

# Prevalence and perceptions of voluntary medical male circumcision among University of Juba students, South Sudan

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## ABSTRACT

**Introduction:** Voluntary medical male circumcision (VMMC) is one of the key interventions against heterosexual spread of HIV. However, its prevalence in South Sudan is not clearly understood. This study aimed to assess the prevalence and perceptions of VMMC among University of Juba students.

**Method:** A cross sectional descriptive study design was adopted. Data from randomly selected students from six schools of the University of Juba were collected using a respondent-administered structured questionnaire. IBM SPSS Statistics version 23.0 was used for data analysis. Chi-squared tests were performed to determine variables significantly associated with VMMC.

**Results:** Amongst 390 students interviewed, the prevalence of VMMC was 41.8% and the overall male circumcision rate was 83.8%. Most respondents expressed positive attitudes and perceptions towards VMMC. The respondents believe VMMC is an important health programme. The decision to get circumcised is associated with age, marital status, religion and state of origin ( $p < 0.001$ ).

**Conclusion:** Most participants were circumcised and perceive VMMC positively. A countrywide study and scale up of the current VMMC programme are recommended.

**Key words:** Male circumcision, VMMC, HIV, prevention, University of Juba, South Sudan

## Introduction

Voluntary medical male circumcision (VMMC) is a key preventive measure that reduces the risk of heterosexual transmission of human immunodeficiency virus (HIV) by 60%.<sup>[1]</sup> It has also been established that VMMC reduces the prevalence of penile inflammatory conditions such as balanitis which contributes to a 3.8 fold increase in the risk of penile cancer, by 68%.<sup>[2]</sup> The key benefits of VMMC have been summarised as reduction of individual HIV risk, reduction

of community HIV risk, and reduction in incidence of STI and urological infections.<sup>[3]</sup> VMMC is implemented by trained health professionals through surgical and nonsurgical techniques.<sup>[4]</sup> Surgically, a cut is made around the head of the penis to remove the foreskin while the nonsurgical procedure involves a *ShangRing* placed on the penis for seven days; the skin slowly disconnects and is removed with the *ShangRing*.<sup>[4]</sup>

Male circumcision is a traditional practice amongst some, but by no means all social / religious groups. Evidence has shown that the success of a VMMC programme is greatly influenced by religious beliefs and cultural sentiments around: lack of openness between parents and children on sexual matters, traditional leadership, and consultation with stakeholders.<sup>[5]</sup> Such influences shape the uptake of the programme in different settings.

Driven by evidence, major health bodies such as the World Health Organisation (WHO), the Joint United Nations Programme on HIV/AIDS (UNAIDS), and the US Centres for Disease Control and Prevention (CDC) recommend VMMC in HIV-1 epidemic settings in which the major route of HIV transmission is through heterosexual intercourse; four sub-Saharan African countries were identified as hot spots for rollout.<sup>[6,7]</sup> Current estimates suggest 30% of the world's males aged 15 years or older are circumcised.<sup>[6]</sup>

In South Sudan, a 2010 study by IGAD and UNHCR found only 9.4% of the men interviewed were circumcised and one third of these were circumcised before their tenth birthday, while a quarter reported being circumcised after the age of 20.<sup>[8]</sup> The study further found 39.5% of the uncircumcised men willing to be circumcised if the process was affordable and safe.<sup>[8]</sup> By 2016, the prevalence of male circumcision in South Sudan was estimated at 23.6%.<sup>[6]</sup> This is still too low compared to the global target of 80% coverage of all men, given that the South Sudan Modes of Transmission Study attributes 80% of new infections to sexual transmission.<sup>[9]</sup>

Since commencement at Juba Military Referral Hospital in 2017, the VMMC programme has grown slowly and is now offered in three PEPFAR-supported military health facilities in Juba, Bor and Wau.<sup>[10]</sup> The programme aims to rapidly achieve optimal coverage among boys and men in the age groups that are most likely to be sexually active, 15 years and above.<sup>[11]</sup> No assessment has been done on the programme so far. Therefore, this study assessed the prevalence and perceptions of VMMC among University of Juba students.

## Method

The study was conducted in August 2022 at the University of Juba in South Sudan. The university hosts 30,000 students spread across 21 schools, 2 colleges, 3 institutes, and 4 specialized centres, of which 4,000 students are studying at postgraduate level.<sup>[12]</sup> Our study participants were undergraduate students. This population fairly represents the VMMC target group and was economically more accessible to the study team at the time of the study.

A cross-sectional descriptive design was chosen. Participating schools were selected by drawing lots while individual male students were randomly selected from the schools' lists through their coordinators. The sample size was calculated using Cochran's formula specifying a precision of 5%, a confidence level of 95% and estimated prevalence of 0.5.<sup>[13]</sup> This resulted in a sample size of 384 which was adjusted to 422 by adding 10% to cater for possible nonresponse.

IBM SPSS 23.0 was used for data entry and analysis. Chi-squared tests were performed to detect significant associations. Quality was ensured by training of the research team on ethical data collection, use of questionnaires and adherence to approved protocol as well as pretesting of study tools and close supervision.

Ethical clearance was obtained from the Department of Community Medicine, School of Medicine and the Dean of Students, while written informed consent was obtained from each participant prior to data collection. Throughout the research period, confidentiality, privacy and anonymity of participants' information were maintained. All COVID-19 safety protocols were observed to protect the health of both the participants and those carrying out the research during data collection and throughout the study.

## Results

Out of 391 respondents recruited, one was excluded due to missing circumcision data. From the remaining 390 respondents analysed, 84.9% were in the age group 18 - 30 years, 90.3% were Christians while 77.9% reported being single. Most of the respondents (57.7%) originated from Lakes (20.0%), Warrap (19.5%) and Jonglei (18.2%) states (Table 1).

From Table 1, the prevalence of VMMC is 41.8% and the overall male circumcision rate among the respondents was 83.8%. All the circumcised students were Christians aged 18-30 years and close to 93% of these were single. Those aged 31 and above were uncircumcised. All respondents

**Table 1. Relation of respondents' sociodemographic characteristics to circumcision status**

Variable	Circumcised		Not circumcised n (%)	Total n	p-value
	VMMC n (%)	Other means n (%)			
<b>Age in years</b>					
18-30	163 (49.2)	164 (49.5)	4 (1.2)	331	
31-45	0 (0)	0 (0)	50 (100)	50	
46-60	0 (0)	0 (0)	6 (100)	6	
61 and above	0 (0)	0 (0)	1 (100)	1	
Unspecified	0 (0)	0 (0)	2 (100)	2	
<b>Religion</b>					
Christianity	163 (46.3)	164 (46.6)	25 (7.1)	352	<0.001
Islam	0 (0)	0 (0)	13 (100)	13	
African beliefs	0 (0)	0 (0)	22 (100)	22	
Others	0 (0)	0 (0)	3 (100)	3	
<b>Marital status</b>					
Single	163 (53.6)	141 (46.4)	0 (0)	304	<0.001
Married (monogamous)	0 (0)	23 (37.7)	38 (62.3)	61	
Married (polygamous)	0 (0)	0 (0)	19 (100)	19	
Divorced	0 (0)	0 (0)	4 (100)	4	
Unspecified	0(0)	0(0)	2(100)	2	
<b>State of origin</b>					
Upper Nile	14 (100)	0 (0)	0 (0)	14	<0.001
Central Equatoria	36 (100)	0 (0)	0 (0)	36	
Eastern Equatoria	20 (100)	0 (0)	0 (0)	20	
Western Bahr el Ghazal	10 (100)	0 (0)	0 (0)	10	
Western Equatoria	19 (100)	0 (0)	0 (0)	19	
Jonglei	64 (90.1)	7 (9.9)	0 (0)	71	
Lakes	0 (0)	78 (100)	0 (0)	78	
Warrap	0 (0)	76 (100)	0 (0)	76	
Abyei Administrative Area	0 (0)	3 (50)	3 (50)	6	
Ruweng	0 (0)	0 (0)	5 (100)	5	
Unity	0 (0)	0 (0)	28 (100)	28	
South Kordofan (Sudan)	0 (0)	0 (0)	1 (100)	1	
El Fashir (Sudan)	0 (0)	0 (0)	1 (100)	1	
Northern Bahr el Ghazal	0 (0)	0 (0)	25 (100)	25	
<b>Total</b>	<b>163 (41.8)</b>	<b>164 (42.1)</b>	<b>63 (16.2)</b>	<b>390</b>	

Chi-squared tests exclude participants with missing data for age and marital status

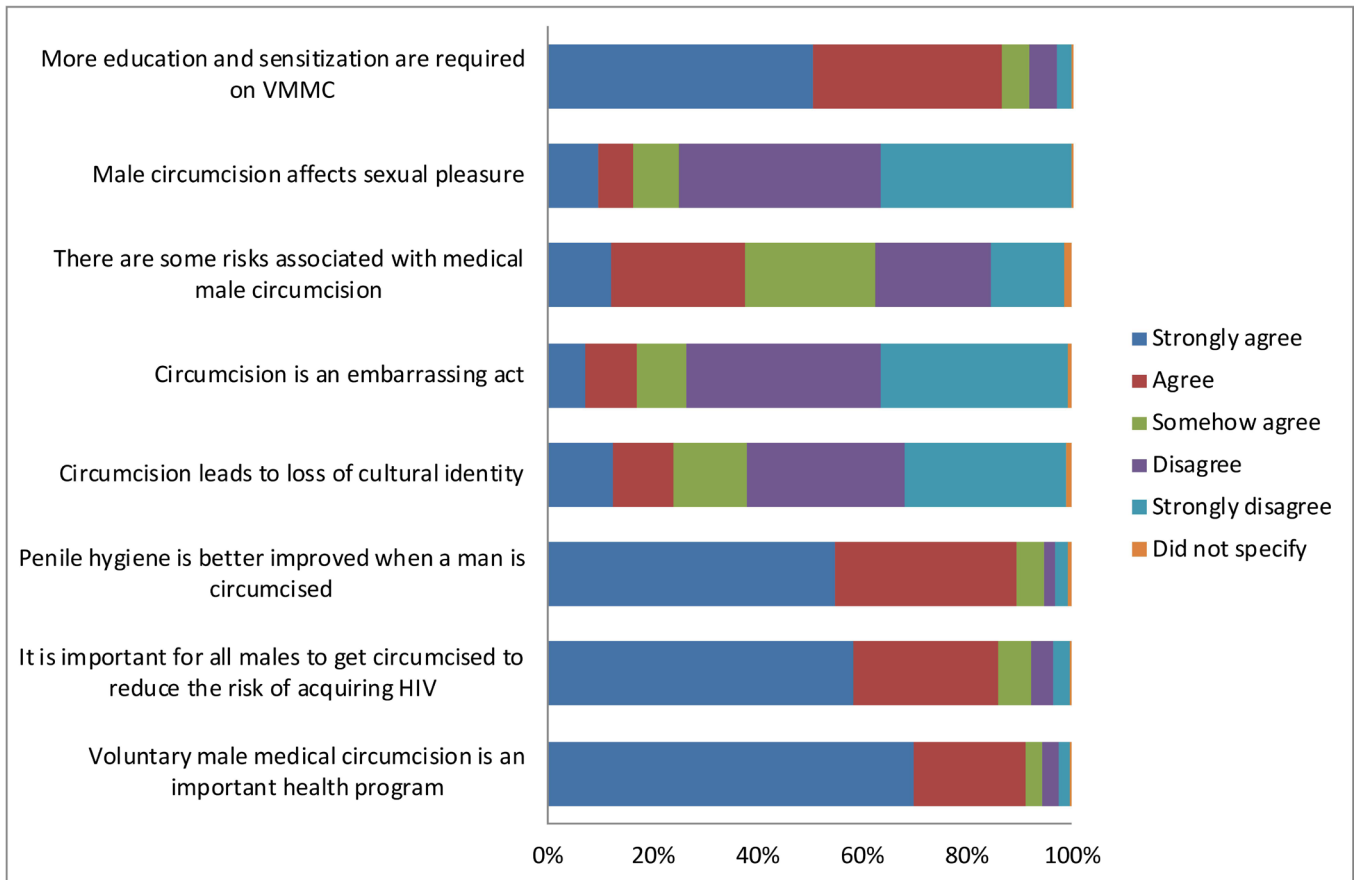


Figure 1. Respondents' perceptions of VMMC

from Lakes, Warrap, Jonglei, Central Equatoria, Eastern Equatoria, Western Equatoria, Upper Nile and Western Bahr Al Ghazel states were circumcised. Contrarily, all 13 Muslims and 22 African traditional believers were not circumcised, as were all students from Unity and Northern Bahr Al Ghazel States.

The circumcised did so for different reasons; almost half said they were circumcised through the VMMC programme while 37.8% said it was part of cultural practices. Factors associated with the decision to get circumcised are age, marital status, religion, and state of origin all of which had  $p < 0.001$ .

As shown in Figure 1, over two thirds (69.5%) believe VMMC is an important health programme and more than 90% said they would recommend it for HIV prevention because it reduces risks of acquiring HIV (58.1%) and improves penile hygiene (54.5%). There was disagreement with the perceptions that VMMC interferes with culture (60.6%) and is an embarrassing act (72.6%).

## Discussion

VMMC is a relatively new programme, launched in 2017 at the Juba Military Referral Hospital, near to the University of Juba, with a target to reach 80% circumcision amongst males of 15 years and above. This has been achieved amongst our study population, although VMMC only accounted for half those circumcised. We do not know how representative our sample is of the general population.

VMMC was perceived positively as preventing HIV and STI transmission and improving penile hygiene. Age, marital status, religion and state of origin were associated with the decision to be circumcised, all of which had  $p < 0.001$ . In contrast a student focused study in Ethiopia found perceived threat and knowledge of the process by the students were positively associated, and fear of community rejection negatively associated, with willingness to get circumcised.<sup>[14]</sup>

Most of our participants did not share the belief that male

circumcision affects sexual pleasure, the same finding as a similar study carried out in Zambia.<sup>[15]</sup> Moreover a study that examined the perceptions of VMMC among circumcising and non-circumcising communities in Malawi showed that VMMC was viewed positively by all participants, just as a similar study in South Africa found that those who perceived benefits of VMMC were more likely to undergo circumcision.<sup>[16,17]</sup> In an Eswatini study however, students had negative attitudes.<sup>[18]</sup> Unexpectedly, this study finds that all respondents from the usually non-circumcising states were circumcised while all those from the usually circumcising states and the Muslims were not. This is an unusual finding which requires further investigation.

## Conclusion

The prevalence of VMMC among the University of Juba students is below the international target of 80% but the overall circumcision rate is well above this. The students are aware of VMMC as an HIV prevention intervention and would recommend it for those who have not yet been reached. A countrywide assessment is therefore recommended for better understanding of the baseline prevalence and perceptions of VMMC and the issue of risk compensation among the circumcised. We also recommend VMMC outreach health promotion programmes and incorporation of VMMC into the national health policy and strategies.

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