

Sexual Dysfunction and Its Predictors among Male Patients with Epilepsy Attending Public Hospitals, East Ethiopia: A Cross-Sectional Study

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Abstract

Introduction: Sexual dysfunction is common Comorbid conditions in patients with epilepsy; however, its causes are complex and multifactorial. Nearly five fold increased risk compared to the general population. However, there is limited study that examined prevalence and determinants of sexual dysfunction among male epileptic patients.

Objective: To determine prevalence of Sexual Dysfunction and its predictors among male epileptic patient attending public hospitals, East Ethiopia.

Methods: An institutional-based cross-sectional study was conducted between May 15 - June 15, 2019 among 581 participants, who were selected using a systematic random sampling technique. A sexual dysfunction was measured by the Change in Sexual Functioning Questionnaires (CSFQ-M-C) Clinical Version. The association between outcome and independent variables was identified by bi-variable and multivariate logistic regression. Finally, variables with P-value less than 0.05 were considered statistically significant at 95% CI.

Results: The prevalence of global sexual dysfunction was 59.4 % with 95% CI - 57.6, 64.9. Factors like, age \geq 45 years (AOR - 5.43; 95% CI - 1.22, 7.18), uncontrolled seizure (AOR - 3.11; 95% CI-1.8, 5.29), current khatuse (AOR - 3.66, 95% CI - 2.21, 6.04) and psychological distress (AOR - 2.01; 95% CI - 1.19, 3.38) were significant predictors.

Conclusion: The question of sexual activity should be raised by health-care professionals as a routine part of the management of patients with epilepsy and needs to refer to psychiatry clinic accordingly.

Keywords: Sexual dysfunction; Male; Epilepsy; Ethiopiahamartomatous polyps

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Abbreviations: AED: Antiepileptic Drug; CSFQ-M-C: Changes in Sexual Function Questionnaires for Male Clinical; ED: Erectile Dysfunction; HADS: Hospital Anxiety and Depression Scale; HSDD: Hypo sexual Desire Disorder; SD: Sexual Dysfunction; SSQ: Social Support Questionnaire

Introduction

Epilepsy is a common neurologic disorder which is characterized by recurrent and unprovoked seizure [1]. It is one of the most common and widespread disorders that affect over 65 million people worldwide [2]. A study conducted in 5 African countries (Kenya, Tanzania, Uganda, Ghana, South Africa) revealed that the prevalence of epilepsy varies from 7 to 15 per 1000 people [3]. A systematic analysis of 32 studies in sub-Saharan Africa showed that 4.4 million people have active epilepsy in Sub-Saharan Africa, with a peak age of 20–29 year at 11.5/1000 [4,5].

The prevalence of epilepsy in Ethiopia is 5-8 cases per 1000

population with both incidence and prevalence was higher in males [6]. A study conducted among 912 Kenyans, showed that sexual dysfunction has a great impact on affecting the quality of life in both men and women patients with epilepsy [7]. A sexual dysfunction can be a disturbance in the subjective sense of pleasure or desire usually associated with sex, or by the objective performance [8,9]. It is more prevalent in males than in females [10]. Generally, prevalence is about 10% across all ages. The prevalence is over 50% in men between 50 and 70 years of age [11].

In a population based study, 21.15% of male and 14% of the

female has been diagnosed to have one or more sexual disorder. The prevalence of erectile dysfunction reported to be 15.77%, hypoactive sexual desire disorder reported 2.56%, premature ejaculation has been found to be 8.76% of the male, and associated with various demographic characteristics like age and educational status [11]. The prevalence of sexual dysfunction in men and women with epilepsy is, 30 to 66% and 14 to 50% respectively [12]. Hypo sexuality is the predominant syndrome, which is characterized by the loss of sexual desire, reduced sexual activity, and inhibited sexual arousal [12].

Studies showed that due to sexual problems, male patients have a lower marriage rate and have fewer children than expected [13]. Many studies showed that sexual dysfunction has a negative effect on marital function. A reported case study indicated that 75% of couples in marital therapy are not satisfied with their sexual life, and from the report in sexual therapy marital discord affects sexual function [14].

Erectile dysfunction is the persistent inability to attain and maintain an erection sufficient to permit satisfactory sexual performance. Although erectile dysfunction is a benign disorder, it affects physical and psychosocial health and has a significant impact on the quality of life of sufferers and their partners [15].

In more than 60% of men who complain about erectile dysfunction due to organic reasons, especially endothelial and metabolic dysfunction like hypertension, coronary heart disease, hypercholesterolemia and diabetes mellitus [16]. Other reasons for developing sexual dysfunction are age, lifestyle, alcohol- and nicotine-abuse, obesity and drug-induced side effects [17].

Abnormalities in sexual function are common comorbid condition in patients with epilepsy, the risk increased fivefold as compared to general population [18]. Disturbance in sexuality signifies a major limitation in the quality of life and may have harmful effects on nearly all areas of life, which is a very important indicator of the patients health status [19-25]. Despite this, there is no published study in Ethiopia among male patients with epilepsy, Therefore, this study aimed to determine prevalence and associated factors of sexual dysfunction among male patients with epilepsy.

Methods and Materials

Study design and setting

An institutional based cross-sectional study was conducted from May 15- June 15, 2019. In the east Ethiopia there are nine public hospitals. The study was conducted in the three selected public hospitals (*Hiwotfana specialized hospital*, Jegol and Dilchora hospital). Hiwotfana hospital is one of the teaching hospitals in the Eastern part of Ethiopia. It is located in Harar at 525 km from Addis Ababa. Hiwotfana hospital serves the eastern partial population as a referral hospital. Jegol hospital is allocated in the walled part of Harar city; Ras Mekonin established this hospital around 1904 EC. The Dire dawa Dilchora hospital is 47 km far away from Harari.

Study population

The study participants were selected from all male patients with epilepsy, who had follow up in the selected public hospitals. All

married and sexually active male patients with epilepsy were included in the study, whereas the male patients who had been unconscious, and unable to respond verbally were excluded.

Instruments

Structured interviewer administered questionnaire was used to measure, a socio-demographic questionnaire to assess the patients' background information. Substance-related factors used to assess substance use history of the patient; similarly, clinical factors were assessed by yes/no answers of respondents. Social support was measured by the Oslo-3 scale. It has the sum score scale ranging from 3–14 [21].

Sexual dysfunction was measured by using Changes in Sexual Functioning Questionnaires (CSFQ-M-C) Clinical Version. It contains 14 items and was used to assess the presence/absence of sexual dysfunction in the study participants. The questionnaire has scored five likert scales for answers, and all the 14 items were answered. Score of ≤ 47 (14 to 70) indicate global sexual dysfunction. The questionnaires contain pleasure (item 1), desire /frequency (item 2 & 3), desire/interest (item 4, 5 & 6), erection (item 7, 8 & 9), orgasmic/ejaculation (item 11, 12&13). The current study had Cronbach's α of 0.90 [23].

Psychological distress was measured by Kessler Psychological Distress Scale (K10), which score a total score of < 20 was considered normal; 20-24 mild distress; 25-29 moderate distress; and 30-50 severe distress with 5 possible responses for each question ranged from 'none of the time' (score 1) to 'all of the time' (score 5). In this study, the scores will be dichotomized into those who scored < 20 (absence of psychological distress) and those who scored ≥ 20 (presence of psychological distress) [22].

Current substance use: those participants used at least one of a specific substance for non-medical purpose within the last three months (alcohol, khat, tobacco, others). Data was collected using face to face interview methodes and chart review. Six male professional nurses for data collectors and supervised by three psychiatry nurses. The training was given for data collectors and supervisors.

Sample size determination and study procedures

Sample size was determined by using Single population proportion formula.

$$n = Z_{\alpha/2}^2 \times \frac{p(1-p)}{d^2}$$

$$n = 1.96^2 \times \frac{0.674(1-0.674)}{0.04^2} n = 528$$

Adding 10% non-response rate gives us a final sample size of 581

Where,

n= Minimum sample size required for the study

Z= Standard normal distribution (Z=1.96) with confidence interval of 95% and $\alpha=0.05$

P= Proportion of sexual dysfunction 67.4% was taken from a study which is done in Addis Ababa, Ethiopia in Amanuel mental

specialized hospital [24].

d= Absolute precision or tolerable margin of error (d) =4%=0.04

Concerning the sampling technique which was employed in the study was systematic random sampling. The study population comes from selected three public hospitals; these include, Hiwotfana, Jegol and Dilchora. Study population was selected proportionally, from each hospital (Figure 1).

Systematic random sampling was used to select study subjects from each hospital. The interval size (k) was calculated using the following formula.

$$k = \frac{N}{n}$$

$$k_1 = \frac{410}{205} = 2 \quad k_2 = \frac{140}{70} = 2 \quad k_3 = \frac{613}{306} = 2$$

Therefore, the interval size for each hospital was two. So that every two person was selected from the study population.

Where

N-Monthly population of selected hospitals

n- Sample size of each hospital (proportionally allocated)

Statistical analysis

Data was cleaned, coded and entered using Epidata version 3.1 and analyzed using SPSS-20 respectively. The descriptive data were summarized using tables. Associations of sexual dysfunction and factors were identified using logistic regression

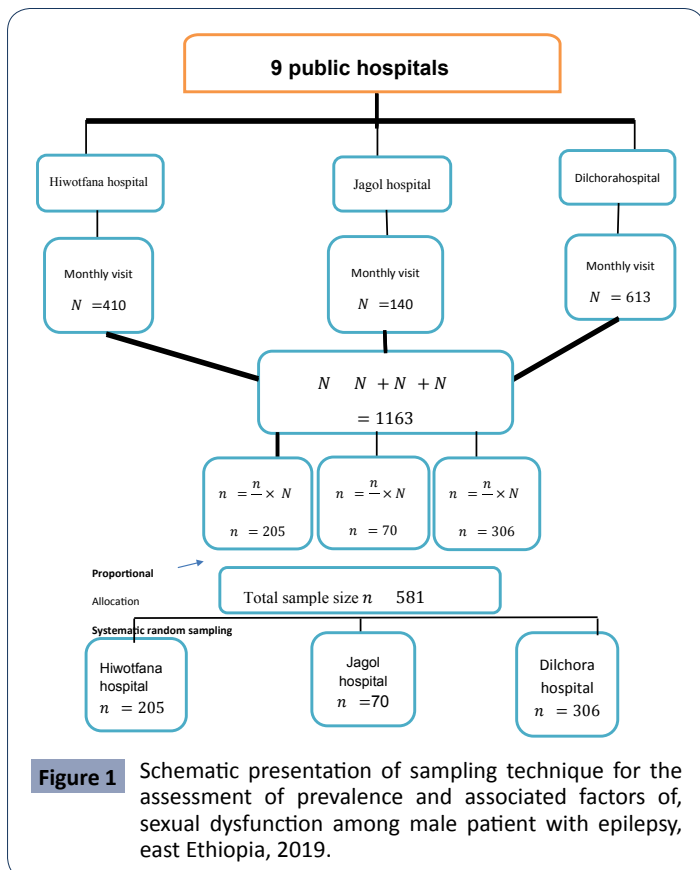


Figure 1 Schematic presentation of sampling technique for the assessment of prevalence and associated factors of sexual dysfunction among male patient with epilepsy, east Ethiopia, 2019.

analyses. Following each bi-variable regression, multivariable logistic regression model was constructed. P-value less than 0.05 were considered as statistically significant and the strength of association was determined using adjusted odds ratio (AOR) at 95% CI.

Results

Socio-demographic characteristics of the respondents

Of the total 581 study participants, 572 were interviewed yielding a response rate of 98.5%. Respondents' age ranged from 18 to 60 years with a median age of 31 years, with an inter quartile range of 12 years. 44.2% were in the age group of 25–34 years. About 42.7% of the respondents were single, 67% were Muslim followers, concerning occupation, 27.4% were farmers and 10.7% were not employed at the time of the study. Regarding educational status, 39.2% attended secondary school followed by primary school 34.4% (Table 1).

Table 1 Socio demographic characteristics of male patients with epilepsy at public hospitals, east Ethiopia, 2019 (n=572).

Variable	Frequency	Percentage
Age		
18 - 24	108	18.9
25 - 34	253	44.3
35 - 44	134	23.4
>=45	77	13.5
Religion		
Muslim	383	67.0
Orthodox	117	20.5
Protestant	72	12.6
Marital status		
widower	44	7.7
Married	463	80.9
Divorced	65	11.4
Ethnicity		
Oromo	226	39.5
Amhara	138	24.1
Harari	100	17.5
Somali	60	10.5
Others*	48	8.4
Educational status		
Not read & write	91	15.9
Primary	197	34.4
Secondary	224	39.2
College above	60	10.5
Occupation		
Farmer	157	27.4
Merchant	143	25.0
Employee	98	17.1
Unemployed	61	10.7
Student	67	11.9
Daily laborer	46	8.0

Others*=Debu, Gurage

Clinical characteristics of respondents

From a total of 572 respondents, 38.3% have been living with epilepsy for 6-10 years followed by 31.3% have been lived ≥ 11 years. Concerning the age of onset of epilepsy, 50.3% were found between age group of 20 – 29 years. The majority of the respondents, 57.9% had one or more seizure attacks per month, around 53.3% of patients with epilepsy were on polytherapy (two or more antiepileptic drugs). The most prescribed AED was 16.4% phenobarbitone (16.4%) followed by phenytoin (12.8%). Among the respondents, 4.9% and 6.5% had past mental illness and chronic medical illness respectively. Around 13.1% of epileptic patients had frequent relational problems with their partners (Table 2).

Table 2 Description of clinical factors among male patients with epilepsy visiting outpatient clinics at public hospitals, east Ethiopia, 2019(n=572).

Variables	Frequency	Percent (%)
Duration of illness		
≤5 years	174	30.4
6-10 years	219	38.3
≥11 years	179	31.3
Age at onset of illness		
10-19 years	87	32.7
20-29 years	288	50.3
≥30 years	97	17
Frequency of seizure		
≥1/month	331	57.9
1-3/year	166	29
Seizure free for year	75	13.1
Type of drugs		
One	267	46.7
≥two	305	53.3
Medication duration		
≤5 years	306	53.5
6-10 years	167	29.2
≥11 years	99	17.3
Family history of mental illness		
Yes	44	7.7
No	528	92.3
Chronic medical illness		
Yes	37	6.5
No	535	93.5
Past mental illness		
Yes	28	4.9
No	544	95.1
Types of seizure		
GTC	364	63.6
Partial/ complex partial	194	33.9
Absence	14	2.4
Controlled seizure		
Yes	222	38.8
No	350	61.2
Relational problem		
Yes	75	13.1
No	497	86.9
Psychological distress		
yes	318	55.6
No	254	44.4

Lifetime and current substance use among respondents

Around 75.9% of respondents had a history of current substance use. Among the participants 55.1% and 15.6%) were using khat and tobacco respectively (Table 3).

Prevalence of sexual dysfunction among patients with epilepsy

The prevalence of global sexual dysfunction was found to be 59.4 % with 95% CI of (57.6, 64.9)of the respondents.

Factors associated with sexual dysfunction among male patients with epilepsy

In multivariable analysis age, current chat use, uncontrolled seizure, and psychological distress were found to be significantly associated with sexual dysfunction at a p-value less than 0.05.

Concerning age, those ≥ 45 years were 5 times more likely to have sexual dysfunction compared to whose age less than 45 years AOR=5.43, 95% CI (1.22,7.18). The odds of having sexual dysfunction among participant with current khat users were about 3.59 times higher than responders who did not use khat(AOR=3.59, 95% CI 2.17, 5.93). Epileptic patient whose seizure was uncontrolled has 3 times more likely to develop sexual dysfunction as compared to controlled seizure (AOR=3.10, 95% CI 1.83, 5.29). The odds of having sexual dysfunction among respondents with psychological distress were 2 times higher as compared to respondents who did not have psychological distress (AOR=2.01, 95% CI 1.19, 3.38) (Table 4).

Discussion

In this study the prevalence of global sexual dysfunction was 59.4 % with 95% CI of (57.6, 64.9),which is in line with the study

Table 3 Substance use characteristics of participants among male patients with epilepsy visiting outpatient clinics at public hospitals, east Ethiopia, 2019(n=572).

Variables	Frequency	Percent
Ever used khat		
Yes	376	65.7
No	196	34.3
Ever used alcohol		
Yes	136	23.8
No	436	76.2
Ever used tobacco		
Yes	201	35.1
No	371	64.9
Current khat user		
Yes	315	55.1
No	257	44.9
Current alcohol user		
Yes	30	5.2
No	542	94.8
Current tobacco user		
Yes	89	15.6
No	483	84.4

Table 4 Bivariable and multivariable binary logistic regression analysis showing association between factors and sexual dysfunction among male patients with epilepsy visiting outpatient clinics public hospitals, east Ethiopia, 2019(N=572).

Explanatory variables	Sexual dysfunction		COR, (95% CI)	AOR, (95% CI)
	Yes(N)	No		
Age 18 – 24	58	50	1	1
25 – 34	171	82	1.79 (1.13, 2.85)	2.43(0.01,5.83)
35 - 44	101	33	2.63 (1.53, 4.55)	2.72(0.89, 8.23)
≥ 45	67	10	5.77(2.69, 12.41)	5.43(1.22, 7.18)**
Educational status				
Unable to read & write	73	18	3.79(1.84, 7.82)	3.50(0.16, 10.55)
Primary	156	41	3.56(1.93, 6.57)	2.58(1.05, 6.35)
9-12	137	87	1.47(0.83, 2.61)	1.60(0.68, 3.76)
College and above	31	29	1	1
Occupation				
Farmer	120	37	2.05(1.18, 3.55)	1.40(0.61, 3.17)
Merchant	98	43	1.47(0.85, 2.53)	1.08(0.51, 2.29)
Daily laborer	34	12	1.79(0.82, 3.88)	1.05(0.38,2.90)
Student	34	33	0.65(0.34, 1.22)	0.61(0.24, 1.53)
Unemployed	49	12	2.58(1.22,5.47)	1.82(0.70, 4.71)
Government employee	60	38	1	1
Social support				
Poor social support	186	65	3.36(1.66, 6.81)	5.51(0.95, 15.62)
Moderate social support	193	90	2.53(1.26,5.07)	2.27(0.81,6.31)
Strong social support	18	20	1	1
Current khat user				
Yes	257	58	3.70(2.54,5.39)	3.59(2.17,5.93)**
No	140	117	1	1
Psychological distress				
Yes	245	73	2.25(1.57, 3.24)	2.01(1.19,3.38)***
No	152	102	1	1
Chronic medical illness				
Yes	31	6	2.38(0.97,5.82)	0.53(0.14,1.93)
No	366	169	1	1
Age of onset of epilepsy				
10 – 19	116	71	3.36(1.66, 6.81)	1.37(0.76, 2.49)
20 - 29	207	81	2.53(1.26, 5.07)	0.91(0.32,2.58)
≥30	74	23	1	1
Duration of epilepsy				
≤5 year	100	74	1	1
6-10 year	149	70	1.57(1.04, 2.38)	1.17(0.55, 2.51)
≥ 11 year	148	31	3.53(2.16, 5.76)	1.35(0.43, 4.19)
Seizure frequency				
≥1/month	258	73	4.49(2.66, 7.60)	1.50(0.68, 3.32)
1 – 3 /year	106	60	2.25(1.29, 3.92)	1.23(0.53,2.85)
Seizure free/year	33	42	1	1
Seizure controlled				
Yes	129	93	1	1
No	268	82	2.35(1.63, 3.39)	3.11(1.83, 5.29)**
Seizure type				
Tonic-clonic seizure	249	114	3.94(1.29, 12.04)	3.08(0.59,16.12)
Partial/complex partial	142	52	4.91(1.57, 15.34)	2.34(0.44, 41)
Absence	6	9	1	1
Medication				
Monotherapy	158	109	1	1
Polytherapy	239	66	2.49(1.73, 3.60)	4.32(0.64, 11.38)
Treatment duration				

≤5 year	189	117	1	1
6 – 10 y	122	45	1.67(1.11, 2.53)	1.25(0.60, 2.61)
≥ 11 year	86	13	4.09(2.18, 7.66)	0.91(0.27, 3.02)
Antiepileptic drug				
phenobaribtone	44	50	1	1
Phenytoine	39	34	1.30(0.70, 2.40)	0.68(0.28, 1.62)
Carbamazepine	38	12	4.02(1.84, 8.80)	3.04(0.15, 7.99)
Sodium valproate	37	13	2.92(1.39, 6.11)	3.00(0.14, 7.88)

Chi square= 5; degree of freedom=8; Hosmer Lemeshow test= 0.726; AED=Anti Epleptic Drug

*p-value less than 0.05 **p-value less than 0.001

conducted in Norway reported 63.3% [26].

However, the result of this study is higher than the study conducted in Bangalore and Iran which was 38% and 42.5% respectively [27-29,30-34]. The possible reason for this significant difference may be explained by the difference in measurement instrument, which also excludes the patients with hypertension, DM, hyper or hypothyroidism, urologic disease and other known neurologic disorder and mental illnesses, whereas our study includes all except unconscious and unable to communicate [35-39].

In this study; age greater than 45 years were five times more likely to develop sexual dysfunction as compared to younger ones', which is supported by the study done in Addis Ababa [24] and Kenya [34,38]. This might be also due to hormonal changes resulted from decreased body function due to advanced age and enzyme inducing AED which might cause testosterone level depletion [28,30].

The study indicated that uncontrolled seizure was three times more likely to develop sexual dysfunction as compared to controlled seizure. This might be people with epilepsy had a much smaller increase in genital blood flow, a key factor in sexual arousal [39]. Men with epilepsy are known to have greater risk for erectile dysfunction and the side effect of AED also a risk for sexual dysfunction [34,35]. This finding is supported by the study conducted in Egypt [33].

In this study, having psychological distress was two times more likely to develop sexual dysfunction as compared to counterpart. This finding is supported by study conducted in the Japan [37]. The possible reason might be blood flow to the sex organ can be disturbed in persons with psychological distress due to neurochemical imbalance [36]. Regarding substance use; current khat user was 3.59 times more likely to develop sexual dysfunction as compared to non-users. This finding was supported by the study conducted in Amanuel mental specialized hospital [24]. The possible reason might be chewing khat is considered a cause of psychosis because khat contains some stimulating elements that may affect erectile dysfunction [31,32].

The strength of this study is; standardized tools were used to assess outcome variable and independent variables like psychological distress. Some of the limitations are social desirability bias due to sensitivity of the questionnaires; in addition, this study didn't identify specific type of sexual dysfunction and didn't compare control and case. This study only determines the prevalence and associated factors of global sexual dysfunction in male patients

with epilepsy.

Conclusion

The predictors for sexual dysfunction of male patients with epilepsy are; age, uncontrolled seizure, current khat use and psychological distress. The question of sexual activity should be raised by health-care professionals as a routine part of the management of patients with epilepsy and needs to refer to psychiatry clinic.

Declarations

Ethics Approval and Consent to Participate

Ethical approval was obtained from the Institutional Review Board of the College of Health Sciences of University of Gondar and Amanuel Mental Specialized Hospital. A formal letter of permission was obtained from zonal administrative office. Informed consent and assent was secured from each participant during the study period. Participants gave the written informed consent. After having adequate information about the study, the potential benefits had been provided. Participants who were found sexual dysfunction positive during the study, communication to the nearby psychiatric clinic was done in order to have further assessment of their condition

Consent for Publication

Not applicable

Availability of Data and Materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no competing interests.

Funding

Not applicable

Authors' Contributions

BS conceived the research idea, framed the methods, did the analysis, and wrote the final paper. SY, TF and AK participated in framing the method, data collection, and write-up. DM wrote the manuscript, framing the method and write-up. All the authors read and approved the final manuscript.

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