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Sexual dysfunction and quality of life in female patients with major depression disorder

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Abstract

Background: Major depression can negatively affect different domains in patients' psychosexual life. Many females with depression have sexual dysfunction which goes under diagnosed leading to reduced sexual and overall health quality of life. The aim of this study is to evaluate the risk of sexual dysfunction, sexual quality of life, and general health quality of life in a sample of Egyptian females diagnosed with major depression compared to a control group.

Results: The sample consisted of 100 participants recruited by convenience sampling, divided into a case group (50 female patients diagnosed with major depression enrolled from our institute's outpatient clinic) and a control group (50 apparently healthy matched females enrolled from employees working in the university hospitals). Patients answered The Structured Clinical Interview for DSM-IV Axis I Disorders, the Female Sexual Function Index, the Sexual Quality Of Life-Female, and the WHO Quality of Life. Descriptive data analysis showed that all patients with major depression had a higher risk of sexual dysfunction compared to 36% in the control group, with higher rates of marital conflicts, unemployment, positive psychiatric family history and lower monthly income than those in controls. Correlation analysis showed a positive correlation between the sexual quality of life in the case group and the psychosexual feelings (emotional intimacy), self-worthlessness and the total score domains of the FSFI, and a positive correlation with psychosexual feelings, sexual relationship satisfaction, and self-worthlessness domains in the control group. Female sexual functioning scores were positively correlated with most of the WHO quality of life domains in the case group.

Conclusions: Female patients with major depression are distinctly prone to sexual dysfunction and marital problems that can lead to both defective sexual and overall health quality of life. This mandates thorough screening of the psychosocial risks of sexual dysfunction in patients with depression for early management and more satisfactory quality of life.

Keywords: Major depressive disorder, Sexual dysfunction, Quality of life, Females

Background

Major depressive disorder (MDD) is a disabling disease characterized by depressed mood, loss of interest, cognitive dysfunction, disturbed sleep or appetite, and daily function restriction [1]. The lifetime and 1 year prevalence of major depression disorder are estimated to be 14–17% and 4–8% respectively. Depression risk factors include female gender, being separated or divorced, experiencing child abuse or domestic violence, in addition to having comorbid diseases like obesity [2]. Women are found to have double lifetime prevalence of MDD (10–25%) than that in men (5–12%) [3]; which can be attributed to the higher incidence of hypothyroidism found in females considered as one of the main underlying causes

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of depression, the role of reproductive hormone changes in causing (premenstrual dysphoric disorder, depression during pregnancy, postpartum depressive conditions, and menopausal depression) [4], in addition to the social pressures pertained in women (such as family role stress, victimization, sex discrimination, internalization, restricted coping styles, unprivileged social opportunities, and culturally perceived stigma of mental illness) that can negatively influence the quality of women's relationships, career, and self actualization [5].

Symptoms constellation of MDD like anhedonia, lack of energy, lowered self-esteem, social withdrawal, and irritability can directly impair sexual functioning and satisfaction [6] besides having relationship difficulties and reduced physical or psychological well-being [7]. Sexual dysfunction can be also one of the somatic complaints in MDD like physical pain, distressed breathing, muscle tension [8] and headaches.

Depressive symptom severity can probably lead to any of the female sexual dysfunction patterns mainly hypoactive sexual desire disorder, female sexual arousal disorder and female orgasmic disorder [9], sexual aversion disorder, dyspareunia, vaginismus, and persistent genital arousal disorder [10] as well as reduced sexual quality of life which is defined as the subjective absence or presence of distressing sexual problems, sexual dissatisfaction and reduced sexual wellbeing [11]; this can be also attributed to the use of antidepressant and antipsychotic medication, the neurobiology and symptoms of depression [12], traumatic experiences, relational problems, and exposure to social stigmatization because of the illness [13].

Neurotransmitters and hormones involved in depression such as acetylcholine, nitric oxide, and dopamine that works on the mesolimbic reward system are the same ones operating the sexual response cycle and motivation for sexual intimacy in addition to serotonin that can reduce the sexual activity through (5HT)-type2 and 5-HT3 receptors and enhance it through 5HT1 receptors, as well as luteinizing hormones affecting the sexual response cycle through acting on the hypothalamus, limbic system and cortex [14].

A study revealed positive correlation between the severity of depressive symptoms and the experience of sexual pain ($P < 0.001$) [15], another study in Beni-Suef, found that 77.6% of 98 women with MDD reported sexual dysfunction especially dyspareunia, lubrication problems and female arousal disorder, with an inverse correlation between depression and sexuality scores ($P < 0.05$) [16]. In India, a research in Kerala, India, demonstrated an extensively high prevalence of sexual dysfunction risk using the Female Sexual Function Index (FSFI) in 90% of a sample of drug naïve female patients with MDD, among which patients with comorbid general medical illness had less sexual desire ($P = 0.009$), and patients who had passive death wishes encountered higher scores on better sexual functioning and orgasm ($P = 0.009$) [17]. In South Korea, a research found a positive correlation between the overall quality of life and sexual quality of life in 367 middle-aged females and negative correlation with depression [18], while a Canadian study estimated the prevalence of sexual dysfunction risk in females diagnosed with depression to be double that in the control group [9].

Female sexual functioning can be affected by many factors including the patient's psychological, cultural-ethnic, educational, and socio-economic statuses [19], as well as the reluctance of patients and some physicians in addressing such problems [20] except upon the spouse's request on facing sexual dissatisfaction [21] and this can affect the quality of life of many patients due to under diagnosis and delayed clinical management of their sexual problems; as enclosing sexual problems in the management plan can help in early remission of depressive symptoms [22].

Under-diagnosis of sexual dysfunction risk factors in female patients with depression can pose more stress on patients as well as risk of decreased quality of life, poor functioning, and worsening of depressive symptoms. Our research aimed to qualitatively measure the rate of occurrence of sexual dysfunction risk in a sample of Egyptian female patients diagnosed with major depressive disorder, and to investigate the sexual quality of life as well as the overall health quality of life compared to a control group, and to screen for sociodemographic predictors of risk of sexual dysfunction and decreased sexual quality of life for better understanding of the dilemma loop of risk factors of sexual dysfunction and the reduced quality of life found in patients with depression which can effectively help clinicians screen for the risk factor of sexual dysfunction in cases with depression putting into consideration the nature of sexual culture in female gender in the management plan. Our research posed questions on which sociodemographic variable can be a risk factor for female sexual dysfunction and reduced quality of life, if there is a high risk of sexual dysfunction found in Egyptian females with major depression, and whether there is a high risk of sexual dysfunction how can it affect both the sexual and overall health quality of life scores.

Methods

Study design

This is an observational cross-sectional, comparative study.

Sampling type

Non-random quota sampling.

Study setting

The sample was selected from Okasha Institute of Psychiatry, Faculty of Medicine, Ain Shams University Hospitals, Cairo, Egypt, from the outpatient clinics that work on Sundays and Wednesdays from 9 am to 12 pm, and they are located in Eastern Cairo and serve a catchments area of the third of The Capital Cairo. They also serve both urban and rural areas including areas around Great Cairo also.

Participants

Taking the cultural sensitivity of the nature of the research scales into consideration, the population size of the case group of female patients with MDD attending the outpatient clinic who could be willing to participate in the study was calculated as 50, with 95% confidence interval and 5% margin of error the ideal sample size was calculated as at least 45. A total of 100 participants were enrolled divided into two groups:

The case group

Consisting of 50 female patients selected from the outpatient psychiatry clinics, with age range 18–50, diagnosed with depressive disorders according to the Structured Clinical Interview for DSM-IV Axis I Disorders who were not on antidepressants for more than 1 month in order to exclude the effect of antidepressants on the sexual functioning. Patients who had any comorbid Axis I psychiatric disorders according to the Structured Clinical Interview for DSM-IV Axis I Disorders apart from depressive disorder (like substance abuse, psychosis, personality disorder) or any general medical illness or intake of medicine or drugs that lead to sexual dysfunction were excluded as well as current pregnant or lactating females or ones in perimenopausal period.

The control group

Consisting of 50 participants from employees working in the university hospitals (matched with the case group in sociodemographic data like age, residence, and education level), with no family history of psychiatric disorders and with no present history of any psychiatric disorders or general medical diseases or intake of medicine or drugs that can affect the sexual function or current pregnancy or lactation or menopause.

Procedure

Every participant was interviewed in one meeting taking around 2 h where socio-demographic data were gathered through completing a semi-structured psychiatric interview sheet, diagnosis of Major Depressive disorder was confirmed using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) held by the examiner. Then, the participant moved to complete the WHO quality of life questionnaire, the Female Sexual function Index by themselves while waiting in the lounge of the outpatient clinic, and finally the examiner helped the participant with answering the Sexual quality of life questionnaire alone in a private room in the OPC after explaining the aim of the questionnaire.

Measures

A semi-structured predesigned sheet

A semi-structured predesigned sheet including age, educational level (college, institute, technical, dropped school, illiterate), occupation (employed/unemployed), residence (rural/urban), current psychiatric history, current general medical history, current drug history, current presence of marital conflicts, and menstrual cycle history.

The general screening part of the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (Clinician version) [23]

We used the validated Arabic version [24]. It was answered prior enrolling in the study to confirm the diagnosis of MDD, to exclude any other psychiatric comorbidities in the patients group and to exclude any psychiatric disorder in the control group. It is a clinician-administered semi-structured interview for use with psychiatric patients or with non patient community participants undergoing evaluation for psychopathology. The scale takes around 2 h to be administered. It is divided into seven domains: mood, psychotic, substance use disorder, anxiety, somatoform, eating, and adjustment disorders. Moderate to excellent categorical inter-rater reliability of the test was evidenced. Categorical inter-rater testing showed moderate to excellent reliability of the SCID-I [25].

The Female Sexual Function Index (FSFI) [26]

The validated Arabic version was used [27]. We used it to assess the risk of sexual dysfunction patterns. It contains 19 self rating questions, it has been developed as a brief, multidimensional self-report instrument on six sexual dysfunction risks concerning: the desire, arousal, lubrication, orgasm, satisfaction, and pain, as well as a total score which determines the presence of risk of sexual dysfunction. On testing overall a study revealed high test-retest reliability coefficients ($r = 0.79$ to 0.86) in addition to high internal consistency scores (Cronbach's alpha values of 0.82 and higher) [26]. The scale has been validated on patients suffering from female sexual arousal disorder, female orgasmic disorder, and hypoactive sexual desire

disorder (HSDD). Scores less than 26.55 indicate having risk of sexual dysfunction [26].

The Sexual Quality Of Life-Female (SQOL-F) questionnaire [28]. We used it to highlight the effect of female sexual dysfunction on the patients' sexual quality of life. It consists of 18 questions covering four subscales (psychosexual feeling, sexual and relationship satisfaction, self-worthlessness, and sexual repression) where higher scores reflect better quality of sexual life. It was validated via three surveys in the UK and the USA on 82 females where it showed good convergent validity, discriminant validity, and test-retest reliability [28]. It takes about 5–10 min to be answered.

The WHO Quality of Life-BREF (WHO QOL-BREF) [29]

We used the Arabic version [30]. It is a 5-point Likert scale that consists of 26 items covering 4 categories throughout the previous 2 weeks concerning: the physical health, psychological health, social relationships, and environment with respect to one's culture, beliefs, goals, and concerns). Higher scores indicate better QOL. Good results were given on testing the test retest reliability, internal consistency, discriminant validity and content validity of the scale by the WHO [31].

Statistical analysis

Collected data were revised, coded, and tabulated using the Statistical package for Social Science (SPSS version 15.0 for windows; SPSS Inc, Chicago, IL, 2001). Data was presented and suitable analysis was done according to the type of data obtained for each parameter. Regarding descriptive statistics for quantitative data, we used the mean, standard deviation (±SD) for numerical data and frequency and percentage for non-numerical data. For analytical statistics, we used Student's *t* test to assess the statistical significance of the difference between normally distributed quantitative variables among two different groups. Chi-square test was used to examine the relationship between categorical qualitative variables in different groups compared (FSFI, Sexual and WHO QOL scales), variables were converted to quantitative variable by Likert scale. Qualitative data were described using number and percentage. Fisher's exact test to examine the relationship between two qualitative variables as a correction of the chi square test when more than 20% of cells have expected count less than 5. Logistic regression analysis is used to predict the odds of being a case based on the values of the independent variables (predictors), regression analysis was performed via the *t* test. And concerning correlation analysis (using *Pearson's method*): it was used to assess the strength of association between two normally distributed quantitative variables. The correlation coefficient defines the strength and direction of the linear relationship between two variables. The criterion for significance is set at $P < 0.05$ for all tests.

Results

Sociodemographic and clinical characteristics

Regarding the sociodemographic data; the mean age in years of the case group was 30 ± 4.9, compared to 32.8 ± 4.7 in the control. The majority of the sample participants ($n = 98$) were married, with only one separated and one divorced yet sexually active participants as per protocol. Half of the case group ($n = 25$) (50%) was unemployed, with ($n = 18$) 36%, ($n = 4$) 8%, and ($n = 3$) 6% having technical, clerical jobs and professional jobs respectively, and regarding the control group 40% were manual workers, while 28%, 18% and 14% had technical, clerical, and professional jobs. Both groups showed no statistically significant difference in such variable (age ($P = 0.05$), marital status ($P = 0.36$), job ($P = 0.2$)). Regarding the monthly income, 54% of cases and 44% of controls had inadequate income. And regarding the history of current marital conflicts, cases reported higher rate of marital conflicts (52%) compared to 12% in control. Both groups showed highly statistically significant difference in such variables ($P < 0.001$ for both).

The case group showed a higher rate of family history of psychiatric disorders (38%) and family history of general medical illnesses (82%) compared to 4% and 18% in the control respectively with a statistically significant difference in both variables ($P < 0.001$ for both) among the 2 groups. Regarding the menstrual cycle pattern, 86% of the case group had regular cycles while 14% had irregular ones, while all the control group participants had regular menstrual cycles.

Regarding the clinical history of MDD in the case group; the age of onset of illness ranged between 21 and 36 years of age (mean age = 27.88), the duration of illness ranged between 1 and 10 years where the number of MDD episodes ranged from 1 to 4 episodes. Only 12 participants declared receiving treatment for the past episodes while 38 participants stated that they did not receive any treatment before.

Comparing sexual dysfunction and sexual QOL between the case and control groups

For assessing the key dimensions of risk of sexual dysfunction in females based on the score of FSFI using the chi square test, those scoring (below 26.5) were categorized as having a risk of sexual dysfunction while those scoring (26.5 and more) were categorized as having no risk of sexual dysfunction (as shown in Tables 1 and 2). In response to a hypothesis question about the possibility of high risk of sexual dysfunction and its qualitative effect on the sexual quality of life, our results showed a

Table 1 Descriptive analysis of the age variable

Age of the patient	Groups	
	Cases	Controls
Range	22–40	27–43
Mean ± SD	30.34 ± 4.972	32.82 ± 4.775

statistical significant difference between the 2 groups where all the cases ($n = 50$) (100%) had a high risk of sexual dysfunction compared to ($n = 18$) (36%) of the controls. Results on the SQOL-F showed statistical significant differences across all domains between both groups; where the cases had lower results on all domains compared to the control as it was hypothesized. All cases had lower scores on the sexual and relationship satisfaction and sexual repression domains, ($n = 30$) (60%) of the cases had lower scores on psychosexual feelings, and ($n = 39$) (78%) had lower scores on self-worthlessness (as shown in Tables 1 and 2).

Comparing the WHO QOL scores between the case and control groups

In response to a posed question in hypothesis about the effect of high risk of female sexual dysfunction of the general quality of life, we found statistically significant differences between the 2 groups across all domains on the WHO quality of life scores using the chi square test where the cases showed statistically significant lower scores on all the 4 subscales than the controls (Table 3).

Logistic regression analysis of risk of female sexual dysfunction and sexual quality of life in relation to age variable

On logistic regression analysis, in answer to a posed question in hypothesis there was a statistically significant relation between the age variable in cases and the psychosexual feelings ($P = 0.001$), self-worthlessness ($P = 0.015$) and the total score domains of the SQOL-F (< 0.001), while the control had a statistically significant relation between age and sexual dysfunction risk ($P < 0.001$) using the Student's t test (Table 4).

Logistic regression analysis of risk of female sexual dysfunction and sexual quality of life in relation to marital conflicts variable

Using the Student t test, there was a statistically significant relation between marital conflicts in cases and risk of sexual dysfunction ($P = 0.002$) as well as all the SQOL-F domains (psychosexual feelings ($P = 0.033$), sexual and relationship satisfaction ($P = 0.051$)) and (self-worthlessness, sexual repression, and the total SQOL-F scores ($P < 0.001$) for all) (Table 5).

Correlation between risk of female sexual dysfunction and sexual and WHO quality of life

Using Pearson correlation test, FSFI scores in the case group were positively correlated with most domains of the WHO QOL and SQOL-F (meaning any risk of sexual dysfunction gives lower sexual and overall quality of life scores) except for the "social relationships" domain of the WHO QOL and the "sexual and relationship satisfaction"

Table 2 Descriptive analysis of the job, marital status, and marital conflicts variables

	Groups						Chi-square	
	Cases $N = 50$		Controls $N = 50$		Total			
	N	%	*N*	%	*N*	%	χ^2	*P* value
Job								
Unemployed	25	50%	20	40%	45	45%	4.5	0.2 NS
Technician	18	36%	14	28%	32	32%		
Clerical	4	8%	9	18%	13	13%		
Professional	3	6%	7	14%	10	10%		
Marital status								
Married	48	96%	50	100%	98	98%	2.04	0.36 NS
Separated	1	2%	0	0	1	1%		
Divorced	1	2%	0	0	1	1%		
Marital conflicts								
Present	26	52%	6	12%	32	32%	18.382	< 0.001*
Absent	24	48%	44	88%	68	68%		

Chi-square test was used

*Statistically significant ($P < 0.05$)

Table 3 The rate of distribution of FSFI and SQOL-F scores in the case and control groups

	Groups						Chi-square	
	Cases		Controls		Total			
	N	%	*N*	%	*N*	%	χ^2	*P* value
FSFI								
Sexual dysfunction	50	100%	18	36%	68	68%	47.059	< 0.001*
No sexual dysfunction	0	0	32	64%	32	32%		
SQOL-F								
Psychosexual feelings								
Low	30	60%	0	0	30	30%	42.857	< 0.001*
High	20	40%	50	100%	70	70%		
Sexual and relationship satisfaction								
Low	50	100%	0	0	50	50%	100.000	< 0.001*
High	0	0.	50	100%	50	50%		
Self-worthlessness								
Low	39	78%	0	0	39	39%	63.934	< 0.001*
High	11	22%	50	100%	61	61%		
Sexual repression								
Low	50	100%	0	0	50	50%	100.000	< 0.001*
High	0	0	50	100%	50	50%		
SQOL-F total								
Low	50	100%	0	0	50	50%	100.000	< 0.001*
High	0	0	50	100%	50	50%		

Chi-square test was used

*Statistically significant ($P < 0.05$)

Table 4 The rate of distribution of WHO QOL scores in the case and control groups

WHO QOL-domains	Groups						Chi-square	
	Cases		Controls		Total			
	N	%	*N*	%	*N*	%	χ^2	*P* value
Physical health								
Low	43	86%	7	14%	50	50%	51.840	< 0.001*
High	7	14%	43	86%	50	50%		
Psychological health								
Low	43	86%	5	10%	48	48%	57.853	< 0.001*
High	7	14%	45	90%	52	52%		
Social relationships								
Low	36	72%	9	18%	45	45%	29.455	< 0.001*
High	14	28%	41	82%	55	55%		
Environmental health								
Low	43	86%	17	34%	60	60%	28.167	< 0.001*
High	7	14%	33	66%	40	4		

Chi-square test was used

*Statistically significant ($P < 0.05$)

domain of the SQOL-F where there was no statistically significant correlation found. In the control group; there was a positive correlation between the FSFI scores and all domains of the WHO QOL and SQOL-F except for the "physical relationships" and "social relationships" domains of the WHO QOL and the "sexual repression"

Table 5 The relation between the age variable and both FSFI and SQOL-F scores

	Age of the participants			
	Cases		Controls	
	r	*P* value	*R*	*P* value
FSFI	0.036	0.804	− 0.556	< 0.001*
SQOL-F				
(Psychosexual feelings)	0.463	0.001*	0.185	0.199
(Sexual and relationship satisfaction)	0.135	0.349	− 0.054	0.707
(Self-worthlessness)	0.342	0.015*	− 0.226	0.114
(Sexual repression)	0.065	0.654	0.090	0.533
Total	0.561	< 0.001*	0.014	0.923

T test was used

*Statistically significant ($P < 0.05$)

domain of the SQOL-F where there was no statistically significant correlation found (Table 6).

Discussion

In this study, age and marital conflicts were found to predictors for sexual dysfunction risk in female patients diagnosed with MDD, with positive correlation between the risk for female sexual dysfunction scores and both the sexual and health quality of life scores. There is a bidirectional relation between major depression and sexual impairment [12] with 50–70% increased risk of sexual dysfunction in depression cases, also sexual dysfunction can lead to adjustment depression by 130–200% [32]. Furthermore, a study on women with depression revealed sexual dysfunction in 7% to 23% of them most commonly hypoactive sexual desire disorders and orgasmic disorders [33], thus a holistic biopsychosocial approach is recommended to investigate and treat various predictors of sexual disorders in females with depression [34].

Social and clinical data in the case group

Cases in our study had higher occurrence of positive psychiatric family history (38%), marital conflicts (52%), low monthly income (54%), and unemployment (50%) than those in the control group with a significant difference regarding all variables except employment ($P < 0.001$ for all), this might reflect the role of family stressors on the female spouses like marital disputes, financial insecurities, having no work life outside home for fulfillment and social support, besides the genetic overload for psychiatric issues. These results were in agreement with a study that outlined the role of social factors like marital conflicts in females with depression having a risk of sexual dysfunction [35].

Also 38% of our study cases did not receive any treatment, and this could explain the reluctance of seeking treatment that can contribute to the long standing sexual problems and decreased quality of life. Similarly, a study on 380 patients diagnosed with MDD found that twofold as many patients suffered from a recurrent rather

Table 6 The relation between history of current marital conflicts and both FSFI and SQOL-F scores

Groups	Marital conflict						*t* test	
	Yes			No				
	Mean	±	SD	Mean	±	SD	*t*	*P* value
Cases								
FSFI	16.323	±	4.235	20.154	±	3.883	− 3.325	0.002*
SQOL-F (psychosexual feelings)	21.808	±	7.684	25.708	±	4.268	− 2.193	0.033*
SQOL-F (sexual and relationship satisfaction)	8.346	±	2.607	10.417	±	4.539	− 1.997	0.051*
SQOL-F (self-worthlessness)	8.308	±	2.055	10.458	±	0.932	− 4.699	< 0.001*
SQOL-F (sexual repression)	7.000	±	0.000	7.708	±	0.550	− 6.572	< 0.001*
SQOL-F total	45.462	±	7.695	54.292	±	3.770	− 5.084	< 0.001*
Controls								
FSFI	26.317	±	1.798	26.573	±	3.574	− 0.171	0.865
SQOL-F (psychosexual feelings)	35.500	±	3.834	35.068	±	1.822	0.467	0.642
SQOL-F (sexual and relationship satisfaction)	26.667	±	1.506	26.523	±	2.215	0.154	0.879
SQOL-F (self-worthlessness)	15.000	±	0.000	15.114	±	1.434	− 0.192	0.848
SQOL-F (sexual repression)	16.833	±	1.329	15.977	±	1.067	1.792	0.079
SQOL-F total	94.000	±	6.573	92.682	±	4.893	0.595	0.555

t test was used

*Statistically significant ($P < 0.05$)

than a first-time depressive episode and did not take any treatment before [36]. Since patients do not frequently volunteer to report problems related to sexuality, and physicians rarely ask about such problems, therefore, assessing about and treating affected libido and sexual function in patients with depression can significantly improve their quality of life [37]. Furthermore, patients have difficulty discussing sexual dysfunction (decreased libido and anorgasmia) and acknowledging decreased libido may be particularly difficult due to social restrains and culture. Many patients under-report sexual problems caused by medications and they may acknowledge a decline in libido only if their partner complains [21].

The rate of distribution of risk of female sexual dysfunction in the study sample

Our findings revealed that all participating female patients with major depressive disorder have a higher risk of sexual dysfunction compared to 36% in the control group which could be explained by the major impact of dopamine/serotonin circuitry dysfunction and depressive symptoms like anhedonia, vegetative symptoms, and sad mood on the sexual cycle, this poses an alarming causality between depression and risk of sexual problems as depression can negatively affect the mood, pleasure intensity, self-confidence, and sexual interest [38]. Similarly, a research found that 40% of cases with MDD had female sexual dysfunction risk compared to 11.1% in controls [39]. Studies reported a riveting high incidence of sexual dysfunction risk in women with MDD [40–45] mainly as low desire (31.3%), low arousal (18.2%), low lubrication (4.8%), low orgasmic function (10.4%), low satisfaction (7.3%), and sexual pain (10.5%) [8]. Moreover, many studies found a significant negative correlation between severity of depression and domains of FSFI [46–48]. Another study found that depression shared in 44% and 83% of the total effect on the positive and negative trait affect respectively among other risk factors in females with sexual dysfunction [49] (Table 7).

Regarding the control group representing the population with no psychiatric disorders, our research demonstrated that 36% had sexual dysfunction risk which might be attributed to socioeconomic stress (like financial burden and any type of abuse from the husband's side) and/or cultural restrains (lack of awareness of sexual health and putting the sexual quality of life out of the list of daily priorities) as many patients under report sexual problems caused by medications or marital problems and they may acknowledge a decline in libido only if their partner complains And this calls for thorough assessment of sexual functioning by clinicians. Many of the women in this study reported that they engage in sexual activity because of spouse demands and to gain their husbands' approval and financial support. Husbands' choice of unsuitable time for sexual intercourse, and unfavorable socio-economic circumstances like lack of privacy and financial instability were reported as aggravating factors for their sexual dissatisfaction. A cross-sectional questionnaire survey on 936 women attending women health clinics in Lower Egypt found a higher prevalence (68.9%) of women with one or more sexual problems [50], while a study on women in Upper Egypt found that (76.9%) had sexual problems [51]. Those results emphasized the high prevalence of sexual problems even among healthy females in Egypt facing cultural constraints such as shyness, embarrassment and reluctances besides lack of physicians' awareness and training in treating sexual dysfunction that all can lead to inadequate identification and management of such problems. This highlights the importance of direct questioning about the sexual function as a part of the routine assessment tools used by psychiatrists and gynecologists investigating the sexual functioning.

Table 7 FSFI correlation with both WHO QOL and SQOL-F scores

	FSFI			
	Cases		Controls	
	r	*P* value	*r*	*P* value
WHO QOL				
Physical health	0.527	< 0.001*	0.202	0.159
Psychological health	0.524	< 0.001*	0.563	< 0.001*
Social relationship	0.239	0.094	0.006	0.967
Environmental health	0.275	0.053*	0.632	< 0.001*
SQOL-F				
Psychosexual feelings	0.303	0.033*	0.311	0.028*
Sexual and relationship satisfaction	0.091	0.530	0.445	0.001*
Self-worthlessness	0.316	0.025*	0.598	< 0.001*
Sexual repression	0.360	0.010*	0.187	0.193
SQOL-F total	0.414	0.003*	0.517	< 0.001*

Pearson correlation method was used

*Statistically significant ($P < 0.05$)

Sexual dysfunction in relation to quality of life

Regarding the sexual quality of life, our results demonstrated that the cases all having sexual dysfunction risk showed lower scores on most of the female sexual quality of life and the WHO quality of life scales compared to the control group with a highly statistically significant difference, which goes with a study that found that 42.8% of females reported high importance of sexual health to good sexual quality of life and that individuals with good sexual health had a significantly higher sexual satisfaction risk than their counterparts with sexual problems [52]. This can be explained by the notion that dissatisfactory

sexual activity can adversely affect the quality of relationships and vice versa [53], as well as the physical, psychological, and social well-being [32]. A study found that 94% of people in the USA declared that sexual pleasure has a strong link to high quality of life and stated that 15.4% of women with depression had to stop the antidepressants on suffering from sexual side effects [14]. Therefore it is mandatory to consider using more psychosexual scales for females, updated diagnostic systems for sexual disorders; ongoing researches on neurochemical and psychotherapeutic approaches in management of female sexual disorders, and greater educational awareness of the impact of FSD on the woman and her partner [54].

Conclusions

Sexual dysfunction and depression can be persistently distressing and can inevitably affect both the sexual and general health quality of life. As far as for our knowledge, this is one of few studies in Egypt highlighting the complex morbidity of high risk of sexual dysfunction in the female population and reduced sexual and general life aspects quality that warrants involvement of biological and psychological intervention in such group with respect to the sociocultural background of patients. So, since risk of female sexual dysfunction is underresearched in Egypt, therefore, this warrants its recognition as a significant public health concern, with the need of further epidemiological research. Finally, studies of physicians' awareness and competency in FSD are urgently needed as many physicians and other healthcare providers receive little or no formal training in this critical area.

Limitations

Our study has limitations regarding the small sample size that cannot be generalized, lack of assessing the spouse's sexual functioning, not using thorough socioeconomic stress scale and not considering assessing the relationship between the clinical characteristics of MDD (like the age of onset of symptoms, duration of illness, and number of episodes) and the presence of sexual dysfunction.

Abbreviations

MDD: Major Depression disorder; FSDI: Female Sexual Function Index; SCID-I: Structured Clinical Interview for DSM-IV Axis I Disorders; SQOL-F: Sexual Quality Of Life-Female; WHOQOL-BREF: WHO Quality of Life-BREF.

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Authors' contributions

M.F.E. conceived and designed the analysis, was involved in supervision of the work, and gave critical feedback. M. A. E. contributed to the designing the data analysis and implementation of the research, was involved in supervision of the work, and gave critical feedback. K. F. W. K. contributed to the data collection, designing of the figures, and contributed to the results interpretation. D. A. M. was involved in the supervision of the work, aided in results interpretation, and contributed to the manuscript writing. All authors read and approved the final manuscript.

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Availability of data and materials

All data generated or analyzed during this study are included in this published article.

Declarations

Ethics approval consent to participate

The research was approved by the Ethical Committee of the Department of Neurology and Psychiatry, Faculty of Medicine, Ain Shams University. A pilot study was carried out for a period of 1 month (mid-January 2017 till mid-February 2017) on 20 patients after obtaining informed written consent and being assured regarding confidentiality. Some problems were identified and had to be taken into consideration in the study proper including having to ask the patients to answer the scales alone either before the clinic time or outside the clinic in the lounge due to the sensitivity of the assessment questions. Also, despite the long interview time needed, it was better to be covered in one session to decrease the drop out and ensure the completion of the whole scales. A written informed consent that was approved by the Ethical Committee of the Department of Neurology and Psychiatry was obtained from all patients involved in the study after providing detailed explanation of the aim and procedure of the study. Confidentiality of the participants was ensured plus confirming that refusal to participate in the study cannot affect the medical service received.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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