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Review Article

Knowledge of voluntary safe medical male circumcision among adults aged 15-49 years attending OPD at Mubende regional referral hospital. A cross-sectional study.

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ABSTRACT

Background:
The study aimed to examine the knowledge of voluntary safe medical male circumcision among adults aged 15- 49 years attending the OPD at Mubende regional referral hospital.

Methodology:
A descriptive cross-sectional study with a quantitative approach was conducted among males aged 15–49 years attending the OPD at Mubende Regional Referral Hospital. A total of 107 participants were selected using simple random sampling via a lottery method. Data were collected through structured close-ended questionnaires in English or Luganda. Piloting at Mityana General Hospital ensured validity. Data were entered into Excel and analyzed using SPSS v24, with results presented as frequencies and percentages. Ethical approval and informed consent were obtained, ensuring confidentiality and voluntary participation.

Results:
The majority of respondents, 76 (71%), were aged 36–49 years, while 31 (29%) were aged 15–35 years. Slightly more than half were married (62, 58%), and 45 (42%) were unmarried. Most respondents had completed primary education or below (84, 78.5%), whereas only 23 (21.5%) had secondary education or higher. Most respondents, 67 (63%), knew the major health benefit, but 60 (56%) were unaware of potential risks or complications. Only 32 (29.9%) knew the type of pain control used during the procedure, while 71 (66.4%) understood what happens during VMMC. Knowledge of wound healing was low, with 80 (74.8%) unaware of the correct healing time, and follow-up knowledge was limited, as 90 (84.1%) did not know when to return to the health facility.

Conclusion:
Limited knowledge of VMMC, including its risks, pain control methods, healing time, and follow-up schedule, reduced its uptake.

Recommendation:
Standardized pre-procedure counseling covering risks, pain control, healing, and follow-up should be provided at all outreach and facility contacts.

Keywords: *Medical Male Circumcision, Pain Control, Circumcision Risks, Voluntary Circumcision*.
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BACKGROUND OF THE STUDY
Knowledge of VMMC, including benefits, risks, and procedural expectations, plays a critical role in its uptake. A randomized experiment in a U.S. primary-care center found that 54% of adults correctly understood major benefits, particularly infection-risk reduction, 46% identified common risks, and 41% adjusted their acceptance when benefits and risks were clearly explained (Seely et al., 2022).

Similarly, a systematic review from Boston hospitals reported that 63% of patients understood their right to withdraw consent, though 74% could not explain alternatives, while 69% understood confidentiality and decision autonomy (Glaser et al., 2020).

Perioperative counselling studies in London showed that 61% of patients understood anesthesia type, 57% were unclear on postoperative discomfort, but 73% expressed confidence in pain-management options (Darville-Beneby, 2023; Wang, 2024).

A review of preoperative education trials in Riyadh, Saudi Arabia, involving 1,700 adults, found that 58% had an unclear understanding of procedure steps, 62% did not comprehend operating room processes, yet 71% experienced reduced fear through prior knowledge (Zhuo, 2023).

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Recovery-pathway evaluations in Addis Ababa revealed that 71% could not correctly describe healing timelines, 66% lacked understanding of recovery milestones, but 74% knew required follow-up dates (Blöndal et al., 2022; Woudneh, 2025).

Studies from Nairobi's surgical discharge units showed that 69% understood wound-care instructions, 64% identified normal recovery versus complications, and 78% accurately described activity restrictions, highlighting the importance of structured after-care education (Gillespie, 2023; Jiang, 2021).

In Kampala, structured preparatory interventions covering fasting, hygiene, transport, and logistics improved readiness, with 67% understanding fasting requirements, 59% hygiene, and 72% transport logistics (Fecher-Jones, 2024; Wang, 2024).

Overall, these studies demonstrate that clear, structured counselling significantly enhances knowledge of procedure benefits, risks, recovery, and follow-up, which is crucial for informed consent and increased VMMC uptake.

The study aimed to examine the knowledge of voluntary safe medical male circumcision among adults aged 15-49 years attending the OPD at Mubende regional referral hospital.

METHODOLOGY

Study Design

The study used a descriptive cross-sectional design with a quantitative approach to data collection. This design was chosen because it allowed for the quantification of findings at a single point in time without the need for follow-up.

Study Area

The study was conducted from Mubende Regional Referral Hospital (MRRH) located in the central business district of Mubende Town, along Old Kampala Road, in Uganda's Central Region. It serves as the main referral facility for Mubende District and the surrounding areas. The hospital is geographically positioned at approximately 0°34′03.0″ N latitude and 31°23′35.0″ E longitude, with an elevation of about 1,299 meters (4,262 feet) above sea level, and lies roughly 150 km west of Mulago National Referral Hospital in Kampala.

The hospital has an estimated catchment population of over 610,000 people, with a capacity of 175 beds, accommodating general inpatient and outpatient services offering general medicine and surgery, obstetrics and gynecology, pediatrics, radiology, intensive care and operating theatre services, dental care, orthopedics, laboratory services, a blood bank, and accident, emergency care, HIV/AIDS care, voluntary medical male circumcision, and other public-health programs in collaboration with district health teams.

The district of Mubende is neighbored to the East by Kassanda District, North by Kiboga and Kyankwanzi Districts, South by Sembabule and Gomba Districts, and West by Kyegegwa and Kakumiro Districts.

Study Population

The study population consisted mainly of adult males aged between 15 and 49 years who were seeking treatment services at the OPD clinic of Mubende Regional Referral Hospital. This age group was selected because they are at constant risk of exposure to STIs due to unsafe sexual practices.

Sample Size Determination

The sample size was determined using Kish Leslie's formula of sample size determination, which is: $N=Z^2PQ/D^{2.}$

N= Sample size

D= Sampling error (5%) or 0.05

P=the proportion of men who underwent SMMC at Mubende Regional Referral Hospital (7.5%) or 0.075 (Mubende Regional Referral Hospital, 2023).

Q= 1-p (1-0.075) = 0.925

Z= Standard normal deviation, value set at 95% confidence interval limit corresponds to a level of statistical significance (1.96)

$$\frac{(1.96)\ (1.96) \times 0.075 \times 0.925}{(0.05)\ (0.05)}$$

= 106.6 respondents

Therefore, a total of 107 respondents were used in this study.

Sampling Technique

This study employed a simple random sampling technique since it aimed to give every willing participant an equal chance of being picked to participate in the study.

Sampling Procedure

After fulfilling all ethical requirements, a simple random sampling method, which involved selecting respondents from the study population by chance, was used, applying a lottery technique where two small pieces of paper were cut and on them written YES and No, then properly mixed as the prospective respondents were asked to choose from the box. The prospective respondents who picked YES were considered, while those who picked No were let to go.

Data Collection Method

The study used a survey method applying a self-administered questionnaire approach to collect quantitative data. Survey method enabled the collection of much data from a large group of respondents in the shortest time possible.

Data Collection Tool

A standardized closed-ended questionnaire was used to collect quantitative data from the respondents. The questions were phrased in English as extracted from the reviewed literature in the study and translated into Luganda for those who did not

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comprehend English.

Data Collection Procedure

After obtaining informed consent, the respondent was given a questionnaire which contained closed-ended questions phrased based on the objectives of the study and as extracted from the literature reviewed in the study. Data was collected through asking the respondents to rank the given factors.

Study Variables

These included dependent and independent variables.

Dependent Variable

Uptake of voluntary medical male circumcision by adults aged 15-49 years. This was measured based on the knowledge and willingness to be vasectomized.

Independent Variables

These included the knowledge, sociodemographic, and health facility factors affecting uptake of voluntary medical male circumcision by adults aged 15-49 years, which were measured using respective attributes as listed in the questionnaire.

Quality Control

The study was piloted at Mityana General Hospital, which closely resembles the setting of Mubende Regional Referral Hospital. Consequently, further adjustments were made to enhance representativeness. This site was chosen because it provides the same services as the study area.

Research assistants were recruited and trained to administer pre-tested questionnaires. The skills of these research assistants were helpful in probing for further response, translating the questions in the research tools into the local language for the respondents who were not well versed in English language.

Questionnaires were pre-tested on 10 randomly picked men at the outpatient clinic of Mubende Regional Referral Hospital, as this helped to check for the validity and accuracy of the research tools, after which adjustments were made before being administered to the target study participants.

Data collection was done in a period of two months, and each respondent was given about thirty minutes.

(30) minutes, as this allowed ample time for data collection, as well as giving respondents sufficient time to complete the questions in the research tool.

All the males aged 15-49 years who were seeking OPD services at Mubende Regional Referral Hospital who gave their consent and were able to talk were considered in this study, whereas the study did not consider men who were too sick to talk or write, those who did not consent to the study, and those who needed payment to take part in the study.

All standard operating procedures that ensured no harm to the respondents, either physically, mentally, or emotionally, were adhered to. In this case, face masking, hand sanitizing, hand washing with soap and water, total confidentiality, privacy, and seeking consent were always ensured before involving a respondent in the study.

Data Analysis and Presentation

Quantitative data was summarized and entered into a dataset using excel spreadsheet. After, it was exported to SPSS-V24 for analysis, where frequencies and percentages were generated and used to rank the responses. After, it was presented in the form of figures and tables.

Ethical considerations

Ethical approval to conduct the study was sought from the Mildmay Institutional Research Review Board after analyzing all ethical issues. Informed consent was obtained from each respondent, and the respondent retained the right to withdraw from participation or refuse to participate in the study at any point if he felt uncomfortable continuing without penalty. The identity of the respondents was not revealed, as this helped to keep the information they provided confidential.

RESULTS

Socio-demographic characteristics of the respondents

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Table 1: Shows the socio-demographic characteristics of the respondents (n=107)

Variable	Category	Frequency (n)	Percentage (%)
Age	15–35 years	31	29
	36–49 years	76	71
Marital status	Married	62	58
	Unmarried	45	42
Level of education	Primary education and below	84	78.5
	Secondary education and above	23	21.5
Religion	Christian	105	98.1
	Muslim	2	1.9
Employment status	Self employed	34	31.8
	Unemployed	57	53.3
	Decently employed	16	15

The Socio-demographic data indicated that the majority of the respondents, 76 (71%), were aged 36–49 years, while the minority, 31 (29%), were aged 15–35 years. Slightly more than half, 62
(58%), were married, while 45 (42%) were unmarried. A majority, 84 (78.5%), had completed primary education and below, while 23 (21.5%) had secondary education or above. Almost all respondents, 105 (98.1%), were Christian, while 2 (1.9%) were Muslim. More than half, 57 (53.3%), were unemployed, while the smallest group, 16 (15%), were decently employed.

The knowledge of voluntary safe medical male circumcision among adults aged 15-49 years.

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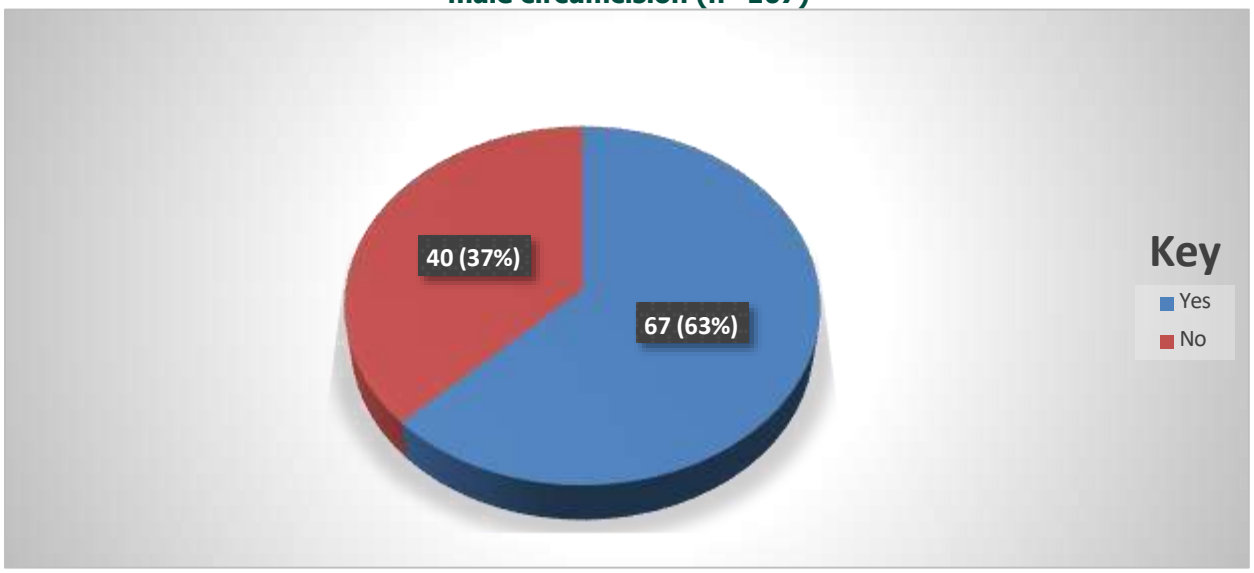
Figure 1: Shows whether respondents knew the major health benefit of voluntary medical male circumcision (n=107)



The majority of respondents, 67 (63%), knew the major health benefit of VMMC, while a considerable minority, 40 (37%), did not know.

Figure 2: Shows what respondents knew could be a possible risk or complication after VMMC (n=107)

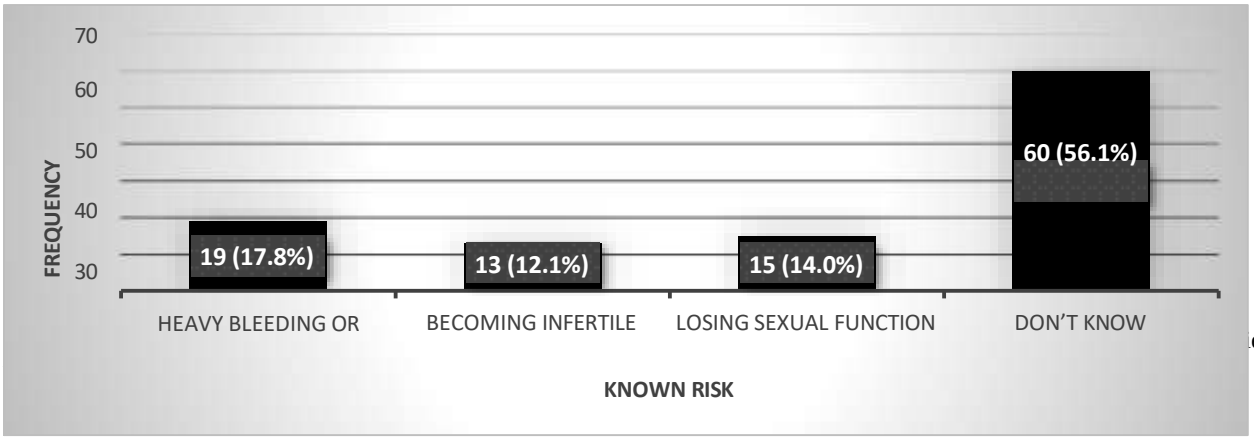


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Table 2: Shows additional knowledge factors of respondents regarding voluntary safe medical male circumcision (n=107)

Variable	Category	Frequency (n)	Percentage (%)
Know the type of pain control used during the VMMC procedure	Yes	32	29.9
	No	75	70.1
Know what happens during the VMMC procedure	Yes	71	66.4
	No	36	33.6
Time taken for the circumcision wound to heal completely	About 6 weeks	17	15.9
	2–3 days.	8	7.5
	One full day	2	1.9
	Don't know	80	74.8
Know when to return to health. Facility.	Yes	17	15.9
	No	90	84.1

Regarding the additional knowledge factors as reflected in the table.

More than half of the respondents, 75 (70.1%), did not know the type of pain control used, while a minority, 32 (29.9%), knew.

A majority, 71 (66.4%), knew what happens during the VMMC procedure, whereas 36 (33.6%) reported that they did not know.

Almost three-quarters, 80 (74.8%), did not know the correct healing time, while very few, 2 (1.9%), believed it takes one day.

More than three-quarters 90 (84.1%) did not know when one should return for follow-up, while only 17 (15.9%) knew.

DISCUSSION

The majority of respondents, 67 (63%), knew the major health benefit of VMMC, which implies a moderate-to-good baseline awareness that could increase the probability of accepting circumcision; this is probably because men who recognise health benefits are more inclined to act on them. The observed knowledge is likely due to prior exposure to public-health messages and campaigns that emphasised benefits, peer-to-peer communication from circumcised acquaintances, and contacts with clinic-based education during outpatient visits. This result agrees with Seely et al. (2022), who showed that 54% of respondents demonstrated correct knowledge of major benefits, especially infection-risk reduction.

Most respondents, 60 (56%), did not know any possible risk or complication of VMMC, a gap that likely reduces the chance of acceptance because a lack of balanced information (benefits plus risks) can breed anxiety or mistrust when men later encounter conflicting stories; some men may therefore postpone or decline due to fear of unknown harms. This knowledge deficit may arise from counseling that emphasises benefits over complications, stigma, or reluctance to discuss sexual or surgical risks openly. The findings correlate with Darville-Beneby (2023), whose findings showed that 57% could not accurately describe postoperative discomfort expectations.

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More than half of the respondents, 75 (70.1%), did not know the type of pain control used during VMMC, which reduces the likelihood of uptake because uncertainty about anaesthesia and pain management contributes directly to fear of the procedure; men who cannot be reassured about pain control are less likely to present for circumcision. This lack of knowledge could be due to limited preoperative counselling that omits technical details, misconceptions spread via informal networks prioritizing sensational accounts over clinical facts, and low literacy about medical terms such as local anaesthesia or analgesia. The findings contrast with Wang (2024), who showed that 61% understood the type of anaesthesia to be used.

A majority, 71 (66.4%), knew what happens during the VMMC procedure, indicating the increase in the chance of VMMC uptake because procedural familiarity reduces fear of the unknown and enables informed consent. This practical understanding may have resulted from prior exposure to community demonstrations, outreach talks by VMMC teams that describe step-by-step care, and peer testimony from successfully circumcised men. The findings disagree with Zhuo (2023), who found that 58% of clients demonstrated unclear understanding of the procedure sequence, and 62% did not understand what would happen during the actual operating room process.

Almost three-quarters, 80 (74.8%), did not know the correct healing time after VMMC, which may lower the probability of uptake since uncertainty about recovery duration discourages men who fear prolonged downtime, missed work, or prolonged abstinence. This gap may be due to counseling that fails to emphasize timelines, assumptions among providers that clients already know recovery expectations, and community myths that inflate healing periods. These findings agree with Blöndal et al. (2022) and Woudneh (2025), who showed that 71% could not correctly describe the expected healing timeline, while 66% did not understand key recovery milestones.

More than three-quarters, 90 (84.1%), did not know when one should return for follow-up after VMMC, which significantly reduces the chance that men will complete recommended post- operative reviews and may also feed reluctance to start because the commitment is unclear; lack of clarity on follow-up may increase perceived procedural burden. This outcome probably stems from weak emphasis on follow-up timing during initial counseling, limited appointment systems that provide specific return dates, and work or transport constraints that make follow-up seem impractical. This contrasts with Blöndal et al. (2022) & Woudneh (2025), who showed that 74% knew the required follow-up dates.

CONCLUSION

The study concluded that lack of knowledge regarding the risks of VMMC, measures of pain control, healing time, and follow-up timing negatively affected the uptake of VMMC among adults aged 15–49 years attending OPD at Mubende Regional Referral Hospital.

RECOMMENDATION

To improve knowledge, health programme managers should ensure that standardized pre-procedure counseling is provided at every outreach and facility contact. This counseling should comprehensively cover the risks of the procedure, pain control options, healing timelines, and follow-up schedules so that every potential client is fully informed before consenting.

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LIST OF ABBREVIATIONS

AIDS: Acquired Immune Deficiency Syndrome
HIV: Human Immunodeficiency Virus
MC: Major complications
MMC: Medical Male Circumcision
VMMC: Voluntary Medical Male Circumcision

CONFLICT OF INTEREST

The authors declare no conflict of interest

DATA AVAILABILITY

Data is available upon request from the author.

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Arnold Kasiita is a student pursuing a diploma in clinical medicine and community health at Mildmay Institute of Health Sciences

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AUTHOR CONTRIBUTIONS

AK: collected the data.
PN: supervised the study.
TM: supervised the study.
FS: supervised the study.
HN: supervised the study.
JFN: supervised the study.

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