

Prevalence and associated factors of Female Sexual Dysfunction among Female Population in Aksum Town, Tigray Region, Ethiopia, 2019. A Community Based Cross Sectional Study

Gebreslasie Gebrezgabhier

Aksum University

Haftom Desta (✉ haftomdesta496@gmail.com)

Aksum University

Tesfay Berhe

Aksum University College of Health Science

Etsay Hailu

Aksum University

Fitsum Gebrehiwot

Aksum University

Yohannes Kifle

Aksum University

Research note

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Abstract

Objective : Female sexual dysfunction is age related, progressive and highly prevalent, affecting more than half of women in general population. A Community based cross sectional study was implemented from March to April 2019 and a total of 823 participants were interviewed. Data was entered using Epi-data version 3.1 and then exported to SPSS Version 20 for analysis. Bivariate and multivariate logistic regression analysis was carried out to assess the association. The p-value less than 0.05 found from multivariate logistic regression analysis was considered as statistically significant. The strength of the association was presented by odds ratio with 95% C.I and model fitness was checked by Hosmer-Lemeshow goodness and goodness fit was 0.086.

Result : A total of 823 women were completed the questionnaire with mean of Age and in this study the prevalence of Female sexual dysfunction was found to be 57.1% . Factors like , old age (AOR= 4 .12; 95% C.I:1.39, 12.22), being divorced (AOR=4.83; 95% C.I: 2.41, 9.66), widowed (AOR=3.28; 95% C.I:1.58, 6.80), single (AOR=6.24; 95% C.I: 2.22, 17.53), menopause (AOR=2.11; 95% C.I:1.06, 4.20), pill contraceptive (AOR=0.24; 95% C.I: 0.06, 0.95) were the factors associated with Female sexual dysfunction in the study area.

Introduction

Sexual dysfunction(SD) is termed as an inability to respond to sexual stimulation, or the experience of pain during the sexual act. It can also be defined as a disturbance in the subjective sense of pleasure or desire usually associated with sex, or by the objective performance[1-4]. The psychological and physiological impact of Medical problems such as diabetes mellitus, hypertension and cardiopathies are known to cause sexual dysfunctions. Complications of these chronic illness including neuropathy and vascular insufficiency have been implicated in decreased vaginal lubrication , orgasm dysfunction and decreased libido in women[5-12]. The other important thing is that. there is successful psychological and pharmacological management for female sexual dysfunction, so as to return their social, psychological , physical and reproductive wellbeing. Despite the available treatment, Peoples with sexual problem are rarely to be seen by their doctors. only 3.2% up to 13% are discussed with their doctors. The magnitude of sexual dysfunction in the community varies with different studies and countries. In a community survey of 436 women one over third (33%) of respondents had one operationally defined sexual dysfunction [13-21]. A prospective cohort study from Austria among 703 women shows the incidence of female sexual dysfunction; 22% reported on desire disorder, 35% arousal disorder, 39% orgasmic disorder and 12.8% reported pain disorder. A cross sectional study among 518 Turkish women showed that 48.3% women had reported female sexual dysfunction. Of the women with FSD 48.3% reported desire problem, 35.9% arousal problem, 40.9% lubrication problem, 42.7% orgasm problem, 45% satisfaction problem, and 42.9% pain problems [22-25]. A cross sectional study conducted among 586 Chinese women. The prevalence of FSD was 37.6% and domains showed; low desire in 37.6% of women, a desire disorder in 23.6%, an arousal problem in 25.4%, a lubrication problem in 36.8%, an orgasm problem in 30.6%, and a pain problem in 21.8%.[27] Another cross sectional study from Hong Kong reported that 37.9% of women

had one form of sexual dysfunction [26-28]. A study conducted among 2409 Iranian women showed that 31.5% of participants reported at least one form of sexual dysfunction. The main domain of FSD observed was orgasm disorder (37%), followed by desire disorder (35%), lubrication disorder (33.7%), satisfaction disorder (31.5), arousal disorder (30%), and pain disorder (26.7%) [15]. Another cross sectional study in urban Iran, among 1456 sexually active women, more than 52% of participants had experienced at least one type of sexual difficulty [29]. As per the study conducted in five Egyptian cities, 68.9% of women participants were reported one or more sexual dysfunction. [30]. A cross sectional study from Ghana reported that, the prevalence of female sexual dysfunction was 72.8% [14].

Methods

Study setting

The study was carried out in Aksum Town, Central zone of Tigray regional state of Ethiopia. Currently, Aksum serves as the capital of the central Zone of Tigray regional state. Based on the 2007 national census by the Central Statistical Agency, the town has a total population of 63,979, of whom 30,441 are men and 33,538 women.

Study design and population

This study was done using a Community-based cross-sectional study design from March to April 2019. Women who lived in Aksum Town and who were ages 18 years and above were included in the study and those with physical or mental illness were excluded from the study.

Sample size and sampling technique

The sample size of this study was calculated using a single proportion formula as follows:

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

Where

n= number of the study subjects (sample size)

Z=standardized normal distribution value for the 95% confidence level (1.96)

d=Margin of error taken (0.05)

p= 50% since there is no study conducted in the study area. Based on the above assumptions, by using of 2 design effect and 10% non-response, the final sample size becomes 845.

In this study Two Kebeles were randomly selected from the Five Kebeles of Aksum Town. Later, systematic sampling technique was being employed for selection of the participants. Study subjects were selecting every 7 House-holds until the sampled population fills. Selection of the first sample was taken through simple random lottery method.

Operational definition

- **Female sexual dysfunction;** are those women who are found to score <23 from FSFI was considered to have female sexual dysfunction. [31]
- **Physically exercise:** when subjects engaged in moderate activities at least 5 times per week, duration 30 minutes and/or vigorous activities at least 3 times per week, duration 20 minutes.[32]
- **SUBSTANCE USE**
- **Current use:** using at least one of a specific substance for non-medical purpose within the last three months (alcohol, khat, tobacco, others).
- **Ever use of substance:** using at least one of any specific substance for non-medical purpose at least once in life time (alcohol, khat, tobacco, others). [33]
- **Physical illness:** those respondents who were responded having chronic physical illness which was diagnosed before from any private and public health institution.[32]
- **Social support:** Assessed by Oslo social support scale (OSSS -3) was classified in to three levels.[34]
- **Menopause:**if women's age is ≥ 40 and lack of menses for 12 straight months in the absence of pregnancy were considered as menopause. [35]
- **Depression:** Those respondents who are found to score ≥ 10 in PHQ-9 were classified as having depression.[36].
- **Psychological distress;** assessed by Kessler psychological distress scale(K-10). [37]

- **Kebeles:** Small administrative unit in Ethiopia.

Data collection tools and procedure

A structured, pretested and quantitative interviewer administered questionnaire was adopted by reviewing different literatures. The questionnaire was prepared in English and

then translated in to Tigrigna version and then translated back to English for its consistency and completeness.

To maintain data quality, data were collected by Female BSc psychiatric nurses and MSc in Psychiatry supervisors. Both of data collectors and supervisors were trained for two days to ensure the quality of data including clarification of questions to make simple and easily understandable, to use recommended ways of sampling technique and to inform the study subjects based on the consent. Seven female BSc psychiatric nurses were assigned to collect data by face to face interview. Four MSc in Psychiatry supervised the data collector's and they had been communicated daily with the authors. The questionnaire was tested for its clarity, consistency and unambiguous and appropriate modification had done based on findings. Supervisors and authors were strictly followed the data collection process and filled questionnaire were reviewed daily for completeness and consistency.

Data processing and analysis procedures

The data were entered, cleaned and coded using Epi-data version 3.1 and data analysis was done using SPSS version 20. It was described using frequency tables and descriptive statistics. The association between dependent and independent factors was analyzed using binary logistic regression analysis with crude Odds Ratio along with 95% confidence interval, then these factors with $P\text{-value} < 0.25$ analyzed using multivariate logistic regression analysis to determine the associated factors with Female Sexual Dysfunction and to control confounding factors. In multivariate analysis, variables having $p\text{-value}$ less than 0.05 and adjusted odds ratio with 95% CI were considered as significantly associated with the outcome variables.

Results

Socio-demographic characteristics of respondents

In this study; majority of the participants were Tigrean (98.1%), Ethiopian orthodox religion followers (82.7%), and married (73.8%). More than thirty percents of the participants were in the age group of 28-37 (32.7%), about thirty seven percents were unable to read and write, about half of the respondents were house wife, more than half were below poverty line, nearly seventy percents were currently in active menstruation, about half of the respondents had 1-5 children, about sixty percent were not used contraceptive (Table 1).

Table 1 The socio-demographic status of study participants in Aksum city, Tigray, Ethiopia, 2019.

Variables	Category	frequency	Percent
Age	18-27	122	14.8
	28-37	269	32.7
	38-47	156	19.0
	48-57	150	18.2
	>57	126	15.3
Ethnicity	Tigrean	807	98.1
	Other	16	1.9
Religion	orthodox Christian	681	82.7
	Muslim	127	15.4
	protestant Christian	15	1.8
Marital status	Married	607	73.8
	Divorced	81	9.8
	Widowed	102	12.4
	Single	33	4.0
Educational status	unable to read and write	306	37.2
	1-8	194	23.6
	9-12	150	18.2
	collage and above	173	21.0
Job	Government employee	132	16.0
	Merchant	227	27.6
	House wife	420	51.0
	Other	44	5.3
Income	below poverty line	471	57.2
	above poverty line	352	42.8
menstrual status	On Menopause	252	30.6
	On menstrual cycle	571	69.4
Number of children	None	145	17.6
	1-5	425	51.6

	6-10	163	19.8
	>10	90	10.9
Contraceptive use	No	501	60.9
	Pill	51	6.2
	Depo	146	17.7
	Implant	112	13.6
	Intra uterine device	13	1.6
Medical illness	No	619	75.2
	DM	109	13.2
	CHD	24	2.9
	Hypertension	57	6.9
	Other	14	1.7

Substance use conditions of respondents

Out of the total study participants, 403(49.3%) had used substance at least once during their life time and 399(48.5%) were taking at least one type of substances in the last three months before their study participation .

Psycho-social conditions of study participants

Among study participants, about 44% were reported poor social support, more than 60% of respondents had depression, and 23.5% had severe mental distress (Table 2).

Table 2 psycho-social conditions of study participants in Aksum city, Tigray, Ethiopia, 2019.

Variables	Category	Frequency	Percent
Level of social support	poor social support	362	44
	moderate social support	305	37.1
	strong social support	156	18.9
Depression	no depression	518	62.9
	Depression	305	37.1
Psychological distress	likely well	494	60.0
	mild mental disorder	69	8.4
	moderate mental disorder	67	8.1
	severe mental disorder	193	23.5

Medication related conditions of study participants

In this study thirty six women were reported history of sexual disorder prior to the current episode, twenty of them were reported medication use. About 37% of respondents thought that psychological support is important for sexual dysfunction.

Prevalence of sexual dysfunction

The prevalence of sexual dysfunction among women residents in Aksum city was found to be 57.1% (95% C.I: 53.7, 60.6).

Factors associated with female sexual dysfunction

After the bivariate logistic regression, multivariate logistic regression was employed to identify the independent predictors of sexual function in female. Accordingly, older age (AOR=4.12; 95% C.I:1.39, 12.22), being divorced (AOR=4.83; 95% C.I: 2.41, 9.66), widowed (AOR=3.28; 95% C.I:1.58, 6.80), single (AOR=6.24; 95% C.I: 2.22, 17.53), menopause (AOR=2.11; 95% C.I:1.06,4.20), pill contraceptive use (AOR=0.24; 95% C.I: 0.06, 0.95), and depression (AOR=2.57; 95% C.I: 1.58, 4.20) were found to be significantly associated with female sexual dysfunction(Table 3).

Table 3 : bivariate and multivariate logistic regression analysis of factors associated with female sexual dysfunctions, among women respondents of Aksum city, Tigray, Ethiopia, 2019.

Variable	Category	Sexual dysfunction		COR	AOR
		No	Yes		
Age	18-27	63	59	1	1
	28=37	173	96	.59(.38,0.91)	.088(.050,1.55)
	38-47	65	91	1.49(0.93, 2.41)	1.58(0.82,3.03)
	48-57	41	109	2.84(1.71, 4.70)	1.29(0.55,3.01)
	>57	11	115	11.16(5.47, 22.78)	4.12(1.39,12.22) 0.01*
Marital status	Married	322	286	1	1
	Divorced	13	69	5.98(3.23, 11.04)	4.83(2.41, 9.66) **
	Widowed	11	89	9.11(4.77, 17.38)	3.28(1.58, 6.80)*
	Single	7	26	4.18(1.79, 9.78)	6.24(2.22, 17.53)*
Numberof children	None	74	71	.37(0.21, 0.65)	0.49(0.23,1.05)
	1-5	196	229	.45(0.27, 0.74)	0.80(0.42,1.50)
	6-10	58	105	.70(0.40, 1.22)	0.71(0.35, 1.44)
	>10	25	65	1	1
Educational status	Can't read and write	120	186	1.30(0.89, 1.90)	0.58(0.33, 1.03)
	1-8	77	117	1.28(0.84, 1.93)	0.98(.55,1.73)
	9-12	77	73	.80(0.51, 1.23)	0.84(.0.48,1.48)
	Collage and above	79	94	1	1
Menstrual status	Menopause+	42	210	5.98(4.13, 8.66)	2.11(1.06,4.20)*
	Menstrual+	311	260	1	1
Job of respondents	Government employee	60	72	1	1
	Merchant	101	126	1.04(0.67, 1.60)	1.14(0.64, 2.03)

	House wife	179	241	1.12(0.76, 1.66)	1.15(0.66, 1.99)
	Other	13	31	1.98(0.95, 4.13)	1.68(0.66, 4.32)
Chronic medical illness	No	307	312	1	1
	DM	23	86	3.68(2.26, 5.98)	1.46(0.77, 2.75)
	CHD	4	20	4.92(1.66, 14.56)	2.70(0.75, 9.81)
	Hypertension	15	42	2.75(1.50, 5.07)	1.43(0.69, 2.96)
	Other	4	10	2.46(0.76, 7.93)	2.14(0.50, 9.18)
Contraceptive use	No	157	344	1.37(0.44, 4.25)	0.71(0.21, 2.43)
	Pill	34	17	.31(0.09, 1.10)	0.24(0.06, 0.95) *
	Depo	90	56	.39(0.12, 1.25)	0.38(0.11, 1.33)
	Implant	67	45	.42(0.13, 1.36)	0.39(0.11, 1.37)
	IUD	5	8	1	1
Current use of chat	No	343	466	1	1
	Yes	10	4	3.81(2.5,5.80)	.46(0.12, 1.83)
Level of social support	poor social support	152	210	0.86(0.59, 1.27)	0.63(0.38, 1.03)
	moderate social support	141	164	.0.73 (0.49, 1.08)	0.79(0.49, 1.28)
	strong social support	60	96	1	1
Depression status	No	270	248	1	1
	Yes	83	222	2.91(2.15,3.95)	2.57(1.58, 4.20)**
Psychological distress	likely well	237	257	1	1
	mild mental disorder	33	36	1.01(0.61, 1.67)	0.67(0.35, 1.27)
	moderate mental disorder	29	38	1.21(0.72, 2.02)	0.50(0.24, 1.04)
	severe mental	54	139	2.37(1.65,	0.93(0.53, 1.63)

** P value<0.05, * p value<0.01

Hosmer-lemshow goodness of fit is 0.086

Discussion

The prevalence of sexual dysfunction among women participated in this study was found to be 57.1%. The magnitude of prevalence in this study was higher than studies found in Brazil (49%) [24], Korea (43.1%) [26], and Iran (52%) [29]. This discordance might be attributed to the difference in survey (internet survey was used in the Korea), difference in socio-economical status, and sample size of these study populations. However, the prevalence of this study was lower than studies found in Egypt (68.9%) [30], and Ghana (72.8) [14]. This variation may be due to the study in Egypt was covered large study areas (conducted in more than five Egyptian cities), socio-cultural difference and/or the difference in sample size.

In this study advanced age was significantly associated with FSD. The result was supported by studies conducted in Brazil and Hong-kong [24, 28]. This may be due to the fact that as age goes increases a number of change in sexual, hormonal, and physiological function takes place. In addition it may be cofound with number of illness faced as age got increased.

This study showed that being divorced, widowed, and single had a significant association with FSD. The study done in Iran and Tukey supported that divorced women had significantly higher sexual dysfunction [15, 23]. This may be attributed to the social and economical burdens must women faced when they are alone. Hence, the burden is increased among developing countries in which majority of the women is dependent on their husband. The psychological stress associated with being divorced and may be another possible reason.

According to this study menopause women had significantly higher sexual dysfunction as compared with those women in active menstruate. Similar results have been found in Iran [15]. This may be due to the hormonal changes occurred with menopause.

This study indicated that women who had depression were more likely to have SD than women without depression. This result was consistent with a studies done in Colombia and Korea [25, 26]. This may be attributed to the decrease in nor-epinephrine and serotonin associated with depression are also associated with sexual inhibition. The psychological effect of depression may also affect sexual functions of a women. Loss of interest, cardinal symptoms of the illness, may include loss of sexual function

This study showed that women with pill contraceptive were least likely to have sexual dysfunction. This was consistent with a study found in Iran [29]. The possible reason for this may be the hormonal effects of the contraceptive & cultural & religious difference.

Conclusions

This study indicated that the magnitude of sexual dysfunction among women who were participated in this study was found high. Older age, being single, divorced, widowed, menopause, and having depression were association with FSD. So women especially those who are with advanced age, single divorced, widowed, menopause, and depressed should have carefully evaluate for sexual dysfunction.

Limitations Of The Study

The cross-sectional nature of the study makes it difficult to determine the direction of causality, therefore, further analytical study is needed to understand the direct causal relationships of variables.

Abbreviations

BSc ;Bachelor of Sciences

CHD :Chronic Heart Disease

C.I : Confidence Interval

DM :Diabetes Mellitus

FSD :Female Sexual Dysfunction

IUD :Intra uterine Device

MSc :Master of Sciences

OSSS :Oslo social support scale

SD : Sexual Dsyfunction

SPSS: Statistical Package for Social Science

VIF :Variance Inflation Factors

Declarations

Ethics approval and consent to participate

The study was approved by Aksum University, College of Health science, Research Ethics Committee. Permission letter was also obtained from Aksum City health office and was presented to all participants. Written consent was obtained after the potential participants were informed of the study's objectives and reading the information sheet. Only women who gave consent to participate were included in the study. All participants were also informed that they could withhold or withdraw from participation at any time, without any negative consequences. Interviews were conducted in private that guarantee optimum privacy. Confidentiality and privacy of the study were maintained during data collection, analysis, and reporting.

Consent for publication

Not applicable

Availability of data and materials

The datasets in which conclusion taken is available in the form of Microsoft Excel. It is available on requesting

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

GG wrote the proposal, participated in data collection, analyzed the data, and drafted the paper. HD , TB , EH , FG and Yk approved the proposal, participated in data analysis and revised subsequent drafts of the paper. All authors read and approved the final manuscript

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Author's information

GG :MSc , Department of psychiatry, College of Health Science,AksumUniversity, Aksum, Ethiopia

HD:MSc , Department of psychiatry, College of Health Science,AksumUniversity, Aksum, Ethiopia

TB: MPH, Department of public health College of Health Science, Aksum University, Aksum, Ethiopia

EH:MSc , Department of psychiatry, College of Health Science,AksumUniversity, Aksum, Ethiopia

FG:MSc , Department of psychiatry, College of Health Science,AksumUniversity, Aksum, Ethiopia

YK:MSc , Department of psychiatry, College of Health Science,AksumUniversity, Aksum, Ethiopia

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