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ORIGINAL ARTICLE *MALE CIRCUMCISION*

Voluntary Medical Male Circumcision Services and Related Psychosocial Factors Among Men in Kenya

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ABSTRACT

Background and Objective: Voluntary medical male circumcision (VMMC) has been popularized over the years as a public health intervention geared toward reducing HIV infection. Turkana County, inhabited mainly by traditionally uncircumcised communities with a high prevalence of HIV at 4%, has however only achieved between 5% and 10%, which is below the national average of VMMC strategic target. This study, therefore, sought to determine the association between the uptake of VMMC and associated factors amongst adult men.

Methods: This cross-sectional study was carried out in Loima, Turkana Central and Turkana North sub-counties, with a sample size of 434 adult men. Data was collected using both quantitative and qualitative tools. Statistical package for the Social Science version 22 was used to analyze quantitative data, whereas qualitative data was analyzed thematically.

Results: Of the 374 male participants in the study, 79.9% had undergone circumcision, 77.0% were aged 18–35 years, 94.1% were Christians, 44.7% were unemployed and 54.8% were married. The overall mean scores of responses for psychosocial and socioeconomic factors were 3.602 (positive) and 2.894 (negative), respectively. The study found that only psychological factors were significant predictors of embracing VMMC.

Conclusion and Implications for Translation: Psychosocial and socioeconomic factors have a significant influence on the uptake of VMMC among male participants in Turkana County. Therefore, there is a need to address these factors when designing interventions to improve VMMC uptake in the county.

Keywords: Circumcision, Male, Health Services, Kenya, Community Support, Hygiene

INTRODUCTION

Voluntary Medical Male Circumcision (VMMC) has been adopted as a plan to manage the fast spread of HIV and AIDS across the globe as stated by the World Health Organization (WHO).[1] The Joint United Nations on HIV/AIDS (UNAIDS) and WHO reports of 2021 recommend that VMMC should be applied together with other prevention measures for HIV. Accumulating evidence indicates that there is a correlation between male circumcisions and reduced HIV infection as stated by UNAIDS and WHO.[2] It was found that the inner foreskin cells are prime targets for HIV entry into the body and its multiplication as opposed to the cells on the outer exposed skin as stated by Sharma et al.[3] In most communities in the East African region like Kenya, Burundi, South Sudan, and Rwanda, circumcision is taken as a rite of passage from childhood into adulthood. VMMC is practiced culturally in the majority of the 47 counties in

Kenya, with the exception of Turkana, Siaya, Kisumu, Homa Bay, and Migori, which have the highest adult HIV prevalence as stated by the National AIDS and STI Control Program (NASCOP).[4] According to Odoyo-June et al.,[5] 92% of Kenyan men have undergone circumcision for 15 years in the month of December, mostly as a cultural rite of passage and also for medical and religious reasons. In 2008, the Ministry of Health in Kenya began implementing the VMMC program using phased approaches. The VMMC program was initiated after three randomized trials as stated by Gao et al.,[6] which showcased that male circumcision reduces HIV transmission rate among men by 60%.[7] The US Agency for International Development (USAID) Project research revealed that male circumcision was not considered a cultural rite among Turkana men but had a negative connotation because most of their traditional archenemies—the Samburu, the Pokots, and the Marakwet's men—practice circumcision.[8] Thus, the acceptance of circumcision among their men was seen as cultural infidelity and devaluation of their well-established sociocultural rites of marking the tribal membership.[9]

Over the years, studies have shown that the perception of male circumcision in improving sexual performance is a significant facilitator of the uptake of VMMC.[10] Other factors include age, occupation, marital status, and family support.[11,12] Similarly, men often look up to the community's council of elders or leaders for guidance on social norms and cultural practices within the social hierarchy.[13] This study, therefore, sought to determine the association between the uptake of VMMC and the associated factors among adult men.

METHODS

Study Design

This study adopted the cross-sectional study design in investigating factors that influence the uptake of VMMC services among adult men in Turkana County. Ethical clearance was obtained from the Kenyatta University Ethics Review Committee (Approval number: PKU/234/11480).

Study Setting and Participants

This study was conducted in Turkana County in Kenya. Turkana County is one of the 47 counties in Kenya. Turkana County has six sub-counties, out of which three—Loima, Turkana Central, and Turkana North—were selected for this study. The study targeted Turkana adult men in the selected sub-counties. The selected study areas have high HIV rates of up to 4% and low VMMC prevalence as low as 5%–10%. Males aged 15–17 years were included in the study, as long as their surrogates or parents assented to the study. The study excluded all non-Turkana males and selected participants who declined to give consent.

Study Variables

The independent variables in the study were psychosocial factors, including attitudes, perception, self-esteem, and motivation, and socioeconomic factors like employment, income/finances, socioeconomic status, nature of profession, and distance to health facilities that affect the uptake of VMMC. The dependent study variable in the study was VMMC uptake. It was determined by the number of males who have undergone VMMC in Turkana County, Kenya.

Data Sources/Measurements

A questionnaire was used to collect information from the household heads, either male or female, about the respondent's age, marital status, occupation, religion, opinion on VMMC status, and how economic factors like employment, income/finances, socioeconomic status, nature of profession and distance to health facility, and psychosocial factors like attitudes, perception, self-esteem, and motivation influence the uptake of VMMC within the study area. For the Questionnaire, the study's expected sample size was 434 respondents.

The sample size was determined using Fisher et al.'s (1998) formula n = z2pq/d2.[14] Where:

n: Necessary quantity of samples.

z: Z-table values with a 95% confidence level for significance (1.96).

p: Voluntary medical male circumcision prevalence (50%). q=1-p

d: Investigation's allowed margin of error at a level of confidence of 95% (+/- 0.05 interval, which is 1.96).

By changing the aforementioned variables: (Z=1.96; p=0.5; q=0.5; d=0.05; n=sample)

Where:

$$n = (1.96)2\ [0.5 \times 0.5]/0.05 \times 0.05 = 385$$

Target sample size = 385*13% adjustment to cater for errors such as incompletely filled forms.

Therefore, n = 434 respondents

The research administered 181 questionnaires in Turkana Central, 98 in Loima and 155 in Turkana North. Out of the total 434 questionnaires administered, 374 questionnaires were fully completed, presenting a response rate of 86.18%. Multistage sampling was used to select the primary respondents for the study. This study involves the use of various stages to get to the respondents.

In the first stage, the study used purposive sampling to select three sub-counties out of six in Turkana County. The

participants were selected from these three sub-counties (primary sampling units), namely Turkana Central, Loima, and Turkana North, which are urban, peri-urban, and rural, respectively.

In the second stage, the study used systematic random sampling to select every tenth respondent for the questionnaire from the first respondent in Turkana Central, Loima, and Turkana North sub-counties.

Purposive sampling is a form of non-probability sampling in which researchers rely on their own judgment when choosing members of the population to participate in their study. You set out to identify members of the population who are likely to possess certain characteristics or experiences (and be willing to share them with you) as stated by Saunders et al.[15]

Quantitative Variables

Quantitative variables were grouped into four groups, including sociocultural, knowledge-based, psychological, and socioeconomic factors. The Likert scale (disagree, neutral, and agree) was used to determine the influence of these variables on the uptake of voluntary medical male circumcision, a surgical procedure done by trained and qualified healthcare professionals on men—this was ascertained by asking the respondent if they are circumcised or not.

Statistical Methods

For quantitative data, the questionnaires were audited for data cleaning to ascertain that they were correctly filled and the answers entered were correct. The data was then coded and entered into a statistical package for the social science (SPSS) version 22 (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.) for analysis. Descriptive statistics were summarized into categorical data to generate frequencies and percentages. To investigate factors that influence the uptake of VMMC services and associated factors among adult men in Turkana County, this study used the ordinal regression and the p-value. Analytical analysis also used Pearson's correlation to investigate the association between a dependent variable and an independent variable. The findings were presented either in table form as per strobes guidelines.

RESULTS

Sociodemographic Characteristics

The majority of the respondents (77%) enrolled in the study were between 19 and 35 years old. Most had attained secondary education at 39.3% while 2.9% had postgraduate education. Some of the respondents (44.7%) were unemployed. The majority (54.8%) was married, while 79.9% were circumcised and 20.1% were uncircumcised [Table 1].

Table 1: Demographic characteristic of respondents.

Characteristics	Category	Frequency (n = 374)	Proportion (100%)
Age	Below 18 years	44	11.8
	18–35 years	288	77.0
	Over 35 years	42	11.2
Level of Education			
	Did not attend school	19	5.3
	Primary	74	19.5
	Secondary	147	39.3
	Certificate	36	9.6
	Diploma	54	14.5
	Graduate	33	8.8
	Post-graduate	11	3.0
Religion	Christian	352	94.1
	Muslim	16	4.3
	Traditionalist	5	1.3
	Other	1	0.3
Occupation	Agriculture	11	2.9
	Business	93	24.9
	Civil servant	51	13.6
	Private sector/ NGO	20	5.3
	Unemployed	167	44.7
	Other	32	8.6
Marital Status			
	Married	205	54.8
	Single	164	43.9
	Widowed	1	0.3
	Divorced/ separated	4	1.0
Circumcision status			
	Circumcised	299	79.9
	Not circumcised	75	20.1

Psychosocial Factors and Uptake of VMMC

Among the psychosocial factors that influence the uptake of VMMC in a health facility, most of the respondents agreed (67.6%) that a person's attitude toward circumcision had the most influence on the level of uptake of VMMC; 53.2% agreed that self-esteem had an influence on the level of uptake of VMMC and 57.7% agreed that the perception of people who have undergone circumcision by the community strongly influenced the uptake of VMMC while the majority

Table 2: Psychological factors.

Psychological factors	Disagree		Neutral		Agree		Total scores	Mean scores	Influence on VMMC
	f	%	f	%	f	%			
A person's attitude toward circumcision influences VMMC uptake	63	16.9	58	15.5	253	67.6	1,406	3.76	Positive
The level of self-esteem in a person has a strong influence on whether or not he chooses to undergo VMMC	77	20.6	98	26.2	199	53.2	1,300	3.48	Neutral
The perception of people who have undergone circumcision by the community has a strong influence on the uptake of VMMC	68	22.6	71	19.7	235	57.7	1,372	3.67	Positive
The motivation by males to undertake VMMC is strongly influenced by their spouses and communal support	132	18.2	66	19.0	216	62.8	1311	3.51	Positive
Overall mean score								3.602	Positive

1.0–2.4 (Negative influence), 2.5–3.4 (neutral influence), and 3.5–5.0 (Positive influence), VMMC: Voluntary medical male circumcision, f: Frequency.

of the participants agreed that motivation by males to undertake VMMC was strongly influenced by their spouses and communal support (62.8%). The overall mean score indicated that psychological factors had a positive influence on the VMMC uptake, as the mean score was 3.602 which is above the 3.5 mean score [Table 2].

Socioeconomic Factors and Uptake of VMMC

Among the socioeconomic factors that influence the uptake of VMMC, we found that the majority of the respondents disagreed that a person's income (59.1%) was the most influential socioeconomic factor on the uptake of VMMC; 57.5% disagreed that employment or lack thereof influenced uptake of VMMC; and 47.8% agreed that distance to a health facility influenced the uptake of VMMC. Respondents who resided near health facilities were more likely to undergo VMMC as compared to those residing far from health facilities. Some of the respondents (41.7%) disagreed that the nature of the profession/career does influence the uptake of VMMC while 43.1% agreed that socioeconomic status like occupation, education, and where someone lives influenced the VMMC uptake. The overall mean score indicated that socioeconomic factors under this study had a negative influence on the VMMC uptake as the mean score was 2.894. The summary of the findings is presented in Table 3.

Ordinal Regression Analysis

The study used ordinal regression to estimate how associated factors influenced the uptake of VMMC in Turkana County. For every unit increase in socioeconomic factors, there is a predicted decrease of 0.371 in the log odds of the uptake of VMMC, and with a p-value of (sig.) of 0.000, this was statistically significant. This implies that socioeconomic factors had a negative influence on the uptake of VMMC in Turkana

Table 3: Socioeconomic factors on level of voluntary medical male circumcision uptake.

Socioeconomic factors	Disagree		Neutral		Agree		Total scores	Mean scores	Influence on VMMC
	f	%	f	%	f	%			
Employment or lack thereof does influence the uptake of VMMC	215	57.5	67	17.9	92	24.6	910	2.43	Negative
The level of income/finances does influence the uptake of VMMC	221	59.1	61	16.3	92	24.6	905	2.42	Negative
The size of the distance to a health facility does influence the uptake of VMMC	121	32.4	74	19.8	179	47.8	1,199	3.21	Neutral
The nature of the profession/career does influence the uptake of VMMC	156	41.7	95	25.5	123	32.8	1,230	3.29	Neutral
Socioeconomic status (SES) does influence the uptake of VMMC	122	32.6	91	24.3	161	43.1	1,171	3.13	Neutral
Overall Mean score								2.894	Negative

1.0–2.4 (negative influence), 2.5–3.4 (neutral influence), and 3.5–5.0 (positive influence). VMMC: Voluntary medical male circumcision, f: Frequency.

Table 4: Ordinal regression on factors influencing VMMC.

	Estimate	Std. Error	Wald	do	*Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Sociocultural	0.301	0.112	7.214	1	0.007	0.081	0.52
Socioeconomic	0.371	0.105	12.535	1	0.000	–0.577	–0.166
Psychosocial	0.986	0.123	63.981	1	0.000	0.745	1.228
Information Sources	0.859	0.12	51.265	1	0.000	0.624	1.094

*Significant (Sig.) at 5% significance level. VMMC: Voluntary medical male circumcision.

County. Turkana is a marginalized community and one of the poorest in Kenya. Hence socioeconomic factors such as low income, unemployment, and long distance to a health facility have a negative influence on VMMC, as most Turkana males cannot afford to undergo the procedure because of the cost. For every one-unit increase in psychosocial factors, there is a predicted increase of 0.986 in the log odds of an increase in the uptake of VMMC in Turkana County, and with a p-value of (sig.) of 0.000, it is statistically significant. This implies that psychosocial factors have a very strong and positive influence on the uptake of VMMC in Turkana County [Table 4].

DISCUSSION

The results show that most of the respondents (77%) were young (19–35 years), which agrees with a study done by Macintyre et al.[16] The results of this study are also in agreement with Nzamwita et al.,[17] who found that the willingness to get circumcised was significantly higher among younger males in Rwanda. The results also showed that most of the respondents (39.3%) had attained a secondary level education, followed by primary education (19.8%), diploma education (14.4%), certificate holders (9.6%), university graduates (8.8%), no formal schooling (5.1%), and postgraduates (2.9%), respectively. These findings are in line with a study by Kibel et al.,[18] who reported that a good education was an essential factor in the acceptance of VMMC. This explains why age and education were a big factor in the VMMC uptake in Turkana County with younger and more educated males being more receptive to the procedure.

Christians comprised a majority of the respondents (94.1%), followed by Muslims (4.3%), Traditionalists (1.3%), and other religious affiliations (0.3%). Christianity and Islam, which are the major religious affiliations in Turkana County, had a significant influence on the uptake of VMMC, with both religions advocating for male circumcision. The findings in this study agree with Mavundla et al. and Gurman et al.,[19,20] who stated that the perceived influence of value systems by Christianity was a significant factor in the uptake of VMMC among men in Botswana and Eswatini, respectively. The study also shows that most of the respondents (44.7%) were unemployed, followed by those involved in business (24.9%), civil servants (13.6%), other occupations (8.6%), and private sector/NGO (5.3%). That explains the challenge with the cost of undergoing the procedure as one of the major barriers since a sizeable number of the male residents who live far from a health center could not afford to pay fare to go for the procedure and stay at the hospital to recuperate. Also, those employed or involved in business found it difficult to undergo circumcision because of fear of losing their jobs or income from their businesses while recuperating. The results of the study agree with Zulu et al.,[21] who stated that the nature of work could be a significant barrier to an enabler of VMMC in the Luo tribesmen in Nyanza, Kenya, with employed males finding it difficult to undergo circumcision because of fear of losing their jobs and income unlike the men who were unemployed as stated by Katisi and Daniel.[22] The results of the study also indicate that most respondents (54.8%) were married, followed by singles (43.9%), divorced/separated (1.1%), while only 0.3% were widowed which agrees with studies done by Osaki et al.[23] that marriage was a key driver of male circumcision in Tanzania with women rejecting marriage proposals by males who had not undergone circumcision.

Turkana County has a high HIV/AIDS burden; hence, psychosocial factors such as a person's attitude, perceptions, self-esteem, and beliefs about the importance of VMMC in reducing HIV transmission and enhancing penis hygiene may serve as incentives for males to undergo VMMC. The results are in agreement with Macintyre et al.[16] and Nzamwita et al.,[17] found that in psychosocial factors such as the attitudes and perceptions about VMMC on sexual performance and safety of the penis had a significant influence on the uptake of VMMC.

Social-economic factors were found to have a negative influence on the uptake of VMMC in Turkana County. However, correlation results showcase that there is a very weak correlation (0.139) between socioeconomic factors and the uptake of VMMC with a p-value of 0.004, which implies that it is statistically significant. Correlation results are in

agreement with Menon et al.[24] that the cost of VMMC is a barrier to the scaling up of its uptake in Tanzania. The results are also in agreement with George et al.[25] In their study of VMMC in Kwa Zulu Natal in South Africa, they discovered that deplorable socioeconomic conditions of the society had a negative influence on the uptake of VMMC.

Limitations

The study utilized a cross-sectional study design whereby data was collected at one point in time, hence the difficulty in establishing causal association and temporal sequence.

CONCLUSION AND IMPLICATIONS FOR TRANSLATION

The findings from our study indicate that psychosocial and socioeconomic factors have a significant influence on the uptake of VMMC among male participants in Turkana County, therefore, creating a need for concerted efforts to address the problem. As a condition for encouraging voluntary medical male circumcision in Turkana County, the Government of Kenya (GOK) and nongovernmental organizations (NGOs) should make sure there is appropriate HIV/AIDS education for the purpose of bringing voluntary medical men's circumcision service closer to the public and expand awareness and mobile clinics. Initiatives to upscale and promote VMMC among younger Turkana males are encouraged. Respected local leaders must be used to raise community awareness and support for the VMMC initiative. Further studies should focus on behavioral change and societal acceptance in communicating health advantages, social acceptance, and appeal of unforced medical male circumcision.

Key Messages

- The findings of the study will be used to explain the influence of psychosocial and socioeconomic factors on voluntary medical male circumcision (VMMC) uptake.
- This study brought out the policies that need to scale up or transform their perspective toward attaining the 80% VMCC target by WHO.

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COMPLIANCE WITH ETHICAL STANDARDS

Conflicts of Interest

The authors declare no competing interests.

Financial Disclosure

Nothing to declare.

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Ethics Approval

This study was ethically reviewed and approved by the Kenyatta University Ethics Review Committee (Approval number: PKU/234/11480).

Declaration of Patient Consent

The authors certify that they have obtained all appropriate participant consent.

Use of Artificial Intelligence (AI)-Assisted Technology for Manuscript Preparation

The authors confirm that there was no use of AI-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

Disclaimer

None.

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