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Determinants of Sexual Functionality Among Men Who Utilize Sex Enhancing Drugs

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Abstract

This paper is based on the findings of a study carried out on the determinants of sexual functionality among men who utilize sex enhancing drugs (SEDs). The study was submitted as a thesis in partial fulfillment for the award of a degree of Master of Public Health Maseno University in the year 2019. The research design was cross sectional. Data for this study was collected using socio-demographic and International Index for Erectile Function (IIEF) questionnaires from a sample of 67 men above the age of 18 who were sampled purposively. The results from descriptive analysis indicated that 55% of the study participants are aged between 30 and 49 years, 64% are educated to secondary school and above, 68% have an occupation, 71% are non-smokers, 40% ride a bicycle, 91% are physically active and 30% have co-morbidity. On sexual functionality, 95% have some level of erectile dysfunction, at 85% a similar number have varying levels of orgasmic dysfunction and sexual desire. 98% have some level of intercourse dysfunction. The study demonstrate that the determinants of sexual functionality include age, marital status, education, alcohol consumption, bicycle riding, physical activity and co-morbidity. The study identifies socio-demographic factors, lifestyle and co-morbidity as risk factors to sexual functionality. It recommends that sexual functionality be given deserving public health attention.

Keywords: Erectile dysfunction, intercourse satisfaction dysfunction, orgasmic dysfunction, sexual desire dysfunction, sexual dysfunction

1. Introdunction

The World Health Organization (WHO) defines sex enhancing drugs (SEDs) as pills, drinks or ointments that are commonly offered over the internet and in various drugs outlets for various sex oriented purposes (WHO, 2017). Men self- medicate with sex enhancing drugs due to various forms of male sexual dysfunction which may be caused by organic and psychological factors, involving several aspects such as libido, pleasure, sexual life, intercourse, erection, ejaculation, orgasm, happiness and bother (Oksuz&Malhan, 2005). The SEDs that are currently available worldwide include; phosphodiesterase type 5 inhibitors (PDE5i) which are Sildenafil, Tadalafil,Vardenafil, and avanafil. Some herbal remedies include Damiana(Temeradiffusa), Ginkigobiloba, Asian Ginseng, Arginine and Yohimbe (Tomlinson, 2017). In Kenya, the Pharmacy and Poisons Board (PPB) has registered over 56 brands of SEDs as reported on the PPB public view page on retained registered products 2018 (PPB, 2018). These add to the pool of unregistered SEDs and unregulated herbal products that are utilized by men. This indicates that there is a huge demand for SEDs whose cause needs to be unraveled.

A global study of sexual attitudes and behaviour states that several factors elevated the likelihood of sexual problems. These include age, lack of interest in sex, inability to reach an orgasm, and erectile difficulties (Laumann, et al.,2005). Moreover, in general, sexual problems tend to be associated with physical health and aging (Lindau et al., 2007). Mental health and stress influence sexual function, depression and stress from financial problems are positively associated with erectile difficulties in men (Laumann et al., 2008). In addition, the educational level and social economic factors have also been shown to have an effect on sexual function. Issues of relationships also play a role in the etiology of sexual problems (Laumannet al., 2005).Among the underlying causes sexual functionality would be a contributing factor.

Majority of older people desire to maintain their sexual activity without significant decline however, age related

physiological changes occur resulting in slower progression of the sexual response cycle (Yang et al., 2000). Medical illnesses and medications as well as cultural, societal and psychological factors further impact on sexual function. Aging in men results in vascular diseases that can impair human sexual response (De Palma, 1996) and local thrombotic disease such as thrombotic obstruction of aorticbifurcation, which interferes with the blood supply of the penis thereby causing impotence also known as erectile dysfunction (Godschalket al., 1997). Erectile Dysfunction (ED) is the persistent inability to achieve or maintain an erection sufficient for satisfactory sexual performance (NIH, 1993).Though the etiology of ED is known, little has been done to educate men about it. Therefore, enhancing public health education on ED can assist in curtailing unnecessary utilization of SEDs.

Erectile dysfunction may result from psychological, neurologic, hormonal or cavernosal impairment or a combination of these factors (Alastair & Wood, 2000). According to Mock (2000), ED affects millions of men in the world. This is based on the Massachusetts Male Aging Study (MMAS) where 52% of men aged 40 – 70 exhibited erectile dysfunction (Alastair & Wood, 2000). It is estimated that, in 1995, there were 152 million men worldwide who experienced ED. The projection for 2025 shows a prevalence of approximately 322 million men. The largest projected increase expected is in the developing countries in Africa, Asia and South America (Aytaet al., 1999). Due to the anticipated increase in sexual dysfunction in Kenya, the assessment of the determinants of sexual dysfunction is crucial. This is important as it will enable the Ministry of Health (MOH) to have the necessary public health preparedness.

According to Lindauet al., (2007), little is known about sexual behavior and sexual function of older people. Although many older adults are sexually active and sexual problems are frequent, they rarely discuss these issues with physicians (Lindau et al., 2007). Regardless of the etiology of ED, sexual satisfaction in men with ED is very low, this leads to low satisfaction with life as a whole (Fugl – Meyers,1997). ED can have severe psychological effects, leading to poor self-image, decreased self-esteem, depression, mental stress and negative effects on personal relationships (Shaneet al., 2004). Physicians may need to probe into sexual functionality status of their patients. This is because sexual dysfunction as co-morbidity has to be leveraged in order to achieve positive health outcomes.

A Kenyan study on the Ariaal community of Northern Kenya reported age related increase in ED in men aged 18 and above (Gray & Campbell, 2005). The study also suggested that ED may be another symptom of the overall decline in sexual function with age. Moreover, the study found that ED is negatively related to a man's current number of wives whereby older men with more than one wife showed less age-related decline in ED. A study in the evaluation of ED among Bungoma bicycle taxi riders concluded that the rate of ED was higher among riders who spent many hours carrying passengers per week (Wasike, 2009). It is not known if any study has been carried out on the determinants of sexual functionality in men who utilize SEDs.

According to WHO (2009), one reason for the rise in Human Immunodeficiency Virus (HIV) infection among older men was the use of SEDs that has allowed men to have more sexual partners. In addition, the use of SEDs such as Viagra and other herbal products commonly used in less developed nations contribute to a high risk of STIs including HIV infection in older adults (Simone &Appelbaum, 2008). SEDs began to gain widespread popularity in the late 1990s with the introduction of phosphodiesterase type 5 inhibitors (PDE5i). PDE5i brought relief to millions of men with ED (Boolellet al., 1996). The effectiveness and ease of use of the PDE5i made it a popular drug misused by men without medical indication (Rosen et al., 2006). In Kenya, the proliferation of PDE5i due to the increase in the number registered by PPB has resulted in increased availability from various outlets. These drugs are easy to use for self-medication and are utilized indiscriminately by men thus creating a public health concern.

The data on the prevalence of the illicit use of SEDs is scanty. A European study estimates that approximately six million (3%) of men in the United Kingdom, Italy, and Germany might be bypassing the health care system to obtain SEDs (Schnetzieret al., 2010). The study suggests that consumption of SEDs without prescription, dwarfs consumption of legitimate *versions.* A study in the Netherlands that used sewage epidemiology found that at least 60% of the SEDs issued could not be explained by dispensing records (Venhuiset al., 2014). Further, recreational use of SEDs in Britain has shown a leap since the licensing of Sildenafil from 3.2% in 1999 to 17% in 2003 (McCambrigeet al., 2006). In Taiwan, sales of SEDs retrieved from International Market Services Health between 1999 and 2011 show a six fold increase with over 90% of the SEDs purchased in the pharmacies without a prescription (Tsai &Jiann, 2014). In Kenya the misuse of SEDs has been noted (Habtuet al., 2014) no data on their misuse was found. The Standard Digital Newspaper in February 2014 states that misuse of SEDs is rife among Kenyans who purchase them from pharmacies, hawkers and vendors.

The Kenya Pharmaceutical Distributors Association indicates that there is an upsurge in the uptake of SEDs without prescriptions (*Daily Nation*, December 3rd 2013). This concurs with a public alert notice posted in the print media on 3rd June 2015 by PPB on illegally imported contraband pharmaceutical drugs. Similarly, on 9th March 2016 a pharmacist pleaded guilty of selling contraband SEDs from a Nairobi outlet.

The current study used a self-administered questionnaire known as *the International Index for Erectile Function* (IIEF). Though there are many sexual function profiles and ED questionnaires that have been developed, the IIEF questionnaire is the most reliable measure of sexual function (Fugl- Meyeret al., 2003). The IIEF has 15 questions and the total score is obtained by the sum of individual scores in each question. It has five domains namely erectile function, orgasmic (ejaculation), sexual desire (libido), intercourse satisfaction (ability to sustain intercourse), and overall satisfaction/premature ejaculation. Being a self-administered tool, IIEF is the most preferred in assessing sexual function as compared to other diagnostic procedures such as medical and sexual history (Rosen, 1998). There are research studies in Kenya that have utilized the IIEF questionnaire. These include; the Ariaal study on ED and its correlates among the Ariaal of Northern Kenya (Gray &Campel, 2005), risks of HIV infections among men aged 50–70 using ED drugs attending Kenyatta National Hospital. (Habtuet al.,2014).Also, the evaluation of ED among bicycle taxi riders (bodaboda) in Bungoma (Wasike, 2005). In this study, the IIEF was used in analyzing sexual function and the study participants were required to recall sexual function information before using SEDs. This helped determine the sexual functionality of men who utilize SEDs.

There were fifty-six (56) brands of sex enhancing drugs registered by the Pharmacy and Poisons Board of Kenya in 2018 (PPB, 2018), while in 2013 eleven (11) brands of SEDs were registered. Therefore, within a period of five years, the number of brands of SEDs registered in Kenya increased by over 500%. This increment was huge and of public health concern. It is not known what triggers the consumption of SEDs and sexual functionality of these consumers is undocumented.

The PPB which is the Kenyan drug authority warned in a public alert notice dated 3rd June 2015 about illegally imported, unregistered, suspected substandard SEDs in the Kenyan market. This is fueled by the high demand for SEDs by men. Despite the rampant use of SEDs, there is no study that has been conducted in Kenya to establish the determinants of sexual functionality among men who utilize SEDs. The utilization of SEDs is, therefore, a major public health problem.

The study endeavored to assess the sexual functionality of men who utilized SEDs, by assessing their sexual functionality domains of erectile function, orgasmic function, sexual desire, intercourse satisfaction and overall satisfaction. The study also determined the association between socio- demographic factors, lifestyle factors, co-morbidities and sexual function domains.

2. Methodology

2.1 Study Area

The research study was conducted in the former western province which upon the promulgation of the new constitution of Kenya was devolved to the counties of Bungoma, Busia, Kakamega and Vihiga. The study covered Bungoma, Kakamega and Vihiga which according to 2009 census had a total population of three million five hundred ninety thousand three hundred thirty six (3590336), covering an area of five thousand seven hundred seventy two square kilometers (5772 sq km) (KNBS, 2009). These counties are predominantly inhabited by the Luyha tribe. The bicycle and motorcycle are the mainstream forms of transportation and self-employment.

2.2 Study Design

Cross sectional study design was used for this study. This is an observational descriptive survey where data analyzed was collected retrospectively at a single point in time (Kendall, 2003). Participants were required to remember their sexual functionality prior to utilizing SEDs.

2.3 Study Population

The study population was men aged above 18years who utilize SEDs in the counties of Bungoma, Kakamega, and Vihiga. These men purchased sex enhancing drugs from Green Cross Pharmacies namely: Bungoma Chemists and Hillside Pharmacy, (Bungoma County), Sparkles Pharmacy and Bukura Chemists (Kakamega County) and Chavakali, Chemists (Vihiga County). These were the only Pharmacies in Western Kenya that were branded Green Cross, after meeting the requirements for branding as stipulated by the Pharmaceutical Society of Kenya. The Green Cross Pharmacies meet the requirement of pharmacy practice accreditation standards offering quality, safe and effective services. These pharmacies provide an environment for patient counseling that secures the privacy and security of patients' data. This environment was suitable for the administration of questionnaires on sexual

functionality. When the study commenced in the year 2018, no pharmacy in Busia had acquired the Green Cross brand, therefore Busia was excluded.

The Kenya National Bureau of Statistics (KNBS, 2013) posted a report which stated that the combined male population of Bungoma, Kakamega, and Vihiga was 1,774,215, with 800,654 households. This was based on 2013, Kenya population and housing survey. Furthermore, the Kenyan demographics report showed that the median age for Kenyans is 19 years; therefore the number of men in these counties aged 18 and above is about 890,000.

2.4 Inclusion Criteria

Men aged above 18 who utilize SEDs, visited a Green Cross Pharmacy in Western Kenya and who consented to the study.

2.5 Exclusion Criteria

1) Men aged above 18 who request for SEDS from Green Cross pharmacies but had problems recalling due to illness or senility, or did not consent to the study.

2) Men aged above 18 who request for SEDs from Green Cross pharmacies but were not the actual users.

2.6 Sampling Method

Purposive sampling was used to select 71 men aged 18 years and above, who purchased SEDs from five selected pharmacies.

2.7 Sampling Procedure

The study sampled participants through Green Cross Pharmacies. These are pharmacies that are registered by PPB, superintended by pharmacists registered by PPB and accredited by Pharmaceutical Society of Kenya (PSK) to offer pharmacy care. They provide an environment suitable to administer the questionnaire on the sexual function which is a sensitive subject.

Men aged 18 and above who purchased SEDs from Green Cross Pharmacies were requested to see the pharmacist or his/her assistant, who introduced himself/herself and informed the client about the study on determinants of sexual functionality of men who utilized SEDs. The pharmacist then asked the client to sign consent if he was willing to participate in the study. Those who consented to participate in the study opted for a convenient day when they reported back and self-administered the questionnaires. Others study participants administered the questionnaire on the same day.

2.8 Data Collection, Management and Analysis

The study participants self-reported on the socio-demographic, lifestyle and medical characteristics. Moreover, they self-administered the IIEF questionnaire using either the English version or Kiswahili version and answered all the 15 questions.

The data captured through questionnaires was duplicated in a computer database designed using, MS- Excel application. Regular file back-up was done to avoid any loss or tampering. Data were analyzed using the Statistical Package for Social Sciences (SPSS) format version 20.0.

3. Results

A total of 71 men aged 18 and above consented to the study, with 95% (67 study participants) responding to the questionnaires. The study participants self administered questionnaires on their socio-demographic factors, lifestyle factors, medical factors and the IIEF. Assessment of sexual functionality was done by considering the distribution of sexual function domains on erectile functions, orgasmic functions, sexual desire, intercourse satisfaction and overall satisfaction. The categorization of sexual function domains was based on the clinical interpretation of the scoring algorithm for IIEF as illustrated on Appendix table 4.13 (Rosen et al. 1997). The characteristics on socio-demographic factors, lifestyle factors and selected medical factors are also presented. Data was collected between April 2018 and June 2018. The analysis was carried out to assess the association using Pearson Chi-square between socio-demographic factors, lifestyle factors, selected medical factors and sexual function domains of men who utilized SEDs.

3.1 Erectile Functionality

The study sought to establish if the study participants had some erectile function problems. The researcher asked the respondents to state their erectile functioning status and the responses were as shown in Appendix table 4.1

Categorization of Erectile Functionality

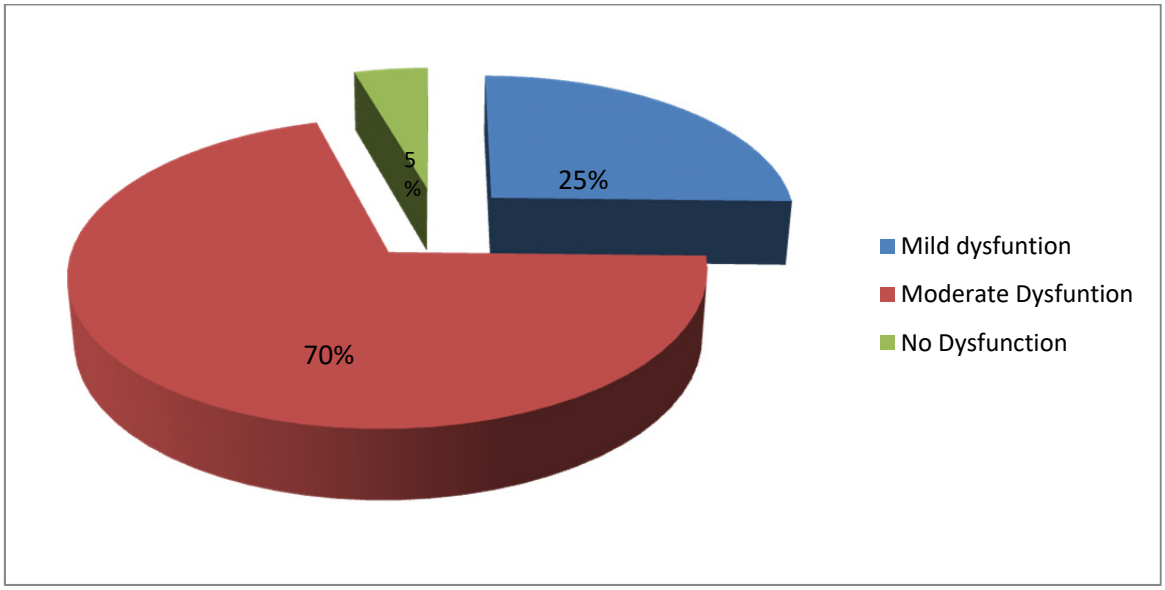

Figure 1. Distribution of Erectile Functionality

Orgasmic functionality

This study sought to establish if the study participants had some orgasmic function problems. The researcher asked the study participants to state their orgasmic functioning status and the responses were as shown in Appendix table 4.2.

Categorization on Orgasmic Functionality

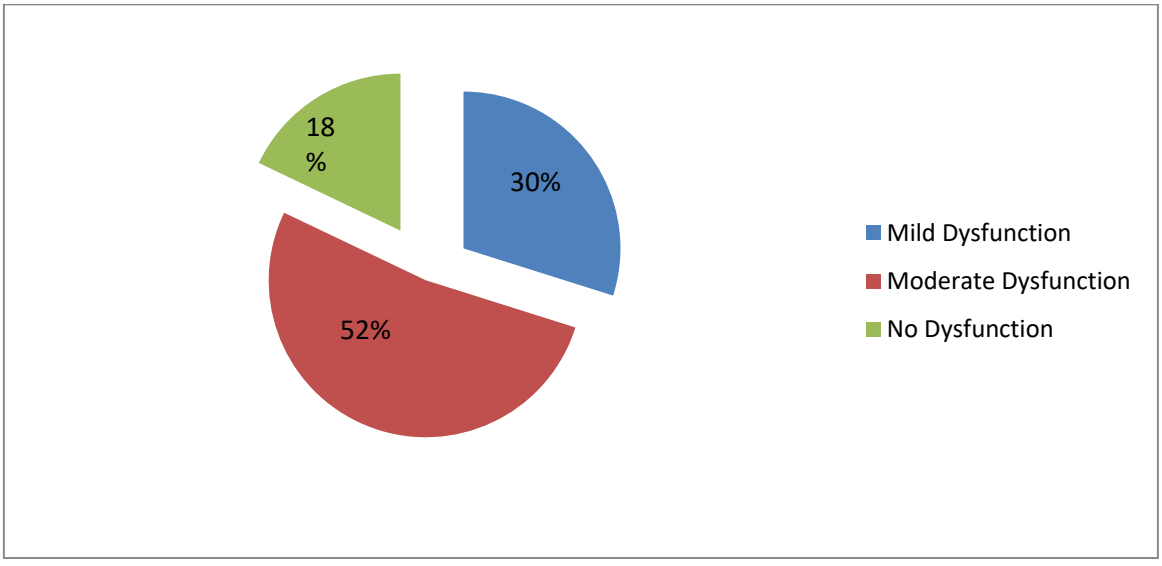

Figure 2.Disribution of Orgasmic Functionality

Sexual Desire

The study sought to establish if the study participants had some sexual desire problem. The researcher asked the study participants to state their sexual desire status and the responses were as shown in Appendix table 4.3

Categorization of Sexual Desire

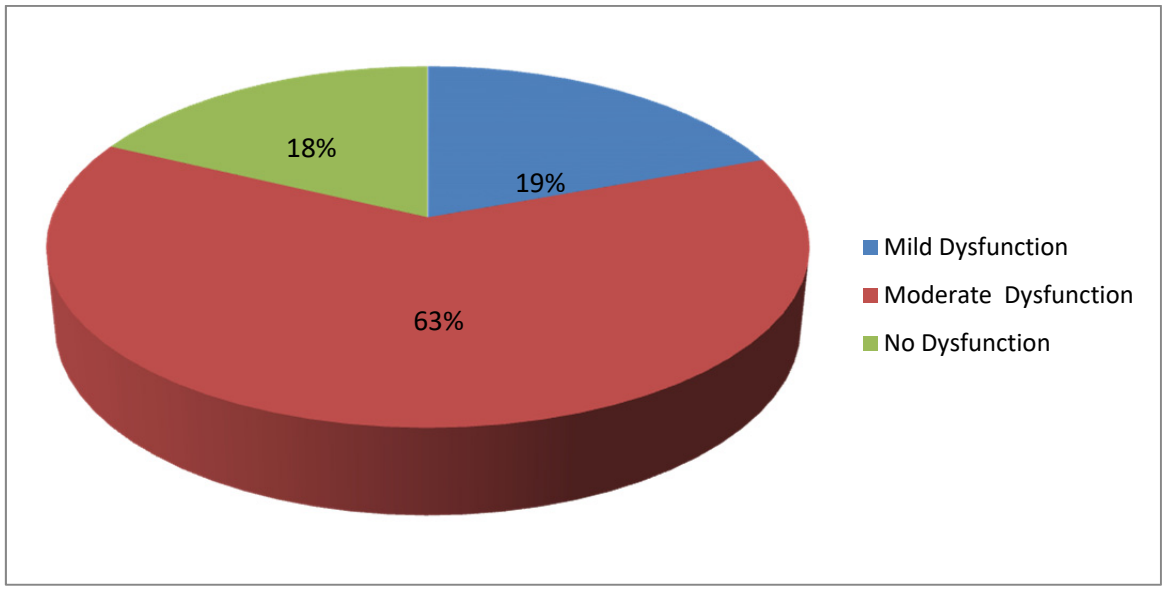

Figure 3.Disribution of sexual desire Functionality

Intercourse Satisfaction

The study sought to establish if study participants got sexual satisfaction during intercourse. The researcher asked the study participants to state their level of satisfaction during sexual intercourse and the responses were as shown in Appendix table 4.4

Categorization of Intercourse Satisfaction

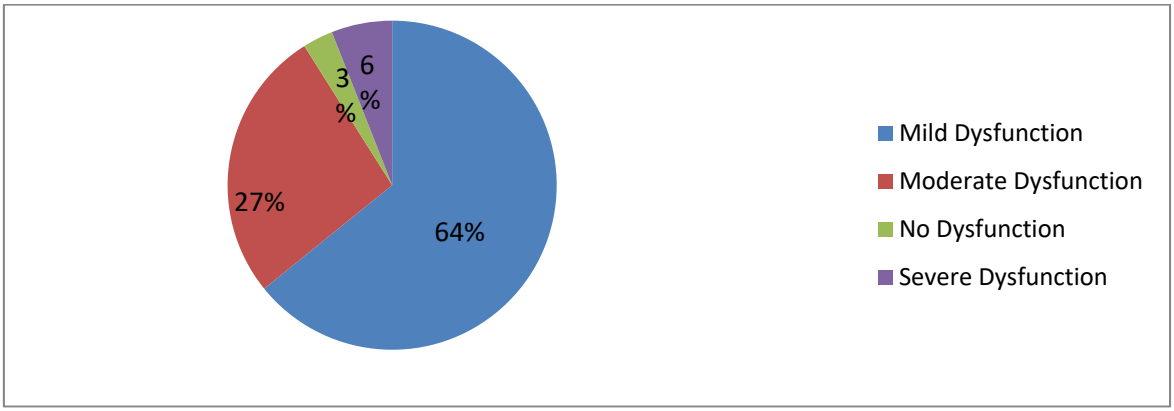

Figure 4. Distribution of Intercourse Satisfaction Functionality

Overall Satisfaction

The study sought to establish if the study participants got sexual satisfaction during intercourse. The researcher asked the study participants to state their level of overall satisfaction during sex and the responses were as shown in Appendix table 4.5

Categorization of Overall Satisfaction

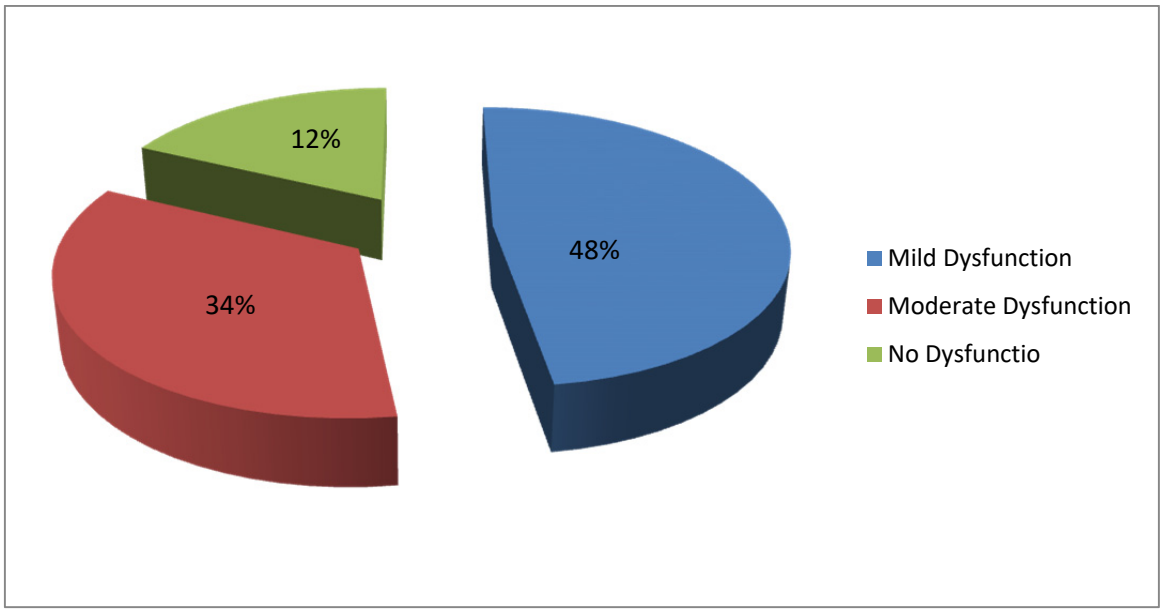

Figure 5. Distribution of Overall Satisfaction Functionality

Overall Categorization of Sexual Functionality

Appendix table 4.6

Socio-Demographic Factors of Men who Utilize SEDs

Socio-demographic characteristics of the study participants is detailed in .Appendix table 4.7.

The association between socio-demographic factors and sexual function domains determined by the Pearson chi-square is shown in Appendix table4.8.

Lifestyle Factors of Men who Utilize SEDs

The study sought to establish the lifestyle characteristics of study participants in terms of cigarette smoking, alcohol consumption, bicycle riding and physical activity, results as detailed in Appendix table 4.9

The association between lifestyle factors and sexual function domains is captured in Appendix table 4.10

Medical Factors of Men who Utilize SEDs

The study sought to assess the co-morbidities that are likely to affect the sexual function of the study participants. The researcher asked the respondents to state if they are suffering from the related diseases such as cardiovascular disease, hypertension, diabetes and depression , results as shown in Appendix table 4.11.

The association between the co-morbidities and sexual function domains was determined and the results are shown in Appendix table 4.12.

4. Discussion

Most studies done on sexual functionality emphasize erectile functionality, with not much attention given to the other sexual functionality domains. It is important to note that in those studies overall moderate to severe ED is profoundly different from the low of about 5% in Northern Europe to the high of 35% in North America (Kubmet al., 2003). In Australia 46% of male surveyed indicated difficult in obtaining an erection. The overall age adjusted ED in Turkey was 36% (Kubmet al., 2003). A Kenyan study on male diabetic patients showed prevalence of ED at 68% (Likataet al., 2012). From the present study it was noted that; on erectile dysfunction, 47(70%) had moderate 17(25%) had mild and 3(5%) had no dysfunction at all. These results compare well with most studies though with variation. The reason is most probably due to the uniqueness of the study participants who were men who utilize SEDs. The symptoms of ED included being able to get an erection sometimes but not every time, being able to get an erection but not having it long enough for sexual intercourse and being unable to get an erection at any time. Whichever of the above symptoms manifests in a man causes an alarm as it affects the man's sexuality. Sex, as it

were, does not merely occur between individual partners. Instead, it occurs within a broader social, cultural context with implications for prestige, status and or reputation (Buss, 2003).

On orgasmic function, 35(52%) had moderate, 20(30%) had mild with 12(18%) having no dysfunction at all. The main symptom of orgasmic dysfunction is the inability to achieve sexual climax. Others include having unsatisfactory orgasms, and taking longer than normal to reach climax. The inability to have an orgasm can be frustrating, and have an impact on the relationship and that is why this study is similar to what Wilson (2018) stated that men with orgasmic dysfunction use SEDs as a self driven initiative to solve the problem.

On sexual desire, 42(63%) had moderate, 13(19%) had mild and 12(18%) had no dysfunction at all. The overall dysfunction was 53(82%), against 12(18%) no dysfunction at all. A similar to the study done by Psychology Today which stated that sexual desire dysfunction refers to a low level of sexual interest resulting in a failure to initiate or respond to sexual intimacy (Snyder, 2017). Symptoms include, reduced or absent sexual thoughts or fantasies and reduced or absent desire for sexual activity according to the American Psychiatric Association 2018. It is the latter symptom that necessitates men to seek for a solution, leading them to utilize SEDs.

On intercourse satisfaction 4(6%) had severe dysfunction, 18(27%) had moderate dysfunction,43(63%) had mild dysfunction and 2(3%) had no dysfunction. On sexual satisfaction, 23(34%) of the study participants had moderate dysfunction, 32(48%) had mild dysfunction and 12(18%) had no dysfunction. Sexual satisfaction has been defined as the evaluation of positive and negative dimensions of one's sexual relationship. These dimensions may include personal sex experiences, the sex experiences of the partners, relationship – related aspects of sexuality and how openly sexual matters were discussed (Lawrenceet al., 1995). Men distressed by sexual problems have lower sexual satisfaction as witnessed among these study participants.

Sexual dysfunctions are highly prevalent affecting an average of about 31% as demonstrated in most studies. In addition to their widespread prevalence sexual dysfunctions have been found to impact significantly on interpersonal functioning and overall quality of life in men (Rosen, 2000).

The study found that a majority of the participants are aged between 30 to 49 years at 37(55%). This is similar with another study done in Saudi Arabia in which those asking for SEDs tended to be young men aged between 30 and 40 years (Ahmed et al 2017). Similarly, a study done by Harvard health publishing reported in May 2014 in which about half of the men aged 40 – 70 had some degree of sexual dysfunction (Harvard publishing, 2014). However, only one in ten reported their inability to have erections. Furthermore, one in four men who sought help for erectile dysfunction was under 40 according to research reported in the journal of sexual medicine (Colleen, 2017).

The results presented here showed that Pearson Chi-square on age was significantly associated with the sexual function domain of sexual desire. This study showed that age was associated with sexual function domains and that age related sexual dysfunction was consistent with previous epidemiological findings. Sexual dysfunction is an inevitable consequence of aging (Yanget al., 2000). Sexual activity decreases with advancing age and the use of SEDs is more prevalent in the middle and late life than in the younger generation (Georgeet al., 1981). Men who are older, in general, have more severe forms of sexual dysfunction. They tend to be more consistent when it comes to using SEDs.

The majority who were 46(69%) of the study participants were married and monogamous. The results from this study using chi-square showed that marital status was significantly associated with sexual desire. This validated an earlier study done on the Ariaal community which associated monogamy with sexual dysfunction. That study found that ED was negatively related to a man's current number of wives, among older men, those with more wives showed a less related decline in ED (Gray, P. Campbell, 2005).

On levels of education, the minimum attainment of secondary school and higher qualifications accounted for 43(64%) of the study participants. The results from this study using chi-square showed that levels of education were significantly associated with sexual desire and intercourse satisfaction. This is largely because educated men were able to reflect and respond appropriately to the questionnaire. A study done in Saudi Arabia stated that it is not surprising as these educated men have higher levels of knowledge and awareness on the availability of SEDs (Ahmed *et al* 2017). This group of men was able to afford and purchase SEDs. Levels of educational and social economic factors have also been shown to have an effect on sexual function. Similarly, relationships issues play a role in the etiology of sexual problems (Laumannet al., 2005).

This study shows that educated men utilized SEDs because they may have read, peer shared or seen advertisements about SEDs. They equally share their experience with SEDs with their colleagues leading to more utilization. These men have a tendency of patronizing social amenities resulting in having certain habits such as using SEDs. From the literature review, characteristics such as education are important aspects to consider when examining

sexual activity. Laumann and colleagues (1994) further argued that such traits are fundamental.

On residence 52(78%) of the study participants resided in the rural areas. The chi-square results from this study showed that residency was significantly associated with sexual desire and intercourse satisfaction. These results compare well with that on educated men who are in a position to choose residence depending on their preference.

On the lifestyle factors, this study found that only 10(15%) of the study participants were smokers, and that smoking was not significantly associated with sexual function domains. This was due to the fact that the majority who were 57(85%) study participants were non- smokers. With only 10(15%) as smokers, the study may not have been suited to establish on the study participants' smoking habits. Other studies show that smokers suffer sexual dysfunction significantly higher than the general population (40% compared to 28%) (Milett*, et al*. 2006). The results of this study were different from those of other studies. Such difference may have arisen from the methodology used and the study population characteristics.

Majority who were 24(43%) study participants were low alcohol consumers, 15(22%) were moderate alcohol consumers and 8(13%) were high alcohol consumers. In this study, alcohol consumption was significantly associated with sexual function domain of orgasmic function and intercourse satisfaction using chi-square test. Crowel*et al* (1989) stated that one of the most common short term side effects of alcohol is reduced inhibition, which can lead to an increase in using SEDs and sexual behavior. In most studies, consumption of alcohol has been shown to inhibit testosterone which is critical for libido and physical arousal (Helpem-Felsheret al., 1996). Therefore, when men consume alcohol, they will notice that their sexual function is diminished and they get depressed. This serves as a trigger for them to use SEDs. Other studies conducted indicate that increasing levels of alcohol intoxication produce a significant degradation in male sexual function. This leads to reduced libido and physical arousal (Sarkolaet al., 2003).

In this study, only 8(12%) of the study participants were boda-boda riders. Bicycle riding was significantly associated with erectile function, sexual desire and overall satisfaction using chi-square. A previous study carried out an evaluation on erectile dysfunction among bicycle riders (boda-boda) identified bicycle riding as a risk factor of ED (Wasike, 2009).This indicated that a man who is used to riding a bicycle is more likely to have sexual dysfunction. Sexual dysfunction reduces sexual activity resulting in the utilization of SEDs. The Massachusetts Male Aging Study (MMAS) found that, in certain circumstances, bicycle riding can damage nerves and compress arteries in the penis. This is similar to a study done by Solan (2018) who stated that the highest risks were in men who cycled more than three hours a week.

Some 61(91%) of the study participants were physically active. Physical activity associated significantly with sexual desire and overall satisfaction as analyzed by Pearson Chi-square. This is not surprising since as a study published in British Journal for Sports Medicine suggested, the usage of moderate to vigorous intensity physical activity (MVPA) alongside using SEDs produced promising results in enhancing sex (Silvaet al., 2017). This shows that the study participants being physically active ensured sexual function potency since they were using SEDs and benefiting from the synergy. Physical activity interventions particularly moderate to vigorous intensity aerobic activity can improve sexual dysfunction through the improvement of endothelial functions (ChengS, 2018).

On the selected medical factors 21(30%) of the study participants were suffering from the selected medical variables (co-morbidity) which were hypertension, cardiovascular diseases, diabetes or depression. Co-morbidity was significantly associated with orgasmic function, intercourse satisfaction and overall satisfaction using Pearson chi-square. The results from this finding concur with those of other studies which showed that co morbidity impacted on sexual function through different pathways resulting in the use of medication with SEDs. According to Lindau, et al. (2007), specific physical illnesses have been associated with incidences of sexual dysfunction including cardiovascular diseases, hypertension, and diabetes among others. It is general clinical knowledge that conditions such as cardiovascular disease, hypertension, and diabetes affect sexual functions and many risk factors for cardiovascular disease are also associated with increased risk of sexual dysfunction (Sullivanet al., 2001).

5. Conclusions

This study showed that most of the men who utilize SEDs had a challenge with their sexual functionality. Age, marital status and education associated significantly with sexual functionality's domain of sexual desire. Residence also significantly associated with intercourse satisfaction.

Alcohol was significantly associated with sexual functionality's domains of orgasmic function and intercourse satisfaction. Bicycle riding was significantly associated with sexual functionality's domains of erectile function, sexual desire, and overall satisfaction. Physical activity also associated significantly with sexual functionality's

domains of sexual desire and overall satisfaction.

This study too showed co-morbidity associated significantly with sexual functionality's domains of orgasmic function, intercourse satisfaction and overall satisfaction.

It has been demonstrated here that men who utilize SEDs have varying levels of sexual dysfunction and this study identifies socio-demographic factors, lifestyle factors and co-morbidities as risk factors.

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Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

Supplementary Material

Table 4.1. Study Participants' Erectile Functionality

	No sexual activity n (%)	Never n (%}	A few times n (%)	Sometime n (%)	Most times n (%)	Always n (%)
How often were you able to get an erection during sexual activity	3(5%)	12(18%)	33(49%)	13(19%)	6((9%)	0(0%)
When you had erections with sexual stimulation, how often were your erections hard enough for penetration?	0(0%)	18(27%)	27(40%)	4(6%)	18(27%)	0(0%)
When you attempted intercourse, how often were you able to penetrate (enter) your partner?	0(0%)	12(18%)	20(30%)	15(22%)	16(24%)	4(6%)
During sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?	0(0%)	4(6%)	23(34%)	31(46%)	6(9%)	3(5%)
	DNAI	ED	VD	D	SD	ND
During sexual intercourse, how difficult was it to maintain your erection to completion of intercourse	0(0%)	4(6%)	15(22%)	17(25%)	22(33%)	9(14%)
	Very Low	Low	Moderate	High	Very High	
How do you rate your confidence that you could get and keep an erection?	0(0%)	35(52%)	15(22%)	14(21%)	3(5%)	

DNAI=Did not attempt intercourse, ED= Extremely difficult, VD= Very difficult, D= Difficult, SD=Slightly Difficult, ND= Not difficult.

Table 4.2. Study participants' Orgasmic Functionality

		No sexual activity	Never	A few times	Sometime	Most times	Always
When you had sexual stimulation or intercourse, how often did you ejaculate?	n	0	0	19	19	25	4
	%	0%	0%	28%	28%	38%	6%
When you had sexual stimulation or intercourse, how often did you have the feeling of orgasm or climax?	n	0	0	15	36	16	3
	%	0.0%	0%	22%	54%	24%	4.5%

Table 4.3. Study Participants'Sexual Desire

		Never	A few times	Sometimes	Most times	Always
How often have you felt sexual desire?	n	0	6	22	35	4
	%	0%	9%	33%	52%	6%
		Very low	Low	Moderate	High	Very high
How would you rate your level of sexual desire?	n	4	29	16	18	0
	%	6.0%	43%	24%	27%	0%

Table 4.4. *S*tudy Participants' Intercourse Satisfaction

		No attempts	1-2 attempts	3-4 attempts	5-6 attempts	7-10 attempts	At least 10 attempts
How many times have you attempted sexual intercourse?	n	10	18	24	11	4	0
	%	15%	27%	36%	16%	6%	0.0%
		No sexual activity	Never	A few times	Sometimes	Most times	Always
When you attempt sexual intercourse, how often was it satisfactory to you?	n	1	13	9	11	17	16
	%	2%	20%	13%	16%	25%	24%
		No enjoyment at all	Not very enjoyable	Fairly enjoyable	Highly enjoyable	Very highly enjoyable	No intercourse
How much have you enjoyed sexual intercourse?	n	10	13	26	10	8	0
	%	15%	19%	39%	15%	12%	0.0%

Table 4.5. Response on Overall Satisfaction

		VD	**MD**	**ESD**	**MS**	**VS**
How satisfied have you been with your overall sex life?	Count	3	23	8	31	2
	%	5%	34%	12%	46%	3%
How satisfied have you been with your sexual relationship with your partner?	Count	0	16	14	24	13
	%	0%	24%	21%	36%	19%

VD=Very Dissatisfied, **MD**=Moderately Dissatisfied, **ESD**=Equally Satisfied and Dissatisfied,

MS=Moderately Satisfied, **VS =**Very Satisfied.

Table 4.6. Categorized Domains of Study Participants as Dysfunction and no Dysfunction

Category	Erection Function n (%)	Orgasmic Function n (%)	Sexual Desire n (%)	Intercourse Satisfaction n (%)	Overall Satisfaction n (%)
Dysfunction	64(95)	55(82)	55(82)	65(97)	55(82)
No dysfunction	3(5)	12(18)	12(82)	2(3)	12(18)
Total	67(100)	67(100)	67(100)	67(100)	67(100)

Table 4.7. Distribution of Socio-demographic Factors of Men who utilize SEDs

Age in years	Frequency(n)	Percentage (%)
Below 29	8	12
30-49	37	55
50-69	12	18
Above 70	10	15
Total	67	100

Marital status	Frequency(n)	Percentage (%)
Single	5	7
Monogamous	46	69
Polygamous	8	12
Separated/Divorced	4	6
Widowed	4	6
Total	67	100

Education level	Frequency(n)	Percentage (%)
Never attended school	3	5
Primary School	21	31
Secondary School	32	48
Post Secondary	11	16
Total	67	100

Occupation	Frequency(n)	Percentage (%)
Unemployed	15	22
Unskilled	7	11
Skilled	25	37
Professional	20	30
Total	67	100

Residence	Frequency(n)	Percentage (%)
Urban	15	22
Rural	52	78
Total	67	100

Table 4.8. An Association between Socio-demographic Factors and Sexual Function Domains among Participants using SEDs

Factor	Pearson chi-square test	Erectile function	Orgasmic functions	Sexual desire	Intercourse Satisfaction	Overall Satisfaction
Age	Chi-square	17.111	16.633	51.184	9.797	12.497
	df	12	6	9	12	9
	Sig.	0.432	0.129	**0.001***	0.634	0.199
Marital status	chi-square	19.413	12.777	58.155	16.608	17.423
	df	12	4	4	9	12
	Sig.	0.224	0.403	**0.001***	0.266	123
Education level	chi-square	17.908	21.376	58.155	17.693	24.338
	df	12	4	4	8	6
	Sig.	0.425	0.432	**0.001***	**0.024***	0.967
Occupation	chi-square	11.276	16.808	15.321	16.750	15.193
	df	12	6	9	12	9
	Sig.	0.389	0.102	0.064	0.085	0.214
Residence	chi-square	9.939	5.313[a]	18.618	24.847	14.150
	df	4	6	9	12	9
	Sig.	0.073	0.257	**0.006***	**0.001***	0.222

Pearson chi-square test, df= degrees of freedom *= statistical significance.

Table 4.9. Distribution of lifestyle Factors of Men who Utilize SEDs

Smoking	**Frequency(n)**	**Percent (%)**
Non-smoker	48	71
former Smoker	5	8
Current Smoker	10	15
No response	4	6
Total	67	100
Alcohol Consumption	Frequency(n)	Percent (%)
Low, Once weekly	29	43
Moderate, Thrice weekly	15	22
High, Almost daily	8	13
None Drinker	15	22
Total	67	100
Bicycle Riding	Frequency(n)	Percent (%)
Self-Use	19	28
Boda- Boda	8	12
Does not ride	38	57
No response	2	3
Total	67	100
Physical Activity	Frequency(n)	Percent (%)
Sedentary (inactive)	6	9
Active	61	91
Total	67	100

Table 4.10. An Association between Lifestyle Factors and Sexual Function Domains among Participants using SEDs

Variables	Pearson chi-square test	Erectile function	Orgasmic functions	Sexual desire	Intercourse Satisfaction	Overall Satisfaction
Smoking	Chi-sqaure	12.496	18.111	15.697	13.674	12.197
	df	8	4	3	4	3
	Sig.	0.324	0.067	0.086	0.213	0.391
Alcohol consumption	Chi-sqaure	19.583	35.668	17.401	25.628	16.217
	df	12	4	6	8	6
	Sig.	0.092	0.001*	0.083	0.01*	0.219
Bicycle riding	Chi-sqaure	78.637	11.897	89.187	11.839	125.475
	df	8	4	6	8	6
	Sig.	0.001*	0.218	0.001*	0.159	0.001*
Physical activity	Chi-sqaure	18.908	3.799	27.971	6.081	39.645
	df	4	2	3	4	4
	Sig.	0.284	0.150	0.001*	0.198	0.001*

Pearson chi-square test; df=degrees of freedom, * significant *P*=value.

Table 4.11. Distribution of Study Participants' Medical Factors

Disease suffered	Frequency (n)	Percent (%)
None	46	70
Cardiovascular diseases	6	9
Hypertension	5	7
Diabetes	5	7
Depression	5	7
Total	67	100

Table 4.12. An Association between Medical Factors (Co-morbidity) and Sexual Domains among Participants using SEDs

Variable	Pearson Chi-square test	Erectile function	Orgasmic functions	Sexual desire	Intercourse satisfaction	Overall satisfaction
Co-mobility	Chi-sqaure	12.891	32.204	19.021	33.380	102.838
	df	12	6	9	12	9
	Sig.	0.097	**0.021***	0.076	**0.001***	**0.001***

Pearson chi-square test df= degrees of freedom, *=significant *P*-value.

Table 4.13. Scoring Algorithm for IIEF/ Clinical interpretation

All items are scored in 5 domains as follows:

Domain	**Items**	**Range**	**Score Max**
Erectile Function	1, 2, 3, 4, 5, 15	0-5	30
Orgasmic Function	9, 10	0-5	10
Sexual Desire	11, 12	0-5	10
Intercourse Satisfaction	6, 7, 8	0-5	15
Overall Satisfaction	13, 14	0-5	10

Clinical Interpretation

I. Erectile function total scores can be interpreted as follows:

Score	**Interpretation**
0-6	Severe dysfunction
7-12	Moderate dysfunction
13-18	Mild to moderate dysfunction
19-24	Mild dysfunction
25-30	No dysfunction

II. Orgasmic function total scores can be interpreted as follows:

Score	**Interpretation**
0-2	Severe dysfunction
3-4	Moderate dysfunction
5-6	Mild to moderate dysfunction
7-8	Mild dysfunction
9-10	No dysfunction

III. Sexual desire total scores can be interpreted as follows:

Score	**Interpretation**
0-2	Severe dysfunction
3-4	Moderate dysfunction
5-6	Mild to moderate dysfunction
7-8	Mild dysfunction
9-10	No dysfunction

IV. Intercourse satisfaction total scores can be interpreted as follows:

Score	**Interpretation**
0-3	Severe dysfunction
4-6	Moderate dysfunction
7-9	Mild to moderate dysfunction
10-12	Mild dysfunction
13-15	No dysfunction

V. Overall satisfaction total scores can be interpreted as follows:

Score	**Interpretation**
0-2	Severe dysfunction
3-4	Moderate dysfunction
5-6	Mild to moderate dysfunction
7-8	Mild dysfunction
9-10	No dysfunction

Source: Rosen RC, Riley A, Wagner G, Osterloh IH, Kirkpatrick J, Mishra A.
The international index of erectile function (IIEF) a multidimensional scale for assessment of erectile dysfunction. Urology. 1997 Jun; 49(6):822-30. Copyright 1997 by Elsevier Science, Inc.

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