International Journal of Impotence Research (2014) 26, 135–140

www.nature.com/ijir

ORIGINAL ARTICLE

Golombok Rust Inventory of Sexual Satisfaction for the presence of sexual dysfunction within a Ghanaian urological population

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Sexual dysfunction (SD) is devastating to a man's ego and its presence could defeat his purpose of masculinity. A number of studies have explored and reported on existing comorbidities between SD and medical conditions for which urological problems are no exception. However, in Ghana there is paucity of data exploring the epidemiological, etiological and health associations of medical conditions with SD. This study was therefore conducted to determine the prevalence, types and determinants of SD in a sample of Ghanaian men with urological conditions. This descriptive cross-sectional study was carried out between December 2012 and April 2013 at the Urology clinic of the Tamale Teaching Hospital in the Northern Region of Ghana. A total of 200 participants were enrolled in the study. All participants were evaluated by using a semistructured questionnaire and the Golombok Rust Inventory of Sexual Satisfaction questionnaire. An overall response rate of 47.5% was estimated after 69 patients refused to partake in the study; 6 patients found the questionnaire too sensitive and refused to participate and 30 participants returned incomplete questionnaire. The mean age of the participants was 36.5 ± 13.8 years and ranged from 18 to 70 years. The estimated prevalence of SD was 71.6%. The prevalence of the various SD domains was as follows: non-sensuality (71.6%), premature ejaculation (70.5%), non-communication (69.5%), impotence and infrequency (68.4%), dissatisfaction (61.1%) and avoidance (57.9%). Participants who were married, consumed alcoholic beverages, smoked cigarettes and aging males who had children were at a greater risk of developing SD. Urologic patients have a high prevalence of SD that is dependent on marital status, alcohol consumption, smoking status and aged patients with children.

International Journal of Impotence Research (2014) **26,** 135–140; doi:10.1038/ijir.2013.52; published online 16 January 2014

Keywords: dissatisfaction; impotence; premature ejaculation; sexual problems

INTRODUCTION

In an attempt to attain its health for all goals, the government of Ghana and the Ministry of Health as part of their major strategies have adopted sexual health as a component of reproductive health. Emphasis, however, is often placed on infection and contraception, with little attention to or a total neglect for the problems associated with sexual dysfunction (SD). The prevalence of SD in the world database for different countries varies between 5.4 and 82.2% due to differences in racial background, geographical location, socio-demographic status and environmental factors.[1–6]

In Ghana, the prevalence of SD varies between 59.8 and 70.0% depending on the population,[7,8] medical conditions[9,10] and marital status.[11] Among Ghanaian subjects with varied medical conditions, the SD prevalence for subjects with self-reported diabetes was 70.0%, 50.0% among hypertensives, 41.7% among patients with migraine, 100.0% among ulcer patients, 75.0% among patients who have undergone surgery and 50.0% among STD patients.[9]

To date, there is paucity of data in Africa, including Ghana, on the prevalence of SD among subjects with urological conditions. Available and relevant information on SD in Ghana are from the southern parts of the country (that is, Greater Accra and Ashanti region) with largely of Christian population, hence the need to replicate such studies in the Northern sector, which is largely Islamic by population. Projections made based on data from developed countries (predominantly Caucasian population) with developed socio-economic standards of living may not accurately reflect the reality in developing countries.[12] This study therefore seeks to estimate the prevalence and determinants of SD in a cohort of Ghanaian men visiting the Urology clinic of the Tamale Teaching Hospital in the Northern region of Ghana.

MATERIALS AND METHODS

Participants

This hospital-based cross-sectional study was conducted at the Urology clinic of the Tamale Teaching Hospital in the Northern region of Ghana between December 2012 and April 2013. All the participants enrolled into the study were patients with urological problems, visiting the clinic for care and treatment. Participants were sexually active Ghanaian men, aged 18 years and above, who had maintained stable heterosexual relationship at least 2 years before enrolment into the study. A stable relationship was defined as one in which the man was engaged and maintains sexual relation, regardless of marital status. Participation of the respondents was voluntary and informed consent was obtained from each participant.

Procedure

On the basis of interviewer availability, days were selected over 5 months during which consecutive attendees to the clinic were enrolled to partake in the study. Patients' who were too ill or under 18 years of age and could not read were excluded from partaking in the study. All enrolled

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Received 16 July 2013; revised 9 October 2013; accepted 12 December 2013; published online 16 January 2014

participants were evaluated by using a semistructured questionnaire and the Golombok Rust Inventory of Sexual Satisfaction (GRISS) questionnaire. In all, a total of 200 questionnaires were distributed.

Socio-demographic parameters

A detailed, self-designed, semistructured questionnaire was administered to each consented study participant for socio-demographic information, including age, marital status, behavioural and lifestyle activities (exercise, smoking and alcohol consumption), educational background and occupation. Exercise was defined as any activity causing light perspiration or a slight-to-moderate increase in breathing or heart rate for at least 30 min. Alcohol consumption was defined as the intake of at least one unit of alcohol (bottle of an alcoholic beverage) per week. Regarding smoking, individuals were classified as smokers based on whether they smoked at least one cigarette a day. Occupation was divided into three groups: self-employed, gainfully employed and unemployed.

The Golombok Rust Inventory of Sexual Satisfaction

Sexual response was assessed by the GRISS questionnaire, which measures specific sexual behaviours, beliefs and attitudes. The GRISS is a validated tool and consists of 28 items on a single sheet and it is used for assessing the existence and severity of sexual problems in heterosexual couples or individuals who have a current heterosexual relationship. All the 28 questions were answered on a five-point (Likert type) scale from 'always', through 'usually', 'sometimes' and 'hardly ever' to'never'. It provides overall scores of the quality of sexual functioning within a relationship. In addition, subscale scores of impotence, premature ejaculation, infrequency, non-communication, dissatisfaction, non-sensuality and avoidance were obtained and presented as a profile. Responses were summed up to give a total raw score (range 28–140). The total score and subscale scores were transformed using a standard nine-point scale ranging between 1 and 9, with high scores indicating greater problems. Scores of 5 or more were considered to indicate SD. The GRISS was chosen because it is standardized, easy to administer and score, relatively unobtrusive and substantially inexpensive.

The GRISS can be used to assess improvement as a result of sexual or marital therapy and to compare the efficacy of different treatment methods. It can also be used to investigate the relationship between SD and extraneous variables. The subscales are particularly helpful in providing a profile for diagnosis of the pattern of sexual functioning within the couple, which can be of great benefit in designing a treatment program. The reliability of the overall scales has been found to be 0.94 for men and that of the subscales on average to be 0.74 (ranging between 0.61 and 0.83). Validity has been demonstrated under a variety of circumstances.[13–15]

Statistical analysis

Continuous data were presented as mean ± s.d., whereas categorical data were presented as percentages. Continuous data were compared using unpaired *t*-test. Logistic regression was used to assess the simultaneous influence of different variables in sexuality. Entry of variables into the model was considered if *P*-value is <0.05 and a stepwise procedure was applied. Association was assessed using Pearson's product–moment correlation coefficient between SD, including the seven subscales of the GRISS. Boldface *r*-values indicate Pearson's product–moment correlation coefficient with a medium size ($0.30 \leqslant r \geqslant 0.50$) effect; boldface and underlined *r*-values indicates Pearson's product–moment correlation coefficient with a large size ($r > 0.50$) effect. In all statistical tests, a value of $P<0.05$ was considered significant. All analyses were performed using SigmaPlot for Windows, Version 11.0 (Systat Software, Erkrath, Germany; www.systat.com).

RESULTS

Out of the 200 urological patients contacted for the study, 69 refused to partake in the study, 6 patients found the questionnaire too sensitive and declined participation, 30 participants returned incomplete questionnaire, leaving 95 complete and evaluable questionnaires, indicating a response rate of 47.5%. From this study, participant ages ranged from 18 to 70 years with a mean ± s.d. of 36.5 ± 13.8 years. The participants with SD were significantly older (38.4 ± 14.5 years; $P=0.034$) compared with those without SD (31.7 ± 9.3 years). Majority of the study population were married (58/95, that is, 61.1%), attained tertiary education (55/95, that is, 57.9%) and engaged in active exercise (73/95, that is, 76.8%). Whereas ~16% of the studied population smoked cigarettes (15/95, that is, 15.8%), 21.1% consumed alcoholic beverages (20/95) and just under half of the population have had children before (45/95, that is, 47.3%).

Table 1. Univariate analysis of risk factors for male sexual dysfunction

Variable	n/N[a]	*Rate of SD (%)*	*cOR (95% CI)*	P-*values*
Marital status				
Married	46/58	79.3	2.6 (1.1–6.5)	0.0365
Single	22/37	59.5		
Occupation				
Gainfully employed	23/34	67.6	0.7 (0.3–2.0)	0.5274
Self-employed	29/39	74.4		
Unemployed	16/22	72.7	0.9 (0.3–3.0)	0.8894
Educational level				
Basic	18/21	85.7	2.8 (0.6–13.1)	0.1909
Secondary	13/19	68.4		
Tertiary	37/55	67.3	0.9 (0.3–2.9)	0.9266
Smoking				
Yes	14/15	93.3	6.7 (1.1–54.1)	0.0418
No	54/80	67.5		
Alcohol				
Yes	18/20	90.0	4.5 (1.1–20.1)	0.0398
No	50/75	66.7		
Exercise				
Yes	54/73	74.0	1.6 (0.6–4.5)	0.3461
No	14/22	54.5		
CHD				
Yes	38/45	84.4	3.6 (1.4–9.6)	0.0084
No	30/50	60.0		

Abbreviations: CHD, child bearing; CI, confidence interval; cOR, crude odd ratio. [a]Number of subjects with SD/number of subjects in each category.

From this study, the rate of SD among the married group was 79.3% compared with the 59.5% estimated prevalence among the unmarried group (Table 1). Married participants were about three times at risk of developing SD compared with those who were unmarried (odds ratio = 2.6; $P=0.0365$). Occupational status, educational level as well as exercise were not predisposing factors for SD from this study (Table 1). Those who smoked cigarette (93.3%) were about seven times at risk of developing SD (odds ratio = 6.7; $P=0.0418$) compared with those who did not smoke cigarette (67.5%). Moreover, those who consumed alcoholic beverages (90.0%) were about five times at risk of developing SD (odds ratio = 4.5; $P=0.0398$) as compared with those who did not consume alcoholic beverages (66.7%; Table 1). Older urological patients who have had children were four times more likely to develop SD compared with younger patients who have never had children (odds ratio = 3.6; $P=0.0084$) as shown in Table 1. The significant variables (that is, marriage, smoking, consumption of alcoholic beverages and having children) were sustained after adjusting for the confounding factors.

From Table 2, the mean GRISS raw score for SD of the total population is 76.6 ± 12.2. The mean score for impotence, premature ejaculation and non-sensuality are 10.6 ± 3.0, 9.9 ± 3.1 and 12.1 ± 3.5, respectively. When the studied population was stratified based on SD, the mean raw score for SD and its subscales were significantly higher among those with SD compared with those without SD, except for non-communication, which was not significantly different among the stratified groups (Table 2). Furthermore, the mean stanine score for SD, including its subscales,

Table 2. Total score of each GRISS subscale of the study population stratified by SD

Variable	*Total* (n = *95*)	*Without SD* (n = *27*)	*With SD* (n = *68*)	P-*values*
GRISS raw score				
Sexual dysfunction	76.6 ± 12.2	61.6 ± 10.0	82.5 ± 6.7	<0.0001
Impotence	10.6 ± 3.0	8.1 ± 2.9	11.5 ± 2.6	<0.0001
Premature ejaculation	9.9 ± 3.1	7.5 ± 2.7	10.8 ± 2.7	<0.0001
Non-sensuality	12.1 ± 3.5	9.0 ± 3.1	13.3 ± 2.9	0.0001
Avoidance	9.6 ± 3.5	7.5 ± 2.3	10.5 ± 3.6	<0.0001
Dissatisfaction	10.5 ± 3.1	8.6 ± 2.7	11.3 ± 2.9	<0.0001
Non-communication	5.6 ± 2.0	5.0 ± 1.7	5.9 ± 2.1	0.0721
Infrequency	5.9 ± 1.7	5.1 ± 1.9	6.2 ± 1.5	0.0031
Stanine score				
Sexual dysfunction	5.2 ± 1.4	3.4 ± 0.9	5.9 ± 0.8	<0.0001
Impotence	5.2 ± 1.9	3.7 ± 1.8	5.8 ± 1.6	<0.0001
Premature ejaculation	5.2 ± 1.8	3.9 ± 1.5	5.7 ± 1.7	<0.0001
Non-sensuality	5.2 ± 1.8	3.6 ± 1.6	5.9 ± 1.4	<0.0001
Avoidance	5.1 ± 1.9	3.9 ± 1.1	5.5 ± 1.6	<0.0001
Dissatisfaction	5.2 ± 1.9	4.0 ± 1.6	5.6 ± 1.8	0.0001
Non-communication	5.1 ± 1.7	4.6 ± 1.3	5.3 ± 1.7	0.0603
Infrequency	4.9 ± 1.7	4.1 ± 2.0	5.2 ± 1.5	0.0031

Abbreviations: GRISS, Golombok Rust Inventory of Sexual Satisfaction; SD, sexual dysfunction; SQoL, sexual quality of life. Data were presented as mean ± s.d. and compared using unpaired *t*-test.

were significantly higher among those with SD as compared with those without SD with the exception of non-communication (Table 2).

As shown in Figure 1, the prevalence of SD among the respondents in the study was 71.6% (68 out of 95, that is, scores of 5–9). The most prevalent areas of difficulty were non-sensuality (68 out of 95; 71.6%), premature ejaculation (67 out of 95; 70.5%), non-communication (66 out of 95; 69.5%), impotence and infrequency (65 out of 95; 68.4% each), dissatisfaction (58 out of 95; 61.1%) and avoidance (55 out of 95; 57.9%; Figure 1).

However, the prevalence of severe SD among the respondents in the study was 1.1% (1 out of 95) as shown in Figure 1 (that is, scores of 8–9). The most prevalent areas of severe difficulty were premature ejaculation (12 out of 95; 12.6%), dissatisfaction (11 out of 95; 11.6%), avoidance and non-communication (9 out of 95; 9.5% each), non-sensuality (8 out of 95; 8.4%), impotence (7 out of 95; 7.4%) and infrequency (2 out of 95; 2.1%; Figure 1).

The highest prevalence (100.0%) of SD from this study was found among the 45- to 54-year age group, followed by 87.5% in those older than 55 years, then 75.0% in the 19- to 24-year age group through 67.4% in the 25–34 year age group to 65.0% in the 35 to 44-year age group (Table 3). As indicated in Table 3, almost all the subscales of SD increased with increases in age with the exception of non-sensuality and infrequency of sexual act, which appeared to decrease with age (Table 3). Even though, SD and its subscales generally did not show any trend with age, the severe form of SD was found only among individuals who were older than 55 years (6.3%) as shown in Table 3.

From this study, there is a significant positive correlation ($r = 0.22$, $P < 0.05$) between age and avoidance of sexual act. SD also correlated positively with all of its subscales as shown in Table 4. There was a direct relation between impotence and non-sensuality ($r = 0.21$, $P < 0.05$), dissatisfaction ($r = 0.37$, $P < 0.001$), as well as infrequency of sexual act ($r = 0.23$, $P < 0.05$). There was a positive correlation between premature ejaculation and non-sensuality ($r = 0.31$, $P < 0.01$), including non-communication ($r = 0.23$, $P < 0.05$). The higher the level of non-sensuality, the higher the extent of avoidance ($r = 0.20$, $P < 0.05$), dissatisfaction ($r = 0.21$, $P < 0.05$) and non-communication ($r = 0.25$, $P < 0.05$). As dissatisfaction increased, a direct correlation with infrequency was observed ($r = 0.21$, $P < 0.05$; Table 4).

DISCUSSION

The rate of SD between countries and continents would vary depending on racial background, geographical location, socio-demographic status and environmental factors. Even within a country, sexual behaviour could differ between different tribes, era, individuals, as well as within the same individual, due to changes in time and circumstance.[16] Marital relationship is not only dependent on coitus but also the emotional sharing and conjugal feelings that lead to coitus. Emotional sharing and its related conjugal feelings preceded by foreplay gives satisfaction and pleasure[16] for which the importance cannot be overemphasized, as it affects a person's health, quality of life and general wellbeing.[16]

Despite the fact that the rate of SD is dependent on age, surgical and medical conditions, there has been little empirical research in the area of problematic sexual functioning in Africa and almost no research on the potential link between urologic cases and sexual problems to date in Ghana. The prevalence of SD is said to vary between 5.4 and 82.2% in different parts of the world.[1–6] In the present study, 71.6% of the subjects achieved an overall score of 5 or greater on the GRISS, indicating significant sexual problems. This figure is higher than the 66% among the general Ghanaian male population,[7] 59.2% reported among Ghanaian men in marital relationships,[11] 69.3% among Ghanaian diabetic men[10] and the 59.8% reported among Ghanaian men with various medical conditions.[9] These results provide tentative support for the hypothesis that individuals with urologic cases are at greater risk of developing sexual problems. The observed difference could, in part, be due to population differences and geographical location. Jonler *et al.*[17] and Seyam *et al.*[18] demonstrated geographical location as one of the key factors that affects the prevalence of SD within a country and it is more common in rural settings compared with that in urban settings.

The observed 71.6% prevalence rate from this study is also higher than the estimated 10.6% among men with genitourinary problem in Edinburgh,[19] 24% among men with genitourinary problem in central London,[20] 40.4% among Dutch with urological population,[21] 49% among Chinese men with chronic prostatitis[22] and 4.8% among urological cases (self-reported cases) in Turkish men.[23] The observed variation could be due to differences in population (race and ethnicity), confounding variables such as sample size, comorbidities, differences in help-seeking behaviour,

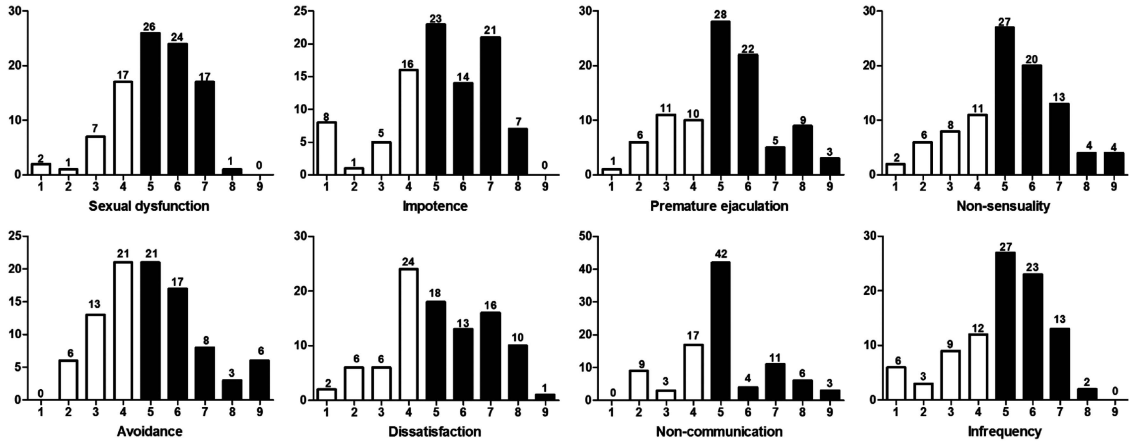

Figure 1. Scores of sexual dysfunction in 95 responding men with urological problems according to Golombok Rust Inventory of Sexual Satisfaction (GRISS) questionnaire. Graph shows the distribution of scores (from 1 to 9 on the *x* axis) for each GRISS subscale, with the number of patients (*y* axis) above each score. Normal scores range from 1 to 4, abnormal scores are 5 to 9 and severe abnormal scores are 8 to 9.

Table 3. Prevalence of SD stratified by age among the studied population

Variables	*19–24* (n = *8)*	*25–34* (n = *46)*	*35–44* (n = *20)*	*45–54* (n = *5)*	*>55* (n = *16)*
Difficulties (%)[a]					
Sexual dysfunction	6 (75.0%)	31 (67.4%)	13 (65.0%)	5 (100.0%)	14 (87.5%)
Impotence	3 (37.5%)	32 (69.6%)	15 (75.0%)	2 (40.0%)	13 (81.3%)
Premature ejaculation	5 (62.5%)	31 (67.4%)	14 (70.0%)	5 (100.0%)	12 (75.0%)
Non-sensuality	7 (87.5%)	36 (78.3%)	12 (60.0%)	5 (100.0%)	10 (62.5%)
Avoidance	4 (50.0%)	25 (54.3%)	10 (50.0%)	3 (60.0%)	13 (81.3%)
Dissatisfaction	3 (37.5%)	26 (56.5%)	13 (65.0%)	5 (100.0%)	10 (62.5%)
Non-communication	5 (62.5%)	33 (71.7%)	13 (65.0%)	4 (80.0%)	11 (68.8%)
Infrequency	6 (75.0%)	29 (63.0%)	17 (85.0%)	4 (80.0%)	9 (56.3%)
Severe difficulties (%)[b]					
Sexual dysfunction	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (6.3%)
Impotence	0 (0.0%)	5 (10.9%)	1 (5.0%)	0 (0.0%)	1 (6.3%)
Premature ejaculation	3 (37.5%)	7 (15.2%)	0 (0.0%)	0 (0.0%)	2 (12.5%)
Non-sensuality	1 (12.5%)	6 (13.0%)	0 (0.0%)	0 (0.0%)	1 (6.3%)
Avoidance	0 (0.0%)	3 (6.5%)	3 (15.0%)	0 (0.0%)	3 (18.8%)
Dissatisfaction	1 (12.5%)	6 (13.0%)	1 (5.0%)	0 (0.0%)	2 (12.5%)
Non-communication	1 (12.5%)	1 (2.2%)	1 (5.0%)	1 (20.0%)	5 (31.3%)
Infrequency	0 (0.0%)	1 (2.2%)	0 (0.0%)	0 (0.0%)	1 (6.3%)

Abbreviation: SD, sexual dysfunction. [a]Score of 5–9. [b]Score of 8–9.

Table 4. Pearson product moment correlation coefficient between SD including the seven subscales of the GRISS

Variable	*s.d.*	*IMP*	*PE*	*NS*	*AV*	*DS*	*NC*	*IF*
Age	0.16	0.12	0.08	−0.01	0.22[a]	0.10	0.15	−0.06
SD		**0.56**[b]	**0.53**[b]	**0.65**[b]	**0.45**[b]	**0.55**[b]	**0.32**[c]	**0.34**[b]
IMP			0.14	0.21[a]	0.15	**0.37**[b]	−0.10	0.23[a]
PE				**0.31**[c]	0.17	0.17	0.27[c]	0.11
NS					0.20[a]	0.21[a]	0.25[a]	0.13
AV						0.06	0.04	−0.05
DIS							0.14	0.21[a]
NCO								−0.02

Abbreviations: AV, avoidance; DIS, dissatisfaction; GRISS, Golombok Rust Inventory of Sexual Satisfaction; IF, infrequency; IMP, impotence; NCO, non-communication; NS, non-sensuality; PE, premature ejaculation; SD, sexual dysfunction. [a]Correlation is significant at the 0.05 level (two tailed). [b]Correlation is significant at the 0.001 level (two tailed). Boldface *r*-values indicate Pearson's product–moment correlation coefficient with a medium size ($0.30 \leqslant r \geqslant 0.50$) effect; boldface and underline *r*-values indicates Pearson's product–moment correlation coefficient with a large size ($r > 0.50$) effect. [c]Correlation is significant at the 0.01 level (two tailed).

methodological differences, the questionnaire and different predisposing factors dependent on age, time, type of urological condition and the local area.

Difficulties in individual domains of sexual functioning were also highly prevalent as determined by the GRISS domain scores. The areas of difficulty were non-sensuality, premature ejaculation, non-communication, impotence, infrequency, dissatisfaction and avoidance. The trend in the presentation of the difficulties is suggestive of a mixture of biological and psychological etiologies as related by Schein *et al.*[24] and clearly evident of the

overlap in urologic conditions with sexual problems even though sexual difficulties have different underlying neurophysiological mechanisms as iterated by Rust and Golombok.[13–15]

Significant comorbidities were observed between the subscales of SD assessed in this study. Inability to develop or maintain an erection of the penis during coitus is associated with a lack of desire for a partner in a relationship, reduced level of satisfaction and reduced frequency of sexual act. The rate of those who experience orgasm and expel semen soon after sexual penetration and with minimal penile stimulation is linked with a lack of desire for a partner in a relationship and the level of communication. Non-sensuality is directly linked with the level of sexual dissatisfaction, non-communication and avoidance of sex. In addition, men who are dissatisfied with their sex life have a higher score on infrequency of sexual act. In effect, lack of desire for a partner in a relationship could lead to or be due to reduced sexual satisfaction. The individual may not talk about it but avoid sexual acts with the partner. It is, however, worthy to note that such existent correlations do not imply causality but it is reasonable to assume that one variable could result in the other.

From the study, being married, smoking cigarette, consuming alcoholic beverages and having children were significant risk factors among the population even after adjusting for confounding factors. The reasons why marriage and having children served as predisposing factors for SD among this cohort of study participants could not readily be inferred from this study but may however warrant further research for clarification. Participants who have had children were observed to be older and hence the observed increased risk of SD could partly be due to the effect of age. The observation with regards to smoking is in agreement with previous population-based studies that provided some evidence of the relationship between SD and smoking.[25–27] This relationship is said to be strong but indirect[28] and possibly due to endothelial pathology. The Massachusetts Male Aging Study found that cigarette smoking at baseline almost doubled the likelihood of SD at follow-up, after controlling for other risk factors.[29] Alcohol has been linked to male sexual problems, including premature ejaculation and inhibited sexual desire.[30] Reduced sexual function, less sexual satisfaction and less frequent intercourse as well as impotence are also common among men who indulge in the consumption of alcoholic beverages.[31,32] Alcohol is known to reduce genital response[33] and act as central nervous system depressant. This fact could be a reason for the significant increase in the rate of SD observed in study respondents taking alcoholic beverages.

The response rate of 47.5% is highly indicative of the majority of study respondents who are most likely not to participate in such studies on the backdrop that they do not have inherent sexually related problems. Data from this cohort of patients with urological conditions are preliminary and it is hoped that this study will provide the groundwork for more elaborated and elucidative studies in the future.

CONCLUSIONS

The prevalence of SD among the Ghanaian men visiting urology clinic is high (71.6%) compared with similar studies. The determinants of SD among this population include marital status, smoking, alcohol consumption as well as having children.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Conception and design: NA, LQ and AAA. Acquisition of data: NA, PK, BBNG, EOA and EN. Analysis and interpretation of data: NA, LQ, AAA, PK, BBNG and EOA. Drafting the article: NA, LQ, EN, PK, BBNG and EOA. Revising it for intellectual content: NA, LQ, AAA, PK, BBNG, EOA and EN. Final approval of the completed article: NA, LQ, AAA, PK, BBNG, WOA and EN.

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