

**FACTORS ASSOCIATED WITH UPTAKE OF VOLUNTARY MEDICAL
MALE CIRCUMCISION AMONG MEN AGED 18-50 YEARS IN KIBERA
SUB-COUNTY, NAIROBI COUNTY**

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**A thesis submitted in partial fulfilment of the requirements for the degree of
Master of Science in Medical Epidemiology at the Jomo Kenyatta University of
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DECLARATION

This thesis is my original work and has not been submitted for a degree in any other university.

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DEDICATION

I dedicate this work to my parents and family, for their love and support during the period of the study

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome.
C- Change	Communication for Change.
CDC	Centre for Disease Control.
CI	Confidence Interval
df	degrees of freedom
ERC	Ethical Review Committee
HIV	Human Immunodeficiency Virus.
KAIS	Kenya AIDS Indicator Survey.
KDHS	Kenya Demographic and Health Survey.
MoPHS	Ministry of Public Health and Sanitation
NASCOP	National AIDS/STD Control Programme.
OR	Odds Ratio
aOR	Adjusted Odds ratio
PEPFAR	President's Emergency Plan for AIDS Relief
SSC	Scientific Steering Committee
STI	Sexually Transmitted Infection.
UNAIDS	United Nations Programme on HIV/AIDS.
VMCC	Voluntary Medical Male Circumcision.
WHO	World Health Organization.

ABSTRACT

Voluntary Medical Male Circumcision (VMMC) is the surgical removal of all or part of the foreskin from the penis. It is done for medical reasons as it has been shown to reduce the risk of female to male transmission of HIV by up to 60%. It has also been associated with lower transmission of sexually transmitted infections. Voluntary Medical Male Circumcision services have been scaled up in countries with generalized heterosexual HIV epidemics and low rates of male circumcision. Kibera is inhabited by a multi-ethnic community with a sizeable number of non-circumcising communities. The objective of this study was to determine the uptake of voluntary medical male circumcision among men hailing from non-circumcising communities in Kibera Sub-County and identify factors associated with circumcision preference. The study was a cross-sectional descriptive study that utilized quantitative methods for data collection. The study was done in Kibera Sub County of Nairobi County. Three hundred and eighty seven (387) participants were randomly sampled. A 42-item questionnaire was administered to the participants for determining the uptake of VMMC. It had three sub-sections namely demographic characteristics, general knowledge about VMMC and AIDS and acceptability of VMMC, which were used to collect data on the main outcome measures. Data was entered using EpiInfo and Stata11 was used for analysis. Bivariate statistics were generated for all the variables with circumcision preference as the dependant variable. Categorical variables were analysed using chi-square tests, while t-test was used for the quantitative variables. Multivariate logistic regression analysis was performed to identify factors associated with acceptability of male circumcision. The mean age of the participants was 31 years. A total of 62% of the participants were married. A total of 55% of the respondents had completed secondary level of education and above. A total of 57% of the respondents (95% CI; 0.54 - 0.64) were aware of VMMC. Of these, 31% had obtained information about VMMC through TV and radio. The most frequently mentioned reason for undergoing VMMC was prevention of HIV and sexually transmitted infections. The level of uptake of VMMC was 75%. The study established that the preferred age group for circumcision was 11 to 17 years. The factors associated with uptake of VMMC were identified using multivariate logistic regression. These were level of education, medical and

hygiene. Barriers for uptake were cost of the operation, pain and long recovery period after the operation. The uptake and level of acceptability of male circumcision was high among the general population in Kibera. Participants' level of understanding of HIV and VMMC was also high. The implication of the results was that comprehensive HIV prevention packages needed to be provided at the time of circumcision. The national strategy needed to attain a male circumcision prevalence of 80% in all provinces in Kenya by providing counselling and testing services, treatment for sexually transmitted infections, promotion of safer sex, and provision of condoms.

CHAPTER ONE

INTRODUCTION

1.1 Background information

Male circumcision involves removal of the foreskin surgically, a loose skin covering the head of the penis. It is one of the oldest and most common surgical procedures worldwide, and is undertaken for many reasons: religious, cultural, social and medical. There is no definite answer as to why medical male circumcision reduces men's risk of HIV infection during vaginal sex, but there are several possible explanations. The inner surface of the foreskin contains *Langerhans'* cells with HIV receptors; these cells are likely to be the primary point of viral entry into the penis of an uncircumcised man (Szabo, 2000). By removing the mucosal surface of the penis foreskin and the *Langerhans'* cells, the glans become keratinized and creates a barrier which reduces the susceptibility to the virus.

In 2006, male circumcision emerged as the first effective prevention strategy for reducing risk of HIV transmission for heterosexual men (Bailey, 2007; Gray, 2007; Siegfried, 2009). Male circumcision lowers transmission of viral sexually transmitted infections, including HIV (Bailey *et al.*, 2007). VMMC improves the genital hygiene for men and reduces chances of being infected by viral sexually transmitted infections including Herpes Simplex type 2 by 28%-34%. In men, it reduces the prevalence of Human Papilloma virus by 32%-35% (Wetmore, 2010). A review of previous studies done on male circumcision and ulcerative STD strongly indicated that circumcised men were at lower risk of chancroid and syphilis than uncircumcised men (Weiss, 2000).

Among female partners of circumcised men, chances of infection with bacterial vaginosis were reduced by 40% and *Trichomonas vaginalis* infection by 48%. Genital ulcer disease was also reduced among males and their female partners (Wetmore, 2010; Tobian, 2010).

About 33 million people (68% of whom are in sub-Saharan Africa) are currently infected with HIV, the virus that causes AIDS. Since HIV is usually spread through unprotected sex with an infected partner, the risk of becoming infected with HIV could be reduced by abstaining from sex, having only one sexual partner and using male or female condoms regularly.

Recently, Voluntary Medical Male Circumcision (VMMC) has been recommended as a HIV prevention strategy and has been made part of HIV prevention programs in regions with a generalized HIV epidemic and a low level of male circumcision (Uthman, 2010). Implementation of VMMC programs across eastern and southern Africa started in 2007. This was done by local governments with support from World Health Organization (WHO), Joint United Nations Programme on HIV/AIDS (UNAIDS) and Centres for Disease Control and Prevention. Their aim was to reach 80% coverage in adult males residing in Africa by 2015 (WHO, 2009). Successful implementation will depend on the accessibility of commodities essential for VMMC programming and appropriate allocation of resources to support VMMC supply chain (Edgil, 2011)

Kenya has been facing a public health threat from HIV/AIDS with an estimated HIV prevalence of 7.4 percent among adults aged 15-49 years. These results indicated that 8% of women and 5% of men aged 15-49 years were infected with HIV. A total of 1 million rural residents and 400,000 urban residents were infected with HIV (NASCOP, 2009).

The Government of Kenya took the lead in rolling out VMMC services, based on technical guidance from UNAIDS and the World Health Organization. Regions where male circumcision was not practiced were prioritized to broaden access to the safety and HIV prevention efficacy of VMMC. These included Nairobi County and counties within the former Nyanza, Western and Rift Valley provinces. These regions had high HIV prevalence at the time- 7 percent, 13 percent, 6.6 percent and 4.7 percent respectively among adults aged 15- 49 (KDHS, 2008-2009).

This study explored the acceptability of male circumcision and documented the factors associated with circumcision preference among Kenyan residents of Kibera Sub-County.

Behavioural interventions for HIV prevention have been hampered by ideological differences and the inherent challenges in changing sexual behaviour on a mass scale. In addition, cultural hurdles, financial constraints and a shortage of skilled practitioners continue to pose tremendous challenges for the implementation of mass male circumcision services in sub-Saharan Africa (Pincock, 2007). In addition, the health care services introduced to provide VMMC have collapsed due to pullout of donors from the programme.

1.2 Problem statement

Results from the three randomized trials conducted in Kenya, Uganda and South Africa established that there was a strong association between getting circumcised and the reduction of HIV transmission by up to 60% (Bailey, 2007; Gray, 2007; Siegfried, 2009). Factors associated with not getting circumcised were not well understood despite the compelling evidence supporting circumcision as a preventive measure to reduce risk of HIV transmission. HIV prevalence in Nairobi County stands at 7%. This study aimed to identify these factors in Kibera Sub-county.

Male circumcision has been initiated for medical reasons in non-circumcising communities. The campaign of reaching 80 percent coverage for male circumcision has been an uphill task. This is because there is need for increasing uptake of services since some communities still hold firm cultural beliefs. There are unintended consequences like greater risk taking by circumcised men whereupon operations research is being done including questions on changes in risk behavior after male circumcision, private sector participation and male circumcision by non-physicians. This is evident in many regions of Africa where VMMC is being introduced as a HIV prevention strategy.

1.3 Justification

A number of studies have been carried out to assess acceptability of VMMC among either children or adults in sub-Saharan Africa. Currently, VMMC services are being scaled up in regions with high prevalence, generalized heterosexual HIV epidemics

and low rates of male circumcision. These regions include Nairobi County, counties within Nyanza, Rift Valley and Western provinces.

There was scarce information regarding the uptake of VMMC in Kibera Sub-County. This was because VMMC services were being rolled out in the region. This was in tandem with other zones within the county where the rollout was simultaneous. These regions were Dagoretti, Kasarani and Mathare. This was also an entry-point for men to learn their HIV status, and therefore reduce the risk of infecting sexual partners.

The results obtained established that the uptake of VMMC was 75% among the general population in Kibera. The factors associated with the uptake of VMMC were level of education, medical and hygiene reasons for male circumcision. A strategy to strengthen the health system delivery was necessary and the study contributed to this end by establishing the factors that were associated with uptake of VMMC in the area of study.

1.4 Research questions

- i. What is the level of uptake of VMMC in a population of males aged 18-50 years among traditionally non circumcising communities in Kibera Sub-County?
- ii. What is the level of knowledge of HIV and VMMC among men aged 18-50 years among traditionally non circumcising communities in Kibera Sub-County?
- iii. What factors are associated with the uptake of VMMC in a population of males aged 18-50 years among traditionally non circumcising communities in Kibera Sub-County?

1.5 Objectives

1.5.1 General objective

To determine the factors associated with uptake of VMMC in a population of males aged 18-50 years among traditionally non circumcising communities in Kibera Sub-County.

1.5.2 Specific objectives

- i. To determine the level of uptake of VMMC by men aged 18-50 years among traditionally non- circumcising communities in Kibera Sub-County?
- ii. To determine the level of knowledge of HIV and VMMC by men aged 18-50 years among traditionally non- circumcising communities in Kibera Sub-County?
- iii. To determine the factors associated with the uptake of VMMC by men aged 18-50 years among traditionally non- circumcising communities in Kibera Sub-County?

1.6 Variables

1.6.1 Dependent variable

- i. Uptake of Voluntary Medical Male Circumcision defined as the surgical removal of all or part of the foreskin from the penis of man.

1.6.2 Independent variables

- i. Demographic variables which include age, marital status and level of education.
- ii. Cultural- myths and ethnicity in relation to VMMC.
- iii. Economic- employment status.
- iv. Social- lifestyles of the respondents, health seeking behaviour, support groups.

1.7 Conceptual framework

Voluntary Medical Male Circumcision is done to adult males of ages 18 years to 50 years among traditionally non circumcising communities. It is aimed at preventing the transmission of HIV as it reduces the transmission by up to 60%. It is done in a hospital setting by trained clinicians. It is due to this fact that the study was undertaken to determine the factors associated with uptake of VMMC as they constituted the most sexually active age group and were associated with the highest prevalence of HIV.

The age of a person may influence preference for VMMC. Boys of the same age may want to become circumcised at the same time thus creating increased uptake of VMMC. UNAIDS and WHO advise that the greatest public health benefit would result from prioritising circumcision for young males (such as those aged 12-30 years), as well as men thought to be at higher risk for HIV (Binagwaho *et al.*, 2010).

Prevalence of circumcision within a country may vary dramatically by ethnicity. For example, although an estimated 84% of all Kenyan men were circumcised, the level is much lower among the non-circumcising ethnic groups (40%). In some cultures, there has been discrimination, punishment, bullying and beatings in case a man was not circumcised (Bailey *et al.*, 2002). The desire to conform is an important motivation for circumcision in places where majority of men are circumcised. Thus uptake is high.

Socioeconomic factors also influence preference for VMMC, especially in regions with more recent uptake of the practice, such as USA. Studies in the USA have shown a strong association between preference for VMMC and high socioeconomic status, whereas low uptake of the service is associated with low socioeconomic status. In contrast, the Demographic and Health Surveys in sub-Saharan African countries show no consistent association with socioeconomic status. For example, in the United Republic of Tanzania, higher rates of circumcision were observed among men with higher levels of education, of higher socioeconomic status and living in urban areas, whereas in Lesotho, circumcision was most common among men with no education, in the lowest wealth quartile and living in rural areas.

Independent Variable

Dependent Variable

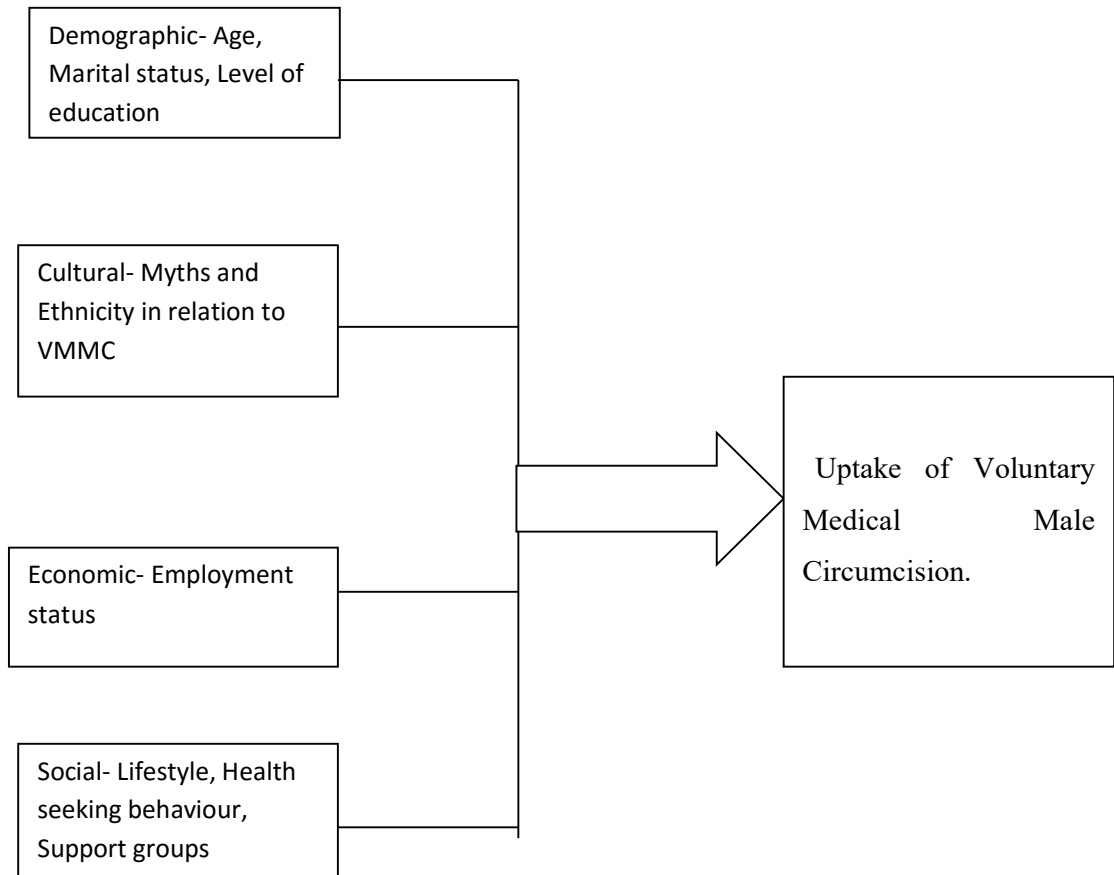


Fig 1.1: Conceptual framework

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Scientific trials have established that male circumcision can reduce a man's risk of becoming infected with HIV during heterosexual intercourse by up to 60 percent (Siegfried, 2009). Investing in male circumcision as a part of a comprehensive HIV prevention package is justified by the proliferation of the virus not only in Africa, Asia, and the Caribbean area, but also in Eastern Europe, in Mexico and more recently in Central America. Male circumcision could prevent millions of new HIV infections especially in sub-Saharan Africa and save on future treatment costs (Williams, 2006). The practice is an opportunity to develop innovative programs and to re-engage with policymakers and planners about the implementation of a prevention strategy.

Epidemiologists studying AIDS epidemic estimated that scaling up VMMC could prevent over six million new HIV infections and avert three million deaths over the next 20 years if all sexually active men in sub-Saharan Africa became circumcised (Williams, 2006; Njeuhmeli, 2011).

These findings led to the decision by UNAIDS and the World Health Organization (WHO) to recommend circumcision as an important new element of HIV prevention. VMMC is currently being rolled out for HIV prevention in main regions across sub-Saharan Africa that have high HIV prevalence and low levels of adult male circumcision (Uthman, 2010).

Since the decision was made to incorporate male circumcision in HIV prevention programmes, the demand for circumcision has been increasing in many African countries and other regions where males do not circumcise. In Zimbabwe, 700 men requested to be circumcised within just two weeks of the government starting the roll out of VMMC services for HIV prevention (WHO & UNAIDS, 2009).

Quality and feasible roll out of VMMC services could be achieved and adapted to African low-income settings. It could be implemented promptly and safely according

to international guidelines. The programs acted as models for the scale up of comprehensive VMMC services, which could be tailored to rural and urban communities of high HIV prevalence and low VMMC rates.

UNAIDS launched the Communication for Change (C-Change) global project in Kenya from 2009-2011 for improving the effectiveness and sustainability of communication programs as part of a comprehensive HIV-prevention strategy. The project worked under the leadership of National Male Circumcision Taskforce and the Ministry of Public Health and Sanitation (MoPHS).

C-Change project provided technical assistance in social and behavior change communication. It worked closely and collaboratively with the MoPHS, the National male circumcision task force and other partners to operationalize and implement Kenya's National Male Circumcision Communication Strategy. The project also worked with the Male Circumcision Technical Working Group of the US President's Emergency Plan for AIDS Relief (PEPFAR) and task force leaders to establish VMMC communication sub-committees of national and regional technical working groups, coordinate VMMC communication activities, and develop effective, evidence-based VMMC communication materials.

Materials in the VMMC Communication Strategy were used by the four implementing partners, who leveraged USAID's investment in C-Change by using their own funds to print the materials. The materials were widely disseminated in all four priority provinces. Evaluation of the project was very commendable.

Due to these efforts, Kenya emerged as the leading country in the scaling up of Voluntary Medical Male Circumcision programs in Africa as indicated by a 66% VMMC prevalence rate with a 7% HIV prevalence out of the male portion of the total population (WHO & UNAIDS, 2008). The VMMC Communication Toolkit development process was deemed a successful model; and other countries requested guidance for its adaptation.

Other countries in Africa in which the roll out was targeted have also made progress. Swaziland has reached 13%, Zambia and Botswana have attained 4%, and Tanzania and South Africa have met 3% of their respective 2015 80% objectives, through campaigns that picked up speed in 2010 (Mwandi, 2011). This is through sustained

government leadership, financial and technical support of international donors, and a partnership strategy that has engaged a broad array of stakeholders.

The overall goal of the National Male Circumcision Communication Strategy was to raise awareness of VMMC as a medically approved method that reduced the risk of heterosexual acquisition of HIV infection for men and to create and maintain demand for VMMC services.

The objectives of the National Male Circumcision Communication Strategy were: to increase the level of awareness of VMMC as a safe and voluntary HIV-prevention strategy; to promote VMMC as part of a comprehensive HIV-prevention strategy that includes condom use; to create and maintain demand for comprehensive VMMC services in safe and appropriate settings; and to improve attitudes and communication skills of health workers and others in the sector in order to improve uptake and the delivery of quality VMMC services. It sought to counter the growing perception that circumcised men and their sexual partners were fully protected from HIV and the risk behaviors that may be associated with this mistaken belief.

The strategy focused on the health benefits of VMMC for traditionally circumcising and non-circumcising communities. It also recognized that partners and allies from across the country needed to come together, in settings where traditionally circumcising communities and non-circumcising communities had different views about the procedure.

The VMMC Communication strategy involved counselling on the procedure and seeking informed consent from the participants in the project across the prioritized regions of the country. The strategy identified barriers to uptake of VMMC services, including fear of pain and cultural resistance among traditionally non-circumcising communities.

2.2 World prevalence of circumcision

The prevalence of circumcision (or circumcision rate) refers to the proportion of males that are circumcised in a given population. It may also refer to the proportion of newborn males that are circumcised. Estimates of the proportion of males that are circumcised worldwide vary from 17% of the total male population (Williams, 1993) to 33% (Crawford, 2002). The World Health Organization has estimated that 664,500,000 males aged 15 years and over are circumcised (30% global prevalence), with almost 70% of these being Muslims (WHO & UNAIDS, 2007).

Circumcision is most prevalent in the Muslim world (near-universal), parts of Southeast Asia and of Africa, the United States, the Philippines, Israel, and South Korea. It is relatively rare in Europe, parts of Southern Africa, and most of Asia and Oceania. In Latin America, prevalence is universally low (Drain, 2006). Canada, New Zealand, Australia and the United Kingdom have generally experienced a decline in male circumcision while there are indications of increasing demand in Southern Africa.

Studies indicated that overall, 62% of African males are circumcised. However, these rates differ by region, ethnic and religious groups. Countries with prevalence less than 20% include Rwanda, Burundi, Zambia, Malawi, Botswana, Namibia, Swaziland and Canary Islands. Countries with a prevalence of between 20% and 80% include Central African Republic, Sudan, Uganda, Tanzania, Mozambique, South Africa and Lesotho. The rest of Africa reports prevalence rates of more than 80%. In Kenya, circumcision prevalence indicates that 86 percent of men aged 15-49 years are circumcised, a moderate increase from the level of 84 percent in 2003 (Williams *et al.*, 2006).

The Kenya Demographic and Health Survey of 2008- 2009 revealed that 85% of rural residents were more likely to have been tested for HIV than their urban counterparts who had 78%. Coast province had a testing rate of 89% followed by Nyanza and Western provinces at 86% each. Nairobi province had a testing rate of 81%.

Women were more likely to be tested for HIV than men. Women and men with no education were least likely to be tested for HIV than those with some education. Those in the highest quintile of the wealth index were the least likely to be tested for HIV. Coverage rates varied considerably by ethnic group, being highest among the Kisii, Embu, and Meru for women and Mijikenda/Swahili, Kisii, and Taita/Taveta for men. Among men, the coverage rate for HIV testing was almost the same for circumcised and uncircumcised men.

Urban respondents were slightly more likely to have HIV than rural respondents (7 percent and 6 percent respectively). Nyanza province had an overall prevalence of 14%, double the level of the next highest provinces- Nairobi and Western, at 7% each. Gender differences in prevalence persisted in all provinces, with women bearing a higher burden of HIV than men. Working women and men had a higher prevalence of HIV than those who were not working. HIV infection tended to rise with wealth.

There were very large differences in HIV prevalence by ethnicity. Among both women and men, HIV prevalence was lowest among Somalis (<1%) and highest among the Luos (20.2%). With regard to religion, Muslims had the lowest level of HIV infection at 3% followed by Catholics at 5.9%, Protestants and other Christians at 6.6% and those who had no religion had the highest level of 7%.

In terms of marital status, the divorced or separated had a HIV prevalence of 14.3%. Those in polygynous unions had a prevalence level of 13% and those in non-polygynous unions or others had a prevalence of 6%.

The higher the number of lifetime sexual partners increased the likelihood of having HIV. Those with high risk sex behavior had a higher prevalence of HIV. Women with earlier sexual debut had a higher HIV prevalence. For men, however, those who initiated sexual intercourse after age 20 had the highest HIV prevalence.

Participants who had an STI or STI symptoms in the 12 months before the survey had more than 2-fold risk of HIV (18%) than those who did not have an STI or STI symptoms (7%).

Male circumcision has been shown to have a protective effect against HIV infection (Agot *et al.*, 2004). Although HIV prevalence tends to increase with age among both circumcised and uncircumcised men, the increase is far steeper among uncircumcised

men. HIV prevalence is more than four times higher among uncircumcised men than among circumcised men aged 15-49 years (13 percent and 3 percent) respectively. In rural areas, 15 percent of uncircumcised men age 15-49 were HIV positive compared with only 3 percent of circumcised men. There were also much higher levels of HIV infection among uncircumcised men than circumcised men by education level. The high rate of HIV in uncircumcised men supports the need to evaluate possible causal links between lack of male circumcision and HIV.

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study site

The study was conducted in Kibera Sub-County, an administrative division of Nairobi County, Kenya. The area was divided into a number of villages, including Kianda, Soweto East, Kisumu Ndogo, Gatwekera, Lindi, Laini Saba, Siranga, Makina and Mashimoni. A VMMC clinic existed at the District Commissioner's grounds, from where services were rendered.

3.2 Study design

This was a descriptive cross sectional study that utilized a quantitative approach for data collection. Interviews were conducted using a structured questionnaire developed to collect the relevant data to meet the aims and objectives of the study. Study subjects were informed on the study objectives and were assured that all responses were confidential.

3.3 Study sample

The study targeted men living in the area who were aged 18 to 50 years. Study participants were all men selected to participate in the study. In households with more than one eligible participant, the eldest eligible among them was selected to join the study.

Criteria for inclusion were all men aged between 18-50 years, living in the village during the time of the survey and who consented. Criteria for exclusion were boys below 18 years and men above 50 years and those who refused to consent.

3.4 Sample size determination

Since the uptake of VMMC is not known, an assumed proportion of 50% was used in sample size estimation. Using the formula (Fisher *et al*, 2006)

$$N = \frac{z^2 \times pq}{d^2}$$

Where;

n = sample size

z = the value corresponding to the 95% confidence interval.

p = prevalence of male circumcision taken as 50%.

q = 1- p

d = allowable error margin of 0.05.

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2}$$

$$N = 384.16 = 385$$

The sample size was adjusted by 10% to cater for attrition.

$$385 / (1 - 0.1)$$

$$N = 427.77 = 428$$

Therefore, the minimum sample size required was 428.

3.5 Sampling procedures

This cross-sectional study used a geographically stratified, cluster sample design to select 387 eligible. The survey response rate was 91 %. The population eligible for this study component was adults aged 18–50 years. Random selection occurred at

three levels: 10 area clusters, 40 households per area and 1 adult member per household.

3.6 Data collection tool

A structured questionnaire was used in data collection. It contained variables on demographics, understanding of VMMC and acceptability of VMMC. The questionnaire was administered by research assistants under the guidance of the investigator.

3.7 Data collection and management

The data was collected using a 42-item scale questionnaire with the primary aim of determining uptake of VMMC. The questionnaire was in three sub-sections: demographic characteristics, general knowledge about VMMC and AIDS and acceptability of VMMC. Most primary outcome variables were assessed by asking Yes/No questions, such as “Are you able to determine when to go for VMMC?”

Knowledge on AIDS and male circumcision, involved twelve questions, including four on general knowledge of AIDS such as the pathway of HIV transmission and methods of HIV prevention, and eight on VMMC including whether one could determine when to undergo the procedure. For AIDS knowledge, the average score among all interview subjects was computed; each correct answer was given a score. Willingness to accept circumcision was assessed using the question “Do you want to be circumcised?”, and the response categories were “definitely willing”, “probably willing”, “definitely not willing” and “not willing”. For analysis, the groups of “definitely willing” and “probably willing” were dichotomized into a single variable of “willingness to accept MC”, and the groups of “definitely not willing” and “not willing” as “refusal to accept”. Reasons to accept or refuse to take circumcision involved two open-ended questions, which enquired about the benefits and problems associated with VMMC (Xiaobo, 2011).

The questionnaire was pilot-tested in one village in the study area in order to establish validity and reliability. It also made the questionnaire easier to comprehend.

The data was entered into EpiInfo and converted to Stata11 for analysis. The data was stored in a hard disk and backed up in a pen drive and cloud storage before analysis.

3.8 Data analysis

Descriptive statistics were generated for all the variables corresponding to the specific questions in the survey. Quantitative variables were analysed using T-test. Categorical variables were analysed using Chi-square tests. Dependent variables that were associated with the independent variable were selected for inclusion in the stepwise multiple regression model at $p < 0.15$. They were subjected to stepwise (forward and backward) logistic regression analysis and those associated with VMHC were selected at $p < 0.05$.

3.8 Ethical considerations

This study was reviewed and approved by the Scientific and Ethical Review Committees of the Kenya Medical Research Institute (KEMRI) and referenced as SSC Protocol No. 2419 prior to commencement of activities. Sensitization meetings with village elders and leaders were held to obtain permission to access the homesteads. The objectives of the study were explained and permission sought to carry out the study in the villages.

The informed consent document was read to the respondents informing them of what the study entailed. All the rights of the respondents were explained. After voluntary and informed consent had been explained, only the men, who met study requirements, consented and who voluntarily signed the consent forms were enrolled into the study.

Benefits

The most immediate benefit of the study was to promote the uptake of VMMC to males of all ages in a manner that was culturally sensitive to minimize stigma as well as demystify myths that may be associated with circumcision status.

Confidentiality

No names were entered in the computerized database to ensure confidentiality. Participants were identified primarily by a unique study number. No individual identities were used in any presentations or publications resulting from the study. All records were kept as confidential as possible and only authorized personnel had access.

CHAPTER FOUR

RESULTS

4.1 Descriptive univariate analysis

4.2 Demographics characteristics of the study participants

A total of 387 participants were enrolled into the study. A total of 44% of the participants were aged between 20-29 years, 27% were 30-39 years and 22% were 40 years and above. Only 7% of the sample was aged below 20 years. The mean age of the participants was 31 years.

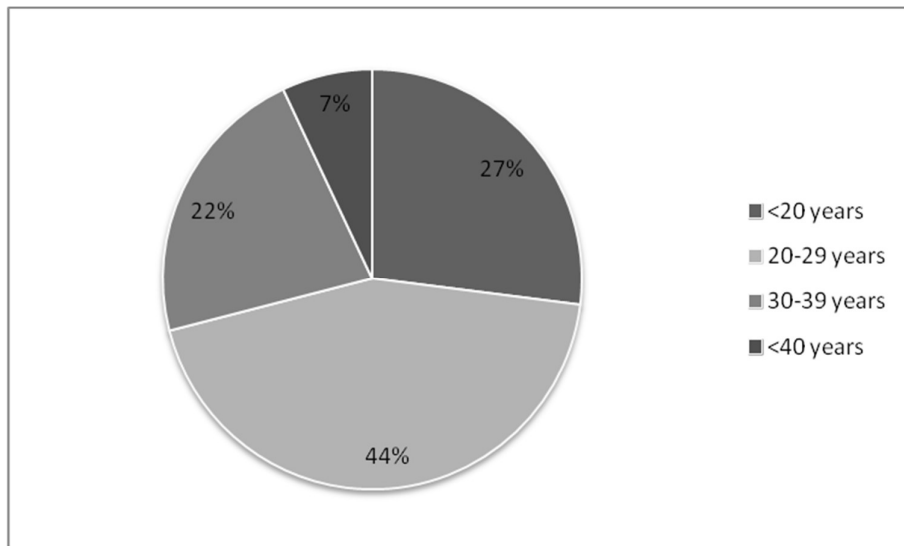


Fig 4.1: Distribution of age and percentage frequencies.

A total of 13% had not completed primary level education, 32% had completed primary level education and 55% had a secondary level of education and beyond.

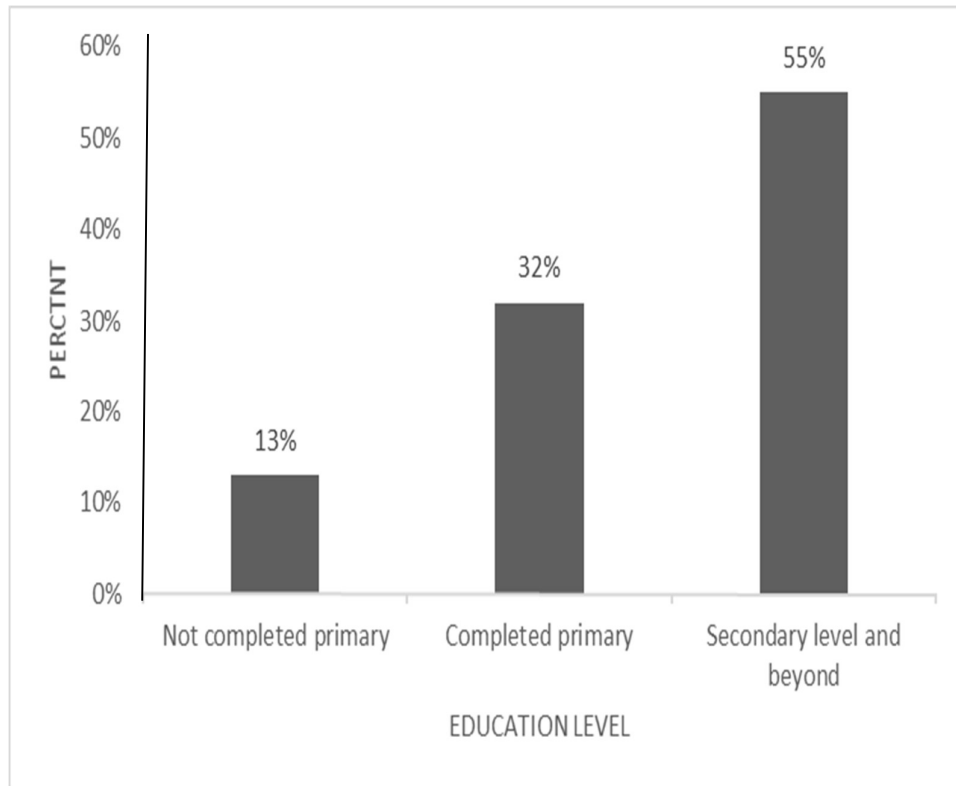


Fig 4.2: Distribution of education level and percentage frequencies.

A total of 62% of the participants were married, 27% were single and 11% were widowed.

A total of 91% of the participants were Christians and 7% were Muslim and 2% had Traditional beliefs. Only 23% of the participants were in formal type of employment.

4.3 Participant knowledge of HIV and VMMC

A total of 57% of the participants knew about VMMC.

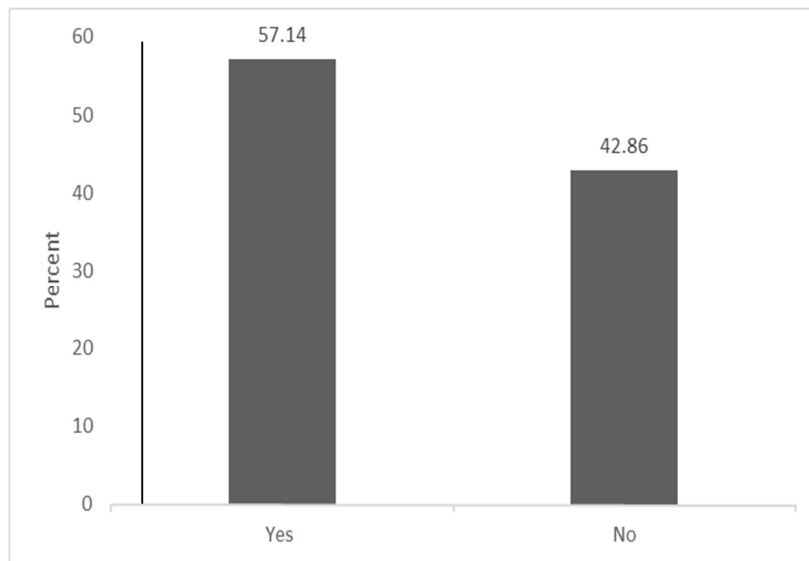


Fig 4.3: Knowledge about VMMC and percentage frequencies.

A total of 30% of the participants had obtained information about VMMC from health workers and TV and radio.

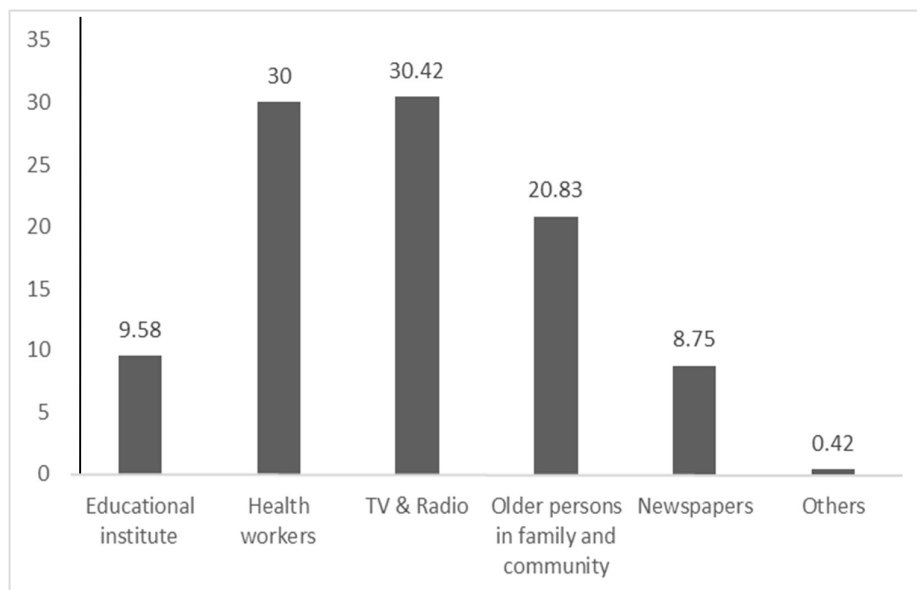


Fig 4.4: Sources of information on VMMC and percentage frequencies.

A total of 44% of the participants reported that VMMC could be performed at any time once a person attained the age of circumcision. The preferred age of circumcision was during adolescence. A total of 69% of the participants reported that VMMC could not prevent HIV. Majority (64%) of the participants were aware that it was done voluntarily in a hospital through an operation.

The most frequently mentioned reason for undergoing VMMC was that it prevented transmission of HIV and sexually transmitted infections (53%). Other reasons reported for undergoing VMMC were to improve penile hygiene and peer pressure influence.

Creation of awareness to the general public was the most frequently mentioned measure that could improve the roll out of VMMC services. This could be achieved through seminars, barazas, medical camps and advertising on banners, posters and mainstream media. Other measures mentioned included increasing health facilities so as to meet the demand for the service.

A total of 27 percent of the participants reported that the commonest methods of HIV transmission were sexual intercourse and being transfused with unscreened blood respectively. Other methods of HIV transmission that were mentioned included sharing of contaminated sharp objects with infected people and mother-to-child transmission.

Use of condoms was the commonest method for prevention of HIV transmission among the participants. A total of 86% of the participants had sexual intercourse in the past three months prior to the study. Out of these, 47% never used a condom, 34% used condoms consistently and 19% used condoms inconsistently.

4.4 Uptake and Acceptability of VMMC

A total of 75% of the participants had undergone VMMC. A total of 38% of the participants reported that VMMC was done for traditional reasons followed by medical reasons at 35%.

A total of 25% of the participants were not circumcised. Reasons for not being circumcised included issues relating to fear of the procedure and traditions and cultures that did not practise it. Of these, 45% were not willing to be circumcised even if they were aware about VMMC.

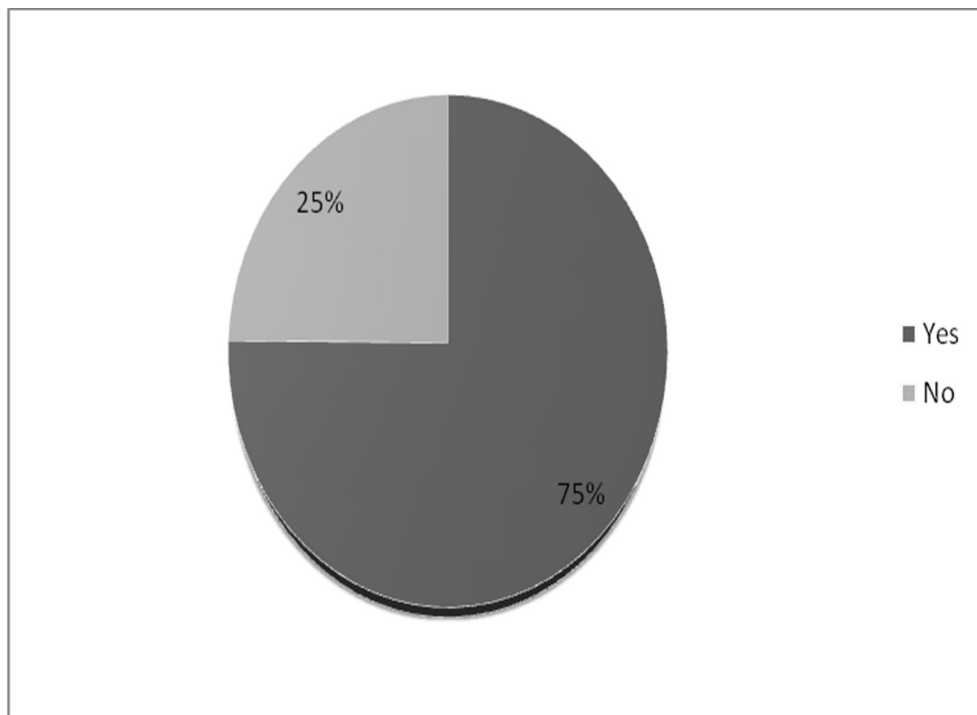


Fig 4.5: Percentage uptake of VMMC.

A total of 84% of the respondents reported that they were willing to have their sons circumcised if they had one. They had knowledge of the protective benefits of male circumcision and transmission of HIV and other sexually transmitted diseases.

The study established that the preferred age group for circumcision was during adolescence (11 to 17 years). Reasons mentioned for circumcising adolescents were

that the boy could make own decision and understand the significance of the event; boys were most likely at their early stages of sexual activity, would take care of the wound themselves and would heal faster than if done post-pubertal.

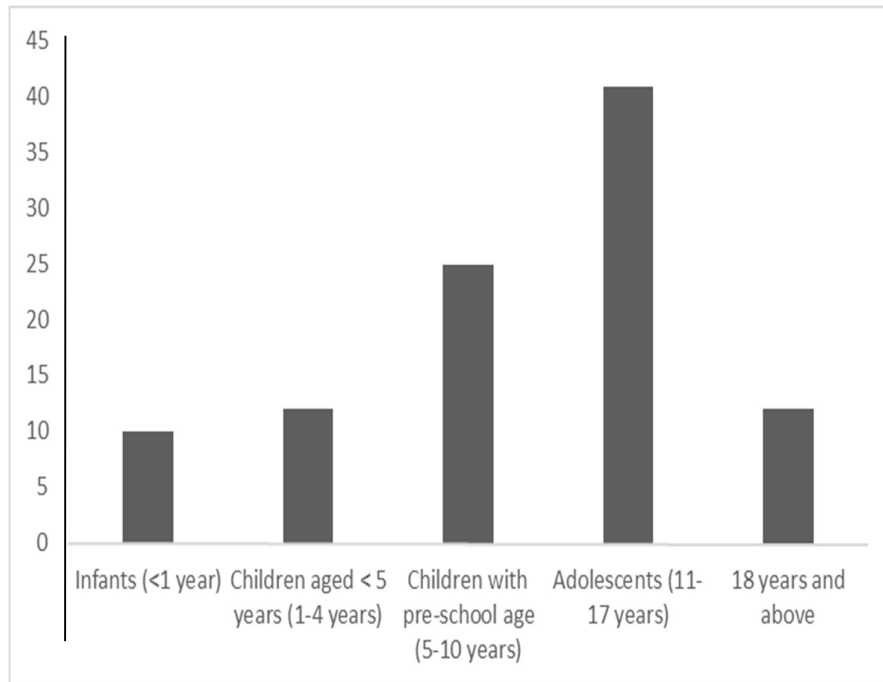


Fig 4.6: Preferred age for circumcision and percentage frequency.

A total of 77% of the respondents reported that they would take their sons to a health facility for circumcision as they believed medical doctors were experienced, would use sterile equipment, were able to minimize pain through anaesthesia and could deal with any complications. Few participants preferred traditional circumcisers who would willingly maintain confidentiality.

Reported benefits of male circumcisions were prevention of HIV and STIs and maintenance of hygiene. Negative consequences of male circumcision included excessive bleeding, pain, loss of penile sensitivity and long recovery period after operation.

4.4 Bivariate statistics

4.4.1 Demographic characteristics on uptake of VMMC

Cross tabulations were generated to establish the variables associated with the uptake of VMMC. Table 4.1 represents the distribution of demographic variables and the uptake of VMMC. Comparison of the various age categories with the uptake of VMMC revealed that 37% of participants aged 20- 29 years were circumcised. Overall, 69% of the younger participants aged less than 20 years to 29 years were circumcised as compared to 31% of the older participants aged 30 years to 50 years. A total of 57% of participants with secondary level of education and beyond were circumcised. Circumcision status was reported by 64% of the married participants and 90% of Christian participants.

Table 4.1: Distribution of demographic characteristics and uptake of VMMC

Age	Circumcised n (%)	Uncircumcised n (%)
<20 years	90 (32)	27 (29)
20-29 years	104 (37)	22 (24)
30-39 years	59 (21)	29 (31)
>40 years	27 (10)	15 (16)
<u>Education level</u>		
Not completed primary	22 (8)	25 (27)
Completed primary	98 (35)	25 (27)
Secondary level and beyond	160 (57)	43 (46)
<u>Marital status</u>		
Single	73 (27)	26 (28)
Married	177 (64)	50 (54)
Widowed	25 (9)	16 (17)
<u>Religion</u>		
Christian	252 (90)	87 (94)
Muslim	27 (10)	6 (6)

Table 4.2 represents the analysis of the demographic variables and their association with VMMC uptake. There was a significant association between age of the participants and uptake of VMMC. Lower age was particularly protective to uptake of VMMC with a 0.64 fold risk. Having a higher level of education increased the uptake of VMMC by 1.29 fold risk; therefore, having a higher level of education was a factor likely to influence the uptake of VMMC in the study region. Marital status of the participants decreased the uptake of VMMC by 0.87 fold risk. Religion of the participants increased the uptake of VMMC by 1.23 fold. It is important to note that the level of employment (OR=1.55, CI=1.46-1.65, $p<0.001$) increased the uptake of VMMC by 1.55 fold.

Table 4.2: Demographics and uptake of VMMC

Demographics	OR	95% CI	Chi square	P value	df
Age	0.64	0.62-0.66	9.6083	0.022*	3
Educational level	1.29	1.24-1.34	22.9738	0.000*	2
Marital status	0.87	0.83-0.91	5.5447	0.048*	2
Religion	1.23	1.14-1.33	1.0056	0.021*	1
Formal employment	1.55	1.46-1.65	2.1178	0.000*	1

*Significant at 5%

Key: OR- Odds Ratio, CI- Confidence Interval, df- degree of freedom.

4.4.2: Social variables and uptake of VMMC

Table 4.3 represents the distribution of social variables and the uptake of VMMC. Among the participants who knew about VMMC, 63% of them were circumcised. A total of 85% of the participants who had sex in the last 3 months before the study

were circumcised and 44% of those who never used a condom during sexual intercourse were circumcised.

Table 4.3: Distribution of social variables and uptake of VMMC

Do you know about VMMC	Circumcised n (%)	Uncircumcised n (%)
Yes	177 (63)	39 (42)
No	103 (37)	54 (58)
<u>Sexual intercourse in last 3 months</u>		
Yes	231 (85)	76 (83)
No	41 (15)	16 (17)
<u>Frequency of condom use</u>		
Consistently	103 (38)	20 (23)
Inconsistently	47 (17)	20 (23)
Never use	120 (44)	48 (55)

On bivariate analysis of social variables and uptake of VMMC, the study established that lack of knowledge about VMMC (OR=0.9, CI=0.85-0.96, $p<0.001$) statistically inhibited the uptake of VMMC by 0.9 fold. Sexual intercourse in last 3 months before conduct of the study had no statistical significance with the uptake of VMMC. Frequency of condom use during sexual intercourse decreased the uptake of VMMC by 0.98 fold.

Table 4.4: Social variables and uptake of VMMC

Variable	OR	95% CI	Chi square	P value	df
Do you know about VMMC	0.9	0.85-0.96	12.9685	0.000*	1
Sexual intercourse in the last 3 months	2.82	2.61-3.04	0.597	0.2796	1
Frequency of condom use during intercourse	0.98	0.95-1.01	7.0403	0.003*	2

4.4.3: Reasons for VMMC and uptake of VMMC

Analysis of reasons for VMMC and uptake established that among the participants who responded that VMMC was done for traditional reasons, 62% of them were circumcised. Of those who cited medical reasons, 54% of them were circumcised.

Table 4.5: Distribution of reasons for VMMC and uptake of VMMC

Traditional	Circumcised n (%)	Uncircumcised n (%)
Yes	175 (62)	46 (49)
No	106 (38)	47 (51)
<u>Medical</u>		
Yes	152 (54)	28 (30)
No	129 (46)	65 (70)
<u>Hygiene</u>		
Yes	116 (41)	15 (16)
No	165 (59)	78 (84)
<u>Religious</u>		
Yes	42 (15)	3 (3)
No	239 (85)	90 (97)

On bivariate analysis of reasons for VMMC and uptake of VMMC, the study established that hygiene reasons increased the risk of VMMC uptake by 3.3 fold, traditional reasons by 2.4 fold and medical reasons by 1.3 fold.

Table 4.6: Reasons for VMMC and uptake for VMMC

Reason for VMMC	OR	95% CI	Chi square	P value	df
Medical	1.30	1.23-1.37	4.7471	0.029*	1
Hygiene	3.25	3.06-3.47	16.1015	0.000*	1
Traditional	2.46	2.33-2.6	19.4237	0.000*	1

4.5: Binary logistic regression on factors associated with VMMC uptake.

Chi-square tests were used to select dependent variables that were associated with the outcome. The variables to be included in the model were selected at $p < 0.15$ using stepwise multiple regression analysis. They included age, education level, knowledge about VMMC, medical and hygiene reasons for male circumcision. They were subjected to stepwise (forward and backward) logistic regression analysis and those associated with VMMC were selected at $p < 0.05$.

Table 4.7 represents the variables associated with the uptake of VMMC. The factors identified included level of education (aOR=1.54) 95% [1.16- 2.03], $p < 0.027$, medical reasons for VMMC (aOR= 2.45) 95% [1.53- 3.92], $p < 0.006$ and hygiene reasons for VMMC (aOR= 3.44) 95% [2.02- 5.86], $p < 0.001$.

Table 4.7: Factors associated with uptake of VMMC.

Variables	aOR	95% CI	P value
1. Educational level	1.54	1.162-2.032	0.027
2. Medical reasons for VMMC	2.45	1.529-3.919	0.006
3. Hygiene reasons for VMMC	3.44	2.023-5.857	0.001

Key: aOR- adjusted Odds Ratio, CI- Confidence Interval.

CHAPTER FIVE

DISCUSSION

The study established that the level of uptake of VMMC was 75%. This proportion is higher than the reported median acceptability rate (62%) in sub-Saharan Africa (Herman-Roloff, 2011). The factors associated with uptake of VMMC included education level, medical and hygiene reasons for male circumcision. Majority of the respondents were born in rural areas but lived in the urban regions at the time of the study.

Young respondents below 30 years were more likely to have undergone VMMC as compared to those above 30 years. Moreover, they also paid more attention to their sexual health. These findings can be corroborated by finding from a study in the Dominican Republic (Brito, 2009) which established that younger respondents were more likely to accept the procedure when compared to their older counterparts.

Earlier investigations on the age of male circumcision and risk of prevalent HIV infection in rural Uganda reported that pre-pubertal circumcision was associated with reduced HIV risk, whereas circumcision after age 20 years was not significantly protective against HIV-1 infection. In addition, adult circumcision had higher risk of complications, was more painful and made one experience painful erections causing delays in healing (Ngalande, 2006).

Most of the respondents would circumcise a male child if this service were offered for free in the hospital. The preferred period for circumcision was adolescence. This bears a strong correlation with a survey in Denver, United States of America which established that the main correlate of circumcision status was circumcision status of the father, with 90% of circumcised fathers choosing to circumcise their sons during adolescence compared with 23% of non-circumcised fathers. This finding is also supported by results of a study conducted in Zimbabwe which indicated that infant and adolescent circumcision should be offered as part of national HIV prevention

efforts (Mayhu, 2012). The ages at which males become circumcised has an effect on how rapidly circumcision interventions may impact the HIV epidemic in any given area (Bailey *et al.*, 2002; Rain-Taljaard, 2003; Scott, 2005).

The level of knowledge about HIV was a significant factor with uptake of VMMC. Majority of the respondents reported unprotected sexual intercourse was the main method of transmitting HIV. Methods of HIV prevention that were reported included abstinence, faithfulness and using condoms.

The study established that frequency of condom use during sexual intercourse was significantly associated with uptake of VMMC upon bivariate analysis. Respondents who never used a condom were less likely to undergo VMMC than those who used one consistently.

The majority of the respondents cited prevention of sexually transmitted diseases, including HIV, as a motivator for undergoing circumcision. These results are consistent with the study by Bailey *et al.*, 2001. The study established that many people from the study area felt that they had insufficient knowledge to make a decision about when best to circumcise. They preferred to obtain advice from clinical professionals in health institutions. This observation is supported by findings of studies in Kenya and Malawi (Bailey *et al.*, 2002; Ngalande, 2006).

Cultural norms and traditions were viewed as central factors in acceptability of circumcision. Circumcision was associated with specific traditionally circumcising communities. However, in Kibera region, VMMC is not a universal practice; the population is cosmopolitan with substantial number from non- circumcising ethnic communities. An important conclusion reached by past studies was that circumcision was increasingly an issue of personal choice rather than ethnic identity (Rain-Taljaard, 2003; Scott, 2005). Urbanization, ethnic mixing, and exposure to other cultures and religions were conducive to higher acceptability of circumcision in traditionally non- circumcising ethnic groups.

In the logistic model, the study established that respondents who had attained secondary level of education and above were more likely to have been circumcised

as compared to those who had only completed primary education level. This may be due to the fact that they were more knowledgeable about voluntary medical male circumcision and aware of the protection it confers against HIV. In addition, medical and hygiene reasons for male circumcision were significantly associated with uptake of VMMC.

A large majority of the men who took part in the study reported that their greatest misgiving about circumcision was related to fear of pain, long recovery period after the operation and cost of time away from work. Where circumcision is the norm, families were expected to shoulder the circumcision expenses without worrying of the cost. In non-circumcising communities, there were always competing needs in terms of cost when time for circumcision comes. It was viewed as including not only the payment for the procedure, but also the opportunity costs of time away from work and other income generating activities. Cost as a primary consideration was shown dramatically by the pilot intervention in Siaya, Kenya, where men came in large numbers when the charges were lowered to \$1.45US (Bailey *et al.*, 2002). These results indicate that the true cost of the procedure would have to be supplemented to achieve significant uptake of VMMC.

The concerns for safety and pain were based on the perception that circumcision, as a surgical procedure, came with inherent risks. The concerns were also drawn from occasional press releases publicizing mutilations and deaths. Personal knowledge of neighbouring communities where traditional initiates withstood excruciating pain was also likely to influence preference of VMMC. This is supported by findings of a study conducted in Western Kenya which reported that 25 percent of circumcised males (35 percent in traditional circumcision and 18 percent in a clinical setting) experienced an adverse event, for example excessive bleeding, infection or excessive pain (Bailey *et al.*, 2008).

Sustained uptake of VMMC required performance of the procedure with minimal adverse events. This could be achieved through proper training and supervision of practitioners, proper instrumentation and sterilization, complete instructions to

patients, follow-up with patients, and over all attention to quality control (Krieger, 2005).

We missed collecting information about the number of sexual partners in the current study, which could have important public health implications. It is not clear whether a high proportion of those who accepted VMMC are those who have multiple sex partners. Multiple sexual partners aggravate the HIV infection rate due to high-risk heterosexual behaviour (KDHS, 2009)

Our study had several limitations. Those who participated in the study were perhaps more concerned about their health and more interested in the topic. Additionally, all data collected was based on self-reported behaviours and characteristics without clinical examination or other confirmation.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1: Conclusion

- i. This study shows that the uptake of voluntary medical male circumcision was 75% among the general population in Kibera. Reasons for not being circumcised included fear of the procedure and traditions and cultures that did not practise it. A total of 84% of the respondents reported that they were willing to have their sons circumcised if they had one. The study established that the preferred age group for circumcision was during adolescence (11-17 years) at 27 percent. Reported benefits of male circumcisions were prevention of HIV and STIs and maintenance of hygiene. Negative consequences of male circumcision included excessive bleeding, pain, loss of penile sensitivity and long recovery period after operation.
- ii. More than half of the respondents had knowledge about VMMC (59%) with 69% reporting that it could not prevent HIV. The major source of information on VMMC was from TV and radio (22%).
- iii. The study established that the factors associated with the uptake of VMMC were level of education, medical and hygiene reasons for male circumcision.

6.2: Recommendations

- i. Circumcision should be promoted in traditionally non circumcising communities as it has been shown to reduce risk of HIV transmission. This will provide clients with an opportunity to learn of their HIV status if they had never been tested before.
- ii. Circumcision by medical providers should be increased in traditionally non-circumcising communities to reduce incidence of adverse events. Comprehensive HIV prevention packages should be provided at the time of circumcision. This should go hand in hand with provision of counselling and testing services, treatment for sexually transmitted infections, promotion of safer sex, and provision of

condoms. They should emphasize on the beneficial aspects of male circumcision that promote medical and hygienic health of circumcised men.

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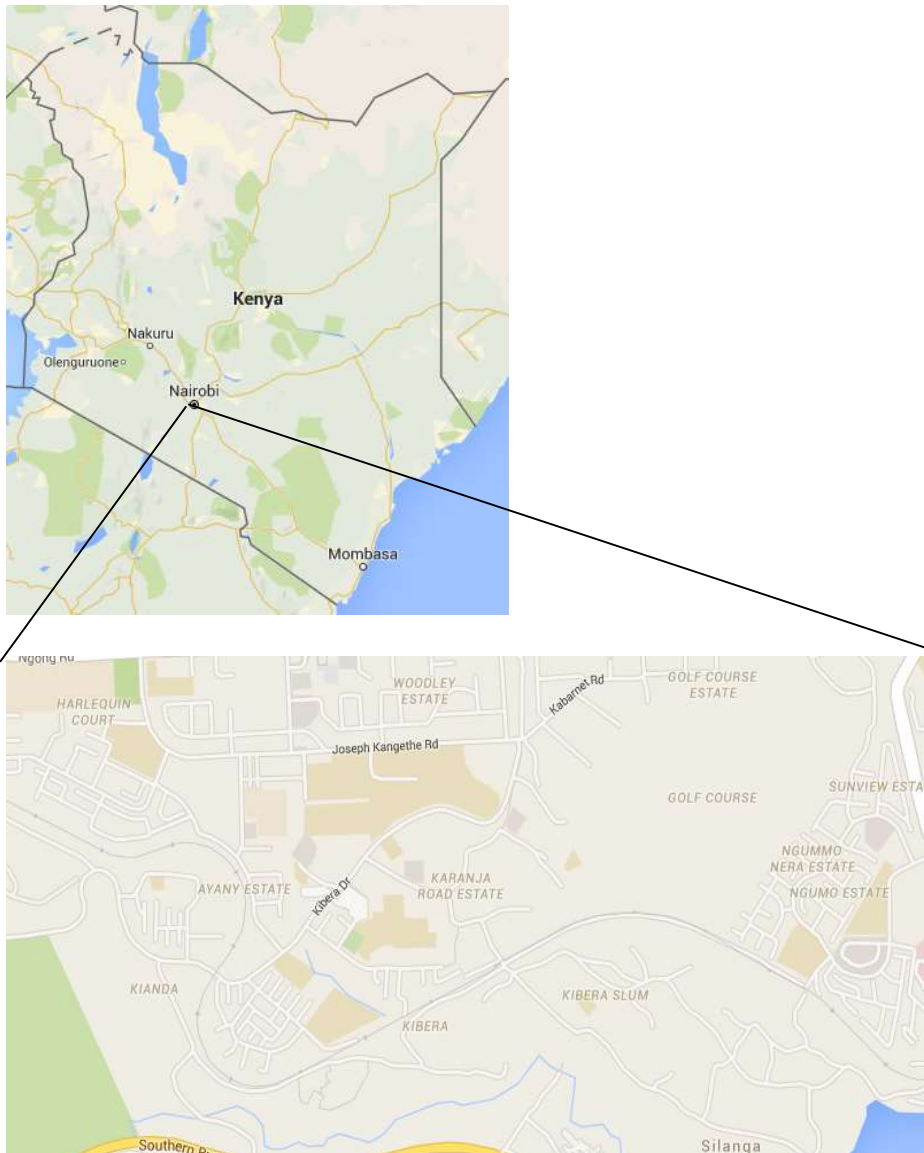
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APPENDICES

Appendix 1: Map of Kibera



Source: <http://maps.google.com>

Appendix 2: Role of investigators

Eric Muriithi Nyaga is a Master of Science (Epidemiology) student at JKUAT/KEMRI here in referred to as the Principal Investigator for this work. He will conduct research based on the procedures in this protocol as part of his Degree requirement.

Dr. Gabriel G Mbugua is an Epidemiologist at Kenya Medical Research Institute-Center for Microbiology Research and a co-investigator in this project. He will give technical advice to the PI.

Mr. Lawrence Muthami is a Principal Research Officer at Kenya Medical Research Institute- Centre for Public Health research and a co-investigator in this project. He will provide technical advice regarding analysis of data.

Dr. Joseph Gikunju is a Lecturer at the Institute of Tropical Medicine and infectious Diseases (JKUAT) and a co-investigator. He will provide the research team with a key link between JKUAT and KEMRI administration. He will also provide technical assistance and advice.

Appendix 3: English informed consent form.

Principal investigator: NYAGA ERIC MURIITHI

Introduction:

Good morning /afternoon?

My name is Nyaga Eric Muriithi and I am a student at the Jomo Kenyatta University of Agriculture and Technology (JKUAT), Institute of Tropical Medicine and Infectious Diseases (ITROMID) located in Kenya Medical Research Institute (KEMRI). I am here with my research team to conduct a study on the uptake of Voluntary Medical Male Circumcision in Kibera division. I would like to seek your permission, please read the consent form below.

The purpose of the study

The aim of this study is to understand the factors that are associated with voluntary medical male circumcision in this village. It is a service that has been introduced to non-circumcising communities in order to encourage men who are not circumcised to become circumcised as a preventive measure in the spread of HIV. The information you provide will therefore be of benefit to you and also aid in providing insights into the factors associated with VMMC and help form a basis for formulating informative policies.

Procedure

The purpose of this form is to obtain your consent to participate. If you choose to participate a questionnaire will be administered to you and the interview will take between 10 and 20 minutes to complete.

Participation is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope you will participate in this interview since your views are important. I, being the principal investigator, will administer the questionnaire to you individually. However, if you have difficulties in filling out the questionnaire or have problems with communicating your views and information, you may be assisted by close family members and close friends.

There are no right or wrong answers to the questions; we would just like to learn about your personal thoughts and attitudes. If you don't understand a question, please tell me, and you can add further information at any stage.

Benefits

There are no direct benefits to you by choosing to participate in this study. However, the results of this study will be communicated back to you and to KEMRI who will also take action depending on the outcome. The results will also be used in writing my thesis as part of requirements by the university.

What are the risks of the study?

Apart from the inconveniences caused by taking part of your time, the process is safe and there are no risks involved. But some questions may appear uncomfortable but it is necessary for you to answer them with honesty. However, we will try as much as we can to make sure we save on your time.

What about confidentiality?

All the information obtained will be strictly confidential and data password protected only accessed by the Principal investigator, study subjects in the study will be kept

anonymous, being identified only by specific numbers assigned by the principal investigator.

Contact information

For any questions or concerns about the study or in the event of a study-related injury, the following person is available for contact

Principal Investigator- NYAGA ERIC MURIITHI

Telephone- 0716485449

Email: muriithieric@yahoo.com

For any questions pertaining to rights as a research participant, the contact person is

The Secretary,

KEMRI Ethics Review Committee

P.O. BOX 54840-00200 Nairobi.

Tel: (254) (020) 2722541, 0722-205 901, 0733-400003

Email: erc@kemri.org

At this point, do you want to ask me anything about the study?

Subject permission:

I, the undersigned have understood the above information which has been fully explained to me by the investigator. I have agreed to voluntarily consent to participate. I was given the chance to ask questions and I received satisfactory responses.

Name _____ of _____ Participant _____ or
respondent.....

Signature.....Date.....

Signature of the person obtaining consent _____ Date _____

(Must be signed by the investigator or individual who has been designated to obtain consent)

Appendix 4: English Questionnaire.

SECTION 1: DEMOGRAPHICS

1. How old are you? *Write age in full years*

2. How many children do you have? Boys: Girls:

3. What is the highest education level you have attained?

0= Did not complete completed primary level; 1= Completed primary school; 2= Secondary and Tertiary;

4. What is your marital status?

0= Never married; 1= Married; 2= Widowed;

5. Where were you born?

Name of place _____ *District* _____

6. What type of area?

1= Rural; 2= Urban;

7. Where are you living now?

Name of place _____ *District* _____

8. What type of area?

1= Rural; 2= Urban;

9. What is your religion?

1= Christian; 2= Muslim

10. Are you in formal employment? 0= No; 1= Yes;

SECTION 2: PARTICIPANT UNDERSTANDING OF HIV AND VMMC

1. Do you know about VMMC? 0= No; 1= Yes;

If yes, what is it?

2. From which sources did you get information on VMMC?

1= Educational institute; 2= Health workers; 3= TV & Radio; 4= Older persons in family and community; 5= Newspapers; 6= other.

3. Are you able to determine when one should go for VMMC? 0= No; 1= Yes;

If yes, please explain.

4. What makes one undergo VMMC?

5. Can male circumcision prevent HIV? 0= No; 1= Yes; ☐
6. How is VMMC carried out?
7. What measures do you think should be carried out to improve the roll-out of VMMC services?
8. How is HIV transmitted?
9. What methods of HIV prevention do you know of?
10. Have you had sexual intercourse in the last 3 months? 0= No; 1= Yes; ☐
11. What methods of prevention of transmission of HIV do you use?
12. How frequently do use a condom during sexual intercourse?
0= Never use; 1= Consistently; 2= Inconsistently; ☐

SECTION 3: ACCEPTABILITY OF VMMC

1. Are you circumcised? 0= No; 1= Yes; ☐
2. Please describe what you think male circumcision is.
0= Don't Know; 1= Removal of the penis; 2= Removal of the foreskin (the skin that can be rolled forward or back over the head of the penis), but not necessarily the entire foreskin; 3= Removal of the entire foreskin (the skin that can be rolled forward or back over the head of the penis);

Specify if 'Other':

.....
.....

3. Why do you think male circumcision is carried out?

- ☐ Traditional reasons: 0= No; 1= Yes; ☐
- ☐ Medical reasons: 0= No; 1= Yes; ☐
- ☐ Hygiene reasons: 0= No; 1= Yes; ☐
- ☐ Religious reasons: 0= No; 1= Yes; ☐
- ☐ For other reasons (*please state*)

.....

4. [If 'not circumcised' in Q1] Why aren't you circumcised?

5. Would you want to be circumcised? ☐

0= Undecided; 1= Definitely not willing; 2= Definitely willing;

6. What are your reasons for this answer? ☐

1= Improves sexual partner's hygiene; 2= To remove redundant foreskin; 3= Prevents penile cancer; 4= Prevents HIV and sexually transmitted diseases; 5= Improves sexual ability and pleasure; 6= Has circumcised friends; 7= Loss of penile sensitivity; 8= Lack of access to health care; 9= Requires time away from work; 10= Increased promiscuity; 11= Circumcision is old-fashioned; 12= Cannot withstand the pain.

7. If you have or had a son, would you want him to be circumcised? |____|

0= Undecided; 1= Definitely not willing; 2= Definitely willing;

8. What are your reasons for this answer?

9. [*If 'definitely not willing, probably not willing or Undecided in Q7' write 8=NA to Q9-Q11 and skip to Q12*]

[*If 'definitely willing or probably willing in Q7'*]

When would be the best time for him to be circumcised?

I shall read to you several answers and you select the time you think would be best.

☐ Infants (less than 1 year)? 0= No; 1= Yes; |____|

☐ Children aged less than 5 years (1-4 years)? 0= No; 1= Yes; |____|

☐ Children with pre-school age (5-10 years)? 0= No; 1= Yes; |____|

☐ Adolescents (11-17 years)? 0= No; 1= Yes; |____|

☐ 18 years and above? 0= No; 1= Yes; |____|

10. Why would he be circumcised at this time?

11. Where would you like him to be circumcised? |____|

1= At a traditional circumciser; 2= At the health facility; 3= At other places;

Specify if 'at other places':

.....
.....

12. What do you think the benefits of male circumcision would be?

13. What do you think the problems or negative consequences of male circumcision might be?

14. *[If the answer is "definitely not willing, probably not willing or Undecided" to Q5] tell the interviewee the following,*

ELSE write 8= NA to Q14-Q15 and SKIP to Q16.

Based on this information, would you now want to be circumcised?

0= Undecided; 1= Definitely not willing; 2= Definitely willing;

15. What are your reasons for this answer?

16. *[If the answer is "definitely not willing, probably not willing or undecided" to Q7] tell the interviewee the following,*

ELSE write 8=NA to Q16 and SKIP to Q17.

Would you now support your son's circumcision?

0= Undecided; 1= Definitely not willing; 2= Definitely willing;

17. *[If the answer is "definitely not willing, probably not willing or Undecided" to Q16] tell the interviewee the following,*

ELSE write 8=NA to Q17 and SKIP to Q18.

Would you now support your son's circumcision?

0= Undecided; 1= Definitely not willing; 2= Definitely willing;

If the respondent answered "no" or "strongly no" to Question 17, this is the end of the survey— express thanks to the respondent for their time and information.

Remember to ask them if they have any questions for you. You may need to refer to the briefing you have been given, however, if you don't know the answer to a question, do not be afraid to say so.

18. Would you still be worried about anything to do with male circumcision?

0= No; 1= Yes; 9= NA;

19. *[If 'yes' in Q18, ELSE write 8=NA to Q19 and skip to Q20].*

20. What would you be worried about?

Appendix 5: Kiswahili informed consent form.

UTANGULIZI NA IDHINI

FOMU YA RIDHAA

KICHWA: MATUMIZI YA TOHARA YA HIARI YA KIUME KATIKA IDARA KIBERA.

Mchunguzi mkuu: Nyaga Eric Muriithi

Utangulizi:

Habari za asubuhi / mchana?

Jina langu ni Nyaga Eric Muriithi na mimi ni mwanafunzi katika Chuo Kikuu cha Jomo Kenyatta cha Kilimo na Teknolojia (JKUAT), Taasisi ya Magonjwa ya Kuambukiza (ITROMID) kwa ushirikiano na Kenya Medical Research Institute (KEMRI). Niko hapa na timu yangu kufanya utafiti juu ya Matumizi ya tohara ya hiari ya kiume katika idara Kibera.

Napenda kuomba ruhusa yako, tafadhali soma fomu ya ridhaa hapa chini.

Nitashukuru sana kama wewe utasaidia mimi kwa kukubali kuwa mshiriki katika mafunzo yangu.

Madhumuni ya utafiti

Lengo la utafiti huu ni kuelewa sababu ya kuhusishwa katika tohara ya hiari kwa wanaume katika kijiji hiki. Ni huduma ambayo imeanzishwa kwa jamii zisizo tahirisha ili kuhamasisha watu kuwa kupashwa tohara ni kinga katika kuenea kwa ukimwi. Habari utakayotoa itakuwa na manufaa kwa wewe na pia itasaidia katika kutoa utambuzi katika mambo yanayohusiana na VMMC na kusaidia msingi wa kutunga sera na taarifa.

Utaratibu

Madhumuni ya fomu hii ni kupata idhini yako ya kushiriki. Ukichagua kushiriki, dodoso itakuwa inasimamiwa na wewe na mahojiano itachukua muda wa dakika kati ya 10 na 20 kukamilisha.

Ushiriki ni wa hiari na unaweza kuchagua kujibu swali lolote au maswali yote. Hata hivyo, tunatarajia kuwa utashiriki katika mahojiano haya kwa maana maoni yako ni

muhimu.

Hakuna majibu sahihi au makosa kwa maswali, na sisi tunalenga juu ya mawazo yako binafsi na mitazamo. Kama hutaelewa swali, tafadhali niambie; na unaweza kuongeza taarifa zaidi katika hatua yoyote.

Faida

Hakuna faida kwako moja kwa moja kwa kuchagua kushiriki katika utafiti huu. Hata hivyo, matokeo ya utafiti huu yatawasilishwa kwa KEMRI ambao pia itachukua hatua kulingana na matokeo. Matokeo yake pia itatumika katika kuandika ripoti yangu kama sehemu ya mahitaji na chuo kikuu.

Je, nini hatari ya utafiti?

Mbali na kuchukua sehemu ya muda wako, mchakato ni salama na hakuna hatari ya kushiriki. Lakini baadhi ya maswali yanaweza kuonekana wasiwasi lakini ni muhimu kwa ajili yenu kuyajibu kwa uaminifu. Hata hivyo, mimi nitajaribu kuhakikisha nimetumia mda mdogo.

Nini kuhusu siri?

Habari zote zitakazopatikana zitakuwa za siri, zitalindwa na kupatikana tu kwa mpelelezi Mkuu; washiriki katika utafiti hawatajulikana majina, watatambuliwa tu na nambari maalum ya kupewa na mpelelezi mkuu.

Kuwasiliana habari

Kwa maoni yoyote katika tukio la maswali ya utafiti kuhusiana, maoni au malalamiko, watu wafuatao watapatikana kuwasiliana nao:

Mpelelezi Mkuu- Nyaga Eric Muriithi

Simu: 0716485449

Email: muriithieric@yahoo.com

AU

Katibu Mkuu,

Taifa ya Maadili ya Kamati ya Uchunguzi

P.O. BOX 54840-00200 Nairobi

Tel: (254) (020) 2722541, 0722-205 901, 0733-400003

Email: erc@kemri.org

Katika hatua hii, unataka kuniuliza kitu chochote kuhusu utafiti?

Ruhusa na Muhusika

Mimi niliyetia kuelewa habari hapo juu ambayo imekuwa kikamilifu akanieleza kwa uchunguzi. Mimi nimekubaliana kwa hiari kukubali kushiriki. Nilipewa nafasi ya kuuliza maswali nikapata majibu ya kuridhisha.

Jina la Mshiriki.....

Tarehe

Sahihi ya mtu kupata idhini _____ Tarehe _____

(Lazima saini na mpelelezi au mtu binafsi ambaye amekuwa mteule kupata kibali)

Appendix 6: Kiswahili Questionnaire.

SEHEMU YA 1: TAKWIMU ZA WATU

1. Uko na umri gani? Andika miaka kamili | ____ | ____ |

2. Uko na watoto wangapi? Wavulana: | ____ | ____ | **Wasichana:** | ____ | ____ |

3. Je, ngazi ya juu zaidi ya elimu uliyohitimu ni ipi?

0= Bado maliza shule ya msingi; 1= Maliza shule ya msingi; 2= Secondari na zaidi; | ____ |

4. Hadhi yako ya ndoa?

0= Sijaoa; 1= Ndoa; 2= Mjane; | ____ |

5. Ulizaliwa wapi?

Jina la mahali _____ Wilaya _____

6. Ni aina gani ya eneo?

1= Vijijini, 2= Mjini; | ____ |

7. Unaishi wapi sasa?

Jina la mahali _____ Wilaya _____

8. Ni aina gani ya eneo?

1= Vijijini, 2= Mjini; | ____ |

9. Dini yako ni ipi?

1= Mkristo; 2= Islamu; 3= Utamaduni | ____ |

10. Umeajiriwa? 0= La; 1= Ndio; | ____ |

SEHEMU YA 2: UJUZI WA MHOJIWA KUHUSU UKIMWI NA TOHARA HIARI KWA WANAUME

1. Unajua kuhusu VMMC? 0= Hapana; 1= ndio; | ____ |

Kama ndio, ni nini?

2. Ulipata maarifa kuhusu VMMC kutoka wapi?

1=Taalamu ya elimu; 2=Wafanyakazi wa afya; 3= Televisheni na redio; 4= Wazee katika familia na jamii; 5= Magazeti; 6= Nyingine;

3. Unaweza kujua wakati mtu anapaswa kwenda kupata huduma ya VMMC?

0= Hapana; 1= Ndio; ☐

Kama ndio, tafadhali elezea.

4. Nini humfanyamtu aendee huduma ya VMMC?

5. Kutahiriwa kwa wanaume kunaweza zuia ukimwi? 0= Hapana; 1= Ndio;

☐

6. Huduma ya VMMC inafanywa aje?

7. Unafikiri ni mikakati ipi inafaa ichukuliwe ili kuzudusha huduma za VMMC?

8. Ukimwi husambazwa aje?

9. Unajua namna zipi za kuzuia kuambukizwa na ukimwi?

10. Umeshiriki katika ngono kwa miezi 3 iliyopita? 0= Hapana; 1= Ndio; ☐

11. Unatumia namna gani za kuzuia kuambukizwa na ukimwi?

12. Wakati unashiriki ngono, unatumia mipira wa kondomu mara ngapi?☐

1=Kila mara; 2=sio kila mara; 3=kamwe situmii

SEHEMU YA 3: KUKUBALIWA KWA TOHARA HIARI KWA WANAUME

1. Je, umetahiriwa? 0= La; 1= Ndio; ☐

2. Tafadhali eleza unafikiri tohara kwa wanaume ni nini.

0= Sijui; 1= Kutolewa kiungo cha uume; 2= Kutolewa govi nzima (ngozi ambayo inaweza ikavingirishwa mbele au nyuma zaidi ya kichwa cha uume); 3= kutolewa

govi (ngozi ambayo yanaweza ikavingirishwa mbele au nyuma zaidi ya kichwa cha uume), lakini si lazima govi nzima; | _____ |

Fafanua kama 'nyingine':

.....
.....

3. Unafikiri tohara kwa wanaume inafanywa kwa nini?

- ☐ Sababu za mila: 0= Hapana; 1 = Ndio; | _____ |
- ☐ Sababu za afya: 0= Hapana; 1 = Ndio; | _____ |
- ☐ Sababu za usafi: 0= Hapana; 1 = Ndio; | _____ |
- ☐ Sababu za dini: 0= Hapana; 1= Ndio; | _____ |
- ☐ Kwa sababu nyingine (tafadhali taja)

.....

4. [Kama 'hujatahiriwa' katika swali la 1] Kwa nini si wewe hujatahiriwa?

5. Je, ungetaka kutahiriwa? | _____ |

0= Sijaamua; 1= Bila shaka hapana; 2= Bila shaka ndio;

6. Je, una sababu gani kwa jibu hili?

1= Inaongezea usafi wa mpenzio; 2= Kuondoa govi ya uume; 3= Inazuia saratani ya uume; 4= Inazuia ukimwi na magonjwa ya zinaa; 5= Inaongezea nguvu za uume katika ngono; 6= Marafiki wangu wametahirishwa; 7= Kupoteza hisia za kiungo cha uume; 8= Vifaa vya afya havipatikani; 9= Inahitaji mda bila kufanya kazi; 10= Inaongezea uasherati; 11= Kutahiriwa ni kazi ya kale; 12= Siwezi stahimili uchungu.

7. Kama una au ulikuwa na mwana, ungetaka naye atahiriwe? | _____ |

0= Sijaamua; 1= Bila shaka hapana; 2= Bila shaka ndio;

8. Je, una sababu gani kwa jibu hili?

9. [Kama 'Bila shaka hapana, labda hapana au sijaamua katika 7' andika 8 = NA kwa 10-12 na ruka hadi 13]

[Kama 'Bila shaka ndio au labda ndio' katika 7]

Ni wakati upi mzuri wa kutahirisha yeye?

Nitasomea wewe majibu kadhaa na utachagua wakati unafikiri ni bora.

- ☐ Watoto (chini ya mwaka 1)? 0= Hapana; 1= Ndio; | _____ |
- ☐ Watoto wenye umri wa miaka chini ya 5? 0= Hapana; 1= Ndio; | _____ |
- ☐ Watoto wenye umri wa shule ya awali (5-10 miaka)? 0= Hapana; 1= Ndio; | _____ |

|

☐ Vijana (11-17 miaka)? 0= Hapana; 1= Ndio; | _____ |

☐ Miaka 18 na zaidi? 0= Hapana; 1= Ndio; | _____ |

10. Kwa yeye atahirishwe wakati huu?

11. Ungetaka yeye atahirishwe wapi? | _____ |

1= Kwa ngariba wa jadi; 2= Katika kituo cha afya; 3= Kwa maeneo mengine;

Fafanua kama ni 'katika maeneo mengine':

.....
.....

12. Unafikiri faida za tohara kwa wanaume ni kama zipi?

13. Unafikiri matatizo au madhara ya tohara kwa wanaume inaweza kuwa yapi?

14. [Kama jibu ni 'bila shaka hapana, labda hapana au sijaamua' kwa 5] ambia mhojiwa hivi,

LA SIVYO, andika 8 = NA ya 14-15 na RUKA hadi 16.

Kulingana na taarifa hii, je, sasa ungetaka yeye atahiriwe? | _____ |

0= Sijaamua; 1= Bila shaka hapana; 2= Bila shaka ndio;

15. Je, una sababu gani kwa jibu hili?

16. Kama jibu ni 'bila shaka hapana, labda hapana au sijaamua' kwa 7] ambia mhojiwa hivi,

LA SIVYO, andika 8 = NA kwa 16 na RUKA hadi 17.

Je, sasa unaunga mkono tohara kwa mwana wako? | _____ |

0= Sijaamua; 1= Bila shaka hapana; 2= Bila shaka ndio;

17. Kama jibu ni 'bila shaka hapana, labda hapana au sijaamua' kwa 16] ambia mhojiwa hivi,

LA SIVYO, andika 8 = NA kwa 17 na RUKA hadi 18.

Je, sasa unaunga mkono tohara kwa mwana wako? | _____ |

0= Sijaamua; 1= Bila shaka hapana; 2= Bila shaka ndio;

Kama mhojiwa alijibu "hapana" au "bila shaka hapana" kwenye swali 17, huu ndio mwisho wa utafiti- toa shukrani kwa mhojiwa kwa mda wao na kutoa habari.

Kumbuka kuwauliza kama wako na maswali yoyote kwako. Unaweza pata haja ya kuangaliakwenye mkutano uliopewa, hata hivyo, kama hujui jibu la swali, usiwe na

hofu ya kusema hivyo.

18. Je, wewe bado una wasiwasi wowote kuhusu tohara kwa wanaume?

0= Hapana; 1= Ndio; | ____ |

19. [Kama 'ndiyo' katika Q18, LA SIVYO, andika 8= NA 19 na RUKA hadi 20]

20. Ungekuwa na hofu kuhusu nini?

Appendix 7: Scientific Steering Committee (SSC) Approval KEMRI



KENYA MEDICAL RESEARCH INSTITUTE

P.O. Box 54840-00200, NAIROBI, Kenya
Tel (254) (020) 2722541, 2713349, 0722-205901, 0733-400003; Fax: (254) (020) 2720030
E-mail: director@kemri.org info@kemri.org Website: www.kemri.org

ESACIPAC/SSC/101207

3rd December, 2012

Eric Muriithi

Thro'

Director, CMR
NAIROBI

*Forwarded 11/12/12
Eji*

REF: SSC No. 2419 (Revised) – A survey on uptake of voluntary medical male circumcision and factors influencing the uptake among men aged 18-50 years in Kibera Division in 2012

Thank you for your letter received on 28th November, 2012 responding to the comments raised by the KEMRI SSC.


I am pleased to inform you that your protocol now has formal scientific approval from SSC.

The SSC however, advises that work on the proposed study can only start after ERC approval

Sammy Njenga, PhD
SECRETARY, SSC

In Search of Better Health

Appendix 8: Ethical Review Committee (ERC) Approval KEMRI


KENYA MEDICAL RESEARCH INSTITUTE

P.O. Box 54840-00200, NAIROBI, Kenya
Tel (254) (020) 2722541, 2713349, 0722-205901, 0733-400003; Fax: (254) (020) 2720030
E-mail: director@kemri.org info@kemri.org Website: www.kemri.org

KEMRI/RES/7/3/1

April 18, 2013

TO: Mr. ERIC NYAGA (PRINCIPAL INVESTIGATOR)
STUDENT NO: TM 306-1040/2011

THROUGH: *for* **DR. WILLY SANG,** *Forwarded 2/4/13*
ACTING THE DIRECTOR, CMR, DR C. B. [Signature]
NAIROBI

Dear Sir,

RE: SSC PROTOCOL No. 2419 - (RESUBMISSION): SURVEY ON UPTAKE OF FACTORS
INFLUENCING VOLUNTARY MALE CIRCUMSION AMONG MEN AGED 18-50 YEARS
IN KIBERA DIVISION

Reference is made to your letter dated 13th March 2013. The ERC Secretariat acknowledges receipt of the revised annual continuing study report on March 14, 2013.

This is to inform you that at the Committee determines that the issues raised at the 211th ERC meeting of 6th February 2013 are adequately addressed. Consequently, the study is granted approval for continuation effective this **18th day of April 2013**. Please note that authorization to conduct this study will automatically expire on **April 17, 2014**.

If you plan to continue with data collection or analysis beyond this date, please submit an application for continuing approval to the ERC Secretariat by **March 06, 2014**. The regulations require continuing review even though the research activity may not have begun until sometime after the ERC approval.

You are required to submit any proposed changes to this study to the SSC and ERC for review and the changes should not be initiated until written approval from the ERC is received. Please note that any unanticipated problems resulting from the implementation of this study should be brought to the attention of the ERC and you should advise the ERC when the study is completed or discontinued.

Work on this project may begin.

Yours sincerely,
EAB
DR. ELIZABETH BUKUSI,
ACTING SECRETARY,
KEMRI ETHICS REVIEW COMMITTEE

In Search of Better Health

Appendix 9: Proof of publication

The East African Medical Journal	
Established in 1923	ISSN 0012-835X
November 2014	Volume 91 No.11
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Patterns of poisoning among patients aged 0-13 years at a paediatric hospital in Nairobi <i>V. M. Mutiso, A.S. Muoki and M.M. Kimeu</i>	379
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