

Knowledge on safe male circumcision as an HIV preventive measure among males aged 10 years and above in Katwe-Mulago, Masaka district. A descriptive cross-sectional study.

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Abstract

Background: Safe male circumcision (SMC) is recognised by the World Health Organisation and UNAIDS as an effective biomedical intervention that reduces female-to-male HIV transmission by approximately 60%. Despite its documented benefits, knowledge gaps continue to hinder optimal uptake in many Ugandan communities. This study assessed the level of knowledge regarding SMC as an HIV preventive measure among males aged 10 years and above in Katwe-Mulago, Masaka District.

Methodology: A community-based cross-sectional study was conducted among 79 respondents selected through simple random sampling. Data were collected using structured questionnaires and analysed using descriptive statistics.

Results: Findings revealed that 78% of respondents were aware that male circumcision reduces the risk of HIV transmission. However, only 49% correctly understood that SMC provides partial protection rather than complete immunity. Additionally, 70% acknowledged that SMC is more effective when combined with other preventive measures such as condom use. Healthcare providers were identified as the primary source of information (41%), while community programs accounted for only 15%.

Conclusion: Although general awareness of SMC is relatively high, substantial misconceptions persist regarding its effectiveness and role within comprehensive HIV prevention strategies. Strengthening health education campaigns and emphasising combination prevention approaches could improve the accuracy of knowledge and informed decision-making.

Recommendation: Targeted community-based sensitisation, particularly through healthcare workers, may enhance the effectiveness of SMC promotion programs.

Keywords: Knowledge, Safe Male Circumcision, Hiv Preventive Measures, Males Aged 10 Years And Above, Katwe-Mulago, Masaka District.

Background of the study

Safe male circumcision is the removal of all or part of the foreskin of the penis by a trained healthcare professional (UNAIDS, 2019). HIV (Human immunodeficiency virus) is the one that causes AIDS. HIV attacks the body's immune system, specifically the white blood cells called CD4 cells, which it destroys and weakens the person's immunity against minor infections, according to the WHO HIV guidelines. Male circumcision reduces HIV transmission by removing foreskin cells that are highly susceptible to the virus. (Wamai et al., 2016).

Globally, safe male circumcision has been recognized as a highly effective HIV prevention method, with several studies supporting its efficacy in the reducing the risk of HIV transmission and the estimated percentage of circumcised males in each country or territory varies considerably where global prevalence is 35.7% and approximately half of the circumcisions were for religious or cultural reasons, in countries that lacked data it was assumed 99.9% of Muslims and Jews are circumcised hence its estimated that 38% of men globally are circumcised.

Voluntary male medical circumcision has been recommended by the Joint United Nations program on HIV/AIDS, UNAIDS and WHO since 2007 as part of the broader package of interventions designed to reduce HIV incidence among men in a geographical epidemic, for it is an over time, efficient, safe and cost-effective intervention. However, the guidelines indicate that SMC doesn't provide complete protection against HIV. Following the 2016 political declaration on ending AIDS, the Global Fast Track Targets were set, including VMMC (UNAIDS, 2021). In Africa and specifically Northern Africa, circumcision is prevalent in as many as 93% of countries compared to 62% of countries in Sub-Saharan Africa. WHO recommended VMMC become a component of a comprehensive package of HIV/AIDS preventive services for men basing on the findings from randomised controlled trials conducted in sub-Saharan Africa that found up to 60% protection against HIV infection associated with intervention (WHO, 2022)

In East Africa, focusing more on Kenya and Uganda, three large randomised controlled trials (RCTs) conducted revealed that MC reduces the risk of acquiring HIV via heterosexual intercourse in males by 51-60% if carried out by Medical Professionals under safe conditions. Based on this evidence, the WHO and UNAIDS recommended medical male circumcision as an essential part of the HIV prevention program.

In Uganda, SMC was introduced in 2010, aiming at providing safe male circumcision to 80% of males aged 15-49 years by 2015. Only 2 million men received SMC of the 4.2 million males required (Kripke, Vazzano, Kirungi, Musinguzi, & Opio, 2016). In 2010, MOH stated that circumcision reduces the risk of HIV acquisition among medically circumcised men by approximately 60% (WHO, 2022).

Among the males in Katwe-Mulago, Masaka district, little is known about how SMC acts as a tool in the prevention of HIV. Hence, the study aims to determine the knowledge on safe male circumcision as an HIV prevention measure among males aged 10 years and above in Katwe-Mulago, Masaka District.

Methodology

Study design

A cross-sectional study design was used for the study. This was used because it enabled the study to find out the views that determined the knowledge, attitude, and practice on safe male circumcision as an HIV preventive measure among youths of Katwe-Mulago in Masaka District within a short time. Quantitative data were obtained with the use of questionnaires, which were designed according to the objectives of the study.

Study area

The study was conducted in Katwe-Mulago, in Katwe parish, in Katwe/Butego subcounty in Masaka district. Katwe is found along the Masaka-Kyotera road, and it is approximately 20 kilometres east of Masaka on a latitude of 0.33194 and a longitude of 31.71028. Katwe-Mulago is the area of interest due to the increased cases of HIV/AIDS noted at Uganda Cares, Masaka Regional Referral Hospital. For that reason, the study wanted to find out the views and precautions undertaken by youths in Katwe parish.

Study population

The target population consisted of males of reproductive age (10 years and above).

Sample size determination

The sample size is to be determined using Fisher et al (1990) formula; $n = z^2pq/d^2$

Where n = desired sample size, z = standard deviation at confidence interval of 95%, taken as 1.96. p=proportion of target population estimated to have desired characteristics, 47.7%=0.477(Lema et al, 2020) d= degree of accuracy (0.05) q=population without the desired characteristics (1-p)

$$n = \frac{(1.96)(1.96) \times 0.477(1-0.477)}{(0.05)(0.05)}$$

$$n = 383$$

Since the total population of participants involved is to be less than 10000 (100), the following formula is to be applied: Sample size determination (nf) is calculated as follows: nf = the desired sample size

n = the desired sample size (when the population is less than 10000), N = the estimated population size, N = 100

$$nf = \frac{n}{(1 + \frac{n}{N})}$$

$$= \frac{383}{1 + \frac{383}{100}}$$

$$= 79.296; \text{approximately } 79 \text{ participants.}$$

Sampling technique

A multi-stage sampling technique was used for the study, where the parish was divided into villages. Simple random sampling was then used to select participants. This was used to minimise bias since a male was to be selected, and the next one was skipped to choose the next participant who would participate in the study.

Sampling procedure

The research used a multi-stage sampling method to select the villages. Males who met the study criteria, irrespective of religion, tribe, education level or race, were identified from each village. From the identified villages, a male youth, after the previous participant was skipped, chose the next one. This was continued until the sample size was obtained.

Data collection method

Data was collected using a survey method where questionnaires consisted of closed-ended questions designed to analyse the four aspects: demographic characteristics, knowledge, of males and here the participants circled their best alternative.

Data collection tools

The data collection tools used were self-administered questionnaires, sheets of paper and pens for recording data and other relevant information collected during the study.

Data collection procedure

A letter of introduction was obtained from the research committee of the International Paramedical Institute (IPI), which was presented to the chairman of Katwe parish seeking permission to carry out the study in the area. With an authorisation letter granted, the author and research assistant proceeded to the participants, where they introduced themselves, consented, explained the objectives of the study and then gave out questionnaires to the males who agreed to take part in the study. The questionnaires were answered by circling the best alternative as given by the participant. The author translated the questions into the local language (Luganda) and also circled the choice for the illiterate participants to answer the questionnaire. This helped to go with the data collection process without contradiction due to the English language used in the questionnaire.

Dependent variables

Prevention of contraction of HIV/AIDS among the youths.

Independent variables

Knowledge of safe male circumcision among males.

Pretesting of the research tool

A pilot study was conducted to assess the feasibility of the study. A sample of five male youths in Katwe parish was examined to determine the extent to which questions would address the study objectives; however, these will not be included in the study.

Inclusion criteria

Males aged 10 years and above.

Males who were willing to voluntarily consent to participate in the study.

Exclusion criteria: Males under 10 years.

Adherence to standard operating procedures

Washing hands, putting on masks and the use of sanitisers were effectively put into practice during the study to ensure infection prevention and control.

Data analysis and presentation

The data from the questionnaires was first analysed manually and then entered into Microsoft Excel for analysis and presented in the form of percentages and frequencies in tables, graphs and pie charts.

Ethical consideration

A letter of introduction was obtained from the research committee of the International Paramedical Institute (IPI), which was presented to the chairman of Katwe parish, seeking permission to carry out the study in the area.

After permission was granted, the author collected data where consent was sought and the objectives of the study were well explained to participants who agreed to be involved in the study. No money or gift was promised to any participant for participation. Participants were assured of full privacy and confidentiality, where their names would not be included anywhere on the questionnaires.

Results

Social-demographic data of participants.

Table 1: showing the social-demographic data of the participants

Variables	Response	Frequency (n=79)	Percentage
Age	10-29	41	51.9
	30-49	30	38
	Above 49	8	10.1
Marital status	Single	40	50.6
	Married	33	41.8
	Divorced	2	2.5
	Widower	4	5.1
Level of education	None	3	3.8
	Secondary	30	38
	Tertiary	31	39.2
	Primary	15	19
Religion	Muslim	20	25.3
	Catholic	32	40.5
	Anglican	10	12.7
	Others	17	21.5

Findings from table 1 show that the majority of the respondents 51.9% were between the age bracket of 10-29 years, and a very small percentage 10.1% were 49 years and above. About the marital status, the majority 50.63% were single, and a smaller proportion 2.5% were divorced.

Regarding the level of education, the greatest percentage of the respondents 39.2% attained tertiary education; however, a very small percentage 3.8% of the respondents had not attained any level of education. About the religion of the respondents, the majority 40.5% were Catholics, and the smallest proportion 12.7% were Anglicans.

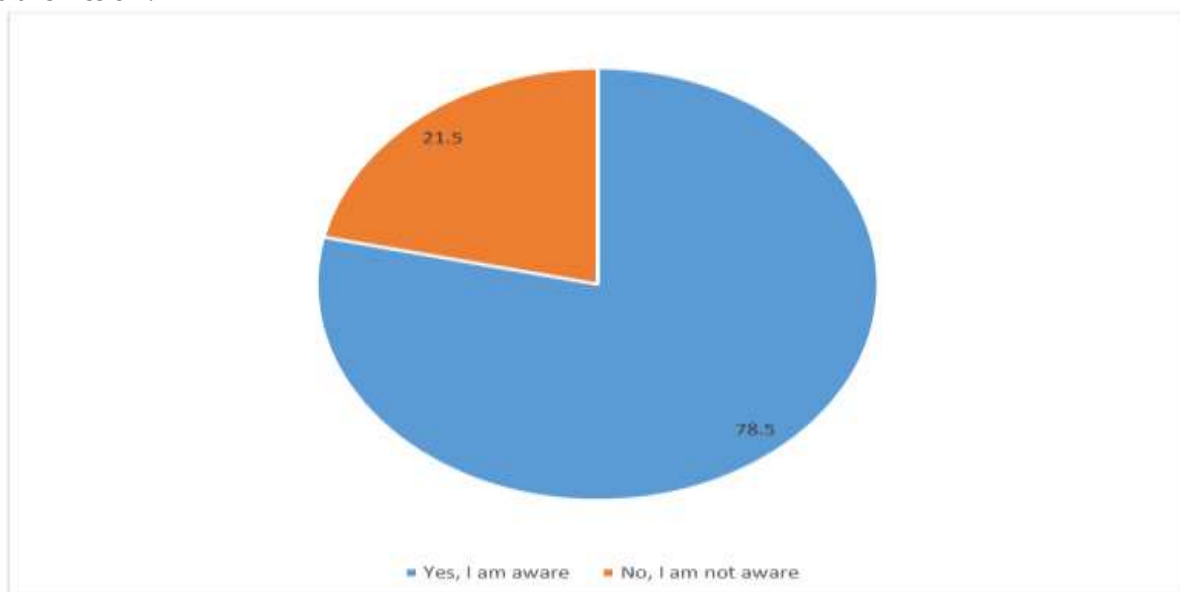
Knowledge of Respondents regarding safe male circumcision as an HIV preventive measure.

Table 2: showing the knowledge of respondents regarding SMC as an HIV preventive measure.

Variables	Response	Frequency(n=79)	Percentage (%)
Aware that male circumcision can reduce the risk of HIV transmission	Yes, I am aware	62	78
	No, I am not aware	17	22
Effectiveness of male circumcision in preventing HIV	It provides complete protection against HIV	21	27
	It reduces but does not completely prevent the risk of HIV	39	49
	I am unsure about its effectiveness	19	24
Degree of confidence that circumcision should be performed by a trained healthcare provider to ensure safety	Very confident	50	63
	Somewhat confident	18	23
	Not confident at all	11	14
Belief that safe male circumcision is more effective when combined with other HIV prevention methods, like condom use.	Yes, if it is more effective	55	70
	No, it is equally effective on its own	15	19
	I don't know	9	11
Main source of information on safe male circumcision as an HIV preventive measure	Healthcare providers	32	41
	Family or friends	15	19
	Media (TV, radio, social media)	20	25
	Community programs	12	15

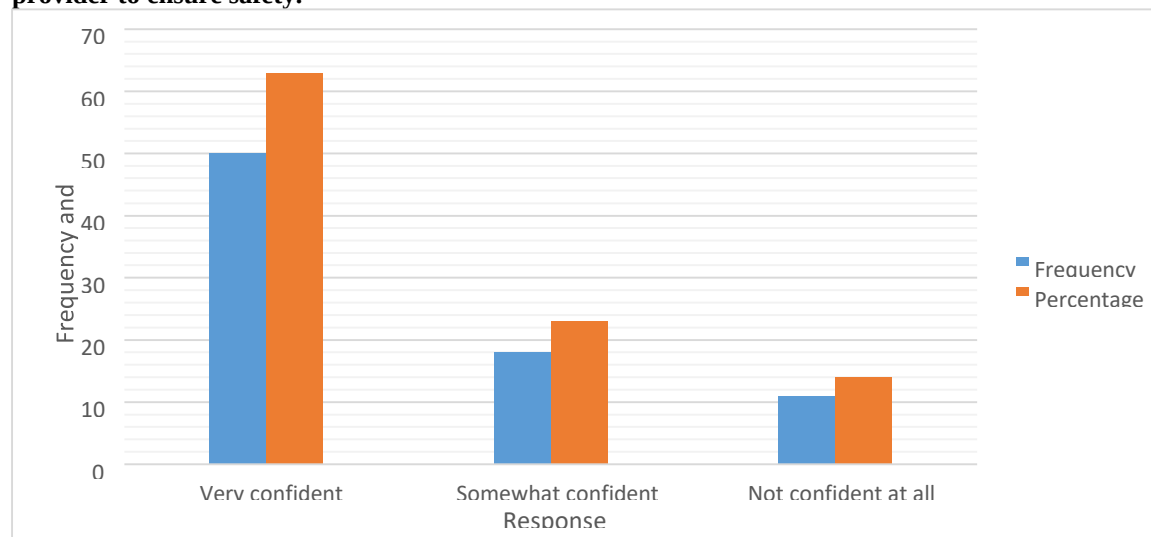
Table 2 represents information regarding the level of knowledge of the respondents on safe male circumcision as an HIV preventive measure. 78% of the respondents were aware of SMC as an HIV preventive measure, while 22% were not aware. 49% of the respondents understood SMC as partially effective against HIV, while 24% of the respondents were unsure about its effectiveness. 63% of the respondents were very confident that circumcision should be performed by a trained healthcare provider to ensure safety while 14% were not confident at all. 70% of the respondents acknowledged that combining SMC with other methods increases effectiveness, while 11% did not know. 41% of the respondents had healthcare providers as their main source of information on SMC as an HIV preventive measure, while 15% of the respondents got the information from community programs.

Figure 1: showing the percentage levels of awareness about male circumcision reducing the risk of HIV transmission .



The pie chart shows 78% of the respondents were aware of SMC as an HIV preventive measure, while 22% were not aware.

Figure 2: showing the degree of confidence that circumcision should be performed by a trained healthcare provider to ensure safety.



The graph shows 63% of the respondents were very confident that circumcision should be performed by a trained healthcare provider to ensure safety, while 14% were not confident at all.

Discussion

Knowledge of males (10 years and above) on SMC as an HIV preventive measure.

The study revealed that 78% of respondents were aware of SMC as an HIV preventive measure, consistent with findings from the study conducted in Kampala, where a similar awareness level (78%) was observed (Atekyereza, Nakazibwe, & Kinyera, 2020). This suggests that awareness initiatives may be working in some regions, but the 22% lacking awareness indicates room for improvement. Educational campaigns targeting younger males and underserved areas could bridge this awareness gap and improve public knowledge of SMC.

The study also revealed that only 49% of the respondents understood SMC as partially effective against HIV. This low knowledge about the effectiveness of SMC suggests that addressing the misconception through clear messaging on SMC's partial effectiveness could improve overall.

HIV prevention behaviours. This aligns with a study in the United States, which revealed that only 32% of men understood the specific role of SMC in HIV prevention, despite a high 64% awareness of male circumcision (Bailey, Fleming, & Córdova, 2017).

From the study, 70% of the respondents acknowledged that combining SMC with other methods increases effectiveness. This highlights an understanding of comprehensive prevention methods. This aligns with a study in Tanzania, which showed that 70% of young men were aware of safe male circumcision, but a significant portion of 65% understood that its benefits are more pronounced when combined with other methods of HIV control. (Chibwana, Kafuma, &

Mchenga, 2021). However, the 11% who didn't know could benefit from health education about SMC and its benefits.

Furthermore, the study also found that 41% of the respondents had healthcare providers as their main source of information on SMC as an HIV preventive measure, while 15% of the respondents got the information from community programs, acknowledging the influential role of medical professionals in disseminating accurate information. Similar trends were observed in Uganda, where healthcare-led community campaigns improved SMC acceptance, with 68% of participants reporting increased acceptance and uptake of circumcision services after campaign implementation (Kanyesigye, Kanyesigye, & Muwanga, 2022).

Conclusion: The study demonstrates relatively high awareness of safe male circumcision (SMC) as an HIV preventive measure among males in Katwe-Mulago. However, important knowledge gaps persist, particularly regarding the partial protective effect of SMC and its need to be combined with other preventive methods such as condom use. Misconceptions about complete protection remain a concern and may lead to risk compensation behaviours. While healthcare providers are a key source of information, community-based information dissemination appears underutilised. Overall, knowledge is moderate but incomplete, requiring strengthened health education efforts.

Recommendations

The Ministry of Health should intensify community-based health education campaigns emphasising that SMC provides partial—not complete—protection against HIV.

HIV prevention messaging should consistently promote combination prevention strategies, including condom use and HIV testing.

Healthcare workers should be further empowered through continuous professional training to deliver accurate and consistent SMC information.

Community outreach programs should be expanded to reach populations with limited access to healthcare facilities.

Schools and youth-centred programs should integrate structured SMC education into sexual and reproductive health curricula.

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List of Abbreviations

ABC: Abstinence, being faithful and condom use

AIDS: Acquired Immune Deficiency Syndrome

HIV: Human immunodeficiency virus

MC: Male Circumcision

MOH: Ministry of Health

SMC: Safe male circumcision

STIs/STD: Sexually Transmitted Infections / Sexually Transmitted Disease

UNAIDS: United Nations Programme on HIV/AIDS

VMMC: Voluntary Medical Male Circumcision

WHO: World Health Organisation

Source of Funding

This study was not funded.

Conflict of Interest

The author declares that there is no conflict of interest related to this study. The research was conducted independently, and the findings presented are solely those of the author.

Author Contributions

Ssendi Isaac conceptualised the study, developed the proposal, designed the data collection instruments, conducted data collection, performed data analysis, and prepared the final research report. The research supervisors provided academic oversight, technical guidance, and critical review throughout the study process.

Data Availability

The datasets generated and analysed during this study are available from the corresponding author upon reasonable request. The data are not publicly available to protect the confidentiality and privacy of the participants.

Ethical Approval

Ethical approval to conduct this study was obtained from the relevant Institutional Research and Ethics Committee before data collection. Permission to carry out the study was also obtained from the respective health facility authorities. The study adhered to ethical principles, including confidentiality, voluntary participation, and respect for participants' rights.

Informed Consent

Written informed consent was obtained from all participants before their involvement in the study. Participants were informed about the purpose of the research, the procedures involved, potential risks and benefits, and their right to withdraw at any time without any penalty.

Author Biography

Ssendi Isaac is a student at International Paramedical Institute Maya. He has a strong interest in clinical practice and community-based research, with a focus on improving healthcare delivery and health outcomes in Uganda. Denis Mungasa is a tutor at International Paramedical Institute Maya.

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