Hospital and patients attending cardiac, diabetic, hepatic, urologic, and respiratory outpatient clinics of the Al-Zahraa University Hospital. Both hospitals are in the same catchment area, located in eastern part of Cairo, Egypt.

Time of the study

The time of the study is during the period from May 2017 to November 2017.

Subjects

The study was carried out on two groups of male patients: group I included 80 psychiatric patients (20 patients with schizophrenia, 20 patients with bipolar disorders, 20 patients with depressive disorders, and 20 patients with anxiety disorders) (not co-morbid with another medical condition or substance abuse), and group II included 100 other medical patients (20 patients with

cardiac diseases, 20 patients with diabetes, 20 patients with hepatic diseases, 20 patients with urologic diseases, and 20 patients with respiratory diseases) (not co-morbid with psychiatric disorder or substance abuse).

The inclusion criteria included:

1. Male patients.
2. Ages from 18 to 65 years.
3. Married and cohabitating with their wives.
4. Those who provided written informed consent.

The exclusion criteria included:

1. Female patients.
2. Male patients who are single, widow, divorced, separated, or married but are not cohabitating with their wives.
3. Psychiatric patients with co-morbidity with other medical condition or substance abuse.
4. Medical patients with co-morbidity with psychiatric disorders or substance abuse.
5. Patients receiving other concurrent medications which are known to cause sexual dysfunction on regular basis, those taking phosphodiesterase inhibitors (e.g., sildenafil, tadalafil, and vardenafil) or any other drugs including hormonal preparations which could increase the desire or improve the level of sexual functioning.
6. Male patients whose spouse is suffering from sexual dysfunction (based on the history) due to any cause.

Table 2 Sexual dysfunctions among patients of group I and group II

IIEF Questionnaire	Group I, N = 80		Group II, N = 100		Significance test	P value
	N	%	N	%		
Sexual function	Normal	39	48.8	79	79	Chi-square test, χ^2 = 18.01
	Abnormal	41	51.2	21	21	

*Significant difference (*P* value < 0.05)

Table 3 Sexual dysfunctions among patients of group I (psychiatric patients)

IIEF Questionnaire		Group I (psychiatric patients)									
		N (number of patients) = 80									
		Schizophrenia, N = 20		Bipolar dis., N = 20		Depressive dis., N = 20		Anxiety dis., N = 20		Significance test (chi-square test)	P value
N	%	N	%	N	%	N	%				
Sexual function	Normal	5	25.0	9	45.0	11	55.0	14	70.0	$\chi^2 = 8.55$	0.036* (sig.)
	Abnormal	15	75.0	11	55.0	9	45.0	6	30.0		

*Significant difference (P value < 0.05)

7. Patients who were not able to give consent or respond the questions for different reasons including cognitive disorders.
8. Patients who refuse to give written informed consent were also excluded from our study.

Study size

A convenient sample of patients was selected and subsequently divided into two groups (psychiatric patients and medical patients).

Procedure

All patients included in the study were subjected to complete history (psychiatric and medical). Diagnosis of psychiatric disorders was done according to the criteria of DSM-5 American Psychiatric Association (2013). Diagnosis of other medical conditions was on the basis of medical history, physical examination, and investigations, wherever needed. Data collection tools were demographic data questionnaire including age, gender, level of education, occupation, type of mental and physical disorders, duration of illness, and compliance with medications.

All patients were subjected to International Index of Erectile Function (IIEF) Questionnaire [10], using the Arabic version [11]. The IIEF Questionnaire was developed to address the need for a self-report measure of both erectile function and sexual function that can be given under guidance of a clinician. The IIEF Questionnaire presents the quality of male sexual function in terms of five domain scores: erectile function, orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction.

All patients were also subjected to Sexual Behavior Questionnaire (SBQ) [12], using the Arabic version [13]. It is a self-completed gender-specific questionnaire. Eleven

questions cover four areas of sexual functioning: desire, arousal, performance, and satisfaction.

A blood sample was taken from every patient for assessment of serum prolactin and total testosterone level.

Statistical methods

Data collected were reviewed and coded, and the statistical analysis of collected data was done by using the SPSS program (Statistical Package of Social Science; SPSS Inc., Chicago, IL, USA) version 16 for Microsoft Windows.

Results

There were no statistically significant difference between both groups (psychiatric and other medical patients) as regards the age of the patients, educational level, and occupation (P value > 0.05), which means that both groups of patients were matched for sociodemographic data (Table 1).

Sexual dysfunction in the psychiatric patients (51.2%) was statistically significantly higher than in the other medical patients (21%) (P value < 0.05) (Table 2).

Among the patients of group I (psychiatric patients), sexual dysfunction in patients with schizophrenia (75%) was statistically significantly higher than in patients with bipolar disorders (55%), depressive disorders (45%), and anxiety disorders (30%) (P value < 0.05) (Table 3).

Among the patients of group II (other medical patients), sexual dysfunction in cardiac patients was (35%), in hepatic patients was (25%), in diabetic patients was (20%), in urologic patients was (15%), and in respiratory patients was (10%), with no statistically significant difference between them (P value > 0.05) (Table 4).

Table 4 Sexual dysfunctions among patients of group II (other medical patients)

IIEF Questionnaire		Group II (other medical patients)											
		N (number of patients) = 100											
		Cardiac dis., N = 20		Diabetes, N = 20		Hepatic dis., N = 20		Urologic dis., N = 20		Respiratory dis., N = 20		Significance test	P value
N	%	N	%	N	%	N	%	N	%				
Sexual function	Normal	13	65	16	80	15	75	17	85	18	90	Fisher's exact = 3.46	0.347 (N.S)
	Abnormal	7	35	4	20	5	25	3	15	2	10		

Table 5 Patterns of sexual functions among patients of group I and group II

IIEF Questionnaire		Group I, N = 80		Group II, N = 100		Chi-square test	P value
		N	%	N	%		
Erectile function	Normal	59	73.8	80	80	$\chi^2 = 0.99$	0.320 (N.S.)
	Abnormal	21	26.2	20	20		
Orgasmic function	Normal	39	48.8	82	82	$\chi^2 = 22.30$	0.000* (sig.)
	Abnormal	41	51.2	18	18		
Sexual desire	Normal	46	57.5	88	88	$\chi^2 = 21.73$	0.000* (sig.)
	Abnormal	34	42.5	12	12		
Intercourse satisfaction	Normal	39	48.8	79	79	$\chi^2 = 16.71$	0.000* (sig.)
	Abnormal	41	51.2	21	21		
Overall sexual satisfaction	Normal	39	48.8	79	79	$\chi^2 = 16.71$	0.000* (sig.)
	Abnormal	41	51.2	21	21		

*Significant difference (P value < 0.05)

Psychiatric patients had a statistically significant higher orgasmic dysfunction, sexual desire dysfunction, intercourse dissatisfaction, and overall sexual dissatisfaction than other medical patients (P value < 0.05), with no statistically significant difference between the patients of both groups as regards erectile dysfunction (P value > 0.05) (Table 5).

Among the patients of group I (psychiatric patients), patients with schizophrenia had a statistically significant higher orgasmic dysfunction, intercourse dissatisfaction, and overall sexual dissatisfaction than patients with bipolar disorders, depressive disorders, and anxiety disorders respectively (P value < 0.05), with no statistically significant difference between them as regards erectile dysfunction and sexual desire dysfunction (P value > 0.05) (Table 6).

Among the patients of group II (other medical patients), there was no statistically significant difference between them as regards erectile dysfunction, orgasmic dysfunction, sexual desire dysfunction, intercourse dissatisfaction, and overall sexual dissatisfaction (P value > 0.05) (Table 7).

Psychiatric patients had a statistically significant higher prolactin level than other medical patients (P value < 0.05), while there was no statistically significant difference between the patients of both groups as regards total testosterone level (P value > 0.05) (Table 8).

Among the patients of group I (psychiatric patients), patients with schizophrenia had a statistically significant higher prolactin level than patients with bipolar disorders, depressive disorders, and anxiety disorders (P value < 0.05), with no statistically significant difference between

Table 6 Patterns of sexual functions among patients of group I (psychiatric patients)

IIEF Questionnaire		Group I (psychiatric patients)								Significance test	P value
		N (number of patients) = 80									
		Schizophrenia, N = 20		Bipolar dis., N = 20		Depressive dis., N = 20		Anxiety dis., N = 20			
		N	%	N	%	N	%	N	%		
Erectile function	Normal	13	65.0	15	75.0	14	70.0	17	85.0	Fisher's exact = 2.26	0.520 (N.S.)
	Abnormal	7	35.0	5	25.0	6	30.0	3	15.0		
Orgasmic function	Normal	5	25.0	9	45.0	11	55.0	14	70.0	$\chi^2 = 8.55$	0.036* (sig.)
	Abnormal	15	75.0	11	55.0	9	45.0	6	30.0		
Sexual desire	Normal	8	40.0	11	55.0	12	60.0	15	75.0	$\chi^2 = 5.11$	0.164 (N.S.)
	Abnormal	12	60.0	9	45.0	8	40.0	5	25.0		
Intercourse satisfaction	Normal	5	25.0	9	45.0	11	55.0	14	70.0	$\chi^2 = 8.55$	0.036* (sig.)
	Abnormal	15	75.0	11	55.0	9	45.0	6	30.0		
Overall sexual satisfaction	Normal	5	25.0	9	45.0	11	55.0	14	70.0	$\chi^2 = 8.55$	0.036* (sig.)
	Abnormal	15	75.0	11	55.0	9	45.0	6	30.0		

*Significant difference (P value < 0.05)

Table 7 Patterns of sexual functions among patients of group II (other medical patients)

IIEF Questionnaire		Group II (other medical patients)										Significance test (Fisher's exact)	P value
		N (number of patients) = 100											
		Cardiac dis., N = 20		Diabetes, N = 20		Hepatic dis., N = 20		Urologic dis., N = 20		Respiratory dis., N = 20			
		N	%	N	%	N	%	N	%	N	%		
Erectile function	Normal	13	65	16	80	15	75	18	90	18	90	5.62	0.229 (N.S)
	Abnormal	7	35	4	20	5	25	2	10	2	10		
Orgasmic function	Normal	15	75	16	80	16	80	17	85	18	90	1.85	0.862 (N.S)
	Abnormal	5	25	4	20	4	20	3	15	2	10		
Sexual desire	Normal	17	85	17	85	17	85	18	90	19	95	1.51	0.824 (N.S)
	Abnormal	3	15	3	15	3	15	2	10	1	5		
Intercourse satisfaction	Normal	13	65	16	80	15	75	17	85	18	90	6.17	0.186 (N.S)
	Abnormal	7	35	4	20	5	25	3	15	2	10		
Overall sexual satisfaction	Normal	13	65	16	80	15	75	17	85	18	90	6.17	0.186 (N.S)
	Abnormal	7	35	4	20	5	25	3	15	2	10		

them as regards total testosterone level (P value > 0.05) (Table 9).

Among the patients of group II (other medical patients), there was no statistically significant difference between them as regards prolactin level and total testosterone level (P value > 0.05) (Table 10).

Psychiatric patients with sexual dysfunctions had a statistically significant increase in their ages more than psychiatric patients without sexual dysfunctions (Table 11).

Patients with sexual dysfunctions (either psychiatric or other medical patients) had a statistically significant longer duration of illness than patients without sexual dysfunctions, while compliance with medication was statistically non-significant (Table 12).

Patients with sexual dysfunctions (either psychiatric or other medical patients) had a statistically significant higher prolactin level than patients without sexual dysfunctions, while there was no statistically significant difference between patients with or without sexual dysfunctions as regards total testosterone level (Table 13).

Psychiatric patients with sexual dysfunctions had a statistically significant higher prolactin level than other medical patients with sexual dysfunctions (Table 14), while there was no statistically significant difference

between those patients as regards total testosterone level (Table 15).

Discussion

The aim of the present study was to determine the prevalence rate of sexual dysfunctions in male psychiatric patients in comparison with other medical patients. The results of the study were indicative of higher prevalence rate of sexual dysfunction in the psychiatric patients compared to those in the other medical patients. These results were in accord with the results of other studies, which have reported the prevalence rate of these dysfunctions to be higher in psychiatric patients [14].

The higher rate of sexual dysfunction in psychiatric patients is influenced by different factors such as the type of medical and mental illness together with the drugs used, marital and relationship problems between the patients and their spouses, and cultural and social issues [15].

As the causes of sexual dysfunctions are multifactorial and due to using different tools to measure these dysfunctions, the rate of these dysfunctions in various studies has been reported from 17 to 80% [16]. Moreover, other studies exert an increase in the prevalence rate of

Table 8 Hormonal levels among patients of group I and group II

Hormonal level		Group I, N = 80		Group II, N = 100		Chi-square test	P value
		N	%	N	%		
Prolactin	Normal	60	75.0	97	97	$\chi^2 = 19.30$	0.000* (sig.)
	High	20	25.0	3	3		
Total testosterone	Normal	78	97.5	99	99	$\chi^2 = 00.61$	0.434 (N.S.)
	Low	2	2.5	1	1		

Table 9 Hormonal levels among patients of group I (psychiatric patients)

Hormonal level	Group I (psychiatric patients)										Significance test (chi-square test)	P value
	N (number of patients) = 80											
	Schizophrenia, N = 20		Bipolar dis., N = 20		Depressive dis., N = 20		Anxiety dis., N = 20					
	N	%	N	%	N	%	N	%				
Prolactin	Normal	11	55.0	15	75.0	15	75.0	19	95.0	$\chi^2 = 8.53$		0.036* (sig.)
	High	9	45.0	5	25.0	5	25.0	1	5.0			
Total testosterone	Normal	19	95.0	19	95.0	20	100	20	100	$\chi^2 = 2.05$		0.561 (N.S.)
	Low	1	5.0	1	5.0	0	0.0	0	0.0			

*Significant difference (P value < 0.05)

mental disorders in those patients with sexual dysfunction [17].

In our study, the results revealed that the mean age (in years) of 47.26 ± 7.41 and 45.09 ± 9.22 had the highest rate of sexual dysfunction in psychiatric and other medical patients respectively. This was in accordance with other studies that have reported sexual dysfunction in the patients between 35 and 64 years old to be higher than in the patients between 18 and 34 years old [16]. This was consistent with other Egyptian studies: Habeeb who found that the sexual function is negatively correlated with age [18] and Mohammed who found that sexual function in patients with paranoid schizophrenia is affected negatively by sociodemographic factor (aging) [13].

It is noteworthy to mention that the patients included in our study were selected from the Abbassia Mental Health Hospital and Al-Zahraa University Hospital. Both hospitals offer their services to the patients of low socio-economic standards on a low price basis; this may reflect the high prevalence of patients with low education and low occupation in this study.

In this study, the results showed that psychiatric and other medical patients with sexual dysfunction had a statistically significant longer duration of illness than psychiatric and other medical patients without sexual dysfunctions (P value < 0.05). This finding is in agreement with Schover who stated that the patients who had chronic and long duration of illness often had difficulties in sexual functioning [17]. Egyptian studies were also supporting this finding:

Mohammed found that sexual function in patients with paranoid schizophrenia is affected negatively by long duration of illness [13], and Hashem et al. reported that long duration of schizophrenia may lead to sexual dysfunctions among schizophrenics [19].

In this study, we found that sexual dysfunction was significantly higher in the psychiatric patients (51.2%) than in the other medical patients (21%) (P value < 0.05). This finding is confirmed by other studies, where Bobes et al. reported that the prevalence of sexual dysfunction among psychiatric patients is higher in comparison to non-psychiatric patients and the general population [20]. Also, Van Lankveld and Grotjohann stated that psychiatric patients have significantly more sexual dysfunction than non-psychiatric patients and also more than in the general population [21].

In this work, the results revealed that among the psychiatric patients, those with schizophrenia (75%) had the highest prevalence rate of sexual dysfunctions. The patients with bipolar disorders, depressive disorders, and anxiety disorders had the following rates respectively. This result comes in accordance with the result of the study done by Fanta T et al. who reported that the overall sexual dysfunction among male schizophrenics was 84.5% [22]. Also, Smith et al. reported that 45% of schizophrenics taking conventional antipsychotic medications have sexual dysfunction [12].

These findings are supported with the findings of Macdonald et al. who found that at least one sexual

Table 10 Hormonal levels among patients of group II (other medical patients)

Hormonal level	Group II (other medical patients)										Significance test (chi-square test)	P value		
	N (number of patients) = 100													
	Cardiac dis., N = 20		Diabetes, N = 20		Hepatic dis., N = 20		Urologic dis., N = 20		Respiratory dis., N = 20					
	N	%	N	%	N	%	N	%	N	%				
Prolactin	Normal	18	90	20	100	19	95	20	100	20	100	$\chi^2 = 5.50$		0.347 (N.S.)
	High	2	10	0	0	1	5	0	0	0	0			
Total testosterone	Normal	20	100	20	100	19	95	20	100	20	100	$\chi^2 = 4.04$		0.347 (N.S.)
	Low	0	0	0	0	1	5	0	0	0	0			

Table 11 Correlation between age of patients and clinical scales (IIEF and SBQ) among patients of group I (psychiatric patients)

Age of patients	Group I (psychiatric patients)		Significance test (Student's <i>t</i> test)	<i>P</i> value
	<i>N</i> (number of patients) = 80			
	Psychiatric patients with sexual dysfunction (<i>N</i> = 41)	Psychiatric patients without sexual dysfunction (<i>N</i> = 39)		
Age/years (mean ± SD)	47.26 ± 7.41	39.41 ± 6.00	<i>t</i> = 5.03	0.000* (sig.)

*Significant difference (*P* value < 0.05)

dysfunction was reported by 82% of male schizophrenic patients [23].

The previous studies confirmed that sexual dysfunction is very common in patients with schizophrenia. This reflects another aspect of the poor quality of life led by many people with schizophrenia that should be addressed.

The high prevalence of sexual dysfunctions in patients with schizophrenia was proved by several studies to be the cause of sexual side effects of using antipsychotics in those patients. In this respect, McCreddie found that depot antipsychotic treatment resulted in sexual dysfunction [23]. Also, Atmaca et al. concluded that sexual dysfunction is an important problem in schizophrenics even with novel antipsychotics [24]. In a study done by Kockott and Pfeiffer to study sexual disorder in non-acute psychiatric patients, they found that schizophrenic patients on neuroleptic medications are most frequently affected, whereas schizophrenic patients not in medications have fewer dysfunctions [25].

The results of our study revealed that 60% of patients with schizophrenia had sexual desire dysfunction. This was consistent with the study done by [22] who reported that 62% of male chronic schizophrenics have reduced libido. The "disease-related" sexual desire reduction might be induced by an unknown underlying process, the patients' psychotic symptoms, or as part of the general loss of initiative and activity level (i.e., negative symptoms) [26].

Regarding the ejaculatory function, we found that 75% of patients with schizophrenia had ejaculatory dysfunction. This was consistent with the study of [22] who reported that 86% of male chronic schizophrenics had ejaculatory dysfunction. This emphasizes that direct questioning about sexual functioning including sexual side effects is necessary to avoid underestimating their frequency among the psychiatric patients.

In the present study, we found that 45% of patients with depressive disorders had sexual dysfunctions. This was in agreement with the study done by [27] who reported that 54% of depressed male patients have sexual dysfunction. Our results showed that 40% of patients with depressive disorders have sexual desire dysfunction. In this respect [27], reported that 37.03% of depressed male patients have lack of sexual desire. Also, the results of our study revealed that 30% of patients with depressive disorders had erectile dysfunction. This was consistent with the study done by [27] who reported that 22.22% of depressed male patients have lack of erection. This may lead us to advice the psychiatrists to bear this in mind, and they should ask about the sexual power before starting treatment and during follow-up and to reassure the patients if there is any problem.

In the present study, we found that 55% of patients with bipolar disorders had sexual dysfunctions. This comes in accordance with [28], who reported that the co-administration of benzodiazepines and lithium resulted in significantly higher rates of sexual dysfunction (49%) in bipolar patients. Additionally, in our study, the results showed that 30% of patients with anxiety disorders had ejaculatory dysfunctions. In this respect, [29] concluded that anxiety or fear of failing to meet a partner's expectations is one of the most common causes of premature ejaculation.

In the present study, we found that among the other medical patients, those with the cardiac diseases (35%) had the highest prevalence rate of sexual dysfunctions. The patients with hepatic diseases, diabetes, urologic diseases, and respiratory diseases had the following rates respectively. This was confirmed by Ahmadzadeh and Shahin who concluded that cardiac patients (37.1%) had

Table 12 Comparison of duration of illness and compliance with medications among psychiatric patients with sexual dysfunctions and other medical patients with sexual dysfunctions

Duration of illness and compliance with medications	Patients with sexual dysfunctions				Significance test	<i>P</i> value
	Psychiatric patients with sexual dysfunction (<i>N</i> = 41)		Other medical patients with sexual dysfunction (<i>N</i> = 21)			
Duration/years (mean ± SD)	15.68 ± 8.25		11.23 ± 3.16		<i>t</i> = 2.37	0.021* (sig.)
Compliant	39	95.1%	20	95.2%	Chi-square test, $\chi^2 = 0.00$	0.984 (N.S.)
Non-compliant	2	4.9%	1	4.8%		

*Significant difference (*P* value < 0.05)

Table 13 Comparison of hormonal levels among psychiatric patients with sexual dysfunctions and other medical patients with sexual dysfunctions

Hormonal level	Patients with sexual dysfunctions				Significance test (chi-square test)	P value	
	Psychiatric patients with sexual dysfunction (N = 41)		Other medical patients with sexual dysfunction (N = 21)				
	N	%	N	%			
Prolactin level	Normal	24	58.5	19	90.5	$\chi^2 = 6.66$	0.010* (sig.)
	High	17	41.5	2	9.5		
Total testosterone	Normal	39	95.1	20	95.2	$\chi^2 = 0.00$	0.984 (N.S.)
	Low	2	4.9	1	4.8		

*Significant difference (P value < 0.05)

the highest prevalence rate of sexual dysfunction among the patients in non-psychiatric wards [30].

Our study revealed that 35% of patients with cardiac diseases had erectile dysfunction. Consistently, data from several studies involving patients with cardiac disease have shown a high prevalence, 42–75%, of erectile dysfunction in this patient population [31]. Also, the results showed that 20% of diabetic patients had erectile dysfunction. This was in accordance with [32] who stated that the prevalence of erectile dysfunction among diabetic patients is 20–65%. Moreover, our results showed that 25% of patients with hepatic diseases had sexual dysfunctions. In this respect, we should mention that liver has a major role in sex hormone metabolism. In the present study, we found that 15% of patients with urologic diseases had sexual dysfunctions. This comes in accordance with the study done by [33] who stated that a common problem that remains difficult to diagnose and treat in patients with chronic renal failure is sexual dysfunction. Our study showed that 10% of patients with respiratory diseases had sexual dysfunction. Also, [34] found that 21% of men with COPD had erectile dysfunction. In fact, any chronic illness may be associated with sexual dysfunction.

In the present study, the results revealed that psychiatric patients with sexual dysfunction had statistically significant higher prolactin level than psychiatric patients

without sexual dysfunction. Also, we found that patients with schizophrenia (higher rate of sexual dysfunction) had statistically significant higher prolactin level than other psychiatric patients. These findings can prove that elevated prolactin level may cause sexual dysfunction. This is consistent with the study done by Bruno who reported that hyperprolactinemic patients reported significant degree of sexual dysfunction [35]. Hyperprolactinemic patients reported significant degree of sexual desire dysfunction, orgasm dysfunction, sexual satisfaction dysfunction, and low frequency of sexual intercourses which is supported with that hyperprolactinemia caused hypogonadism with suppressed LH and FSH levels and low testosterone levels.

In this study, we found no significant difference between psychiatric and other medical patients and between patients with and without sexual dysfunction as regards total testosterone level. This is contrary to [36] who reported that a component of the increased risk conferred by erectile dysfunction could be testosterone deficiency.

Limitations

This study was a cross-sectional one; the nature of this study limits the possibility to explore the cause and effect relationship between sexual dysfunctions and

Table 14 Comparison of total testosterone level among psychiatric patients with sexual dysfunctions and other medical patients with sexual dysfunctions

Hormonal level	Patients with sexual dysfunctions				Significance test (chi-square test)	P value	
	Psychiatric patients with sexual dysfunction (N = 41)		Other medical patients with sexual dysfunction (N = 21)				
	N	%	N	%			
Total testosterone	Normal	39	95.1	20	95.2	$\chi^2 = 0.00$	0.984 (N.S.)
	Low	2	4.9	1	4.8		

Table 15 Comparison of prolactin level among psychiatric patients with sexual dysfunctions and other medical patients with sexual dysfunctions

Hormonal level	Patients with sexual dysfunctions				Significance test (chi-square test)	P value	
	Psychiatric patients with sexual dysfunction (N = 41)		Other medical patients with sexual dysfunction (N = 21)				
	N	%	N	%			
Prolactin level	Normal	24	58.5	19	90.5	$\chi^2 = 6.66$	0.010* (sig.)
	High	17	41.5	2	9.5		

*Significant difference (P value < 0.05)

psychiatric diagnosis. Also, some subjects did not complete the International Index for Erectile Function (IIEF) Questionnaire and Sexual Behavior Questionnaire (SBQ) because of being considered as taboo and shies away from providing any information about sexual functioning.

Conclusion

The persistence of sexual problems has significant negative impact on patient's satisfaction and adherence with the treatment, quality of life, and partnership. Routine assessment of sexual functioning needs to be integrated into ongoing care to identify and address problems early. If sexual dysfunction is ignored, it may maintain the psychiatric disorder, compromise treatment outcome, and lead to non-adherence.

Abbreviations

IIEF: International Index of Erectile Function; SBQ: Sexual Behavior Questionnaire; SPSS: Statistical Package of Social Science

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Authors' contributions

SIA collected the patients' data and applied the scales. RMI designed the study. RAH analyzed and interpreted the patient data. All authors read and approved the final manuscript.

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Availability of data and materials

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Ethics approval and consent to participate

Patients were included in this study after giving written informed consent after explaining the nature and the aim of the study and the confidentiality of informations. Also, ethical issues and anonymity of patients' names were taken in consideration. The study was done consistent with good clinical practice and the Declaration of Helsinki and World Health Organization guidelines. The reference number is not available.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Author details

¹Abbasia Mental Health Hospital, Cairo, Egypt. ²Department of Psychiatry, Faculty of Medicine (for girls), Al-Azhar University, Cairo, Egypt.

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