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Assessment of Sildenafil as a Potential Drug of Abuse among Sexually Active Men in Bushenyi-Ishaka Municipality

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ABSTRACT

This cross-sectional study aimed to assess sildenafil as a potential drug of abuse among sexually active men aged 18-45 years in Bushenyi-Ishaka Municipality, Western Uganda. Both qualitative and quantitative data were collected through questionnaires from selected health facilities, higher institutions, and the general public. The study evaluated the frequency of sildenafil use, reasons for use, and knowledge of associated side effects. The findings revealed widespread abuse of sildenafil, supporting the hypothesis. The majority (86%) had used the drug at least once in the preceding month, with 39% using it 1-2 times, 27% using it 3-5 times, and 20% using it more than 5 times. While sildenafil is indicated for conditions like erectile dysfunction, hypertension, and angina pectoris, the primary reason expressed for use (93%) was to enhance sexual performance, indicating non-medical use. Only 8% reported having medical conditions necessitating sildenafil use, with 2% having erectile dysfunction and 2% having heart disease. A significant portion (47%) were unaware of potential side effects. The most commonly experienced side effect was headache (84%), followed by nausea (7%), sleepiness (6%), and dizziness (3%). The study revealed a strong positive relationship between the frequency of sildenafil use and respondents' religion and level of education. However, no significant relationship was found between the frequency of use and the presence of medical conditions indicated for sildenafil or social problems potentially affecting sexual performance. The findings indicate widespread abuse of sildenafil for non-medical reasons among sexually active men in Bushenyi-Ishaka Municipality, highlighting the need for public awareness and regulatory measures to address this issue.

Keywords: Sildenafil, Drug abuse, Erectile dysfunction, Sexual performance, Side effects

INTRODUCTION

The advent of sildenafil citrate, marketed under the brand name Viagra, revolutionized the treatment of erectile dysfunction, becoming the first oral medication approved by the U.S. Food and Drug Administration (FDA) for this condition in 1998 [1]. However, the widespread popularity and availability of this drug have led to concerns about its potential misuse and abuse, particularly among individuals without underlying medical conditions necessitating its use. Sildenafil was initially developed by researchers at Pfizer's facility in Sandwich, Kent, England, as a potential treatment for hypertension and angina pectoris [2]. The drug's mechanism of action involves inhibiting phosphodiesterase type 5 (PDE5), an enzyme responsible for the degradation of cyclic guanosine monophosphate (cGMP) [3]. By preventing the breakdown of cGMP, sildenafil facilitates the relaxation of smooth muscle cells in the corpus cavernosum, thereby enhancing blood flow and enabling the achievement and maintenance of an erection in response to sexual stimulation. While the therapeutic benefits of sildenafil for individuals with erectile dysfunction are well-established, its recreational use has become a growing concern. Reports have emerged of individuals using the drug to enhance libido, improve sexual performance, or permanently increase penis size [4]. However, studies suggest that sildenafil has minimal impact on individuals without underlying erectile dysfunction [5]. The phenomenon of sildenafil abuse has been documented globally, with studies indicating a growing trend among young adult males. A study revealed that sildenafil use became more pronounced in younger males and females, with the fastest-growing segment being males aged 18–45 years [6]. Another five-year study ending in 2005 revealed a gradual increase in the abuse of Viagra in British nightclubs since its introduction in 1999 [7]. In Uganda, while statistical information on sildenafil use is limited, reports indicate an increasing demand for the drug [4]. This observation has raised concerns about the potential abuse of this medication. Sildenafil abuse is not without risks, as the drug is associated with various side effects, including headaches, nasal congestion, impaired vision, photophobia, dyspepsia, cyanopsia (blue-tinted vision), non-arteritic anterior ischemic optic neuropathy, priapism, heart attack, sudden hearing loss, increased intraocular pressure, ventricular arrhythmias, and liver damage [8]. Furthermore, interactions with other medications, such as protease inhibitors used in HIV treatment, can increase the likelihood and severity of side effects [9, 10].

Notably, sildenafil abuse has been linked to drug addiction and sexual addiction. Individuals addicted to legal or illegal narcotics, as well as those struggling with sexual addiction, may resort to using sildenafil to enhance their sexual experiences [11]. Additionally, concerns have been raised about the potential use of sildenafil by athletes for performance enhancement, although preliminary research has not found any significant benefits [12].

Given the potential health risks associated with sildenafil abuse and the lack of comprehensive studies on this issue in Bushenyi-Ishaka Municipality, this research aimed to assess the extent of sildenafil abuse among sexually active men in the region. By examining the frequency of use, reasons for use, knowledge of associated side effects, and factors influencing abuse, this study sought to provide valuable insights into this emerging concern and inform potential interventions to address the misuse of this medication.

METHODOLOGY

Study design

The study employed cross-sectional methods, combining quantitative and qualitative data collection. Participants completed interview questionnaires individually, ensuring confidentiality. Simple random sampling was utilized to select participants.

Study area

The study was conducted in selected health facilities, higher institutions of education, and the general public in Bushenyi-Ishaka municipality.

Study population

The study population included all men between 18 and 45 years of age in the study area during the study period.

Sample size

The sample size was determined using Morgan &Krejcie [13] table for determining sample size. The estimated population (N) of men in the area of study was 10,000 giving a sample size
(n) of 370

Inclusion criteria

The study included sexually active men who were using or had ever used sildenafil and consented.

Exclusion criteria

The study excluded all men who were using or had ever used sildenafil but were outside the
study area during the study period.

Ethical consideration

i. Ensured acceptability of the student researcher to the community with a letter of introduction from dean of school of pharmacy, KIU western campus to management of the areas of research.
ii. Consent was obtained before any interaction with research participants by use of consent forms which were signed by the research participants before answering the questionnaire as confirmation of accepting to take part in the study.
iii. Confidentiality was maintained throughout the study by using participants initials instead of their names

Analysis of data

The obtained data on the sildenafil use was coded, entered using Microsoft Excel and later keyed into SPSS version 20 for analysis. The results were presented using bar and pie charts for interpretation and analysis.

RESULTS

Descriptive analysis of demographic characteristics of respondents

Age of respondents

The age of respondents was analysed and the mean age obtained as 28 years given that the skewness was 0.241.

Tribe of respondents

From the graph, it is seen that a bigger proportion of the participants who use sildenafil are Munyankole constituting 34%, followed by Mukiga with 14%, Musoga 12%, Muganda with 10%, Munyoro and Mutooro each with 7% and the rest of the tribes altogether making up 16%.

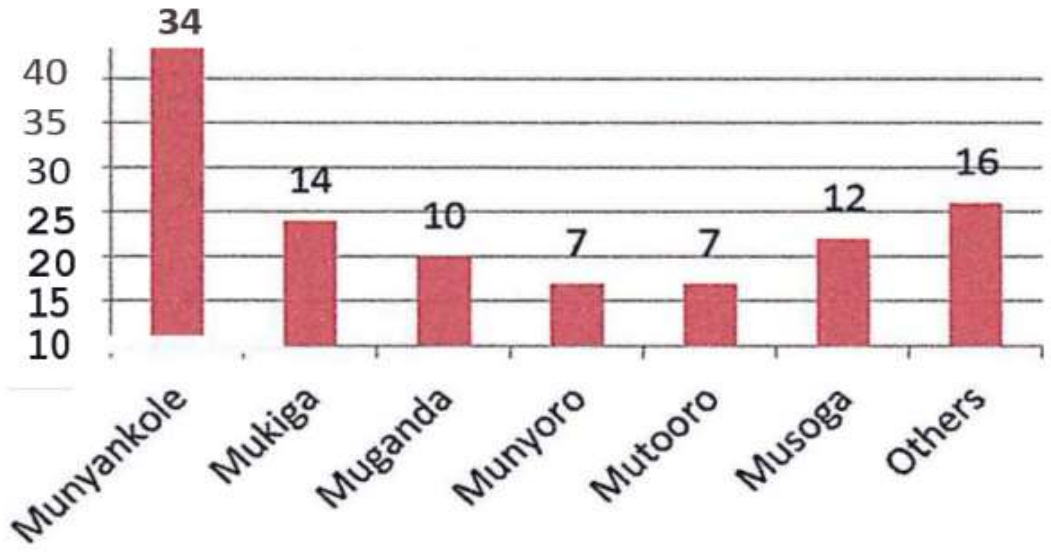

Figure 1: A bar graph showing the tribe of the participants

Religion of the participants

The majority (39%) of the participants were protestants, followed by Catholics (27%), Moslems with 12%, Seventh-day- Adventists and Pentecostals each constituting 11%.

Marital status of the participants

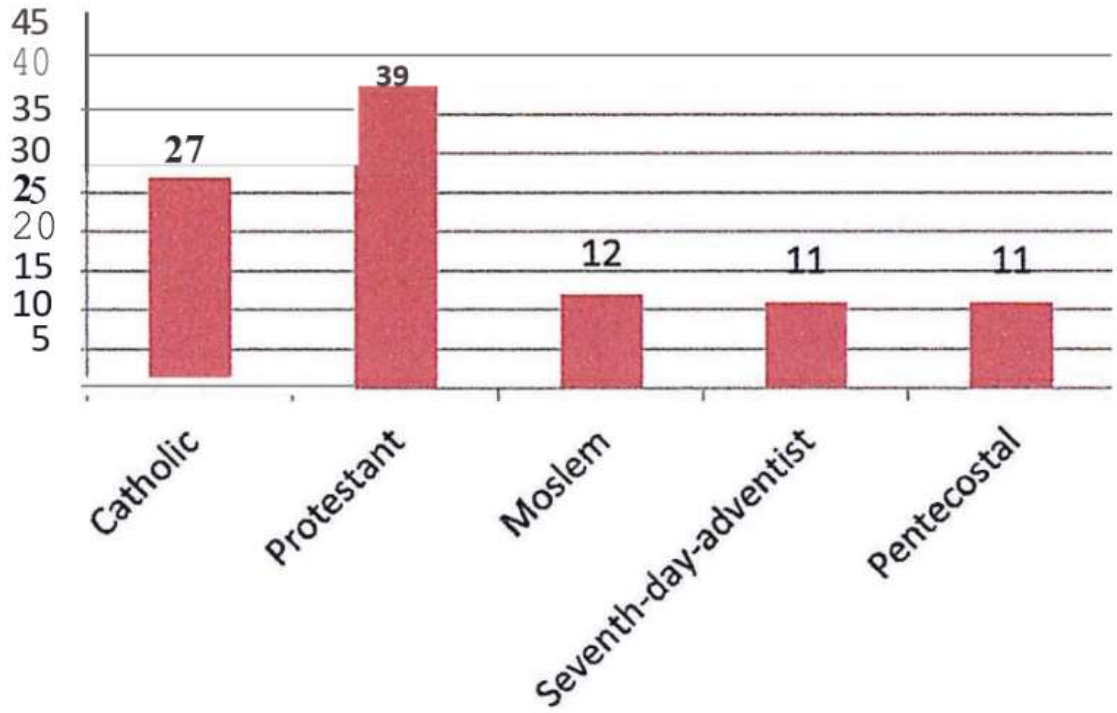

Figure 2: A bar graph showing the religion of the research participants.

The majority of the research participants were single making up 70% of the total number of the people that participated in the study. This was followed by 24% who were married, 4% were divorced/ separated and lastly 2% who were widowers.

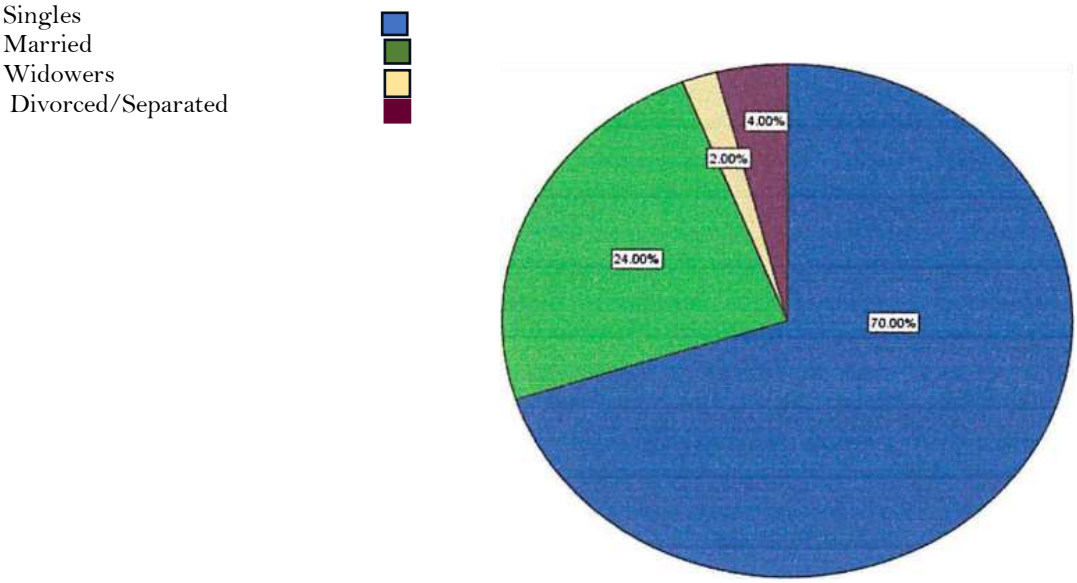

Figure 3: A pie chart showing the marital status of the research participants

The level of Education of participants

From the study, majority (72%) of the participants had attained tertiary Education, followed by those of secondary (16%), primary (9%) and 3% was composed of participants who had no any formal education.

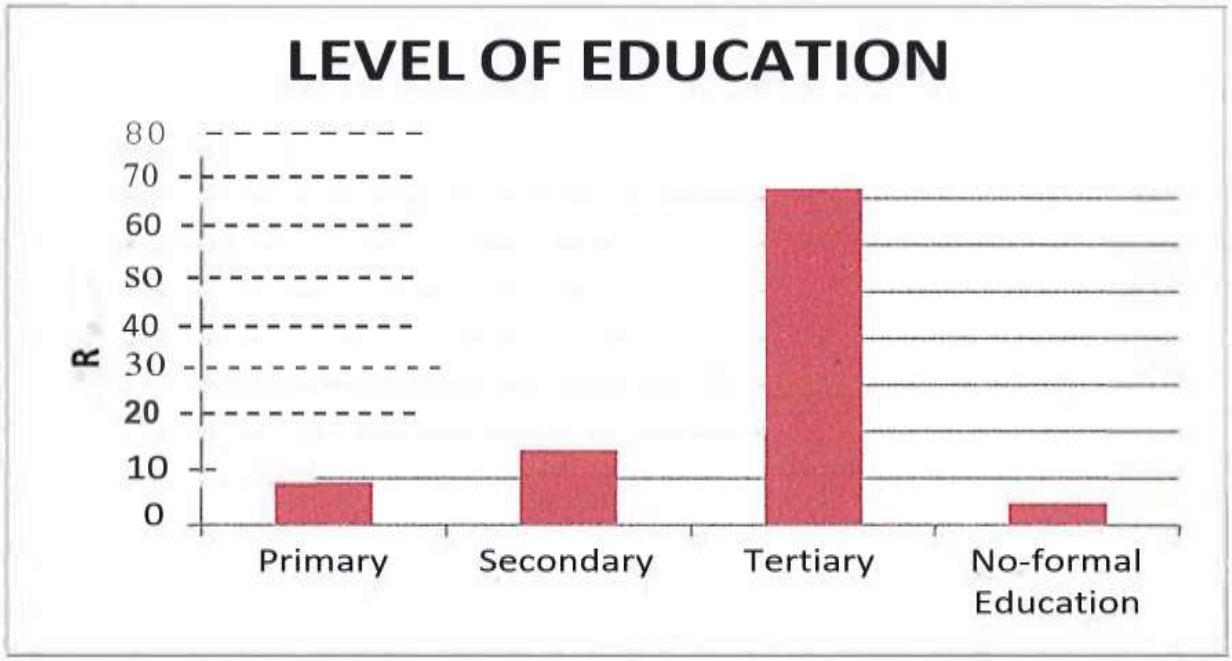

Figure 4: A bar graph showing the level of Education of the research participants.

Occupation of the participants

A good proportion of the research participants were students making up 56%, followed by Business men with 20%, Peasants made up 14% and the least were civil servants making up 10% of the total number of participants.

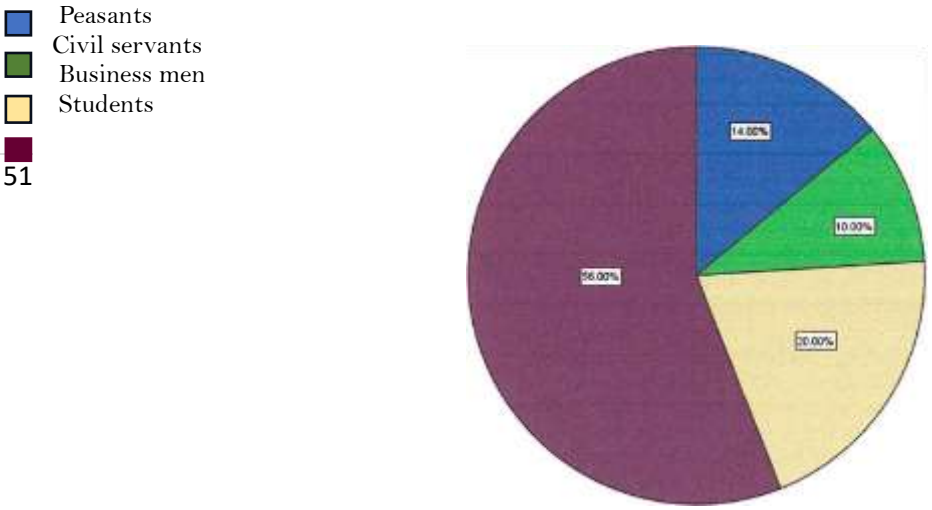

Figure 5: A pie chart showing the occupation of the participants

Frequency of use of the drug during this year

From the study 39% had used the drug 1-2 times, followed by 27% who had used it 3-5 times, 20% had used it more than 5 times while 14% had not used sildenafil during one month but had used it before.

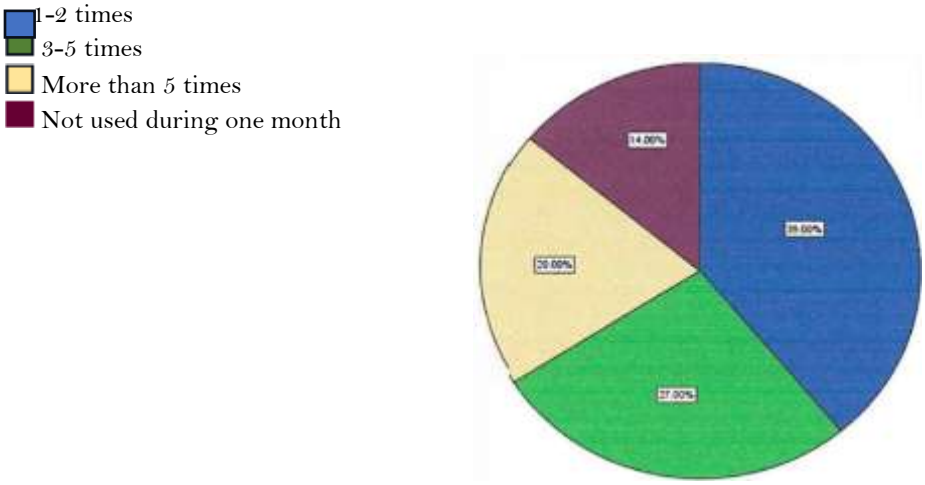

Figure 6: A pie chart showing the frequency of use of sildenafil this year

Common brands of Sildenafil used

The most commonly used brand of sildenafil is Penegra which was used by majority (79%) of the study participants, followed by Degra with 8%, Kamagra with 6%, Satisfil with 5% and the least used brand was Silmet used by only 2% of the users.

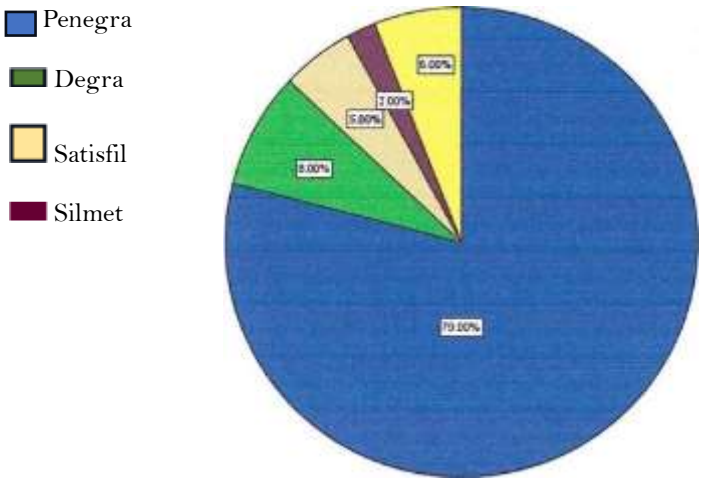

Figure 7: A pie chart showing the common brands of sildenafil used by the participants

Number of tablets usually taken

From the findings, 46% of people interviewed usually take 1 tablet, followed by 39% who take 2 tablets, 9% who take half a tablet, then 6% who take more than 2 tablets.

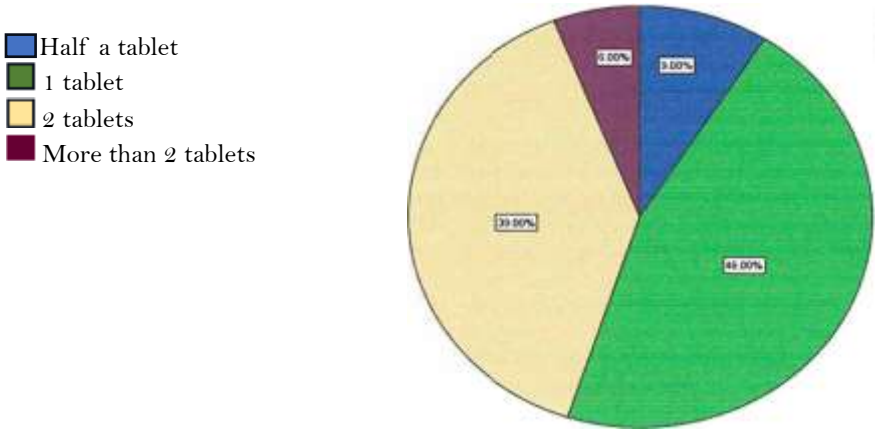

Figure 8: A pie chart showing the number of tablets usually taken

Strength of the drug usually used

The biggest portion (61 %) of sildenafil users interviewed used 50mg tablet, followed by 37% who used 100mg tablet and the least (2%) used 25mg tablet (taking half a tablet of 50mg strength).

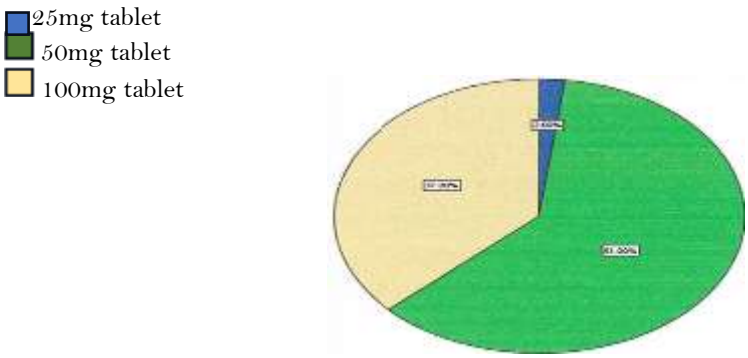

Figure 9: A pie chart showing the strength of the drug commonly used

Way of taking the drug

Majority (89%) of sildenafil users interviewed take it by swallowing, followed by 11% who chew the tablets, 8% crush the tablets and dissolve it in water and 1% comprised of those who take it by other means including putting it under the tongue.

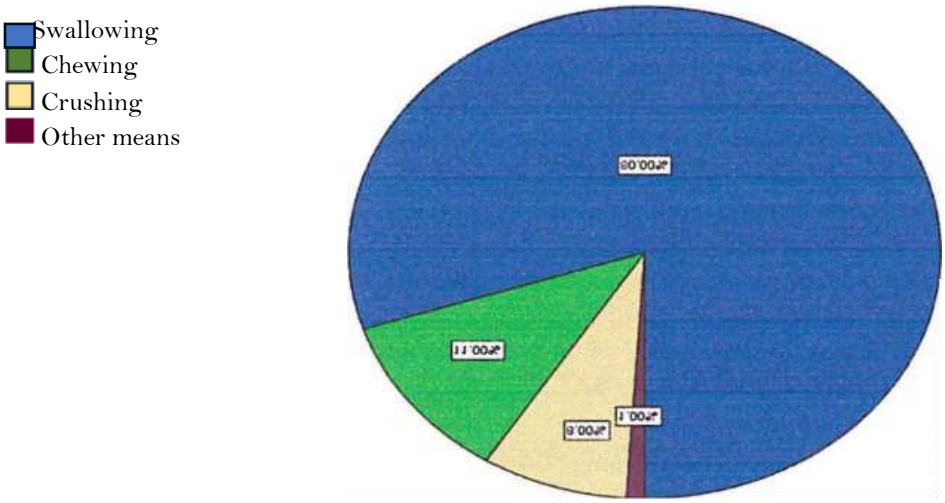

Figure 10: A pie chart showing the way people take the drug

Time when the drug is usually taken by the users

The time when the drug is usually taken was assessed and the responses were as follows; a bigger proportion (61 %) take the drug 1-2 hours before sex, followed by 30% % who take the drug immediately before sex and 9% who take the drug at any time of the day when needed.

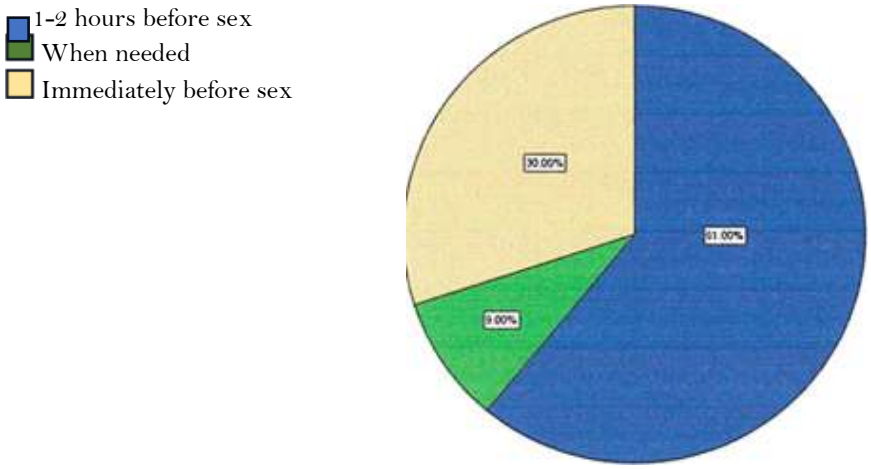

Figure 11: A pie chart showing the time when the drug is usually taken

Reasons why people take the drug

From the study, 93% responded that they take the drug to enhance sexual performance and the least (7%) use it for other reasons.

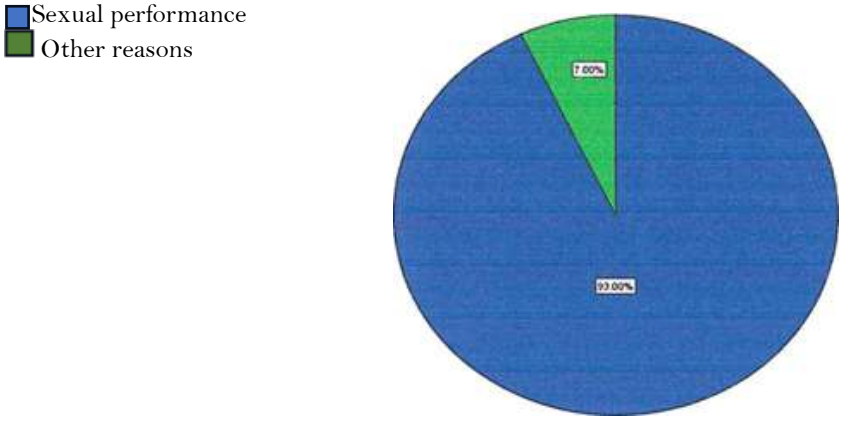

Figure 12: A pie chart showing the reasons why people take the drug

Response to having any medical condition related to taking the drug

The majority (92%) of the participants in this study had no any medical condition related to why they were used the drug with only 8% stating they had medical conditions indicated for the use of the drug.

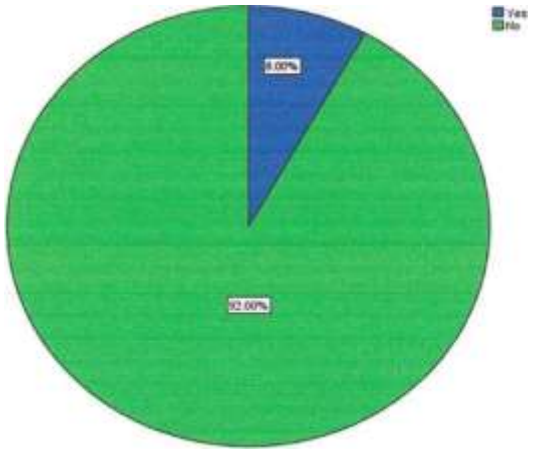

Figure 13: A pie chart showing responses to having any medical condition related to taking the drug.

Known medical conditions participants had and on medication

From the study, 3% of the respondents had eye problems, 2% had erectile dysfunction and heart disease each, 1%had epilepsy and allergies each while the majority (91%) had no any medical condition.

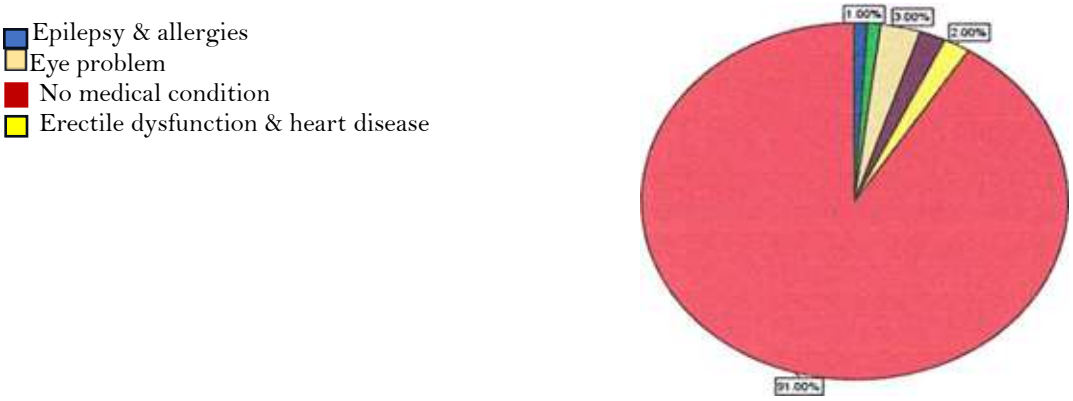

Figure 14: A pie chart showing the medical conditions participants had and on medication

Knowledge of the side effects of using the drug

From the study, 53% were aware of some side effects of the drug while 47% did not know.

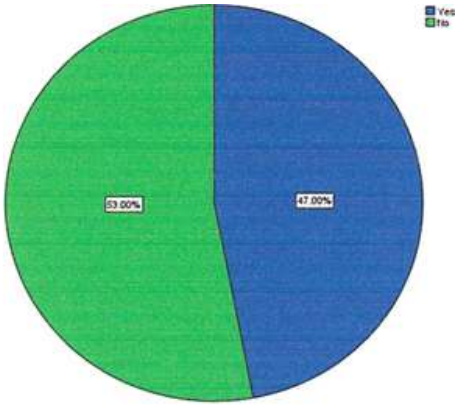

Figure 15: A pie chart showing responses on the knowledge of side effects of the drug

Experience after taking the drug

A good proportion (53%) of the respondents knew about the side effects of whom 84% reported to experience headache, followed by 7% who experience nausea, 6% become sleepy and 3% experience dizziness. 7% of the respondents did not know about any side effects associated with the use of the drug.

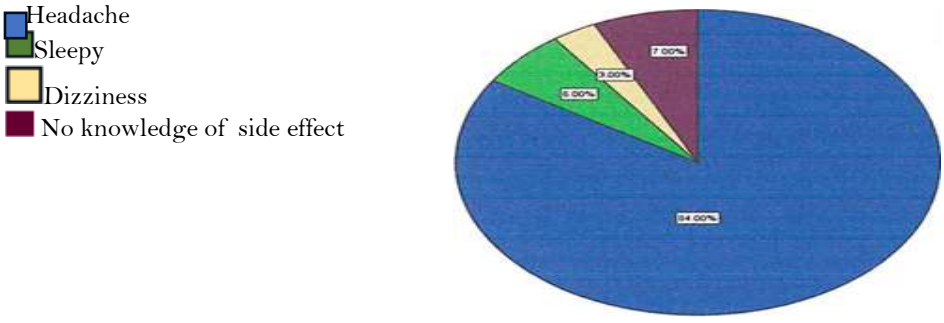

Figure 16: A pie chart showing the experiences of the drug users after using the drug

Responses on seeking knowledge on use of the drug from qualified personnel

A bigger proportion of the respondents (64%) reported to have never sought knowledge on the use of the drug while the rest (36%) of the respondents reported to have ever sought knowledge on the use of the drug from qualified health personnel.

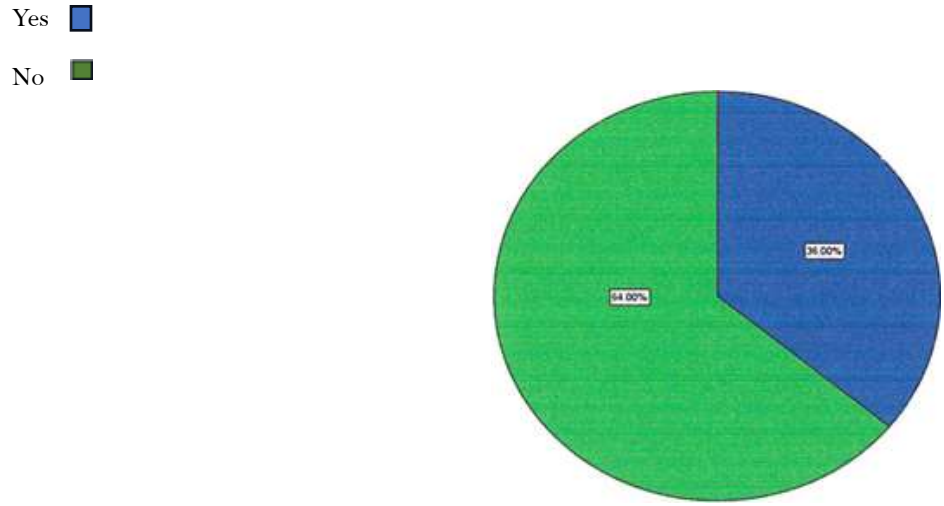

Figure 17: A pie chart showing responses on seeking knowledge on use of the drug from qualified personnel

Experience when they have sex without using the drug

From the study, 41 % of respondents reported that they feel unsatisfied when they do not use the drug, 40% reported to feel weak, 7% reported to have no erection while 12% gave other different reasons.

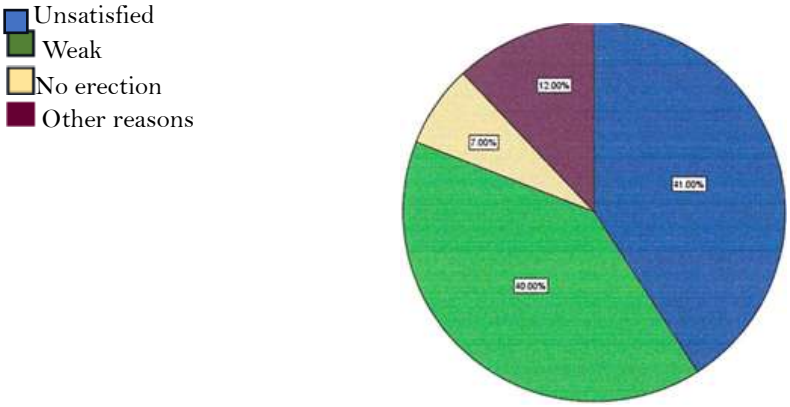

Figure 18: A pie chart showing responses of experiences when they have sex without use of the drug

Response to having any social problem associated with the use of drug

From the study, 75% of the respondents had no any social problems that are thought to lead to decreased sexual performance and lead to use of the drug while 25% reported they had some social problems leading to decreased sexual performance. Those who reported some social problems were as follows; 13 % had school fees problems, followed by 8% who had domestic violence issues, 6% had loans while 16 % reported other different problems.

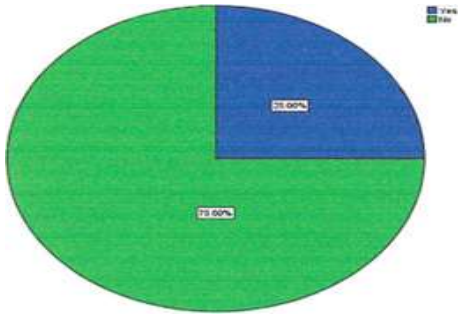

Figure 19: A pie chart showing responses to having social problems associated with use of the drug

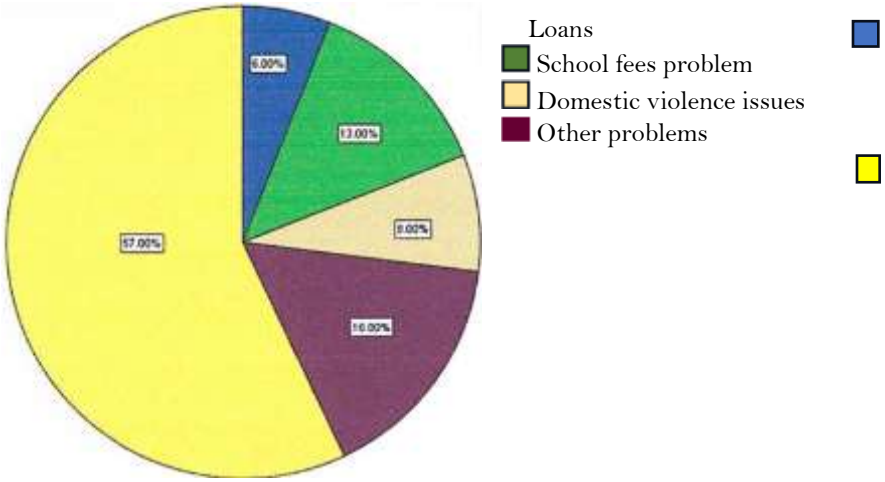

Figure 20: A pie chart showing the social problems reported by the respondents

Opinion of the respondents on whether they can have sex normally without taking the drug

A good proportion (55%) of the respondents reported that they can have sex normally without taking the drug, 29% were not sure if they can have sex normally without the drug and 16% reported not to have sex normally without use of the drug.

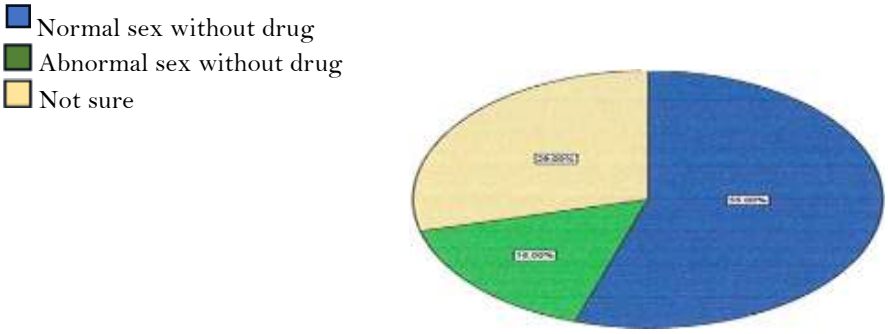

Figure 21: A pie chart showing opinions of respondents on whether they can have sex normally without taking the drug.

Table 1: Cross tabulation of social problems and the frequency of use of the drug

		FREQUENCY OF USE OF DRUG DURING THIS MONTH				Total
		1-2 times	3-5 times	Above 5 times	None	
SOCIAL PROBLEM OF THE PARTICIPANTS	Loans	1	0	3	2	6
	School fees	4	3	3	3	13
	Domestic violence	4	4	0	0	8
	Others	8	4	4	0	16
	Not applicable	22	16	10	9	57
Total		39	27	20	14	100

Pearson Chi- square value =15.640, Chi square test at 1% level of significance, the P value obtained was 0.208.

Assessment of effect of religion of respondents on the frequency of use of the drug

Table 2: Cross tabulation of religion of respondents and frequency of use of the drug

		FREQUENCY OF USE OF DRUG DURING THIS MONTH				Total
		1-2 times	3-5 times	Above 5 times	None	
RELIGION OF RESPONDENTS	Catholic	14	3	7	3	27
	Protestant	18	8	8	5	39
	Moslem	0	9	0	3	12
	Seventh-day Adventist	5	4	1	1	11
	Pentecostal	2	3	4	2	11
Total		39	27	20	14	100

Pearson Chi Square (2) =27.975 and Pvalue was **0.006,** Phi Cramer's value= 0.529, At 1% level of significance.

Effect of level of Education of respondents on the frequency of use of the drug

Table 3: Cross tabulation of level of Education of respondents and frequency of use of the drug.

		FREQUENCY OF USE OF DRUG DURING THIS MONTH				Total
		1-2 times	3-5 times	Above 5 times	None	
LEVEL OF EDUCATION	Primary	1	1	6	1	9
	Secondary	5	6	4	1	16
	Tertiary	33	19	10	10	72
	No formal Education	0	1	0	2	3
Total		39	27	20	14	100

Pearson Chi- Square (2) =24.252, P value =0.004, Phi Cramer's value =0.492, At 1% level of significance.

Effect of having medical condition related to taking the drug on the frequency of use of the drug

Table 4: Cross tabulation of having medical condition related to taking the drug and frequency of use of the drug.

		FREQUENCY OF USE OF DRUG DURING THIS MONTH				Total
		1-2 times	3-5 times	Above 5 times	None	
HAVING ANY MEDICAL CONDITION RELATED TO TAKING THE DRUG	Yes	2	1	5	0	8
	No	37	26	15	14	92
Total		39	27	20	14	100

Pearson Chi-Square (2) = 10.185, P value = 0.017, at 1% level of significance

DISCUSSION

The non-medical use and abuse of prescription drugs pose significant public health challenges, with potentially severe consequences for individuals and communities [14]. This research delving into the potential abuse of sildenafil among sexually active men sheds light on the dangers of drug misuse and the urgent need for comprehensive strategies to address this pressing issue. The study's findings reveal concerning trends and patterns of sildenafil use among sexually active men in the study area. One of the key findings is the high frequency of sildenafil use among the participants. A significant proportion (86%) reported using the drug at least once during the month of the study, with 20% using it more than five times. This high frequency of use raises concerns about potential addiction and abuse of the drug, especially since the majority (92%) reported no medical condition requiring the use of sildenafil. Furthermore, the study revealed that the primary reason for sildenafil use among the participants was to enhance sexual performance (93%), rather than for its approved medical indications [2]. This finding aligns with previous studies that have highlighted the recreational use of sildenafil, particularly among younger individuals [5, 15]. The study also explored the relationship between various factors and the frequency of sildenafil use. Interestingly, the participant's level of education and religion were found to have a significant positive relationship with the frequency of use. This finding suggests that factors such as access to

information and cultural or religious beliefs may play a role in the misuse of sildenafil. Notably, a significant portion of the participants (47%) reported being unaware of the potential side effects associated with sildenafil use. This lack of knowledge highlights the need for increased awareness and education efforts to ensure that individuals are informed about the potential risks and consequences of misusing or abusing the drug. The findings of this study also align with previous research indicating the growing trend of recreational sildenafil use, particularly among younger individuals (15, 16]. The misuse of sildenafil for non-medical purposes raises concerns about potential health risks, including adverse drug interactions, cardiovascular complications, and the development of psychological dependence [5, 17]. The findings highlight the need for targeted interventions, such as educational campaigns, stricter regulations on the dispensing of sildenafil, and increased awareness among healthcare professionals to identify and address potential cases of misuse or abuse.

CONCLUSION

There is a considerable knowledge gap regarding sildenafil use among men in Bushenyi-Ishaka municipality, coupled with widespread abuse of the drug for non-medical purposes. These findings underscore the necessity for immediate interventions to address the rampant misuse of sildenafil and raise awareness about its appropriate use.

Recommendations

Health personnel should carry out health education through sensitization of the public about health risks associated with the misuse of sildenafil. Additionally, sildenafil sale as over-the-counter should be strongly regulated by the drug regulatory body (NDA) and its dispensing should follow a valid prescription.

REFERENCES

1. Ibrahim, A. H. A., Ghallab, K. Q., Alhumaid, F. I., Almahfoudh, H. H., Almadan, A. J., Eid, M. a. A., AlMishqab, M., Alsaffar, M. F., & Aljamea, J. H. (2022). A systematic review of sildenafil mortality through the years. Curēus. https://doi.org/10.7759/cureus.32179
2. Kloner, R. A. (2000). Cardiovascular risk and sildenafil. The American journal of cardiology, 86(2), 57-61.
3. Goldenberg, M. (1998). Safety and efficacy of sildenafil citrate in the treatment of male erectile dysfunction. Clinical therapeutics, 20 6, 1033-48. https://doi.org/10.1016/S0149-2918(98)80103-3.
4. Kamatenesi-Mugisha, M., & Oryem-Origa, H. (2005). Traditional herbal remedies used in the management of sexual impotence and erectile dysfunction in western Uganda. African Health Sciences, 5(1), 40-49.
5. Mondaini, N., Ponchietti, R., Muir, G., Montorsi, F., Di Loro, F., Lombardi, G., & Rizzo, M. (2003). Sildenafil does not improve sexual function in men without erectile dysfunction but does reduce the postorgasmic refractory time. International Journal of Impotence Research, 15(3), 225–228. https://doi.org/10.1038/sj.ijir.3901005
6. Delate, T., Simmons, V., & Motheral, B. (2004). Patterns of use of sildenafil among commercially insured adults in the United States: 1998–2002. International Journal of Impotence Research, 16, 313-318. https://doi.org/10.1038/sj.ijir.3901191.
7. McCambridge, J., Mitcheson, L., Hunt, N., & Winstock, A. (2006). The rise of Viagra among British illicit drug users: 5-year survey data. Drug and Alcohol Review, 25(2), 111–113. https://doi.org/10.1080/09595230500537167
8. Graziano, S., Montana, A., Zaami, S., Rotolo, M. C., Minutillo, A., Busardò, F. P., & Marinelli, E. (2017). Sildenafil-associated hepatoxicity: a review of the literature. European review for medical and pharmacological sciences, 21(1 Suppl), 17-22.
9. Highleyman, L. (1999). Protease inhibitors and sildenafil (Viagra) should not be combined. BETA: bulletin of experimental treatments for AIDS: a publication of the San Francisco AIDS Foundation, 12(2), 3.
10. Chinello, P., Cicalini, S., Pichini, S., Pacifici, R., Tempestilli, M., & Petrosillo, N. (2012). Sildenafil plasma concentrations in two HIV patients with pulmonary hypertension treated with ritonavir-boosted protease inhibitors. Current HIV research, 10 2, 162-4. https://doi.org/10.2174/157016212799937263.
11. Fisher, D. G., Malow, R., Rosenberg, R., Reynolds, G. L., Farrell, N., & Jaffe, A. (2006). Recreational Viagra use and sexual risk among drug abusing men. American journal of infectious diseases, 2(2), 107
12. Reardon, C. L., & Creado, S. (2014). Drug abuse in athletes. Substance abuse and rehabilitation, 95-105.
13. Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. Educational and psychological measurement, 30(3), 607-610.
14. McCabe, S., Boyd, C., & Young, A. (2007). Medical and nonmedical use of prescription drugs among secondary school students. The Journal of adolescent health: official publication of the Society for Adolescent Medicine, 40 1, 76-83. https://doi.org/10.1016/J.JADOHEALTH.2006.07.016.
15. Halkitis, P. N., Shrem, M. T., & Martin, F. W. (2005). Sexual behavior patterns of methamphetamine-using gay and bisexual men. Substance Use & Misuse, 40(5), 703-719.
16. Romanelli, F., & Smith, K. M. (2004). Recreational use of sildenafil by HIV-positive and-negative homosexual/bisexual males. Annals of Pharmacotherapy, 38(6), 1024-1030.

17. Swearingen, S. G., & Klausner, J. D. (2005). Sildenafil use, sexual risk behavior, and risk for sexually transmitted diseases, including HIV infection. The American journal of medicine, 118(6), 571-577.

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