

## EPIDEMIOLOGY/RISK FACTORS

# Prevalence and Associated Factors of Female Sexual Dysfunction Among Sexually Active Students of the University of Buea



Gregory Edie Halle-Ekane, MD,<sup>a</sup> Louis Foingwe Timti, MD,<sup>a</sup> Elvis Asangbeng Tanue, PhD,<sup>b</sup> Conrald Metuge Ekukole, MD<sup>c</sup> and Emmanuel Vubo Yenshu, PhD<sup>d</sup>

## ABSTRACT

**Introduction:** Female sexual dysfunction (FSD) is a common public health issue. Most studies, especially in the sub-Saharan region are typically carried out in the older married female population, but the post-secondary education period is crucial for the development of the sexuality of young women. Poor awareness and management of FSD may lead to adverse physical and psychosocial complications later on in the lives of these women.

**Aim:** To determine the prevalence of the risk of having FSD and the factors associated with having FSD among sexually active students of the University of Buea.

**Methods:** This was a cross-sectional study carried out in the University of Buea involving 405 sexually active students; 16 years of age and above. Quantitative data on sociodemographic, biological, interpersonal and psychosocial characteristics were collected. A validated Japanese modified version of the Female Sexual Function Index (FSFI-J) was used to assess the risk of having female sexual dysfunction. Data analysis involved descriptive statistics, binary and multivariate logistic analyses.

**Main Outcome Measures:** Prevalence of risk of having FSD and its associated factors among students of the University of Buea.

**Results:** A total of 171 (42.0%) out of 405 students showed a risk of having at least one form of FSD. The commonest forms of dysfunction were problems of sexual pain (46.9%), orgasm (42.0%), desire (29.1%) and arousal (21.2%). Participants who were unmarried but in a relationship ( $P = .002$ ) were less likely to experience FSD. Lower levels of education (first year [ $P = .005$ ], second year [ $P = .001$ ]), having a history of sexual assault ( $P = 0.012$ ) and poor health ( $P = .012$ ) were all independently associated with a higher risk of having FSD.

**Conclusion:** The prevalence of students at risk of having FSD was high with 4 out of every 10 students showing a risk of having at least one form. Lower levels of education, having a history of sexual assault and poor health were independent risk factors of FSD. Being unmarried but in a relationship was the sole protective factor against FSD. **Halle-Ekane GE, Timti LF, Tanue EA, Ekukole CM, Yenshu EV. Prevalence and Associated Factors of Female Sexual Dysfunction Among Sexually Active Students of the University of Buea. Sex Med 2021;9:100402.**

Copyright © 2021 The Authors. Published by Elsevier Inc. on behalf of the International Society for Sexual Medicine. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

**Key Words:** Female Sexual Dysfunction; Sexual Health; Prevalence; Factors; Students; Cameroon

Received November 14, 2020. Accepted June 4, 2021.

<sup>a</sup>Department of Obstetrics and Gynaecology, Faculty of Health Sciences, University of Buea, Southwest, Cameroon;

<sup>b</sup>Department of Public Health and Hygiene, Faculty of Health Sciences, University of Buea, Southwest, Cameroon;

<sup>c</sup>Department of Internal Medicine, Kumba District Hospital, Southwest, Cameroon;

<sup>d</sup>Department of Sociology and Anthropology, Faculty of Social and Management Sciences, University of Buea, Southwest, Cameroon

Copyright © 2021 The Authors. Published by Elsevier Inc. on behalf of the International Society for Sexual Medicine. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).  
<https://doi.org/10.1016/j.esxm.2021.100402>

## INTRODUCTION

Female Sexual Dysfunction (FSD) is a common public health issue defined as 1 or more problems of female sexual desire, arousal, orgasm and/or sexual pain/discomfort that leads to significant distress.<sup>1,2</sup> Despite a higher global prevalence of sexual dysfunction in women (38%) compared to men (28%), less attention is paid to the sexual problems of women.<sup>3,4</sup> Nevertheless, FSD adversely affects women's quality of life and physical wellbeing, thus having consequences on public health.<sup>5,6</sup>

This is more emphasized in African societies as most discussions of female sexual health are considered a taboo.<sup>7,8</sup> This is also evident in learning centers where inadequate sex education, religious and sociocultural factors tend to affect views on sexuality.<sup>9</sup> Furthermore, it is also a challenging topic for healthcare providers due to discomfort when discussing it, insufficient clinical time, and limited treatment options.<sup>10,11</sup>

There is a wide range of causative factors and etiologies that lead to FSD which is made up of an interplay of biological and psychosocial components such as age, level of education, and partner-relationship.<sup>12</sup> It is worth noting that female genital mutilation, a practice still ongoing in sub-Saharan Africa, is considered one of the major causative factors of FSD.<sup>7,8,12</sup> The prevalence of FSD varies between different populations, age groups, and countries ranging from 24–63%.<sup>13</sup> Problems of sexual desire are the most commonly reported form of FSD.<sup>13,14</sup> In higher income countries such as the USA, the national prevalence of FSD has been reported to be 43%, with problems of sexual desire being the most prominent form at 17–54%.<sup>4</sup> In sub-Saharan African countries such as Ghana, FSD was seen to have a national prevalence of 46–73%, with pain during sex being the most reported problem at 72.9%.<sup>15,16</sup> Also, in other countries such as Nigeria, there has been a slow yet steady interest on the topic of FSD with studies estimating their national prevalence between 53.3–71%, and the commonest form being that of arousal difficulties.<sup>12</sup>

Despite the myriad of studies on FSD globally, this is not the case in sub-Saharan Africa. Moreover, most of these studies are carried out in the hospital setting, usually amongst women with some form of chronic disease.<sup>17,18</sup> Of the few community studies done, they are usually amongst married women out of the learning environment.<sup>19</sup> Thus, studies representing female sexual function among the typical “younger” student population are scarce. This could be due to the higher prevalence of FSD in increasing age, especially after menopause, thus more interest in the older female population.<sup>20</sup>

Nevertheless, it is essential to know about female sexual health within different communities, especially among students in tertiary institutions. This is significant because it represents a critical period in the development of their sexuality. Thus, poor awareness and treatment could lead to physical and psychosocial complications later on in their lives.<sup>21</sup>

Considering the paucity of data on FSD in our setting, this study thus aimed to answer the following questions: Is the risk of having FSD high among sexually active students of the University of Buea? Are problems of sexual interest the commonest type of dysfunction? Are there many factors associated with FSD among these students?

## METHODS

### Study Design

The study was a cross-sectional descriptive and analytical study conducted over a period of 4 months (February to May 2020) both on campus and on online student fora of the University of Buea, Cameroon.

### Study Population and Sample Size

The study involved only sexually active students of at least 16 years of age. After volunteering to participate in the study, participants were assured confidentiality and anonymity before giving their consent.

The minimum sample size of this study was calculated using Cochran's formula<sup>22</sup> with the target margin of error set at 0.05 and confidence interval at 95%. This gave a minimum sample size of 383 students based on a prevalence rate of 53.3% from a study in Nigeria.<sup>19</sup> Assuming a non-response rate of 10%, we had an adjusted minimum sample size of 421 students. However, 424 students participated in this study by means of convenience sampling.

Participants filled in self-administered questionnaires on campus, in lecture halls during free periods, and on online student fora. The questionnaire was anonymous and the primary investigator was available throughout the administration process.

### Outcome Measures

The questionnaire was made up to 2 main sections: (i) questions on socio-demographic, biological, interpersonal and psychosocial variables of the participant; (ii) standardized Japanese modified version of the Female Sexual Function Index (FSFI-J).<sup>23</sup>

The FSFI-J questionnaire is a brief multidimensional 19-item self-report tool for assessing the risk of having female sexual function in the previous 3 months as opposed to a month in the original. It provides scores on 6 domains of female sexual function (desire, arousal, lubrication, orgasm, satisfaction, and pain).

The overall score was determined by the sum of the 6 domains and varied from 2 to 36, with higher scores indicating a lower risk of having FSD. The participants with an overall score less than or equal to 22.03 were considered to be at risk of having FSD. The cut-off scores to determine the risk of dysfunction within each respective domain were as follows; less than 2.94 on desire, less than 2.82 on arousal, less than 3.72 on lubrication,

less than 2.60 on orgasm, less than 4.02 on satisfaction and finally less than 3.95 on pain.<sup>23</sup> This was got by using the mean values of the different domains in a validated study (for use among Japanese women) done on 126 women in Japan using a sexual period of 3 months which we adapted in our study.

### Ethical Considerations

Ethical approval was obtained on the February 4, 2020 from the Institutional Review Board of the Faculty of Health Sciences of the University of Buea (Application Number: 1087-01/ Reference Number: 2020/1087-01/UB/SG/IRB/FHS). Administrative authorization was also obtained from the South West Regional Delegation of the Ministry of Public Health (Reference Number: R11/MINSANTE/SWR/RDPH/PS/560/859) and the Dean of the Faculty of Health Sciences, University of Buea (Reference Number: 2020/689/UB/VD/RC/FHS). All participants signed consent forms. In addition, assent forms were signed by participants less than 21 years of age. Confidentiality of the participants' information was maintained by giving participant's a code number and data secured in a locked cupboard and computer with a password. All data for the study were fully anonymous upon collection and processing. The IRB approved all aspects of the study protocol.

### Statistical Analyses

Data were inputted using CS Pro software v7.2 (manufactured by the U.S. Census Bureau and ICF International in Virginia). Then, data were analyzed using SPSS software v26.0 (manufactured by IBM based in New York). Continuous variables such as age were presented as means and standard deviations. Categorical variables were expressed as frequencies and percentages. Binary logistic analysis was used to identify factors associated with FSD. These factors were then fitted into a multivariate logistic regression model to control for the effects of confounding variables. The level of statistical significance was set at a  $P$  value of  $<.05$ .

## RESULTS

In total, 424 female students were invited to participate in this study. Out of these, 405 students completely filled the questionnaires giving a response rate of 95.5%.

### Background Information of Participants

Concerning sociodemographic characteristics, most participants were of the 21–25 years age group. The mean age of the participants was 21.7 ( $\pm 2.9$ ) years with an age range of 17–43 years. The majority of participants were Christians 390 (93.6%), not married but in a relationship 222 (54.8%), and in their third year and above of undergraduate studies 162 (40.0%) (Table 1).

**Table 1.** Socio-demographic characteristics of the study population

Variable	Frequency	Percent (%)
<i>Age</i>		
<21 years	145	35.8
21–25 years	233	<b>57.8</b>
>25 years	27	6.7
<i>Religion</i>		
Christianity	390	<b>96.3</b>
Islam	12	3.0
Others	3	0.7
<i>Marital status</i>		
Single	160	39.5
Married	21	5.2
Not married but in a relationship	222	<b>54.8</b>
Divorced/ Separated	2	0.5
<i>Faculty</i>		
Social and management sciences	150	<b>37.0</b>
Health sciences	99	24.4
Science	77	19.0
Law and political science/arts	42	10.4
Engineering and technology	8	2.0
College of technology	3	0.7
Education	12	3.0
HTTTC*	4	1.0
Agriculture and veterinary medicine	10	2.5
ASTI†	0	0
<i>Year of study</i>		
Year 1	79	19.5
Year 2	150	37.0
Year 3 and above	176	<b>43.5</b>

Bold values represent the highest prevalence.

\*HTTTC – Higher Technical Teachers' Training College.

†ASTI – Advanced School of Translators and Interpreters.

Considering the other characteristics (biological, interpersonal, and psychosocial), most of the participants were not pregnant (379 [93.6%]) and had never given birth (367 [90.6%]). Just under half of the participants were irregularly physically active (183 [45.2%]). Most participants consumed alcohol just once monthly or less (226 [55.8%]), and almost all participants had never smoked tobacco (381 [94.1%]). Furthermore, 49 (12.1%) students had some form of ill health with 24 (5.9%) participants reporting taking at least one form of medication routinely. The frequency of sexual intercourse over the past 3 months, was reported by most participants to be less than once a month (179 [44.2%]). Finally, 150 (37.0%) participants reported a history of sexual assault with 6 (1%) participants having undergone some form of female circumcision (Table 2).

### Prevalence of Female Sexual Dysfunction

Of the 405 participants, 171 (42.0%) were at risk of having at least one form of female sexual dysfunction with an FSFI-J score

**Table 2.** Other characteristics (biological, interpersonal and psychological) of the participants

Variable	Frequency	Percent (%)
<i>Pregnancy</i>		
Pregnant	5	1.2
Not pregnant	379	<b>93.6</b>
Did not know	21	5.2
<i>Parity</i>		
None	367	<b>90.6</b>
1–2	28	6.9
3–4	7	1.7
4 and above	3	0.7
<i>Level of physical activity</i>		
Sedentary	47	11.6
Irregularly active	183	<b>45.2</b>
Active	115	28.4
Very active	60	14.8
<i>Tobacco use</i>		
Never	381	<b>94.1</b>
Monthly or less often	21	5.2
2–4 times monthly	0	0.0
2–4 times weekly	1	0.2
4 times or more weekly	2	0.5
<i>Alcohol use</i>		
Never	114	28.1
Monthly or less often	226	<b>55.8</b>
2–4 times monthly	56	13.8
2–4 times weekly	6	1.5
4 times or more weekly	3	0.7
<i>Frequency of sexual intercourse</i>		
Less than once a month	179	<b>44.2</b>
1–2 per month	119	29.4
1–2 per week	70	17.3
3–4 per week	31	7.7
More than 4 times per week	6	1.5
<i>History of sexual assault</i>		
Yes	150	<b>37.0</b>
No	255	63.0
<i>History of female genital mutilation</i>		
Yes	6	<b>1.0</b>
No	399	99.0

Bold values represent the highest prevalence.

of less than 22.03. The range of FSFI-J scores among the participants was 10.8–34.5, with a mean FSFI-J score of 22.99 ± 4.74. The mean score among participants with risk of FSD was 18.41 ± 2.54 and among participants without risk of FSD was 26.34 ± 2.76.

The most reported domains of FSD at risk were; pain 190 (46.9%), orgasmic difficulties 170 (42.0%), sexual interest/desire 118 (29.1%), and arousal problems 86 (21.2%) (Figure 1). Mean domain scores were as follows; desire at 3.1 ± 0.9, arousal 3.7 ± 1.0, orgasm 3.7 ± 1.3, and pain 3.7 ± 1.4.

## Factors Associated With Female Sexual Dysfunction

Binary logistic analysis between FSD and sociodemographic factors indicated that participants aged <21 years were more likely to have FSD ( $P = .006$ ). Married ( $P = .003$ ) and unmarried but in a relationship participants ( $P = .002$ ) were less likely to have FSD. Furthermore, participants in the first ( $P < .001$ ) and second ( $P < .001$ ) level of education respectively were more likely to have FSD.

Among other factors, having a parity of 1 to 2 children ( $P = .023$ ) and using alcohol for >2 times monthly ( $P = .025$ ) were factors less likely associated with FSD. The presence of chronic disease ( $P = .026$ ) was more likely associated with FSD. Participants with a history of sexual assault ( $P = .044$ ) were also seen to be associated with FSD (Table 3).

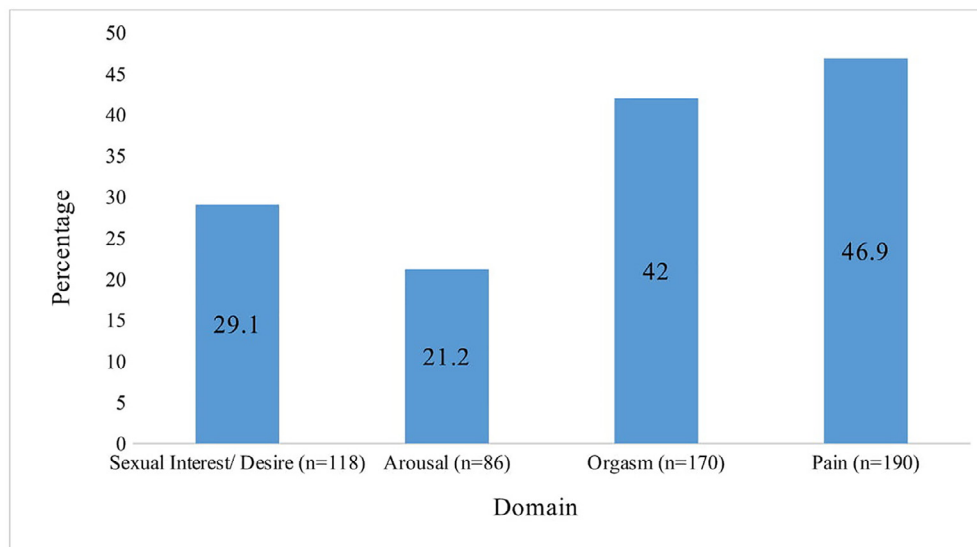
## Factors Independently Associated With Female Sexual Dysfunction

Multivariate logistic analysis was carried out for the variables significantly associated with FSD in the binary logistic model. Participants who were unmarried but in a relationship had a 50% chance of being less likely to experience FSD (AOR 0.50; 95% CI: 0.32–0.78,  $P = .002$ ). Level of education remained a significant indicator of FSD as participants in their first year and second of study were respectively about 2 and 3 times more likely to have FSD compared to those in the third year of studies and above (AOR 2.46; 95% CI: 1.31–4.65,  $P = .005$  and AOR 2.86; 95% CI: 1.74–4.71,  $P = .001$  respectively). Reporting with a form of chronic disease was independently associated with a 2 time higher risk of having FSD (AOR 2.01; 95% CI: 1.04–3.88,  $P = .037$ ). Participants with a history of sexual assault were also about 2 times more likely to have FSD (AOR 1.77; 95% CI: 1.13–2.76  $P = .012$ ) (Table 4).

## DISCUSSION

Female sexual dysfunction negatively affects women's quality of life and physical wellbeing. Studies as such on female sexual function are essential as they lead to better awareness, thus leading to the institution of better preventive measures and treatment modalities for FSD. This study thus set to determine the overall prevalence of risk of having FSD, the most prevalent types of dysfunction and factors associated with the risk of having FSD among the sexually active students of the University of Buea,

The prevalence of risk of having FSD among these students was 42%. This was similar to the prevalence of other studies by Nwagha et al (53.3%)<sup>19</sup> in the University of Nigeria, Enugu and Escajadillo-Vargas et al (39.9%)<sup>24</sup> in a Peruvian University. This prevalence was also similar to a study by Imbeah et al<sup>15</sup> among Ghanaian woman over the national territory who reported a prevalence of 45.6%. This similarity with the older female



**Figure 1.** Prevalence of different types of FSD among female students of the University of Buea, 2020.

**Table 3.** Association between FSD and various characteristics among female students of the University of Buea, 2020

Variable	No FSD No (%)	FSD No (%)	COR	95% CI	P value
<i>Age</i>					
<21 years	40 (47.6)	44 (52.4)	3.03	1.38–6.65	<b>.006</b>
21–25 years	161 (58.3)	115 (41.7)	1.96	0.97–3.97	.060
>25 years	33 (73.3)	12 (26.7)	<b>1*</b>		
<i>Marital status</i>					
Married	18 (85.7)	3 (14.3)	0.15	0.04–0.52	<b>.003</b>
Not married but in a relationship	140 (63.1)	82 (36.9)	0.52	0.34–0.78	<b>.002</b>
Single/ Divorced	76 (46.9)	86 (53.1)	<b>1*</b>		
<i>Level of education</i>					
Year 1	40 (50.6)	39 (49.4)	2.46	1.42–4.26	<b>.001</b>
Year 2	68 (45.3)	82 (54.7)	3.04	1.92–4.81	<b>.001</b>
Year 3 and above	126 (71.6)	50 (28.4)	<b>1*</b>		
<i>Parity</i>					
No kids*	204 (55.6)	163 (44.4)	<b>1*</b>		
1–2 kids	22 (78.6)	6 (21.4)	0.34	0.14–0.86	<b>.023</b>
>2 kids	8 (80.0)	2 (20.0)	0.31	0.07–1.49	.145
<i>Alcohol use</i>					
Never*	61 (53.5)	53 (46.5)	<b>1*</b>		
Monthly or less often	127 (56.2)	99 (43.8)	0.90	0.57–1.41	.638
>2 times monthly	46 (70.8)	19 (29.2)	0.48	0.25–0.91	<b>.025</b>
<i>Chronic disease</i>					
Yes	21 (42.9)	28 (57.1)	1.99	1.09–3.63	<b>.026</b>
No*	213 (59.8)	143 (40.2)	<b>1*</b>		
<i>Sexual assault</i>					
Yes	77 (51.3)	73 (48.7)	1.52	1.01–2.28	<b>.044</b>
No*	157 (61.6)	98 (38.4)	<b>1*</b>		

Bold values represent significant *P* values.

\*Reference category.

CI = confidence interval; COR = crude odds ratio; FSD = female sexual dysfunction.



**Table 4.** Multivariate analysis showing association between female sexual dysfunction and selected factors among female students of the University of Buea, 2020

Variables	People with FSD no (%)	AOR	95% CI for AOR lower upper		P value
<i>Age</i>					
<21 years	44 (25.7)	1.21	0.46	3.14	.702
21–25 years	115 (67.3)	1.12	0.49	2.58	.792
>25 years	12 (7.0)	1*			
<i>Marital status</i>					
Married	3 (1.8)	0.34	0.07	1.47	.148
Not married but in a relationship	82 (48.0)	0.50	0.32	0.78	<b>.002</b>
Single/Divorced	86 (50.3)	1*			
<i>Level of education</i>					
Year 1	39 (22.8)	2.46	1.31	4.65	<b>.005</b>
Year 2	82 (48.0)	2.86	1.74	4.71	<b>.001</b>
Year 3 and above	50 (29.2)	1*			
<i>Parity</i>					
No kids	163 (95.3)	0.39	0.14	1.12	.080
1–2 kids	6 (3.5)	0.33	0.06	1.99	.228
>2 kids	2 (1.2)	1*			
<i>Alcohol use</i>					
Never	53 (46.5)	0.92	0.57	1.50	.354
Monthly or less often	99 (43.8)	1.55	0.27	1.10	.967
>2 times monthly	19 (29.2)	1*			
<i>Chronic disease</i>					
Yes	28 (57.1)	2.01	1.04	3.88	<b>.037</b>
No	143 (40.2)	1*			
<i>Sexual assault</i>					
Yes	73 (48.7)	1.77	1.13	2.76	<b>.012</b>
No	98 (38.4)	1*			

Bold values represent significant *P* values.

\*Reference category.

AOR = adjusted odds ratio; CI = confidence interval; FSD = female sexual dysfunction.

population out of the study environment could point out the probable persistence of FSD even after the post educational period. This emphasizes the importance of early interventions and preventive measures against FSD. This also points out the significance of FSD among different populations and cultures and goes to support the validity, consistency and reliability of the FSFI tool and its variants. This was similar to other studies in higher income countries such as among German female medical students (40.0%) by Wallweiner et al<sup>13</sup> and among female students (42.3%) of the University of Texas by Chapa et al.<sup>26</sup> Nevertheless, a study carried out among Brazilian students by Satake et al<sup>26</sup> showed that the prevalence of FSD was lower at 28.8%. This could be attributed to the documented lesser risk of FSD in Hispanic women compared to women of other races such as women of African descent. This could go to support that women of different racial groups exhibit different rates and patterns of sexual dysfunction.<sup>25</sup>

In this study, the most common type of FSD at risk was sexual pain (46.9%), followed by problems of orgasm (42.0%), desire (29.1%) and arousal (21.2%). This was similar to findings of Imbeah et al in Ghana.<sup>15</sup> This was however different

from most studies globally which report problems of sexual desire as the most prevalent of the domains instead of problems of sexual pain and orgasm in this study. This could be explained by the relatively high number of students who reported a low frequency of sexual intercourse compared to other studies.<sup>8,13</sup> Moreover, a lower frequency of sexual episodes (for example from charged academic schedules, poor communication with partners, relative lower socioeconomic conditions just to name a few) has been seen to be related to sexual pain syndromes<sup>27</sup> which in turn leads to dysfunctions of orgasm. This goes to support the suggested association between orgasm dysfunction and sexual pain.<sup>28</sup>

Factors such as being unmarried though in a relationship, level of education, having a history of chronic disease and a history of sexual assault were all independently associated with FSD. Being unmarried but in a relationship was the sole independent factor associated with a lower risk of having FSD. This was also seen in other studies done in other tertiary institutions by Escajadillo-Vargas et al<sup>24</sup> and Satake et al.<sup>26</sup> This could be as a result of the increased emotional satisfaction which comes with being in a relationship.<sup>29,30</sup>

Furthermore, being in a lower educational level was seen to be related to having a higher risk of FSD compared to those in the higher levels. This was also seen in young women in Egypt by El-Kashif et al.<sup>8</sup> This was probably due to the younger ages of students in the lower levels. Moreover, higher rates of dyspareunia have been reported in younger females as opposed to the older female population. More education has also been seen to lead to more awareness of the causes, types and proper help-seeking behaviors regarding FSD.<sup>15</sup>

Students that reported the presence of chronic disease or ill health had a higher risk of having sexual dysfunction. Zhang et al did a study in China which showed that women of reproductive ages with average or poor health were seen to be 50% more likely to report not finding sex pleasurable and 67% more likely to report physical pain during sexual intercourse. This could be due to the vascular and neurogenic compromise that come with these disease states. In addition, these diseases tend to have a negative effect on women's perception of their body image thus leading to an increased risk of sexual dysfunction.<sup>5</sup>

Having a history of sexual assault was shown to be independently associated with a higher risk of having FSD. This was similar to studies in female college students done by Garneau et al<sup>31</sup> and Turchik et al<sup>32</sup> These students were seen to have a 50% higher risk of experiencing sexual dysfunctions. Nevertheless, other studies like Chapa et al<sup>25</sup> showed an inverse relation, though they could not explain this association. This could go to support the high prevalence of students with problems of orgasm, as this has been seen to be a significant contributing factor for the high prevalence of orgasm due to the lasting psychological disturbances which ultimately affect sexual function and its related orgasmic disorders.

As limitations to this study, using the Japanese version of the FSFI, given the similarities in the frequency of sexual intercourse found in our participants, could as well serve as a limitation given the differences with location, culture and ages of the participants. Also, the study involved only young women in the University setting, thus may not represent the full picture of the young women population in the area. The lack of evaluation of some medications such as non-oral hormonal contraceptives, absence of a detailed history of sexual assault cases, lack of assessment of the presence of anxiety and/ or depressive symptoms, sexual-related stress could be seen as a limitation as these would have given more context to the causative factors of FSD. Finally, participation bias, with a higher inclination to participate possibly more in students who perceive themselves to have these sexual problems.

## CONCLUSION

The prevalence of students at risk of having FSD in the study population was high with just below half of the students being at risk of having at least one form of FSD. The commonest form of FSD at risk was problems of sexual pain and independent risk factors were being in a lower level of education,

having a history of sexual assault and having some form of chronic disease. Being in a relationship though not married was the only protective factor against FSD. This study could lead to more research on this topic with longitudinal study designs so it provides more information on the causes and consequences of FSD in this setting.

**Corresponding Author:** Louis Foingwe Timti, MD, Department of Obstetrics and Gynaecology, Faculty of Health Sciences, University of Buea, P.O.Box 12 Buea, Southwest, Cameroon. Tel: +237-670-687-978; E-mail: [louistimti@outlook.com](mailto:louistimti@outlook.com)

*Conflict of Interest:* The authors report no conflicts of interest.

*Funding:* None.

## STATEMENT OF AUTHORSHIP

Conception and Design: L.F.T., G.E.H., E.V.Y.; Acquisition of Data: L.F.T., C.M.E.; Analysis and Interpretation of Data: E.A.T.; Drafting the Article: L.F.T., G.E.H., E.V.Y.; Revising It for Intellectual Content: C.M.E., E.A.T.; Final Approval of the Completed Article: L.F.T., G.E.H., E.A.T., C.M.E., E.V.Y.

## REFERENCES

1. Association AP. Diagnostic and statistical manual of mental disorders (DSM-5®). American Psychiatric Pub; 2013. p. 1520.
2. Organization WH. Staff WHO. WHO. The ICD-10 Classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines. World Health Organization; 1992. p. 377.
3. Nicolosi A, Laumann EO, Glasser DB, et al. Sexual behavior and sexual dysfunctions after age 40: The global study of sexual attitudes and behaviors. *Urology* 2004;64:991-997.
4. Laumann EO, Paik A, Rosen RC. Sexual dysfunction in the United States. Never married:9.
5. Zhang H, Fan S, Yip PSF. Sexual dysfunction among reproductive-aged chinese married women in Hong Kong: Prevalence, risk factors, and associated consequences. *J Sex Med* 2015;12:738-745.
6. Wolpe RE, Zomkowski K, Silva FP, et al. Prevalence of female sexual dysfunction in Brazil: A systematic review. *Eur J Obstetr Gynecol Reproduc Biol* 2017;211:26-32.
7. Afefy N. Factors associated with female sexual problems among women attending Cairo University Hospital. *J Biol Agriculture Healthcare* 2015;5:35-41.
8. El-Kashif MML, El-tahry SE. A study of sexual dysfunction and its associated factors among women in childbearing age. *Egypt JNEP* 2018;9:95.
9. Hassanin IMA, Helmy YA, Fathalla MMF, et al. Prevalence and characteristics of female sexual dysfunction in a sample of women from Upper Egypt. *Int J Gynecol Obstetr* 2010;108:219-223.

10. Wright JJ, O'Connor KM. Female sexual dysfunction. *Med Clin North Am* 2015;99:607–628.
11. Buster JE. Managing female sexual dysfunction. *Fertil Steril* 2013;100:905–915.
12. Ogunbode O, Aimakhu C, Ogunbode A, et al. Sexual dysfunction among women in a Nigerian gynecological outpatients unit. *Trop J Obstet Gynaecol* 2019;36:61.
13. Wallwiener CW, Wallwiener L-M, Seeger H, et al. Sexual function, contraception, relationship, and lifestyle in female medical students. *J Women Health* 2017;26:169–177.
14. Jaafarpour M, Khani A, Khajavikhan J, et al. Female sexual dysfunction: Prevalence and risk factors. *J Clin Diagn Res* 2013;7:2877–2880.
15. Imbeah EP, Afrane BA. Prevalence and self-management of female sexual dysfunction among women in six regions of Ghana: A cross-sectional study. *J Womens Health, Issues Care* 2015;4:6.
16. Lewis RW, Fugl-Meyer KS, Bosch R, et al. Epidemiology/risk factors of sexual dysfunction. *J Sex Med* 2004;1:35–39.
17. Teuwafeu D, Ashuntantang G, Essi M-J, et al. Sexual function and correlates in women undergoing maintenance hemodialysis in Cameroon: A multi-centric study. *Open Urol Nephrol J* 2016;9:51–59.
18. Ogunjimi L, Yaria J, Makanjuola A, et al. Sexual dysfunction among Nigerian women with epilepsy. *Epilepsy Behav* 2018;83:108–112.
19. Nwagha U, Oguanuo T, Ekwuazi K, et al. Prevalence of sexual dysfunction among females in a university community in Enugu, Nigeria. *Niger J Clin Pract.* 2014;17:791.
20. Cabral PUL, Canário ACG, Spyrides MHC, et al. Determinants of sexual dysfunction among middle-aged women. *Int J Gynecol Obstetr* 2013;120:271–274.
21. Higgins JA, Mullinax M, Trussell J, et al. Sexual satisfaction and sexual health among university students in the United States. *Am J Public Health* 2011;101:12.
22. Bartlett JE, Ik JWK. Organizational research: Determining appropriate sample size. *Survey research information technology, learning, and performance journal*; 2001.
23. Takahashi M, Inokuchi T, Watanabe C, et al. The female sexual function index (FSFI): Development of a Japanese Version. *J Sex Med* 2011;8:2246–2254.
24. Escajadillo-Vargas N, Mezones-Holguín E, Castro-Castro J, et al. Sexual dysfunction risk and associated factors in Young Peruvian University Women. *J Sex Med* 2011;8:1701–1709.
25. Chapa HO, Fish JT, Hagar C, et al. Prevalence of female sexual dysfunction among women attending college presenting for gynecological care at a university student health center. *J Am Coll Health* 2018;2:1–9.
26. Satake JT, Pereira TRC, Aveiro MC. Self-reported assessment of female sexual function among Brazilian undergraduate healthcare students: A cross-sectional study (survey). *Sao Paulo Med J* 2018;136:333–338.
27. Amidu N, Owiredu WK, Woode E, et al. Incidence of sexual dysfunction: A prospective survey in Ghanaian females. *Reprod Biol Endocrinol* 2010;8:106.
28. Zhang H, Yip PSF. Female sexual dysfunction among young and middle-aged women in Hong Kong: Prevalence and risk factors. *J Sex Med* 2012;9:2911–2918.
29. Lodise N. Female sexual dysfunction: A focus on flibanserin. *IJWH.* 2017;9:757–767.
30. de Almeida DMB, Benetti-Pinto CL, Makuch MY. Sexual function of women with premature ovarian failure. *Menopause* 2011;18:262–266.
31. Garneau-Fournier J, McBain S, Torres T, et al. Sexual dysfunction problems in female college students: Sexual victimization, substance use, and personality factors. *J Sex Marital Ther* 2017;43:24–39.
32. Turchik JA. Sexual victimization among male college students: Assault severity, sexual functioning, and health risk behaviors. *Psychol Men Mascul* 2012;13:243–255.