

**Knowledge, Attitude and Perception of Uninitiated Adolescents Towards
Customary Male Initiation Practices in Selected Schools in Buffalo City
Municipality, Eastern Cape**

By

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Thesis submitted in fulfilment of the requirements of the degree of

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DEPARTMENT OF PUBLIC HEALTH

*University of Fort Hare
Together in Excellence*

at the

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Supervisors: Dr KE Oladimeji and Prof. DT Goon

JULY 2022

DECLARATION

I declare that this research report is my own unaided work. It is being submitted for the degree of Master of Public Health by combination of coursework and research at the University of Fort Hare, East London. It has not been submitted before for any degree or examination at any other University.

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DEDICATION

I dedicate this work to my wife Amina Igaba and my children Asifiwe, Tumaini and Upendo whose moral, spiritual, and social support assisted me in completing my degree. They endured many days of loneliness while I was away for school and had family events cancelled to prioritise school work. I further dedicate this work to my father Mr. Kibiribiri Yakobo, my mother Mrs Ntibanyendera Zilpha and my parents-in-law Mr and Mrs Sewagudde who continuously reminded me to further my education.



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- The Almighty God who gave me wisdom, strength and perseverance through the years of my studies,
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ABSTRACT

Background: Based on evidence that Voluntary Medical Male Circumcision (VMMC) significantly reduces the risk of human immunodeficiency virus- HIV transmission by 60%, the World Health Organization (WHO) recommends implementing VMMC programs in countries with a high HIV prevalence, considering the unique sociocultural and economic dynamics of each setting. However, in South Africa (SA), multiple tribes including the AmaXhosa in the Eastern Cape (EC) province practice Customary Male Initiation (CMI) also known as *Ulwaluko* as a rite of passage of males from boyhood to manhood, and this involves circumcision. In recent years, this practice has been riddled with deaths of initiates, admissions to hospital, amputation of penis, assaults, drug and alcohol, and crime. Hence, this study aimed at understanding the knowledge, attitude, and perceptions of uninitiated adolescents towards the CMI practice in Buffalo City Municipality (BCM), EC to aid in developing strategies to solve current challenges.

Methods: Between June and December 2021, this cross-sectional descriptive study was conducted in selected schools within BCM, in the EC, using a quantitative research approach. The study population included adolescent males aged 15 to 19 years who had not attended CMI. Applying a multistage random sampling technique, three (3) BCM towns (Bhisho, King William Town-KWT and East London-EL) and the Mdantsane township (MT) were selected and further the schools from which consenting pupils were enrolled into the study. Data was collected using a validated self-administered questionnaire which was captured on excel and analysed using STATA version 16.1. Categorical variables were summarized using percentages. Bivariate and multivariate regression was used to determine factors associated with a level of knowledge, attitude, and perception towards CMI and VMMC. The odds ratio with a 95% confidence interval was calculated. A p -value of <0.05 was considered statistically significant.

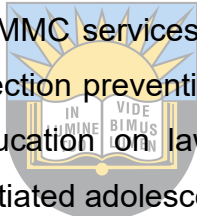
Results: Among 297 participants that responded 251 (84.51%) were between the ages of 15-19 years and had not undergone circumcision or CMI. These were included in this analysis. Majority of participants 181 (72.11%, 95% CI 66.21-77.33) lacked knowledge on whether circumcision reduces risk of HIV acquisition.

More than three quarters of participants 195 (77.69%, 95% CI 72.09-83.87) showed absence of knowledge on whether circumcision reduces risk of STIs. Close to all

participants 244 (97.21%, 95% CI 94.25-98.67) indicated that they would choose CMI over VMMC due to cultural reason. More than three quarters of participants 193 (76.89%, 95% CI 71.24-81.72) agreed that CMI/*Ulwaluko* proves manhood. The presence of knowledge on the benefits of VMMC was positively dependent on the location where a participants lived (uOR 2.32, 95% CI 1.09-4.97, p-value 0.029) and access to internet more than once a week (uOR 3.44, 95% CI 1.14-10.43, p-value 0.029). The choice for CMI over VMMC was positively associated with participants living in Mdantsane Township than those living in urban areas (Coef. 1.55, 95% CI 0.77-2.33, p-value 0.001).

Conclusion: This study found lack of knowledge on benefits of VMMC, laws governing and on risks associated with CMI/*Ulwaluko* practices among uninitiated adolescents. The study further found that CMI/*Ulwaluko* was still highly regarded despite current challenges and most adolescents would choose CMI/*Ulwaluko* over VMMC.

There is urgent need to integrate VMMC services into CMI/*Ulwaluko* to include health education on benefits of VMMC, infection prevention and control, male circumcision by trained medical personnel and education on laws governing CMI/*Ulwaluko*. These interventions should also target uninitiated adolescents.



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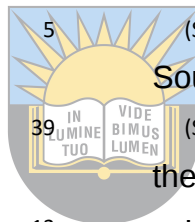
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ACRONYMS

Buffalo City Municipality (BCM)	5	Mdantsane township (MT)	5
Coronavirus Disease 2019 (COVID-19)	32	Medical Male Circumcision (VMMC)	5
Customary Male Initiation (CMI)	5	National Department of Health (NDoH)	18
department of cooperative governance and traditional affairs (CoGTA)	13	randomized controlled trial (RCT)	12
East London (EL)	5	Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2)	32
Eastern Cape (EC)	5	sexually transmitted infections (STI)	12
EC department of education (ECDoE)	39	South Africa (SA)	5
EC house of traditional leaders (ECHoTL)	13	the joint united nations programme on HIV/AIDS (UNAIDS)	18
Education Management Information system (EMIS)	58	traditional male initiation (TMI)	12
Health Research Ethics Committee (HREC)	38	University of Fort Hare (UFH)	38
human immunodeficiency virus (HIV)	5	Voluntary Medical Male Circumcision (VMMC)	5
human papilloma virus (HPV)	12	western cape (WC)	12
King William Town (KWT)	5	World Health Organization (WHO)	5



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CHAPTER ONE: BACKGROUND OF THE STUDY

1.1. Chapter one overview

Chapter one provides a brief background using reviewed literature about Customary Male Initiation (CMI) practice in South Africa (SA) and Voluntary Medical Male Circumcision (VMMC) as an HIV bio-medical prevention modality. Furthermore, it also highlights other benefits of VMMC and male circumcision as a component of CMI. It lists current key challenges facing the CMI practice in SA and measures put in place to properly coordinate CMI are also discussed. It also describes the aim, objectives and study questions and discusses the justification of conducting this study.



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1.2. Background of the Study

The rite of passage from boyhood to manhood is a ritual or a ceremony practiced by many groups and tribes across the globe (Van Gennep, 2013). Male circumcision as part of adolescents rite of passage typically called “initiation schools” was found to still be practiced in many Bantu groups in sub-equatorial Africa (Marck, 1997). For more than a thousand years, ritual of customary male initiation (CMI) of adolescents into manhood has been practiced by the Xhosa people of South Africa and is seen as essential to the Xhosa culture (Froneman and Kapp, 2017). Xhosa people are indigenous South African tribe mostly found in eastern cape (EC) and western cape (WC) Provinces of SA and they speak isiXhosa language (Saul, 2013). Customary Male Initiation is also used synonymously as traditional male initiation (TMI) and practiced by other language nations in South Africa namely, VhaVenda, BaPedi, Basotho, Ndebele and VaTsonga. The traditional name for CMI is *Ulwaluko* defined as a rite of passage from boyhood to manhood (Michelle Glenda Andipatin, 2016). It is considered a highly sacred practice and preferred over voluntary medical male circumcision (VMMC) (Douglas et al., 2018a) a biomedical HIV prevention strategy introduced by world health organization (WHO) to reduce HIV incidence. Voluntary medical male circumcision has proven to reduce the risk of transmission of HIV from female to male in heterosexual intercourse by 60% (Auvert et al., 2005, Bailey et al., 2007, Gray et al., 2007). Further, VMMC confers benefits that include reduction in risk of sexually transmitted infections (STI), reduction in risk of carcinogenic human papilloma virus (HPV) that predispose to cancer of penis and cancer of cervix, good hygiene of the penis and reduced risk of infections of the glans of the penis like balanitis. A recent systematic review and meta-analysis demonstrated a reduction in HIV infection risk in the post randomized controlled trial (RCT) follow-up in community based and in circumcision scale up studies (Farley et al., 2020). Due to the partial risk reduction conferred by VMMC, males are counselled in sex risk reduction, behaviour change, and taught on how to use condoms.

Sometimes CMI is merely reduced to the act of circumcision (Ntombana, 2011b), however, it entails teaching initiates on aspects of adult life and its responsibilities, social responsibilities, knowledge on courtship and marriage and many more (Tapiwa Magodyo,

2016). However, CMI practice has been characterized by an increasing number of botched circumcisions (Mpateni and Kang'ethe, 2020, Douglas et al., 2018b), criminal activities, fatalities among the initiates, drug abuse and inhuman behaviour involving the newly emerged men- *amakrwala* (Ntombana, 2011b). Research on the CMI/ *Ulwaluko* indicate that this practice has lost its historic meaning due to these variety of detrimental inhumane effects associated with negligence and irregularities (Ntombana, 2011b). Several reports through the media have indicated challenges in the practice of CMI characterised by death of initiates, hospitalisation, and other complications (Douglas et al., 2018a, Mdhluli et al., 2020). Eastern cape department of cooperative governance and traditional affairs (CoGTA) passed a bill in 2016 (CMI Act No. 5 of 2016) to regulate the practice of CMI to minimize deaths and complications (Government, 2017). The key role of this bill was to introduce health standards and define each stakeholders' roles and responsibilities in CMI practice in EC province (Nomngcoyiya and Kang'ethe, 2019, Sifunda and Nyembezi, 2015).



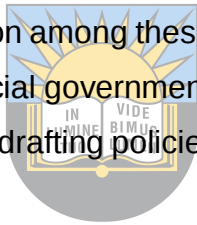
There is little published literature on knowledge, attitude and perception of adolescents who have not undergone initiation towards CMI in Buffalo City Municipality (former Ciskei) especially among adolescents. WHO defines 'adolescents' as individuals in the 10-19 years age group and 'Youth' as the 15-24 year age group, while 'Young People' covers the age range 10-24 years (WHO, 2015). Therefore, this study seeks to assess the level of knowledge, perception and attitude of adolescents who have not undergone initiation towards CMI practices in selected public schools in BCM, EC.

1.3. Statement of research problem

Unpublished reports from the EC house of traditional leaders (ECHO TL), an executive body in charge of coordination activities related to CMI in EC, indicate that 388,602 initiates have been circumcised in CMI since June 2012, with 37,310 of these happening in illegal initiation schools. A total of 25,259 are reported to have received treatment for complications while in initiation schools, 3,411 admitted to hospital, 133 sustained penile amputations and 388 fatalities associated to CMI reported. In December 2021 alone, 46 CMI associated fatalities were reported (ECHO TL CMI statistics 2012-2021 presented at

the Provincial Initiation Task Team, June 2022). There are also reports of botched circumcisions (Vincent, 2008, Mpateni and Kang'ethe, 2020, Prusente et al., 2019), crimes committed by boys while participating in initiations (Bogopa, 2007), wound infection, bleeding, and damage to the penis (Peltzer and Kanta, 2009, Mdhluli et al., 2020). BCM being one of the districts in EC where CMI is highly practiced continues to register high numbers of initiation related mortalities with four (4) deaths reported in the CMI summer season of 2018 (ECDoH CMI summer 2018 report presented at the Provincial Initiation Task Team, February 2019). Although a lot of research has been done in CMI/Ulwaluko in South Africa, lacking in this body of research is a focus on the knowledge, attitude, and perception of adolescents towards the practice of customary male initiation in BCM.

This study assessed the level of knowledge among adolescents who had not undertaken the CMI practices, and it will help inform areas of focus in addressing social and behavioral change and communication among these adolescents in BCM in EC. Findings of this study will guide the EC provincial government in designing strategies on advocacy in social behavioural campaigns and drafting policies targeting adolescents who have not undergone CMI practices.



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1.4. Justification of the study

Various studies had focused on the knowledge, attitude and behaviour of initiates who have undergone CMI (Nomngcoyiya and Kang'ethe, 2021, Douglas et al., 2018b, Douglas and Hongoro, 2018, Ntozini and Abdullahi, 2018) but there was little research done among uninitiated adolescents towards CMI practice. Customary male initiation is sacred and highly preferred in AmaXhosa tribe, and efforts to streamline this practice are required to minimise on the morbidity and mortality associated with CMI.

Upon completion of this study, findings will be shared with EC provincial and BCM district management to give detailed insight into the level of knowledge, attitude, and perceptions of uninitiated adolescents towards CMI customs. Consequently, this vital information will assist management in developing individualised approaches in addressing challenges

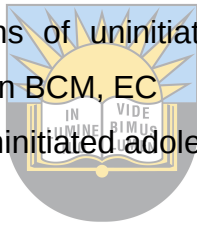
facing CMI practice in EC through policy development targeting uninitiated adolescent males.

1.5. **Main objective of the study**

The objective of this study was to assess the level of knowledge, attitude, and perception of uninitiated adolescents towards CMI practices in selected schools in BCM, EC to inform the EC administrative management on correct and appropriate social, behavioural and communication strategies on VMMC, HIV and CMI for implementation among this age group.

1.6. **Specific objectives of this study**

- 1.6.1. To assess the level of knowledge of uninitiated adolescent males towards CMI practices in selected schools in BCM, EC
- 1.6.2. To determine the perceptions of uninitiated adolescent males towards CMI practices in selected schools in BCM, EC
- 1.6.3. To determine the attitude of uninitiated adolescent males towards CMI practices in selected schools in BCM, EC



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1.7. **Research questions**

- 1.7.1. What was the level of knowledge among uninitiated adolescent males who have not undertaken CMI customs towards the practice of CMI?
- 1.7.2. What were perceptions of uninitiated adolescent males who have not undertaken CMI customs towards the practice of CMI?
- 1.7.3. What was the attitude of uninitiated adolescent who have not undertaken CMI customs towards the practice of CMI?

CHAPTER TWO: LITERATURE REVIEW

2.1. Chapter two overview

Chapter two provides findings from the synthesis of published scientific literatures on knowledge on CMI and VMMC both in SA and other countries. Information on the existing challenges facing CMI, the laws governing the practice, the mortality and morbidity associated with CMI over the years and current knowledge, attitude, and perception towards CMI are discussed. Furthermore, the chapter also highlights benefits of VMMC, and challenges faced in integrating VMMC into CMI.



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2.2. LITERATURE REVIEW

2.2.1. What is Customary Male Initiation (*Ulwaluko*)?

Customary Male Initiation (CMI) also known as *ulwaluko* in IsiXhosa language commonly spoken in EC, SA is known as the rite of passage from boyhood to manhood. It is divided into three phases: separation, transition and reintegration (Magodyo, 2013). In separation phase a pre-initiate is secluded from the community and put on a restrictive diet. He is housed away from the community in a hut built by grass where he will be circumcised (Magodyo, 2013). The period of transition entails the healing of the circumcision wound and the process of instilling lessons of manhood to the initiates. It is a long difficult period (Ntombana, 2011a) characterized by physical activities to overcome difficulties, pain and create endurance, perseverance and obedience among initiates (Ntombana, 2011a). The re-integration phase is a key step in reintroduction of the males into the community as “men” marked by a graduation ceremony. At these graduation events, these newly initiated men share drinks and food with other previously initiated men and are given gifts, and new clothes to symbolize new life. During the CMI practice, the initiates undergo a period of education or traditional schooling. They receive instructions on courtship, social responsibility, marriage practices (Cekiso and Meyiwa, 2014), sexual education (Vincent, 2008a), adult life and its responsibilities as well as advice that they no longer live for themselves but for the common good of their families and community (Mayekiso and Mawere, 2022). This educational experience equips them emotionally, physically, mentally, and morally for adulthood (Ntombana, 2009). According to Gitywa, one of the crucial aspects of the newly initiated male is identifiable change of behavior (Gitywa, 1976).

2.2.2. Overview of Voluntary Medical Male Circumcision in South Africa

Voluntary medical male circumcision refers to the permanent complete removal of the foreskin of the penis in an aseptic environment (WHO, 2018). Randomised clinical trials conducted in Uganda, Kenya and SA demonstrated evidence that VMMC reduces the risk of HIV transmission from a female to a male in a heterosexual intercourse by 60% (Auvert et al., 2005, Bailey et al., 2007, Gray et al., 2007). Apart from HIV prevention, other benefits of VMMC include reduced risk of some STIs (Afshar et al., 2018, Davis et

al., 2019), and HPV that causes cancer of the penis and cervix in males and females respectively (Smith et al., 2021).

In 2007, WHO and the joint united nations programme on HIV/AIDS (UNAIDS) identified thirteen priority countries including SA to scale up VMMC services based on general HIV epidemics, high HIV prevalence and low MC prevalence (Reed et al., 2012). After adopting the VMMC strategy in 2008, the SA National Department of Health (NDoH) began direct service delivery to achieve a cumulative target of 4.3 million MMCs among men 15-49-years by the end 2016 (SA NDoH, 2012). The NDoH targets men 15-49 years old for VMMC for immediate impact of the reduction of HIV incidence since this age group is sexually active and at high risk of HIV infection. From 2008 to 2019, nearly 4.5 million MMCs had been reported performed in SA (Stegman et al., 2021).

By December 2019, nearly 27 million adolescent and adult men (≥ 10 years) had been circumcised and an estimated 340 000 new infections averted in 15 VMMC priority countries (including SA), including 260 000 infections among males and 75 000 among females (due to reduced secondary transmission from males) (Stegman et al., 2021)

2.2.3. Knowledge, attitude, and beliefs towards CMI in the community

The Xhosa people of EC are committed to upholding and protecting the old cultural tradition of CMI. CMI practice is believed to be one of the remaining indigenous knowledge systems that teaches initiates respect, good manners, and Xhosa culture. In a study conducted among Xhosa men residing in Eden district of the Western Cape province, CMI was seen to be very essential to the Xhosa culture. The researcher described many reasons that participants gave for undergoing CMI and these include connection to the ancestors, becoming a role model, avoiding shame, and initiation into manhood. However, the most frequently mentioned reason was community respect (Froneman and Kapp, 2017). This is evidenced by a statement from a learner; “You will no longer be a boy; instead, everyone will listen to what you have to say because you are no longer a boy.” (Participant e, 19, Learner)” (Froneman and Kapp, 2017). Among the detailed teachings acquired by initiates from CMI are how to behave like men, how to understand other children and parents, how to look after their houses and livestock,

personal responsibilities as a man, and generally how to use their free time to improve their lives (Froneman and Kapp, 2017). Becoming a man among the Xhosa involves enduring pain of circumcision with no medical help. It is strictly forbidden to receive any medical help during the rituals and if an initiate happens to receive any medical help, he will be considered to have failed the initiation. He will later become an outcast in the community and will be treated with no respect (Froneman and Kapp, 2017). The only accepted help during CMI activities, including male circumcision, is from traditional leaders who are only allowed to use herbal or indigenous medicine.

2.2.4. Origin and history of CMI practice among AmaXhosa people

The clear origin of CMI practice among Xhosa people is not well understood. However, some researchers have traced the practice of CMI among the Xhosa to the biblical times of Abraham and the arrival of the Arabs on the Indian coastline (Soga, 1931). "This is my covenant, which ye shall keep, between me and you and thy seed after thee; Every man child among you shall be circumcised." (Genesis 17:10, KJV). This is an instruction that God gave to Abram who later circumcised himself and all the males in his household and his name was changed from Abram to Abraham meaning father of all nations. This can be related to the Xhosa CMI practice where a successful initiate is given a new name and acquires new social status in the community after the CMI rituals. After circumcision, the initiate is instructed to say *Ndiyindota* (I am a man) and this symbolizes passage of boyhood to manhood (Mayekiso and Mawere, 2022). Furthermore, Soga believed that CMI has been practiced by Xhosa people since the eighteenth century and likely earlier with some of the earliest testimony on initiation found in 1883 commission on native law and custom whose content was a result of investigations in Transkei and Ciskei (Erlank, 2017). It remains difficult to trace the true origin of the Xhosa CMI practice due to the secrecy associated to the rituals. Only initiated older men are allowed to discuss details of CMI practice with strong restrictions of this knowledge to women and non-initiated males in the community

2.2.5. Customary male initiation and HIV among adolescents

In a systematic review done on prevalence of traditional male circumcision, Wilcken et al. estimate that 86% of Xhosa participants were circumcised by traditional providers compared to only 37% of Tswana men (Wilcken et al., 2010). However, data collected from SA national population-based household survey for males aged 15 years and older, Zungu et al. found that out of 11,086 males interviewed, 19.5% were medically circumcised, 27.2% were traditionally circumcised and 53.3% were not circumcised. They also concluded that males who undergo VMMC are more likely to have had more sexual partners and those who were traditionally circumcised were significantly less likely to be low risk alcohol users (Zuma et al., 2016). This is different from findings from a randomized controlled trial done in Uganda that found very little evidence of behavioral disinhibition among men who had undergone circumcision (Kankaka et al., 2018). In a study conducted in Lesotho, the researcher concluded that circumcision procedures performed by traditional circumcisers have minimal risk reduction effect against HIV transmission compared to those performed by trained medical practitioners (Maffioli, 2017). Contrary to the above findings, a study on HIV prevalence done in rural South Africa found that medically circumcised older males had higher HIV prevalence than their uncircumcised and traditionally circumcised counterparts (Rosenberg et al., 2018). There remain concerns of spread of communicable diseases like HIV due to the use of same blade or instrument in circumcising dozens of initiates. There have also been reports of use of blunt and unconventional tools that lead to excruciating pains during circumcision. It is estimated that adolescents 15-19 years were infected with HIV every 2 minutes (UNAIDS, 2016). Only 33.3% of adolescent boys between 15 and 19 years are estimated to be circumcised (UNAIDS, 2016). Mathematical modelling suggests that approximately 3.4 million new HIV infections may be prevented in 15 years if 8 out of 10 adult men are circumcised within five years. The impact of the preventative measure will translate into an estimated saving of \$16.5 billion in the costs of HIV care and treatment. VMMC not only plays a critical role in averting new infections but also acts as a vital entry point into HIV services for men, and as such helping to achieve the UNAIDS 95-95-95 fast-track targets. The effectiveness of and financial return to VMMC for HIV prevention is highest in a lower age group 14-25, with each circumcision preventing on average 0.09 new

infections. In an older age group this prevention rate declines to 0.06 at 30 years and 0.02 at 40 years. The focus of VMMC programs is on the younger men (Haacker et al., 2016). However, only 63% of males in EC are estimated to be circumcised (HST, 2015).

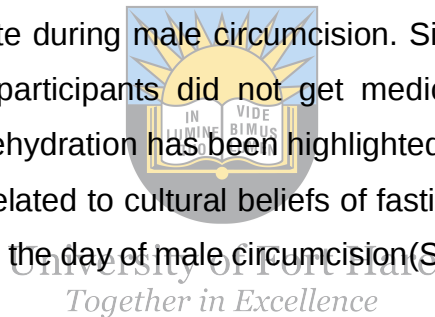
2.2.6. CMI in the modern era

It raises concern that in modern era, CMI practice has been characterised by acts of unprofessionalism, severe adverse events including death and penile amputation, suicide, assault, and unethical behaviours (Ahmed et al., 2021, Mdhuli et al., 2020, Mpateni and Kang'ethe, 2020, Nomngcoyiya and Kang'ethe, 2021, Ngumbela, 2021). There have been several changes in CMI practice since 1994 when South Africa gained independence ranging from changes in legislation to urbanization (Vincent, 2008, Mdhuli, 2017). In the new constitution, the description of human rights has permitted young males to choose not to undergo CMI contrary to old practice where all males were required to participate in CMI activities (Commission for the Rights of Cultural, 2017). Religion has also impacted on the practice of CMI with strong opposition towards certain aspects of the ritual like public dancing and initiates isolation (Deacon and Thomson, 2012). Furthermore, there is also a shift of control of initiation from the chiefs and the traditional leaders to the families and then to the young ones. In recent years, family chose when their son will undergo CMI and dictate the initiation schools they will attend (Deacon and Thomson, 2012). On the other hand, legislations promoting urbanization in post-apartheid SA have led to movement of people from their indigenous communities to major cities leaving behind unexperienced young individuals with little knowledge about the practice of CMI (Commission for the Rights of Cultural, 2017). This has resulted in mushrooming of illegal initiation schools manned by unexperienced young boys driven by economic gains (Mdhuli et al., 2021). Such illegal schools have been identified as the key sources of initiates mortalities, botched circumcisions, amputations, assault, and other complications. In selected areas of the EC like Alfred Nzo district, there is still strong resistance to biomedical interventions like VMMC. However, choosing to keep with the CMI practice, some parents prefer to send their sons to hospitals for a medical circumcision before attending the rituals of CMI (Deacon and Thomson, 2012). The historical and cultural justification of CMI practice is losing momentum as evidenced by

reduced influence of CMI on solving societal problem like crime and gender-based violence. This is because CMI was perceived to be a vehicle of character change and it was believed that if a man with criminal minds underwent CMI, he would come out with clean mind like a new-born baby (Ntozini and Abdullahi, 2018).

2.2.7. The current health issues related with CMI

From the reviewed literature, there has not been any reduction in the number of initiates deaths in EC despite legislative interventions in place. There still reports of use of the same sharp object to remove the foreskin among multiple initiates (Froneman and Kapp, 2017) which raises concerns of transmission of communicable diseases like hepatitis B and HIV. Many initiates still undergo CMI practice without prior medical examination by a clinician to rule out existing medical conditions like bleeding disorders and other chronic illnesses that may complicate during male circumcision. Sifunda and Nyembezi in their study found 19% of their participants did not get medical fitness certificate before undergoing CMI practice. Dehydration has been highlighted among the recent causes of initiates deaths and this is related to cultural beliefs of fasting from some types of foods and drinks two weeks before the day of male circumcision (Sifunda and Nyembezi, 2015).



2.2.8. Experiences reported by initiates and family members

The attendance of initiation schools may be voluntary or forced and is usually influenced by peer pressure or parental initiative. Boys who have not undergone CMI practices are stigmatised against by their peers and the society and called names like '*inja*' (dog) and '*inqambi*' (unclean thing) and *oosondoda*, which dehumanizes the individual (Mdhuli, 2017). Successfully initiated Xhosa males gain respect from all spheres of life and society. They get the privilege of making decisions in their families in regard to marriage and land ownership among others, they participate in traditional activities, and act as role models in the communities they live in (Kheswa et al., 2014). There is growing commercialization of initiation schools by inexperienced traditional surgeons whose major aim is economic gain (Commission for the Rights of Cultural, 2017, Ngumbela, 2021), and this has affected the efficiency and outcome of the practice. The recent rise in alcohol and drug abuse

incidents in initiation schools also raises concern. The traditional surgeons and traditional nurses who are meant to teach initiates about culture and responsibility are the ones supplying drugs and alcohol to these initiates with a goal of minimizing pain (Mdhluli et al., 2020). In some cases, alcohol (e.g. a bottle of brandy) has been used as fees payment to the traditional surgeons and nurses for their services (Mdhluli et al., 2020). It is believed that some cases of genital injury and assault may be associated with traditional surgeons working under influence of drugs and/or alcohol. Furthermore, the language and the teachings at the initiation schools tend to undermine the respect and dignity of women, children, and non-initiated males. Contrary to the above, Kheswa et al. in their studies on experiences and perceptions of “amakrwala” found that those initiates who cooperated with traditional nurses had high chances of good healing and avoiding complications (Kheswa et al., 2014).

2.2.9. Attitudes towards CMI in the community

There is vast body of research that confirm that Xhosa people prefer CMI practices to modern Medical Male Circumcision (Douglas et al., 2018a). Men who have undergone CMI are regarded as superior to those who have not undergone CMI and those who have preferred VMMC in medical facilities. Peltzer et al., assessed the attitude of pre-initiates towards CMI in the context of HIV in areas on Nyandeni and Quakeri of the OR Tambo District (former Transkei) and found that the decision to undergo CMI was primarily influenced by the initiates family (73%), secondarily by community (62%) and followed by peers (26%) (Majaja et al., 2010). They also identified reasons to circumcise as (i) protection from STIs including HIV, (ii) peer enhancement, (iii) protection from other infections, (iv) improved body strength and hygiene, (v) cultural acceptance, and (vi) penile and sexual potency (Majaja et al., 2010). In addition, Meel et al, assessed community perception towards CMI in the sub-region of Transkei (areas around Mount Alyff). He interviewed males between the ages of 1 year and 65 years and identified that 67% of respondents were not aware of risks associated with CMI (Meel, 2005). Women attitude towards CMI practice has changed over time. 98.5% of women supported the ritual to continue with no interference or changes in a study done in 1987 , different from 31% who felt that the CMI practice should continue taking place in the bush with no

medical support (Venter, 2013). Women also believe that a man can only become a respected member of the society if they have undergone CMI practices with 74.5% of respondent Xhosa women agreeing to this fact in a study reviewing Xhosa women views on CMI. However, 50% of these women also believe that there are some forms of child abuse involved in the practice of CMI. There is little studied about the knowledge, attitude, and perception of adolescents towards CMI in Buffalo City Municipality (former Ciskei)

2.2.10. Acceptability of CMI practices in the community

The practice of CMI is highly acceptable in EC communities and regarded as a sacred ritual that symbolises the passage of boyhood to manhood. In a cross-sectional population-based household survey that was conducted using a multi-stage stratified cluster sampling approach done in four provinces in SA, the prevalence of self-reported male circumcision was 39.1% including 15.3% done traditionally and 23.7% done medically. The same study found high acceptability of male circumcision in the community which was positively linked to having better knowledge about male circumcision and HIV (Peltzer and Mlambo, 2012). These findings are like other studies done in other parts of sub-Saharan Africa (Mamo et al., 2018, Kalule-Sabiti and Mangombe, 2019, Moses et al., 2018)



2.2.11. CMI and mortality

Unpublished reports from the ECHoTL indicate that 388 fatalities associated to CMI have been reported between June 2012 and December 2021. In December 2021 alone, 46 CMI associated fatalities were reported (ECHoTL CMI statistics 2012-2021 presented at the Provincial Initiation Task Team, June 2022). Very little is published on the total number of deaths that have occurred during CMI due to the secrecy surrounding this practice. However, a total of 1116 initiates deaths were recorded from 1995-2018 (Rijken, 2018) with the lowest figure in 1996 and the highest in 2009. It is believed that the above figure is underestimated due to the underreported deaths associated with the secrecy surrounding the practice of CMI. In its 2017 report, the Commission for the Promotion and Protection of the Rights of Cultural, Religious, and linguistic communities found that 557 initiates had died between 2006 and 2014 with only 260 arrests made for possible criminal

offences related to these deaths. In the same period, 5035 hospital admissions of initiates for different ailments were registered with more than 214 penile amputations associated with traditional circumcisions (Commission for the Rights of Cultural, 2017). In a study done in Mthatha, the commonest medical cause of death identified among initiates were septicaemia, pneumonia, gangrene, thromboembolism, dehydration, assault, and congestive heart failure (Meel, 2010). In a separate study done at St Lucia Hospital in Tsolo, sepsis was the commonest of complications of traditional circumcisions with genital mutilation and dehydration being among the other causes (Anike et al., 2013). There are many reasons attributed to the rise in the death of initiates and among them is the rise in number of illegal initiations schools manned by unexperienced traditional surgeons (Commission for the Rights of Cultural, 2017). Other factors attributed to the rise in death of initiates are unfavourable health conditions; diminishing appreciation of the cultural value of male initiation; negative public influence on the initiation rite; inappropriate circumcision seasons; and the commercialization of initiation school (Mpateni and Kang'ethe, 2020, Commission for the Rights of Cultural, 2017, Mdhluli et al., 2020).



2.2.12. CMI and the law

Eastern Cape Department of Cooperative Governance and Traditional Affairs (CoGTA) passed a bill in 2016 (CMI Act No. 5 of 2016) to regulate the practice of CMI in order to minimize deaths and complications (Government, 2017). However, these legislations are not usually adhered to. Sifunda and Nyembezi 2015, evaluated the adherence to legislation in 2015 and found 34% of circumcisions were not permitted by traditional leader and 44% of initiates did not have medical fitness exam before circumcision (Sifunda and Nyembezi, 2015). High number of underage circumcisions are still conducted contrary to the recommendation of the Act No. 5 of 2016 to only circumcise males 18 years and above (Nomngcoyiya and Kang'ethe, 2019). After rigorous consultation across the country, The SA government introduced the CMI Act 2 of 2021 to provide for the effective regulation of customary initiation practices; to provide for the establishment of a National Initiation Oversight Committee and Provincial Initiation Coordinating Committees and their functions; to provide for the responsibilities, roles and functions of the various role-players involved in initiation practices as such or in the

governance aspects thereof; to provide for the effective regulation of initiation schools; to provide for regulatory powers of the Minister and Premiers; to provide for the monitoring of the implementation of this Act; to provide for provincial peculiarities; and to provide for matters connected "therewith" (Government, 2021).



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CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Chapter three overview

Chapter three describes the research design, study setting, study population, sampling, inclusion criteria, exclusion criteria, data collection, data management, data analysis, validity, reliability, risk benefit analysis and data variables



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3.2. Research design and study period

This was a cross-sectional descriptive study design using quantitative method conducted between June 2021 to December 2021.

3.3. Study setting

Buffalo City Municipality area covers 2510 square kilometres and is represented as a grouping of urban areas within a metropolitan corridor which stretches from the port of East London in the east, to Dimbaza in the west (Fig. 1). In year 2000, the new BCM municipal area was formed by the integrating the port city of East London, King Williams Town and Bhisho, as well as rural areas (Fig. 1). BCM is also known to be composed of the disadvantaged communities because of inequalities of the apartheid era. Mdantsane and Zwelitsha are some of these communities, and are among largest townships in South Africa. About 880 000 people live in Buffalo City, among whom, more than 80% are Africans, approximately 10 % are white, 6 % are coloured and just under 2 % are Asians. This coastal municipality has a strong automobile industry that is one of the key drivers of the economy and contributes 1.6% to the South African economy. However, BCM unemployment rate for the youth is 45.1% like many parts of South Africa. It is both composed of rural and urban areas and known to strongly practice CMI. According to the 2015 national antenatal sentinel HIV and syphilis survey, BCM HIV prevalence was 32.1%, a slight decrease of 2.9% from the same survey done in 2011.

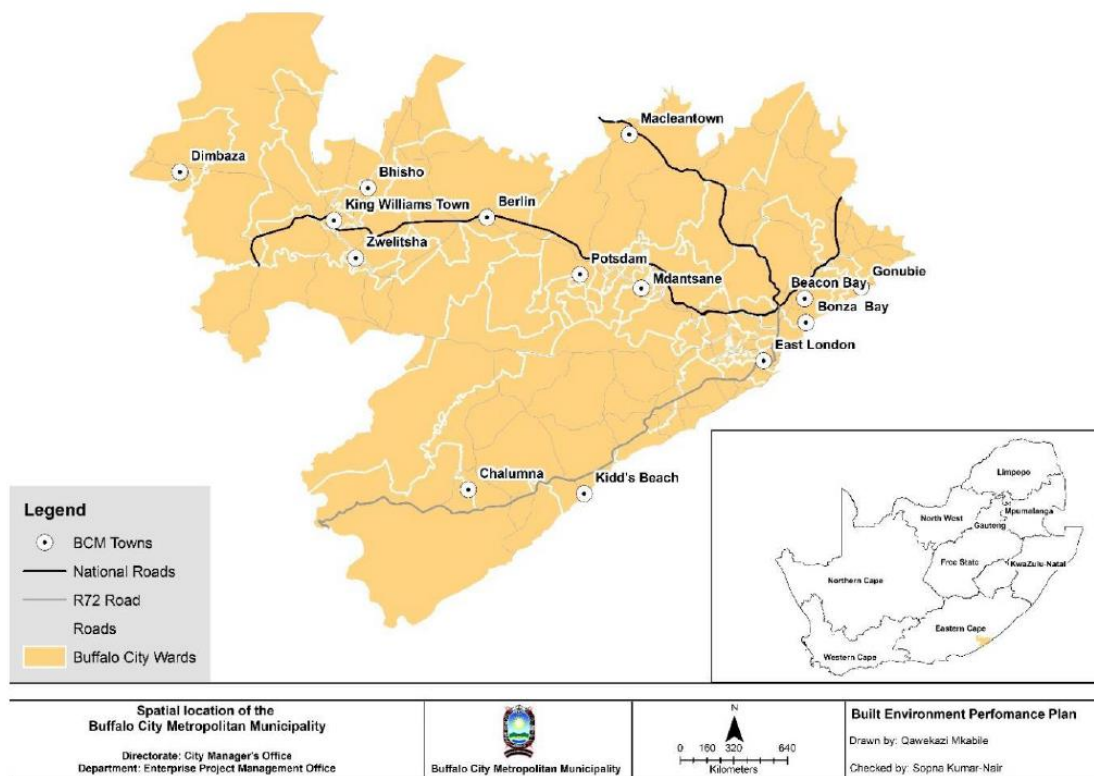


Figure 1. Map of Buffalo City Municipality showing the three selected study areas

3.4. Study population

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This study target population included all adolescent males 15-19 years old attending these selected schools as guided by the study sampling technique. There were an estimated 107,100 adolescent males (10-19 years) in BCM in 2021 with 49,596 being 15-19 years old (Mid-year Statistics SA, 2021), with 296 public primary schools, 134 public high schools, 59 public vocational training schools, and 1 special school for deaf. Ten schools were randomly selected from each of the three towns to be included in this study.

3.4.1. Sampling

This study used a multistage sampling technique. In the first stage, using random selection method, two towns were selected from the three BCM towns and one township from the two BCM townships. In the second stage of sampling, a total of ten (10) schools were randomly selected from each of the two selected towns (East London, and King William) and from the one selected township of Mdantsane (Fig. 2). This involved

obtaining list of 73 schools (both primary and secondary schools) from the department of education in the selected towns and township. The schools were arranged in an alphabetical order, and the researcher selected every 10th school from the list in each selected geographical area. In the third stage of sampling, interested adolescents aged 15-19 years from grade 8 to grade 12 were selected by systematic random method involving them to make a line and selecting every 5th adolescent (Fig. 2). The minimum sample size of participants enrolled was calculated to be 300 using the following formula.

Sample size (N) for single proportion, $N = Z^2 pq/d^2$ (Charan and Biswas, 2013).

Where,

Z = standard normal deviate = 1.96

p = prevalence rate, i.e., proportion in target population estimated to have the characteristic of interest

q = 1 – p.

d = degree of accuracy, set at 0.06.

- Estimated sample size is approximately 267
- Assuming an attrition rate of 10%, the minimum sample size for this study was 300 participants (round off to the nearest whole number).

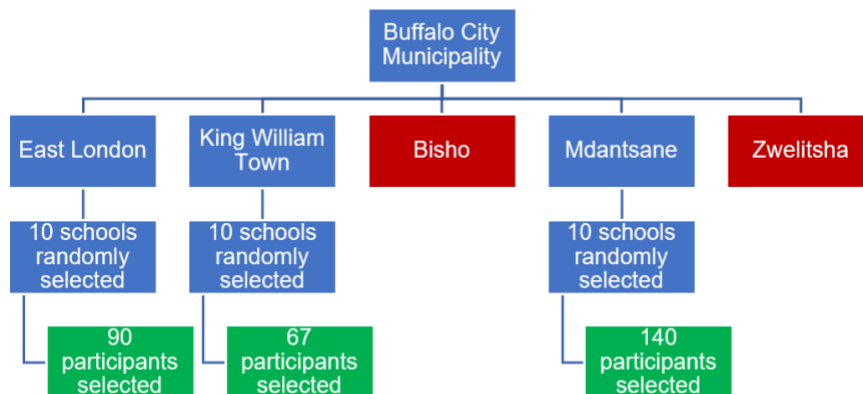


Figure 2. Participants' sampling

3.4.2. Inclusion criteria

Adolescent males aged 15-19 years old attending selected schools in two of the selected towns among the 3 BCM towns and Mdantsane township were included in this study as per the sampling technique.

3.4.3. Exclusion Criteria

Any other adolescents that did not meet the above criteria including adolescent who were mentally retarded and those with mental illness as they were not capable to understand and complete the study questionnaire.

3.5. Research instrument

Through literature review, the researcher adopted a self-administered validated questionnaire (Mubekapi, 2013) and revised it to address my research objectives. The research tool was composed of the title, a unique study identification number generated by the researcher, the date of the interview and participants date of birth. It had 49 questions and was further divided into 4 sections. Section A had questions related to participants demographics, section B had questions related to knowledge on VMMC and CMI, section C had questions related to attitudes, beliefs, and acceptability of VMMC and CMI and section D had questions related to the circumcision status of the participants. All questions were written in simple English language and translated in IsiXhosa language with clear multiple answers for participants to choose from.

3.6. Data collection, management, and analysis

The selected schools were visited to schedule an appointment with the school authority who granted the researcher access to the pupils for data collection.

Upon receiving permission from the school authorities, the researcher addressed the adolescents at an outdoor assembly point, detailing the aim, and purpose of the study. Those adolescents who showed interest to participate in the study were given detailed information about the study and upon assent and/or consent they were given a unique study number. These assented/consented participants were given instructions on how to fill a self-administered questionnaire and requested to complete the questionnaire.

During data collection strict health precautionary measures were taken to prevent spread of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2), the virus that causes Coronavirus Disease 2019 (COVID-19).

For participants below the age of 18 years, legal consent was sought from their parents/guardians/caregivers. Letters with details of the study were sent to the parents in simple clear language they understood, and they were followed up for any questions regarding the study. All details of the study were included in the letters to the parents at indicating their voluntary participation and that of their sons, the aim and objectives and the study, and the contact details of the ethics committee in case they needed further clarity or reporting. Thereafter, informed consents were collected from the adolescents as received from their parents/guardians/caregivers.

The study questionnaires included a question to differentiate those participants who had gone through CMI practice from those who had not. The researcher worked with a research assistant who assisted in data collection in instances where the researcher faced challenges of language barrier. Collected data was entered, in excel spreadsheet, and cleaned and later analysed by STATA Software version 16.1.

3.6.1. Participants' privacy and destruction of data

The privacy of participants was protected by issuing each participant with an identification number which was not linked to his identity. No participants' names or identity details were collected. This ensured that participants' confidentiality was not breached throughout the process of this study. Data generated in paper forms was stored for a minimum of five years in a lockable cupboard in the department of Health Sciences archives at Fort Hare University and was only accessed by the researcher. The electronic data was stored on a password protected computer where only the researcher had access and was planned to be stored for a maximum of ten years. The paper form data will be destroyed by shredding or burning, and all the electronic data generated for this study will be permanently deleted from the computer.

3.6.2. Reliability and validity

To ensure validity of the study, previously used and approved (validated) research instrument was adopted for this study and carefully translated in isiXhosa language. The study questionnaire was revised to suit the objective of this study as per outcome of literature review. In addition, A pilot study involving fourth questionnaires was conducted prior to the start of collecting data of this study to assess if the questionnaire measured what it was intended to measure. The errors, confusions, comments, gaps, and recommendations identified after the pilot study were used to revise the questionnaire to align it to the objectives of this study for reliability purposes. During the pilot study, the researcher also assessed the average time it took to complete one questionnaire and amended where necessary.

3.6.3. Data analysis

3.6.3.1. Descriptive statistics

Univariate descriptive analyses were performed to describe the characteristics of participants' independent variables and participants' mode of access to communication. Frequency and percentage distributions were applied to categorical variables, and the odds ratio with 95% confidence interval was computed using STATA software version 16.1.



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3.6.3.2. Bivariate analysis

Binary logistic regression was used to determine associations between categorical independent and categorical outcome variables, which was reported as un-adjusted odds ratio (cOR) together with 95% Confidence interval (CI). This was used to address objective 2. In bivariate binary logistic regression, the response variable has two possible values for example in this study level of knowledge has two outcomes (i.e., presence of knowledge and absence of knowledge). A p -value of <0.05 was considered statistically significant.

3.6.3.3. Multivariate regression analysis

Multivariable analysis entails conducting various statistical tests to establish if there is any association between outcome independent variables and was used to address objective 3. Multivariable logistic regression was then used to determine associations between categorical independent and categorical outcome variables and is reported as adjusted odds ratio (aOR) together with 95% CI. A p -value of <0.05 was considered statistically significant.

3.7. Risk and benefits analysis

There was no identified risk of physical injury and exposure to threats or hazards to the participants or their parents. The risks associated with participation in this study were no greater than those encountered in daily life. Risks of exposure to SARS-Cov-2 virus transmission were mitigated by adhering to strict preventive protocols as advised by the NDoH. The information received from participants and their parents was kept confidential, their names and their identity details were not collected.

There were no immediate benefits to parents and participants from participating in this study. If participants or their parents had any complaints about ethical aspects of the research or felt that they had been harmed in any way by participating in this study, they were requested to contact the IFREC Administrator, Me N. Bokolo (nbokolo@ufh.ac.za). Participants incurred no extra costs in participating in this study.

3.8. Variable description

3.8.1. The primary outcome

The primary outcome in this study was whether the participant was circumcised or not circumcised, the level of knowledge among the uninitiated adolescents towards the benefits of VMMC, the level of knowledge among the uninitiated adolescents towards Ulwaluko/CMI, and the attitude and perception of uninitiated adolescents towards VMMC, towards Ulwaluko/CMI.

3.8.2. Primary outcome measurement

Level of knowledge was measured as a percentage of participants who responded to the questions correctly and the attitude and perception of participants were measured using the Likert scale (Table 1). Positive attitude was scored as those participants who agreed to the correct provided answer as per literature review findings.

Table 1. Outcome variables

Level of knowledge on benefits on VMMC		
Variable	Description	Code
Circumcision reduces the risks of STIs	True=1 False=2 Not sure=3	0=1 & 2 (lack of knowledge) 1=3 (presence of knowledge)
It is easier to get HIV when a male is?	Circumcised.....1 Uncircumcised....2 No difference.....3 Don't know.....99	0= 1,3, & 99 (lack of knowledge) 1= 2 (presence of knowledge)
It is easier to maintain penile hygiene when a male is?	Circumcised.....1 Uncircumcised....2 No difference.....3 Don't know.....99	0= 2,3, & 99 (lack of knowledge) 1= 1 (presence of knowledge)
It is easier to get penile cancer if a male is?	Circumcised.....1 Uncircumcised....2 No difference.....3 Don't know.....99	0= 1, 3, 99 (lack of knowledge) 1= 1 (presence of knowledge)
Circumcision of a man who does not have HIV reduces his chance of getting HIV.	True=1 False=2 Not sure=3	0=2 & 3 (lack of knowledge) 1=1 (presence of knowledge)
Level of knowledge on CMI/Ulwaluko practices		
Variable	Description	Code
What do you understand about CMI/Ulwaluko?	It is traditional method of circumcision.....1 It is the rite of passage of boyhood to manhood in isiXhosa culture and involves traditional circumcision2 I do not know what Ulwaluko is.....99	0= 1&3 (lack of knowledge) 1= 2 (presence of knowledge)
Do you know any law that governs CMI/Ulwaluko?	EC Customary Male Initiation Act No.5 of 2016.....1 South African Constitution.....2 I don't know.....99	0= 3 (lack of knowledge) 1=1& 2 (presence of knowledge)

Variable	Description	Code
Do you know any risks associated with CMII/Ulwaluko in recent years?	Dehydration due to denial to drink water and other fluids.....1 Injury to the penis.....2 Bleeding after circumcision....3 Illegal initiation schools.....4 Infection after traditional circumcision...5 Drugs and alcohol abuse.....6 Fire and burns.....7 Physical assault.....8 I don't know.....99	0= 99 (lack of knowledge) 1= 1,2,3,4,5,6,7 & 8 (presence of knowledge)
Attitude and perception outcome variables		
Variable	Description	Code
What's the main reason why you would choose Traditional Circumcision over Medical Male Circumcision?	To prevent HIV.....1 Becoming a man.....2 Peer pressure.....3 To prevent STIs.....4 Obeying isiXhosa culture....5 Sexual reasons.....6 Personal Hygiene.....7 Partner's desire.....8 Safety.....9 Others, Specify.....88	0= 1,4,7,9 (Benefits of VMMC) 1= 2,3,5 (Cultural reasons) 2= 6,8,10 (social reasons)
What's the main reason why you would choose Medical Male Circumcision over Traditional Circumcision?	To prevent HIV.....1 Becoming a man.....2 Peer pressure.....3 To prevent STIs.....4 Obeying isiXhosa culture....5 Sexual reasons.....6 Personal Hygiene.....7 Partner's desire.....8 Safety.....9 Others, Specify.....88	0= 1,4,7,9 (Benefits of VMMC) 1= 2,3,5 (Cultural reasons) 2= 6,8,10 (social reasons)
What do you think is the cause of the challenges facing CMII/Ulwaluko?	Illegal initiation schools.....1 Unexperienced Incibi and amankankata.....2 Alcohol and drug abuse.....3 Urbanization.....4 Others(specify).....88	0= 1,2 (cultural challenges) 1= 3,4,5 (Community challenges)
Circumcised men enjoy sex more than uncircumcised men	Strongly agree.....1 Agree.....2 Neutral.....3 Disagree.....4 Strongly disagree.....5	0= 1&2 (positive perception) 1= 3 (Neutral) 2= 4 & 5 (Negative perception)
Circumcised men can safely have sex without using a condom and don't get infected with HIV as compared to uncircumcised men.	Strongly agree.....1 Agree.....2 Neutral.....3 Disagree.....4 Strongly disagree.....5	0= 1&2 (positive perception) 1= 3 (Neutral) 2= 4 & 5 (Negative perception)

Variable	Description	Code
It is important for all males irrespective of their age to be circumcised.	Strongly agree.....1 Agree.....2 Neutral.....3 Disagree.....4 Strongly disagree.....5	0= 1&2 (positive perception) 1= 3 (Neutral) 2= 4 & 5 (Negative perception)
Medical Male circumcision proves manhood	Strongly agree.....1 Agree.....2 Neutral.....3 Disagree.....4 Strongly disagree.....5	0= 1&2 (positive perception) 1= 3 (Neutral) 2= 4 & 5 (Negative perception)
CMII/Ulwaluko proves manhood	Strongly agree.....1 Agree.....2 Neutral.....3 Disagree.....4 Strongly disagree.....5	0= 1&2 (positive perception) 1= 3 (Neutral) 2= 4 & 5 (Negative perception)
CMII/Ulwaluko is an old practice in our community, and it does not need to be re-introduced as Medical Male Circumcision.	Strongly agree.....1 Agree.....2 Neutral.....3 Disagree.....4 Strongly disagree.....5	0= 1&2 (positive perception) 1= 3 (Neutral) 2= 4 & 5 (Negative perception)
Would you prefer traditional circumcision over medical circumcision?	Strongly agree.....1 Agree.....2 Neutral.....3 Disagree.....4 Strongly disagree.....5	0= 1&2 (positive perception) 1= 3 (Neutral) 2= 4 & 5 (Negative perception)
Would you prefer medical circumcision over traditional circumcision?	Strongly agree.....1 Agree.....2 Neutral.....3 Disagree.....4 Strongly disagree.....5	0= 1&2 (positive perception) 1= 3 (Neutral) 2= 4 & 5 (Negative perception)
Medical Male Circumcision done in Clinics/Hospitals is safer than traditional circumcision.	Strongly agree.....1 Agree.....2 Neutral.....3 Disagree.....4 Strongly disagree.....5	0= 1&2 (positive perception) 1= 3 (Neutral) 2= 4 & 5 (Negative perception)

3.8.3. Other explanatory variables

In addition to the above variables, independent variables were used in this study including language, age, religion, location, possession of a television, possession of a radio at home, possession of a mobile phone, having been told of Ulwaluko in the past 12 month (Table 2).

Table 2. Independent variables definition for data analysis

Variable	Description
Participants' age	Age as recorded in completed years of study participants
Participants' location	The place where a study participant lives
Participants' home spoken language	The native language spoken by a study participant at home.
Person/s (caretaker/parent/guardian) living with participants	Father.....1 Mother.....2 Father and mother.....3 Other (Specify).....88
Participants' school grade	The grade of the school the study participant is currently attending
Participants' religion	Christian.....1 Muslim.....2 Traditional....3 None.....4 Other (Specify).....88
Possession of a television at home	Yes.....1 No.....2
Possession of a radio at home	Yes.....1 No.....2
Possession of a mobile phone	Yes.....1 No.....2
Access to internet	Yes, once a week.....1 Yes, more than once a week.....2 No.....3

3.8.4. Data management

STATA version 16.1 was used for data management. It was used for creating, labelling, and renaming variables. Outliers, duplicates, and missing variables were identified and managed using STATA version 16.1. A subset of the dataset was created for data cleaning and coding in preparation for analysis. Both original dataset and the subset of data were password protected, anonymized, and stored in Google drive to maximize prevention of data loss.

3.8.5. Missing data

Frequency tables were used to analyse the data and determine the number of missing values for the outcome variables. Data of participants who did not indicate whether they had undergone initiation or not was omitted from this analysis.

3.9. Ethical approval

This study was approved by the University of Fort Hare (UFH) Health Research Ethics Committee (HREC), SA with ethics clearance number REC-100118-054 (Annexure E). Approval for access to schools was granted by the EC department of education (ECDoE) (Annexure F) and further approval was sought from the ECHO TL to conduct research on a sensitive topic concerning the cultural practices of AmaXhosa in EC (Annexure G).

3.10. Budget

This study was self-funded. The costs included travel costs (car rental, fuel, accommodation), stationery and printing, communication, wages for research assistants (Annexure H).



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CHAPTER FOUR: RESULTS

4.1. Chapter four overview

Chapter four entails descriptive statistics of the level of knowledge of participants towards benefits of VMMC, CMI practice and attitude and perception towards CMI & VMMC. It also describes results bivariate, and multivariate analysis of outcome variables and independent variables.



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4.2. Participants' characteristics

4.2.1. Participants

Out of 520 questionnaires distributed to participants, 57% (n=297) of participants assented/consented and completed the questionnaires (Figure 2). Upon following up the 223 participants that did not respond, multiple reasons were given like lack of parental consent for minors, loss of the questionnaire, sensitivity of the topic, decline from teachers, inability to access the schools due to COVID-19 restriction and learners absenteeism. Among the 297 participants that responded, 255 were uninitiated, 33 were both initiated and circumcised and 9 had missing records. Furthermore, among all the 255 uninitiated participants, 251 were within the age group of 15-19 years and 4 were either below 15 years or above 19 years and were also excluded in the analysis of this study (Figure 2).

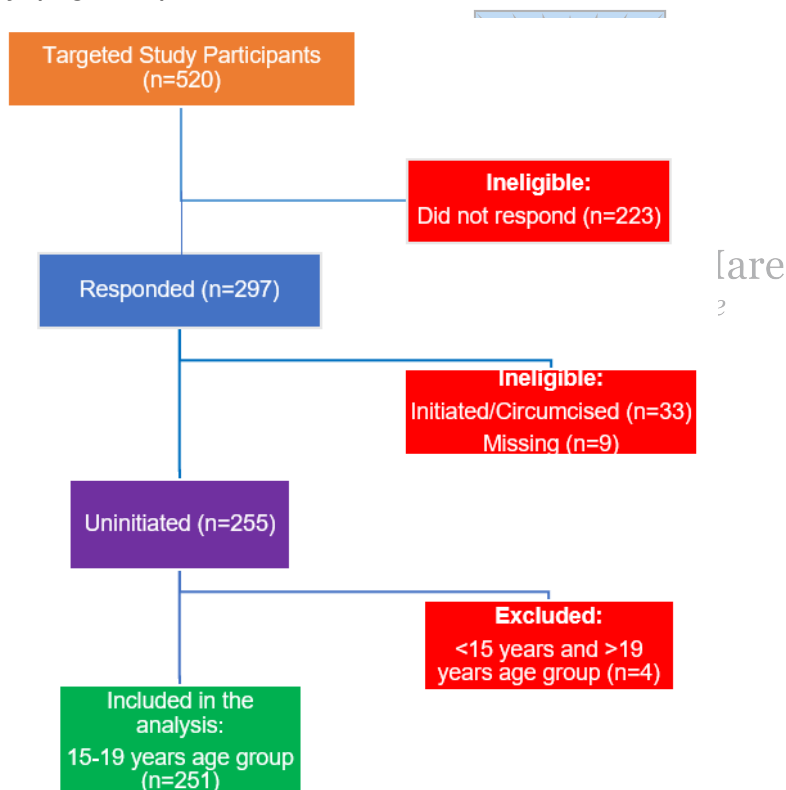


Figure 3. Selection of study participants

4.2.2. Age of participants

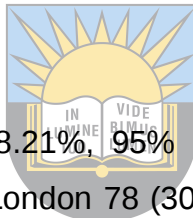
Among all the participants that responded, 251 (84.51%) were between the ages of 15-19 years and had not undergone circumcision or CMI (Table 3). Participants aged 15, 16 and 17 years comprised most of the study representing 65 (25.90%, 95% CI 20.83-31.70), 89 (35.46%, 95% CI 29.76-41.60) and 76 (30.38%, 95% CI 24.89-36.27) respectively (Table 3).

4.2.3. School grade of participants

This study was conducted in schools and 185 (73.71%, 95% CI 67.88-78.80) of the participants were in grade 9 (Table 3). Others were in grade 8,9,10,11 and 12 representing 9 (0.40%, 95% CI 0.06-2.80), 32 (12.75%, 95% CI 9.14-17.50), 27 (10.76%, 95% CI 7.47-15.26), 6 (2.39%, 95% CI 1.07-5.24) respectively (Table 3).

4.2.4. Location of the participants

Majority of the participants 121 (48.21%, 95% CI 42.10-54.61) lived in Mdantsane township, with others living in East London 78 (30.68%, 95% CI 23.80-35.17) and King Williams Town 52 (21.12%, 95% CI 16.01-26.78) (Table 3).



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4.2.5. Language of the participants

IsiXhosa language was the most spoken by 239 (95.22%, 95% CI 91.75-97.27) of the study participants, and 12 (4.78%, 95% CI 2.73-8.25) participants spoke IsiZulu language (Table 3).

4.2.6. Homecare of the participants

Study participants who lived with a mother only as a single parent were the majority in this study, 101 (40.40%, 95% CI 34.46-46.63) (Table 3). Those who lived with both father and mother, father only and other caretakers were 83 (33.20%, 95% CI 27.61-39.30), 21 (8.40%, 95% CI 5.53-12.56) and 45 (18%, 95% CI 13.70-23.29) respectively (Table 3).

4.2.7. Religion of the participants

Study participants who belonged to Christianity and Traditional religions were 108 (43.03%, 95% CI 37.01-49.26) and 117 (46.61%, 95% CI 40.50-52.84) respectively. Fewer participants belonged to no religion 22 (8.76%, 95% CI 5.83-13.08) and those from other unlisted religions were 4 (1.59%, 95% CI 0.60-4.19) (Table 3).

Table 3. Description of participants' characteristics

Variable	Number	Percentage (%)	95% CI
Participants' ages			
15 years	65	25.90	20.83-31.70
16 years	89	35.46	29.76-41.60
17 years	76	30.38	24.89-36.27
18 years	16	6.37	3.93-10.17
19 years	5	1.99	0.83-4.71
Total	251	100.00	
Participants' location			
EL	78	31	23.80-35.17
KWT	52	21	16.01-26.78
MT	121	48	42.10-54.61
Total	251	100.00	
Participants' home spoken language			
IsiXhosa	239	95.22	91.75-97.27
Others	12	4.78	2.73-8.25
Total	251	100.00	
Person/s (caretaker/parent/guardian) living with participants			
Father	21	8.40	5.53-12.56
Father and mother	83	33.20	27.61-39.30
Mother	101	40.40	34.46-46.63
Others	45	18.00	13.70-23.29
Total	250	100.00	
Missing	1		
Participants' school grade			
Grade10	32	12.75	9.14-17.50
Grade11	27	10.76	7.47-15.26
Grade12	6	2.39	1.07-5.24
Grade8	1	0.40	0.06-2.80
Grade9	185	73.71	67.88-78.80
Total	251	100.00	
Participants' religion			
Christian	108	43.03	37.01-49.26
None	22	8.76	5.83-13.08
Other	4	1.59	0.60-4.19
Traditional	117	46.61	40.50-52.84
Total	251	100.00	

4.2.8. Participants' mode of accessing to information

A high proportion of the study participants 234 (93.23%, 95% CI 89.35-95.76) reported that they accessed information through television compared with 17 (6.77%, 95% CI 4.24-10.65) who indicated that they had no television (Table 4). Those participants who reported they had access to radios at home were 185 (73.71%, 95% CI 67.88-78.80) compared to 66 (26.29%, 95% CI 21.20-32.12) who had no access. An equally high number of participants 196 (78.09%, 95% CI 72.52-82.80) reported they had access to mobile telephones compared to 55 (21.91%, 95% CI 17.20-27.48) who did not (Table 4). Nearly half of the participants 123 (49.00%, 95% CI 42.84-55.20) indicated that they had access to internet at least once a week, and n=92 (36.65%, 95% CI 30.89-42.82) for more than once a week (Table 4). Furthermore, 36 (14.34%, 95% CI 10.51-19.27) the participants indicated that they had no access to internet (Table 4).

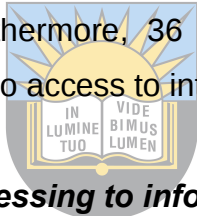


Table 4. Participants' mode of accessing to information

Access to information	Number	Percentage (%)	95% CI
Participants' access to television at home			
No	17	6.77	4.24-10.65
Yes	234	93.23	89.35-95.76
Total	251	100.00	
Participants' access to radio at home			
No	66	26.29	21.20-32.12
Yes	185	73.71	67.88-78.80
Total	251	100.00	
Participants possessing a mobile telephone			
No	55	21.91	17.20-27.48
Yes	196	78.09	72.52-82.80
Total	251		
Participants' access to internet			
No	36	14.34	10.51-19.27
Yes, more than once a week	92	36.65	30.89-42.82
Yes, once a week	123	49.00	42.84-55.20
Total	251	100.00	

4.3. Level of knowledge on benefits of VMMC

Among the 251 participants, 195 (77.69%, 95% CI 72.09-83.87) showed lack of knowledge on the question that circumcision reduces risk of STIs. Surprisingly, majority of the participants did not know that uncircumcised men easily get HIV, with 199 (79.28%, 95% CI 73.79-83.87) showing lack of knowledge. Slightly more than half the participants 146 (58.17%, 95% CI 51.94-64.14) showed absence of knowledge on how easy it is to clean the penis when circumcised and 105 (41.83%, 95% CI 35.86-48.06) showing presence of knowledge. Close to three quarters of participants, 177 (70.52%, 95% CI 64.55-75.85) lacked knowledge on how easier it is to get penile cancer if a male is not circumcised. On whether circumcision of a man who does not have HIV reduces his chance of getting HIV, 181 (72.11%, 95% CI 66.21-77.33) showed absence of knowledge and the rest showed presence of knowledge (Table 5).

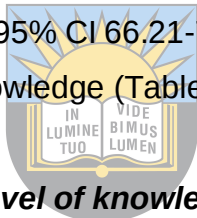


Table 5. Descriptive statistics of level of knowledge on benefits of VMMC

Level of knowledge on benefits of VMMC			
Variable	Number	%	95% CI
Variable 1: Circumcision reduces the risks of STIs			
Presence of knowledge	56	22.31	17.56-27.91
Absence of knowledge	195	77.69	72.09-82.44
Total	251	100.00	
Variable 2: It is easier to get HIV when a male is?			
Presence of knowledge	52	20.72	16.13-26.21
Absence of knowledge	199	79.28	73.79-83.87
Total	251	100.00	
Variable 3: It is easier to maintain penile hygiene when a male is?			
Presence of knowledge	105	41.83	35.86—48.06
Absence of knowledge	146	58.17	51.94-64.14
Total	251	100.00	
Variable 4: It is easier to get penile cancer if a male is?			
Presence of knowledge	74	29.48	24.15-35.45
Absence of knowledge	177	70.52	64.55-75.85
Total	251	100.00	
Variable 5: Circumcision of a man who does not have HIV reduces his chance of getting HIV.			
Presence of knowledge	70	27.89	22.67-33.79
Absence of knowledge	181	72.11	66.21-77.33
Total	251	100.00	

The participants living in MT were less likely to have knowledge on reduction in risk of STI as a benefit of VMMC compared to those from EL (cOR 0.52, 95% CI 0.27-1.02, p-value 0.058). Participants living in MT were 0.34 less likely to have knowledge on reduction of HIV risk as a benefit of VMMC compared to people from EL (cOR 0.34, 95% CI 0.17-0.68, p-value 0.002). Speaking other languages was associated with 5.24 times increased knowledge on reduction of risk of cancer of the penis as a benefit of VMMC compared to speaking IsiXhosa (cOR 5.25, 95% CI 1.52-17.99, p-value 0.008). Participants living in KWT were 2.32 times more likely to have knowledge on reduction of HIV risk as a benefit of VMMC compared to those living in EL (cOR 2.32, 95% CI 1.09-4.97, p-value 0.029). Having access to internet once a week (cOR 3.68, 95% CI 1.19-11.38, p-value 0.024) and more than once a week (cOR 3.44, 95% CI 1.14-10.43, p-value 0.029) was associated to 3.68 and 3.44 times increase in knowledge on HIV reduction risk as a benefit of VMMC respectively (Table 6).



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Table 6. Bivariate analysis of level of knowledge on benefits of VMMC

Level of knowledge on benefits of VMMC																				
Variable	Circumcision reduces the risks of STIs				It is easier to get HIV when a male is?				It is easier to maintain penile hygiene when a male is?				It is easier to get penile cancer if a male is?				Circumcision of a man who does not have HIV reduces his chance of getting HIV.			
Independent Variables	cOR	95% CI		P-value	cOR	95% CI		P-value	cOR	95% CI		P-value	cOR	95% CI		P-value	cOR	95% CI		P-value
Participants' age																				
15 years	1.00				1.00				1.00				1.00				1.00			
16 years	0.88	0.39	1.98	0.751	0.84	0.35	2.01	0.696	0.74	0.39	1.43	0.371	0.82	0.41	1.64	0.572	0.79	0.39	1.63	0.532
17 years	1.74	0.80	3.78	0.166	2.00	0.88	4.52	0.096	1.39	0.72	2.71	0.329	0.80	0.39	1.65	0.545	0.99	0.48	2.04	0.971
18 years	0.92	0.23	3.72	0.910	1.64	0.44	6.03	0.459	0.30	0.08	1.17	0.084	0.95	0.29	3.09	0.935	0.81	0.23	2.82	0.737
19 years	1.00	0.10	9.92	1.000	3.27	0.49	21.95	0.222	1.98	0.31	1.24	0.470	1.40	0.22	9.00	0.725	3.63	0.56	23.50	0.176
Participants' location																				
EL	1.00				1.00				1.00				1.00				1.00			
KWT	0.61	0.27	1.40	0.247	0.35	0.14	0.85	0.020	1.94	0.95	3.93	0.068	1.59	0.77	3.29	0.206	2.32	1.09	4.97	0.029
MT	0.52	0.27	1.02	0.058	0.34	0.17	0.68	0.002	0.85	0.47	1.53	0.582	0.57	0.30	1.08	0.087	1.08	0.55	2.11	0.821
Participants' home spoken language																				
IsiXhosa	1.00				1.00				1.00				1.00				1.00			
Others	1.80	0.52	6.21	0.353	1.29	0.33	4.96	0.708	0.26	0.06	1.23	0.090	5.24	1.52	17.99	0.008	1.31	0.38	4.50	0.667
Person/s (caretaker/parent/guardian) living with participants																				
Father	1.00				1.00				1.00				1.00				1.00			
Father and mother	0.59	0.21	1.68	0.327	3.64	0.79	16.89	0.099	2.22	0.78	6.27	0.134	1.23	0.40	3.73	0.719	0.79	0.27	2.32	0.673
Mother	0.73	0.24	2.23	0.578	3.07	0.62	15.34	0.171	2.19	0.72	6.66	0.168	1.60	0.49	5.21	0.435	1.38	0.45	4.25	0.576
Others	0.43	0.15	1.23	0.116	1.79	0.38	8.44	0.463	1.57	0.56	4.40	0.388	1.35	0.45	4.03	0.588	0.96	0.34	2.72	0.937
Participants' school grade																				
Grade10	1.00				1.00				1.00				1.00				1.00			
Grade11	2.98	0.92	9.63	0.068	1.28	0.42	3.89	0.665	2.04	0.69	6.03	0.195	1.05	0.32	3.40	0.935	1.08	0.35	3.33	0.899
Grade12	0.87	0.85	8.85	0.904	2.56	0.43	15.10	0.301	2.56	0.43	15.10	0.301	6.00	0.92	39.18	0.061	5.11	0.79	32.97	0.086
Grade8	1.00	-	-	-	1.00	-	-	-	1.00	-	-	-	1.00	-	-	-	1.00	-	-	-
Grade9	1.12	0.43	2.92	0.816	0.49	0.21	1.17	0.110	1.95	0.85	4.44	0.113	1.27	0.54	3.00	0.587	0.92	0.40	2.13	0.847
Participants' religion																				
Christian	1.00				1.00				1.00				1.00				1.00			
None	0.88	0.30	2.62	0.822	0.55	0.15	2.03	0.371	0.48	0.18	1.28	0.144	0.33	0.09	1.19	0.900	0.75	0.27	2.08	0.580
Other	1.00	-	-	-	1.00	-	-	-	1.00	-	-	-	2.09	0.28	15.43	0.471	1.00	-	-	-
Traditional	0.77	0.41	1.45	0.422	0.95	0.50	1.79	0.877	0.65	0.38	1.10	0.109	0.85	0.48	1.50	0.587	0.63	0.35	1.13	0.120
Participants' access to television at home																				
No	1.00				1.00				1.00				1.00				1.00			
Yes	0.93	0.29	2.97	0.901	2.04	0.45	9.21	0.355	2.47	0.78	7.80	0.124	0.57	0.21	1.57	0.278	1.87	0.52	6.73	0.336
Participants' access to radio at home																				
No	1.00				1.00				1.00				1.0				1.00			
Yes	1.23	0.62	2.48	0.553	1.24	0.61	2.54	0.554	1.63	0.90	2.93	0.105	1.16	0.62	2.16	0.647	1.29	0.68	2.46	0.442
Participants' possession of a mobile phone																				
No	1.00				1.00				1.00				1.00				1.00			
Yes	1.38	0.64	2.95	0.407	1.23	0.57	2.64	0.600	0.83	0.45	1.51	0.538	1.66	0.82	3.36	0.161	1.51	0.74	3.06	0.258

Participants' access to internet																				
No	1.00				1.00				1.00				1.00				1.00			
Yes, more than once a week	2.31	0.81	6.61	0.118	1.87	0.69	5.02	0.217	1.30	0.59	2.89	0.516	0.92	0.41	2.09	0.843	3.68	1.19	11.38	0.024
Yes, once a week	1.66	0.59	4.70	0.338	1.03	0.38	2.78	0.954	1.34	0.62	2.89	0.456	0.73	0.33	1.63	0.447	3.44	1.14	10.43	0.029



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4.4. Level of knowledge on CMI/Ulwaluko practices

Majority of the participants had knowledge of the definition of CMI/Ulwaluko, $n=173$ (68.92%, 95% CI 62.90-74.37) and 78 (31.08%, 95% CI 25.63-37.10) lacked knowledge on the same (Table 7). Regarding knowledge on the laws that govern CMI/Ulwaluko, 145 (57.77%, 95% CI 51.54-63.76) showed absence of knowledge whereas, 106 (42.23%, 95% CI 36.24-48.46) had knowledge on the same (Table 7). On whether the participants knew the risks associated with the practice of CMI/Ulwaluko in recent years, 114 (58.06%, CI 51.80-64.08) showed absence of knowledge and 104 (941.94%, 95% CI 35.92-48.20) showed presence of knowledge (Table 7).

Table 7. Descriptive statistics on level of knowledge on CMI/Ulwaluko practices

Level of knowledge on CMI/Ulwaluko practices			
What do you understand about CMI/Ulwaluko?			
Variable	Number	%	95% CI
Presence of knowledge	173	68.92	62.90-74.37
Absence of knowledge	78	31.08	25.63-37.10
Total	251	100.00	
Do you know any law that governs CMI/Ulwaluko?			
Presence of knowledge	106	42.23	36.24-48.46
Absence of knowledge	145	57.77	51.54-63.76
Total	251	100.00	
Do you know any risks associated with CMI/Ulwaluko in recent years?			
Presence of knowledge	104	41.94	35.92-48.20
Absence of knowledge	144	58.06	51.80-64.08
Total	248	100.00	
Missing	03		

Study participants living in MT were 10.91 times more likely to have increased knowledge on CMI/Ulwaluko practices than participants from EL and KWT (aOR 10.91, 95% CI 2.73-41.60, p-value 0.001) (Table. 8). Access to internet more than once a week was partially associated with 3.20 times increase in knowledge on risks associated with CMI/Ulwaluko among the study participants compared to having no internet at all (aOR 3.20, 95% CI 0.81-12.56, p-value 0.096 (Table. 8).

Table 8. Multivariate analysis of level of knowledge, Attitude and Perception towards VMMC & CMI/Ulwaluko practices.

Variables	Study primary outcomes											
Independent Variable	Level of knowledge on CMI/Ulwaluko practices				Attitude towards VMMC and CMI/Ulwaluko practices				Perception towards VMMC and CMI/Ulwaluko practices			
	aOR	95% CI		P-value	aOR	95% CI		P-value	aOR	95% CI		P-value
Participants' age												
15 years	1.00				1.00				1.00			
16 years	1.97	0.63	6.23	0.246	1.30	0.61	2.79	0.499	0.85	0.35	2.03	0.709
17 years	0.51	0.14	1.87	0.310	0.75	0.34	1.66	0.476	0.58	0.23	1.46	0.250
18 years	1.67	0.22	12.51	0.616	3.05	0.70	13.26	0.138	0.84	0.12	5.74	0.861
19 years	5.03	0.23	111.72	0.307	2.15	0.24	19.52	0.496	1	-	-	-
Participants' location												
EL	1.00				1.00				1.00			
KWT	0.32	0.03	3.37	0.348	0.30	0.13	0.73	0.008	1.19	0.45	3.17	0.726
MT	10.91	2.73	41.60	0.001	0.26	0.12	0.59	0.001	1.35	0.58	3.18	0.488
IsiXhosa	1.00				1.00				1.00			
Others	-	-	-	-	-	-	-	-	-	-	-	-
Person/s (caretaker/parent/guardian) living with participants												
Father	1.00				1.00				1.00			
Father and mother	1.18	0.22	6.25	0.844	0.78	0.24	2.24	0.645	0.45	0.13	1.60	0.216
Mother	1	-	-	-	1	-	-	-	1	-	-	-
Others	0.58	0.11	3.03	0.517	1.03	0.37	2.84	0.954	0.65	0.19	2.26	0.502
Participants' school grade												
Grade10	1.00				1.00				1.00			
Grade11	0.38	0.05	2.79	0.343	2.39	0.69	8.29	0.169	1.89	0.34	10.41	0.464
Grade12	1	-	-	-	2.36	0.29	19.32	0.423	1	-	-	-
Grade8	1	-	-	-	1	-	-	-	1	-	-	-
Grade9	0.85	0.15	4.75	0.854	2.89	1.03	8.05	0.043	0.51	0.16	1.78	0.303
Participants' religion												
Christian	1.00				1.00				1.00			
None	2.37	0.61	9.17	0.213	2.98	1.00	8.92	0.051	1.12	0.25	4.23	0.979
Other	8.39	0.16	437.79	0.292	1.00	-	-	-	1	-	-	-
Traditional	1.42	0.51	3.95	0.854	2.24	1.21	4.16	0.010	0.40	0.19	0.85	0.016
Participants' access to television at home												
No	1.00				1.00				1.00			
Yes	1.03	0.11	10.07	0.979	0.97	0.27	3.44	0.960	0.25	0.03	2.13	0.203
Participants' access to radio at home												
No	1.00				1.00				1.00			
Yes	0.56	0.21	1.48	0.241	1.18	0.59	2.36	0.632	1.23	0.55	2.76	0.616
Participants' possession of a mobile phone												
No	1.00				1.00				1.00			
Yes	1.66	0.54	5.06	0.372	2.06	0.98	4.33	0.057	0.53	0.20	1.37	0.191
Participants' access to internet												
No	1.00				1.00				1.00			
Yes, more than once a week	3.20	0.81	12.56	0.096	1.37	0.54	3.44	0.505	0.67	0.22	2.03	0.476
Yes, once a week	0.91	0.22	3.89	0.913	1.35	0.56	3.25	0.498	0.69	0.24	2.00	0.491

4.5. Attitude and perception towards VMMC and CMI/Ulwaluko practices

Majority of the participants, 244 (97.21%, 95% CI 94.25-98.67) indicated that culture was the reason they would choose traditional circumcision over VMMC, 4 (1.59%, 95% CI 0.60-4.19) would choose traditional circumcision over VMMC for social reasons and only 3 (1.20%, 95% CI 0.38-3.66) for reasons related to benefits of VMMC (Table 9). On the other hand, more than half the participants, 133 (54.51%, 95% CI 48.19-60.68) indicated they would choose VMMC over traditional circumcision due to social reasons (Table 9). In relation to what the participants thought were the causes of challenges facing CMI/Ulwaluko in recent years, 166 (66.14%, 95% CI 60.03-71.75) attributed the causes to challenges related to culture and the rest to those challenges related to the community (Table 9). On whether circumcised men enjoy sex more than uncircumcised men, more than half of the participants 129 (51.39%, 95% CI 45.19-57.55) agreed, 61 (24.30%, 95% CI 19.37-30.02) disagreed, and further 61 (24.30%, 95% CI 19.37-30.02) neither agreed nor disagreed. Majority of the participants, 182 (72.51%, 95% CI 66.63-77.70) disagreed to a statement that circumcised men can safely have sex without a condom and don't get infected with HIV compared to uncircumcised men with 22 (8.76%, 95% CI 5.82-12.98) agreeing and 47 (18.73%, 95% CI 14.35-24.06) neither agreeing nor disagreeing (Table 9). More than half the participants, 135 (53.78%, 95% CI 47.56-59.89) agreed to the importance of circumcising all males irrespective of the age, whereas 60 (23.90%, 95% CI 19.01-29.60) disagreed and 56 (22.31%, 95% CI 17.56-27.91) neither agreed nor disagreed (Table 9). Only close to a quarter of participants 58 (23.11%, 95% CI 18.28-28.75) agreed that VMMC proves manhood, with close to half 121 (48.21%, 95% CI 42.05-54.41) disagreed and 72 (28.69%, 95% CI 23.41-34.62%) neither agreeing nor disagreeing. On the other hand, more than three quarters of participants 193 (76.89%, 95% CI 71.24-81.72) agreed that CMI/Ulwaluko proves manhood, 18 (7.17%, 95% CI 4.55-11.12) disagreed and 40 (15.94%, 95% CI 11.89-21.03) neither agreed nor disagreed (Table 9). On whether CMI/Ulwaluko was an old practice in the community that did not need to be re-introduces as VMMC, 156 (62.15%, 95% CI 55.96-67.97) agreed, 32 (12.75%, 95% CI 9.14-17.50), and 63 (25.10%, 95% CI 20.10-30.86) neither agreed nor disagreed (Table 9). Majority of participants, 199 (79.28%, 95% CI 73.79-83.87) agreed to preference of traditional circumcision over VMMC, with 17 (6.77%, 95% CI

4.24-10.65) disagreeing and 35 (13.94%, 95% CI 10.17-18.83) neither agreeing nor disagreeing (Table 9). When asked whether VMMC done in clinics/hospitals was safer than traditional circumcision, 95 (37.85%, CI 32.03-44.04) participants agreed, 78 (31.08%, 95% CI 25.63-37.10) disagreed and a further 78 (31.08%, 95% CI 25.63-37.10) neither agreed nor disagreed (Table 9).

Table 9. Descriptive statistics on attitude and perception of participants towards VMMC and CMI practices

Attitude and perception outcome variables			
What's the main reason why you would choose Traditional Circumcision over Medical Male Circumcision?			
Variable	Number	%	95% CI
Benefits of VMMC	3	1.20	0.38-3.66
Cultural reasons	244	97.21	94.25-98.67
Social reasons	4	1.59	0.60-4.19
Total	251	100.00	
What's the main reason why you would choose Medical Male Circumcision over Traditional Circumcision?			
Benefits of VMMC	46	18.85	14.41-24.28
Cultural reasons	65	26.64	21.45-32.57
Social reasons	133	54.51	48.19-60.68
Total	251	100.00	
What do you think is the cause of the challenges facing CMI/Ulwaluko?			
Challenges related to culture	166	66.14	60.03-71.75
Challenges related to community	85	33.86	28.25-39.97
Total	251	100.00	
Circumcised men enjoy sex more than uncircumcised men			
Agree	129	51.39	45.19-57.55
Disagree	61	24.30	19.37-30.02
Neither Agree nor Disagree	61	24.30	19.37-30.02
Total	251	100.00	
Circumcised men can safely have sex without using a condom and don't get infected with HIV as compared to uncircumcised men.			
Agree	22	8.76%	58.29-12.98
Disagree	182	72.51%	66.63-77.70
Neither Agree nor Disagree	47	18.73%	14.35-24.06
Total	251	100.00	
It is important for all males irrespective of their age to be circumcised.			
Agree	135	53.78	47.56-59.89
Disagree	60	23.90	19.01-29.60
Neither Agree nor Disagree	56	22.31	17.56-27.91
Total	251	100.00	
Medical Male circumcision proves manhood			
Agree	58	23.11	18.28-28.75
Disagree	121	48.21	42.05-54.41
Neither Agree nor Disagree	72	28.69	23.41-34.62
Total	251	100.00	

CMI/Ulwaluko proves manhood			
Agree	193	76.89	71.24-81.72
Disagree	18	7.17	4.55-11.12
Neither Agree nor Disagree	40	15.94	11.89-21.03
Total	251	100.00	
CMI/Ulwaluko is an old practice in our community, and it does not need to be re-introduced as Medical Male Circumcision.			
Agree	156	62.15	55.96-67.97
Disagree	32	12.75	9.14-17.50
Neither Agree nor Disagree	63	25.10	20.10-30.86
Total	251	100.00	
Would you prefer traditional circumcision over medical circumcision?			
Agree	199	79.28	73.79-83.87
Disagree	17	6.77	4.24-10.65
Neither Agree nor Disagree	35	13.94	10.17-18.83
Total	251	100.00	
Would you prefer medical circumcision over traditional circumcision?			
Agree	61	24.30	19.37-30.02
Disagree	141	56.18	49.94-62.22
Neither Agree nor Disagree	49	19.52	15.06-24.92
Total	251	100.00	
Medical Male Circumcision done in Clinics/Hospitals is safer than traditional circumcision.			
Agree	95	37.85	32.03-44.04
Disagree	78	31.08	25.63-37.10
Neither Agree nor Disagree	78	31.08	25.63-37.10
Total	251	100.00	

Participants who lived in KWT and those in MT were 0.30 and 0.26 times less likely to choose VMMC over traditional circumcision respectively compared to those from EL (aOR 0.30, 95% CI 0.13-0.73, p-value 0.008) and (aOR 0.26, 95% CI 0.12-0.59, p-value 0.001) (Table. 8). Participants who grade 9 of school were 2.89 more like to have positive attitude towards CMI/Ulwaluko practices compared to participants from the other grades (aOR 2.89, 95% CI 1.03-8.05, p-value 0.043) (Table. 8). Participants who attended traditional religion were 2.24 more likely to choose traditional circumcision over VMMC compared to those from other religions (aOR 2.24, 95% CI 1.21- 4.16, p-value 0.010) (Tab. 8). Our study also found that participants who had a mobile phone were 2.06 times more likely to have positive attitude towards CMI/Ulwaluko practices compared to those who did not have one (aOR 2.06, 95% CI 0.98- 4.33, p-value 0.057) (Tab. 8). On the question of whether or not participants preferred VMMC over CMI/Ulwaluko practices, our participants were 0.40 less likely to prefer VMMC over CMI/Ulwaluko practices (aOR 0.40, 95% CI 0.19-0.85, p-value 0.016) (Table. 8).

Regarding the attitude towards the practice of CMI/*Ulwaluko*, our study found that participants from MT were 1.18 times more likely to disagree that CMI/*Ulwaluko* needs to be reintroduced as VMMC (Coef. 1.18, 95% CI 0.05-2.31, p-value 0.040) (Table 10). Study participants who spoke other languages were 1.56 times more likely to neither agree nor disagree that CMI/*Ulwaluko* was an old practice that did not need to be reintroduced as VMMC (Coef. 1.56, 95% CI 0.29-2.82, p-value 0.016) (Table 10).

Table 10. Bivariate analysis of the Attitude and Perception towards VMMC & CMI/*Ulwaluko* practices

VMMC proves manhood					CMI/Ulwaluko proves manhood					CMI/Ulwaluko is an old practice in our community, and it does not need to be reintroduced as VMMC.				
Variable	Coef.	95% CI		P-value	Variable	Coef.	95% CI		P-value	Variable	Coef.	95% CI		P-value
Participants' age														
Disagree (Base outcome)					Agree (Base outcome)					Agree (Base outcome)				
Agree					Disagree					Disagree				
15 years	1.00				15 years	1.00				15 years	1.00			
16 years	0.04	-0.80	0.88	0.932	16 years	-0.51	-1.75	0.73	0.417	16 years	0.09	-0.95	1.13	0.870
17 years	0.05	-0.79	0.91	0.894	17 years	-0.13	-1.32	1.06	0.833	17 years	0.41	-0.63	1.44	0.444
18 years	0.62	-0.73	1.97	0.370	18 years	-0.06	-2.29	2.18	0.960	18 years	0.41	-1.09	1.90	0.571
19 years	-0.2	-2.65	2.026	0.805	19 years	-13.33	-22.49	22.22	0.991	19 years	0.69	-1.71	3.09	0.571
Neither agree nor disagree					Neither agree nor disagree					Neither agree nor disagree				
15 years	1.00				15 years	1.00				15 years	1.00			
16 years	-0.271	-1.00	0.46	0.468	16 years	0.15	-0.79	1.11	0.750	16 years	0.14	-0.61	0.89	0.722
17 years	-0.623	-1.41	0.16	0.121	17 years	0.27	-0.69	1.25	0.576	17 years	0.23	-0.55	1.00	0.569
18 years	0.049	-1.25	1.35	0.941	18 years	1.45	0.17	2.72	0.026	18 years	-1.51	-3.64	0.59	0.160
19 years	-0.866	-3.19	1.46	0.466	19 years	0.46	-1.85	2.78	0.693	19 years	-0.13	-2.47	2.20	0.911
Participants' location														
Disagree (Base outcome)					Agree (Base outcome)					Agree (Base outcome)				
Agree					Disagree					Disagree				
EL	1.00					1.00					1.00			
KWT	0.53	-0.40	1.48	0.267		-1.24	-3.46	0.99	0.275		1.11	-0.16	2.39	0.087
MT	0.72	-0.04	1.50	0.064		0.79	-0.37	1.97	0.182		1.18	0.05	2.31	0.040
Neither agree nor disagree					Neither agree nor disagree					Neither agree nor disagree				
EL	1.00					1.00					1.00			
KWT	0.19	-0.60	0.99	0.640		-1.87	-3.39	-0.34	0.016		-0.19	-0.99	0.62	0.650
MT	-0.05	-0.72	0.61	0.870		0.05	-0.69	0.78	0.903		-0.35	-1.00	0.32	0.306
Participants' home spoken language														
Disagree (Base outcome)					Agree (Base outcome)					Agree (Base outcome)				
Agree					Disagree					Disagree				
IsiXhosa	1.00					1.00					1.00			
Others	-1.08	-3.23	1.05	0.318		-13.69	-22.50	22.22	0.990		0.20	-2.02	2.43	0.858
Neither agree nor disagree					Neither agree nor disagree					Neither agree nor disagree				
IsiXhosa	1.00					1.00					1.00			
Others	0.35	-0.86	1.58	0.567		1.33	0.13	2.54	0.030		1.56	0.29	2.82	0.016
Person/s (caretaker/parent/guardian) living with participants														
Disagree (Base outcome)					Agree (Base outcome)					Agree (Base outcome)				
Agree					Disagree					Disagree				
Father	1.00					1.00					1.00			
Father and mother	0.35	-1.5	0.78	0.533		-0.8	-2.28	2.12	0.943		.66	0-.46	1.79	0.248
Mother	-13.24	-19.16	18.90	0.989		2.80	-0.10	5.72	0.059		-11.26	-11.79	11.56	0.985
Others	-0.37	-1.00	0.028	0.267		0.69	-0.40	1.79	0.214		0-.32	-1.16	0.50	0.442
Neither agree nor disagree					Neither agree nor disagree					Neither agree nor disagree				
Father	1.00					1.00					1.00			

Father and mother	-0.65	-1.7	0.47	0.259		-0.36	-1.60	0.94	0.583		-1.45	-2.99	0.08	0.064
Mother	1.32	-0.98	3.62	0.261		2.11	-0.33	4.56	0.090		1.59	-0.70	3.89	0.175
Others	-0.58	-1.2	0.03	0.065		-0.037	1.11	0.035	0.310		-0.82	-1.44	-0.19	0.010
Participants' school grade														
Disagree (Base outcome)					Agree (Base outcome)					Agree (Base outcome)				
Agree					Disagree					Disagree				
Grade10	1.00													
Grade11	0.63	-0.75	2.02	0.370		-0.46	-2.93	2.02	0.716		-0.54	-1.76	0.68	0.387
Grade12	-0.34	-2.72	2.03	0.777		-12.95	-22.19	21.93	0.991		-12.23	-14.40	14.16	0.987
Grade8	-12.88	-20.00	-63.00	0.990		-13.33	-53.51	53.25	0.996		-0.89	-2.11	0.34	0.158
Grade9	0.34			0.494		0.24	-1.32	1.75	0.783		-0.65	-2.01	0.69	0.343
Neither agree nor disagree					Neither agree nor disagree					Neither agree nor disagree				
Grade10	1.00													
Grade11	0.92	-0.26	2.11	0.126		0.38	-0.86	1.63	0.541		0.71	-0.64	2.06	0.303
Grade12	-0.75	-3.08	1.58	0.529		0.69	-1.22	2.61	0.478		-11.04	-10.28	10.06	0.983
Grade8	-13.07	-18.00	18.63	0.989		-13.63	-35.94	35.67	0.994		0.65	-0.68	1.98	0.335
Grade9	0.04	-0.83	0.93	0.914		-0.37	-1.36	0.62	0.462		0.26	-1.19	1.72	0.725
Participants' religion														
Disagree (Base outcome)					Agree (Base outcome)					Agree (Base outcome)				
Agree					Disagree					Disagree				
Christian	1.00													
None	-0.36	-1.51	0.78	0.533		-0.081	-2.29	0.95	0.943		0.67	-0.46	1.79	0.248
Other	-13.24	-19.16	18.90	0.989		2.81	-0.11	5.72	0.059		-11.26	-11.79	11.56	0.985
Traditional	-0.37	-1.03	0.28	0.267		0.69	-0.40	1.79	0.214		-0.33	-1.17	0.51	0.442
Neither agree nor disagree					Neither agree nor disagree					Neither agree nor disagree				
Christian	1.00													
None	-0.65	-1.78	0.48	0.259		-0.36	-1.68	0.95	0.583		-1.45	-2.99	0.08	0.064
Other	1.32	-0.98	3.63	0.261		2.12	-0.33	4.57	0.090		1.59	-0.71	3.89	0.175
Traditional	-0.58	-1.21	0.04	0.065		-0.38	-1.11	0.35	0.310		-0.82	-1.45	-0.19	0.010
Participants' access to television at home														
Disagree (Base outcome)					Agree (Base outcome)					Agree (Base outcome)				
Agree					Disagree					Disagree				
No	1.00													
Yes	0.12	-1.27	1.51	0.867		0.36	-1.73	2.44	0.735		13.27	-94.6	97.2	0.978
Neither agree nor disagree					Neither agree nor disagree					Neither agree nor disagree				
No	1.00													
Yes	-0.56	-1.65	0.52	0.313		1.19	-0.86	3.24	0.256		-0.33	-1.37	0.71	0.538
Participants' access to radio at home														
Disagree (Base outcome)					Agree (Base outcome)					Agree (Base outcome)				
Agree					Disagree					Disagree				
No	1.00													
Yes	0.12	-0.60	0.85	0.741		1.08	-0.42	2.59	0.159		0.40	-0.50	1.30	0.386
Neither agree nor disagree					Neither agree nor disagree					Neither agree nor disagree				
No	1.00													
Yes	-0.06	-0.72	0.58	0.840		-0.15	-0.89	0.59	0.694		0.48	-0.23	1.18	0.184
Participants' possession of a mobile phone														
Disagree (Base outcome)					Agree (Base outcome)					Agree (Base outcome)				
Agree					Disagree					Disagree				
No	1.00													
Yes	-0.51	-1.26	0.25	0.186		0.77	-0.74	2.27	0.318		0.68	-0.48	1.75	0.268
Neither agree nor disagree					Neither agree nor disagree					Neither agree nor disagree				
No	1.00													
Yes	-0.53	-1.24	0.17	0.137		-0.46	-1.22	0.29	0.232		-0.39	-1.07	0.27	0.241
Participants' access to internet														
Disagree (Base outcome)					Agree (Base outcome)					Agree (Base outcome)				
Agree					Disagree					Disagree				
No	1.00													
Yes, more than once a week	-0.04	-0.91	0.84	0.937		1.15	-1.50	1.81	0.855		0.31	-1.05	1.68	0.654
Yes, once a week	-0.61	-1.48	0.27	0.175		1.41	-1.17	0.98	0.611		0.57	-0.75	1.88	0.398
Neither agree nor disagree					Neither agree nor disagree					Neither agree nor disagree				

No	1.00													
Yes, more than once a week	0.87	-0,22	1.98	0.117		-0.097	-1.14	0.95	0.856		-0.29	-1.16	0.58	0.511
Yes, once a week	0.94	-0.12	1.99	0.083		0.003	-1.001	-1.001	0.994		-0.22	-1.06	0.61	0.602



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CHAPTER FIVE: DISCUSSION

5.1. Chapter overview

The aim of this study was to assess the level of knowledge, determine attitude, and perception of uninitiated adolescents towards CMI practices in selected schools in BCM, EC. In chapter five, I will discuss the results from my study in relation to findings from other recent studies and implications.



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5.2. Discussion

5.2.1. Participant's demographics

Majority of my study participants were between the ages of 15-19 years (84.51%) and in grade 9 (73.71%). This is similar to the 2020 projected distribution of learner age range (10th-90th percentile) by grade from the Education Management Information system (EMIS) that showed learners in grade 9 should be within 14-18 years(Nic Spaull, 2020).

5.2.2. Participants' mode of accessing information

Our study findings showed that most of the participants 234 (93,23%) accessed information through television. This finding is in line with the increasing trend of pay television subscribers which shows a 6.7% increase for a period of past 7 years(ICASA, 2022). Furthermore, more than three quarters 196 (78.09%) of our participants reported access to a mobile phone which is lower than the 89.4% reported proportion of South African households with access to only cellular phones and further lower than the 96.4% estimated EC proportion of households with access to only cellular phones(ICASA, 2022). It is noted that nearly half 123 (49.00%) of our participants had access to internet at least once a week, significantly lower in relation to the 99.9% 3G coverage among South African population. It is important to improve access to internet in school in order to improve learning as highlighted by Ndou in his research (Ndou, 2021).

5.2.3. Participants' level of knowledge towards benefits of VMMC

Farley et al., in their recent study concluded that not only VMMC was effective from randomised control trials but there was also evidence of its effectiveness in reduction of HIV incidence from observational studies(Farley et al., 2020). Further to these findings, Davis et al., found a protective effect of VMMC against STIs in men and women (Stephanie Davis, 2019). However, our study found that more than three quarters 195 (77.69%) of our participants lacked knowledge on reduction STI risk as a benefit of VMMC. Consequently, majority of our participants 199 (79.28%) showed lack of knowledge on reduction of HIV risk as a benefit of VMMC. Further on level of knowledge on benefits of VMMC, our study found low levels of knowledge on reduction of risk of

penile cancer and proper penile hygiene among our participants. Our findings are like those of Ikwegbue et al., who in their cross-sectional study among women in rural KZN concluded that there was a worryingly poor knowledge around benefits of VMMC among these women (Ikwegbue et al., 2015). Similarly, Atuhaire et al., in their qualitative study among male immigrants in Leeds (UK) found that males only practiced male circumcision for cultural and religious norms other than for HIV prevention (Atuhaire et al., 2019). These findings were like what Nanteza et al., found in a cross-sectional study in rural Northern Uganda showing that knowledge on VMMC benefits was not associated with circumcision status. Further to this, Nxumalo and McHunu in their qualitative study among Zulu men highlighted that the conception of VMMC was more related to religious and cultural benefits. And on contrary to our findings, the understanding of on males regarding VMMC in their study was attributed to HIV prevention (Nxumalo and McHunu, 2020). We found limited literature on level of knowledge among uninitiated adolescent males on benefits of VMMC. Our study also found that participants living in MT were less likely to have knowledge on reduction of STI as a benefit of VMMC, reduction of HIV risk as a benefit of HIV compared to participants from EL. This could be explained to level of access to information between the two locations. EL is a metropolitan urban area with structured housing facilities and better socio-economic infrastructure compared to MT which is a second largest township in SA after Soweto that was created in 1960s to accommodate black labour working in industries bordering EL (Treasury, 2010). Another finding from my study showed that access to internet once a week and more that once a week was associated with increase in knowledge on HIV reduction as a benefit of VMMC. This is in line with Rubin's explanation of internet access as a social determinant of health (Rubin, 2021).

5.2.4. Participants' level of knowledge on CMI/Ulwaluko practices

Majority 173 (68.92%) of my study participants portrayed presence of knowledge of the definition of CMI/Ulwaluko practices. This would be explained by the findings of Froneman and Kapp who in their qualitative study on knowledge, attitude and beliefs of Xhosa men concerning traditional circumcision found that traditional circumcision was seen as essential to Xhosa culture (Froneman and Kapp, 2017). Worryingly, my study found more

than half of the participants lacked knowledge on the laws governing CMI/*Ulwaluko* practices. These findings mirror those of Nomngcoyiya and Kang'ethe, who found lack of clarity pertaining rules that apply to CMI, confusing policies that govern CMI and lack of state resources to enforce existing laws governing CMI (Nomngcoyiya and Kang'ethe, 2019). This reemphasizes Froneman and Kapp findings for the importance of the Traditional Circumcision Act (no.06 of 2001) in the regulation of the EC CMI/*Ulwaluko* practices. With the introduction of the CMI Act No. 2 of 2021, there is great importance in ensuring that all stakeholders starting with uninitiated adolescents, parents, communities, traditional leaders, and government authorities are well oriented on this important piece of legislation. Our study further found that more than half of our participants lacked knowledge on the risk associated with CMI/*Ulwaluko* practices. This is like findings of Froneman and Kapp who equally most males still trusted CMI/*Ulwaluko* despite the knowledge of risks associated.

5.2.5. Participants' attitude and perception towards VMMC and CMI/*Ulwaluko* practices

Our study highlighted that majority of our participants preferred traditional circumcision over VMMC due to cultural reason and this is line with findings by Smith et al., who found male in traditional circumcising areas of Cape Town preferred traditional circumcision over VMMC despite adequate knowledge on benefits of VMMC (Smith et al., 2020). Further to this, majority of participants in our study indicated that CMI/*Ulwaluko* proved manhood. This remains one of the key social cultural pressures that influence males' choice of CMI/*Ulwaluko* over VMMC as allude to by Kumalo and Gama (Kumalo and Gama, 2018). Our study further showed that participants who lived in KWT and MT were less likely to choose VMMC compared to those in EL this would be related to the fact that EL is more urban compared to KWT and MT. The CRL rights commission report on initiation in SA highlighted the challenge of urbanization on diminishing CMI/*Ulwaluko* (Commission for the Rights of Cultural, 2017).

5.3. Recommendation and future research

With the advance in technology and medical knowledge, there is need to integrate surgical skills and infection prevention and control as practiced in VMMC into CMI/*Ulwaluko*. Knowledge on benefits of VMMC remains an important predictor of a male deciding to get circumcised, therefore, health education on benefits and risk of VMMC should be introduced in CMI/*Ulwaluko*. These among other interventions will reduce the current complications and/or deaths associated with CMI/*Ulwaluko*. The practice of CMI/*Ulwaluko* presents an opportunity for an appropriate VMMC target population of sexually active males aged 15 years and above and measures should be put in place to support CMI/*Ulwaluko* as a VMMC scale up strategy.

Customary Male Initiation/*Ulwaluko* in EC is a sacred ritual that is highly respected by the community. However, to prevent further mortality and morbidities associated to CMI/*Ulwaluko* in recent times, the EC provincial government may consider strengthening the implementation of the existing laws governing CMI/*Ulwaluko* like the CMI Act No. 2 of 2021. Further to this, there is urgent need to introduce formal education on CMI/*Ulwaluko* in schools and communities targeting uninitiated adolescents on laws, values, benefits, and risks associated with CMI/*Ulwaluko*.

There is opportunity for future research to include teachers, government officials, parents, and traditional leaders in assessing their knowledge, attitude, and perception towards CMI/*Ulwaluko* through a mixed method study. This will provide global understanding of challenges facing CMI/*Ulwaluko* and measures that can be implemented to improve the activities of this sacred practice.

5.4. Limitations of the study

This study was conducted in selected schools in BCM among uninitiated adolescents with a small sample size and may be generalised to the whole EC province. Due to challenges related to restriction imposed by COVID-19 regulations, the researcher was denied access in multiple schools which affected the sample size of this study. The researcher faced language barrier and cultural restrictions and required assistance from local teachers to administer questionnaires.

5.5. CONCLUSION

This study found lack of knowledge on benefits of VMMC, laws governing and risks of CMI/*Ulwalo* practices among uninitiated adolescents in selected schools in BCM. The study further found that CMI/*Ulwalo* was still highly regarded despite current challenges and most adolescents in our study would choose CMI/*Ulwalo* over VMMC. There is urgent need to integrate VMMC services into CMI/*Ulwalo* to include health education on benefits of VMMC, infection prevention and control, male circumcision by trained medical personnel and education on laws governing CMI/*Ulwalo*. These interventions should also target uninitiated adolescents.



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ANNEXURES

Annexure A: Dissertation Abstract accepted and presented at the AIDS 2022 Conference, Montreal- Canada.

This research work was accepted and presented as an e-poster presentation at the just concluded International AIDS Conference 2022 that took place in July 2022 in Montreal, Canada (Fig. 4). Link to the published abstract: <https://programme.aids2022.org/Abstract/Abstract/?abstractid=5346>

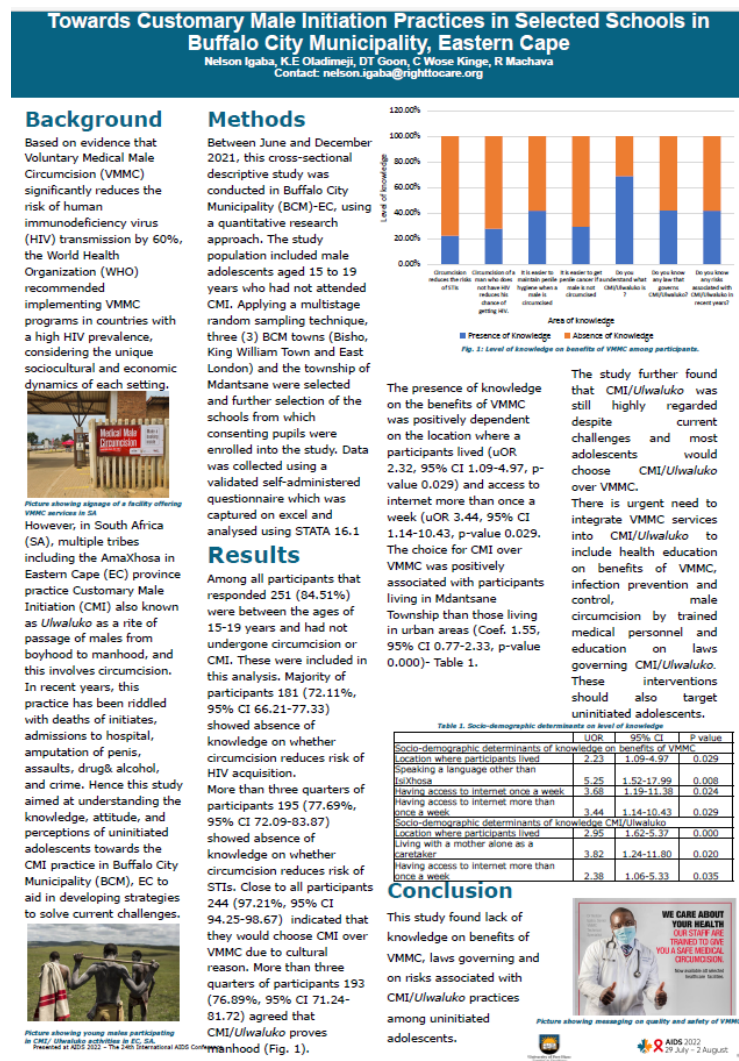


Figure 4. Abstract of the work of this dissertation submitted at the world AIDS2022 international conference (Montreal, Canada) organised by the International AIDS Society

Annexure C: Study questionnaire

QUESTIONNAIRE IN ENGLISH LANGUAGE

Title: Knowledge, Attitude and Perception of uninitiated Adolescents Towards Customary Male Initiation Practices in Selected Schools in Buffalo City Municipality, Eastern Cape

Study ID:

Date of interview: DD/MM/YYYY

Participant's Date of Birth: DD/MM/YYYY

You have been chosen to be part of the study and your contribution in filling in this questionnaire is very important. The information provided will be treated with confidence and your consent is a paramount. Your names will not be used because it will be made anonymous so no one can link information provided to you.

Select one or more responses by circling the appropriate choice.

SECTION A: Demographic Characteristics

DEMOGRAPHIC INFORMATION			
No	Questions and filters	Coding Categories	Enter answer or answer code
1	How old are you?	Age in complete years (also write your date of birth) Don't know 99	
2	What is your physical address?	Write full address	
3	Who do you live with in your home	Father1 Mother2 Father and mother3 Other (Specify)88	
4	What is the main language spoken in your home	ISiXhosa1 IsiZulu2 Sesotho3 Others (Specify)88	
5	What is the name of your school?	Write full name and address of school	
6	What school grade are you in?	Write the grade you are currently studying	
7	What is your religion?	Christian1 Muslim2 Traditional3 None4 Other (Specify)88	
8	Do you have a television at home?	Yes1 No2	
9	Do you have a radio at home?	Yes1 No2	
10	Do you have a mobile telephone?	Yes1 No2	
11	Do you use internet to search for information?	Yes, once a week1 Yes, more than once a week2 No3	

SECTION B: Knowledge on Medical Male Circumcision and Customary Male Initiation (CMI) – *ulwaluko* Practices (Tick the correct box)

	Questions	True	False	Not Sure
		1	2	3
12	Circumcision of a man who does not have HIV reduces his chance of getting HIV			
13	Circumcision of a man who does not have HIV does not completely remove his chance of getting HIV			
14	There is NO chance for a circumcised man to get HIV			
15	Circumcision of a man with HIV does not protect his partner from getting HIV			
16	Circumcision reduces the risks of STIs?			
Now, tell me what you think about circumcised and uncircumcised men based on the following statements				
				Enter answer code
17	It is easier to get HIV when a male is	Circumcised.....1 Uncircumcised.....2 No difference.....3 Don't know.....99		
18	It is easier to get an STD if a male is	Circumcised.....1 Uncircumcised.....2 No difference.....3 Don't know.....99		
19	It is easier to maintain penile hygiene when a male is	Circumcised.....1 Uncircumcised.....2 No difference.....3 Don't know.....99		
20	It is easier to get penile cancer if a male is	Circumcised.....1 Uncircumcised.....2 No difference.....3 Don't know.....99		
Now, tell me what you know about <i>Ulwaluko</i>				
21	What do you understand about <i>Ulwaluko</i> ?	-It is traditional method of circumcision.....1 -It is the rite of passage of boyhood to manhood in isiXhosa culture and involves traditional circumcision.....2 -I do not know what <i>ulwaluko</i> is.....99		
22	Where did you hear first about <i>Ulwaluko</i> ?	Radio.....1 Television.....2 Print Media (Newspapers/ Magazines/Brochure/Posters/Billboards/Community Notices.3		

		Family (Father/Mother/Uncle/Brother).....4 Friends.....5 Health Workers.....6 Political Leaders.....7 Traditional Leaders.....8 Religious Leaders.....9 School-Health- Education.....10 Others (Specify).....88	
23	In your opinion what is the appropriate age for Ulwaluko?	Below 16 years.....1 Between 16-18 years.....2 Above 18 years.....3	
24	In your opinion, who is the ideal person you would prefer to perform a traditional circumcision during <i>Ulwaluko</i> ?	Incibi (traditional surgeon).....1 Initiated trained male Professional Nurse.....2 Initiated trained male medical doctor.....3	
25	In your opinion, which is the ideal place to conduct a traditional male circumcision during <i>Ulwaluko</i> ?	At health facility (Clinic/Hospital).....1 In the mountains/Bush.....2 No preference.....3 At home.....4 Others (Specify).....88	
26	Has anyone talked to you about <i>Ulwaluko</i> in the past 12 months?	Yes.....1 No.....2	
27	In your lifetime, who has ever talked to you about <i>Ulwaluko</i> ?	Family (Father/Mother/Uncle/Brother).....1 Friends.....2 Health Workers.....3 Political Leaders.....4 Traditional Leaders.....5 Religious Leaders.....6 School Teacher7 Others.....88	
28	How old were you when you first heard about <i>Ulwaluko</i> ?	Below 10 years.....1 10-12 Years.....2 13-15 Years.....3 Above 16 Years.....4	
29	Do you know any law that governs <i>Ulwaluko</i> ?	EC Customary Male Initiation Act No.5 of 2016.....1 South African Constitution.....2 I don't know.....99	

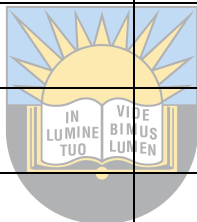
30	What's the main reason why you would choose Traditional Circumcision over Medical Male Circumcision	To prevent HIV.....1 Becoming a man.....2 Peer pressure.....3 To prevent STIs.....4 Obeying isiXhosa culture.....5 Sexual reasons.....6 Personal Hygiene.....7 Partner's desire.....8 Safety.....9 Others, Specify.....88	
31	What's the main reason why you would choose Medical Male Circumcision over Traditional Circumcision	To prevent HIV.....1 Becoming a man.....2 Peer pressure.....3 To prevent STIs.....4 Obeying isiXhosa culture.....5 Sexual reasons.....6 Personal Hygiene.....7 Partner's desire.....8 Safety.....9 Others, Specify.....88	
32	Why wouldn't you want to participate in <i>Ulwaluko</i> and get traditional circumcision?	Fear of complications.....1 I don't believe in the culture of <i>Ulwaluko</i>2 <i>Ulwaluko</i> is expensive.....3 <i>Ulwaluko</i> is against my religion.....4 Other (specify).....88	
33	Do you know any risks associated with <i>Ulwaluko</i> in recent years?	Dehydration due to denial to drink water and other fluids.....1 Injury to the penis.....2 Bleeding after circumcision.....3 Illegal initiation schools.....4 Infection after traditional circumcision.....5 Drugs and alcohol abuse.....6 Fire and burns.....7 Physical assault.....8 I don't know.....99	
34	Based on the statement above, would you choose to attend <i>Ulwaluko</i> , if the above risks are addressed?	Yes.....1 No.....2 I don't know.....99	
35	What do you think is the cause of the above challenges in <i>Ulwaluko</i> ?	Illegal initiation schools.....1 Unexperienced Incibi and amankankata.....2 Alcohol and drug abuse.....3 Urbanization.....4	

	Others(specify).....88	
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SECTION C: Attitudes, Beliefs, And Acceptability on Medical Male Circumcision and CMI – *ulwaluko* Practices
(Tick the correct box)

For each statement, indicate your response by ticking the appropriate box.

	Question	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
		1	2	3	4	5
36	Circumcised men enjoy sex more than uncircumcised men					
37	Circumcised men can safely have sex without using a condom and don't get infected with HIV as compared to uncircumcised men.					
38	It is important for all males irrespective of their age to be circumcised.					
39	Medical Male circumcision proves manhood					
40	<i>Ulwaluko</i> and traditional circumcision proves manhood					
41	<i>Ulwaluko</i> -CMI is an old practice in our community, and it does not need to be re-introduced as Medical Male Circumcision.					
42	Would you prefer traditional circumcision over medical circumcision?					
43	Would you prefer medical circumcision over traditional circumcision?					
44	Medical Male Circumcision done in Clinics/Hospitals is safer than traditional circumcision.					



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SECTION D: Circumcision Status			Enter answer Code
45	Are you circumcised? IF YES PROCEED WITH THE QUESTIONS/ IF NO END OF INTERVIEW	Yes..... 1 No.....2	
46	At what age were you circumcised?	Infant (1-12 months).....1 Child (1-10 yrs).....2 Adolescent (11-19 yrs).....3 Adult (above 19 yrs).....4	
47	Who conducted the circumcision procedure?	Health worker.....1 Traditional circumciser.....2 Other(specify).....88	
48	Where was the circumcision procedure carried out?	Health facility.....1 Home.....2 Initiation ceremony.....3 Religious ceremony.....4 Other(specify).....88	
49	What was the reason for the circumcision?	Religious.....1 Cultural norm.....2 Health reasons.....3 Hygiene.....4 Other(specify).....88	

Annexure D: Participant assent/consent

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

Title of the Research Project: Knowledge, Attitude and Perception of Uninitiated Adolescents Towards Customary Male Initiation Practices in Selected Schools in Buffalo City Municipality, Eastern Cape.

Principal Investigator: Dr Nelson K Igaba

ADDRESS: 5 Oxford Road, East London.

Phone: 074 0485 933

Email: nellykb.kb@gmail.com/201926767@ufh.ac.za

This study has been approved by the University of Fort Hare Faculty of Health Sciences Research Ethics Committee (UFH HREC) (**Ref No: 100118-054**) and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki and the ethical guidelines of the National Health Research Ethics Council. It might be necessary for the research ethics committee members or relevant authorities to inspect the research records.

What is this research study all about?

This study will be conducted in selected public schools in Buffalo City Municipality to assess the knowledge, attitude and perception of uninitiated adolescents towards CMI practices. Adolescents who are 15-17 years old will be selected for this study and will be requested to complete a questionnaire. The results of this study will be shared with the EC administrative management and will inform them on the correct and appropriate social, behavioural and communication strategies to implement among this age group in addressing challenges facing the Customary Male Initiation practice.

The objectives of this research are:

- To assess the level of knowledge of uninitiated adolescent males towards CMI practices in selected schools in BCM, EC

- To determine the perceptions of uninitiated adolescent males towards CMI practices in selected schools in BCM, EC
- To determine the attitude of uninitiated adolescent males towards CMI practices in selected schools in BCM, EC

Why have you been invited to participate?

- You have been invited to participate in this study because you qualify the criteria for participants which is an adolescent between the age of 15 and 17 years.

What will your responsibilities be?

- Your responsibility will be to avail yourself to an information giving session about this study where you will be given an opportunity to ask questions. Upon confirmation that you have fully understood, and you voluntarily want to participate in this study, you will be requested to complete a questionnaire, and this may take you 30 to 45 minutes.

Will you benefit from taking part in this research?

- The researcher wishes to offer you scholastic material including a pen, pencil, an eraser and a mathematical set to compensate for your time and inconvenience.

Are there risks involved in your taking part in this research?

- There are no risks in this study in as far as the participants are concerned.

Who will have access to the data?

- Confidentiality and privacy of participants will be ensured as each participants will be issued with an identification number that will not be linked to his biodata.
- Data generated in paper forms will be stored for a minimum of five years in a lockable cupboard in the department of Health Sciences archives at Fort Hare University and will on be accessed by the researcher. The electronic data will be stored on a password protected computer where only the researcher will have access, and this will be stored for a maximum of ten years.
- The paper form data will be destroyed by shredding or burning, and all the electronic data generated for this study will be permanently deleted from the computer.

What will happen with the data/samples?

- This is a once off collection of data, it will be analysed and communicated to you, the EC Province Administrative Management and UFH through reports and articles will be published in peer-reviewed journals.
- Once this study is completed, the paper form data will be destroyed by shredding or burning, and all the electronic data generated for this study will be permanently deleted from the computer.

Will I be paid to take part in this study and are there any costs involved?

No. You will not be paid, and you will not incur any costs by participating in this study

Who can you contact for additional information regarding the study?

The primary investigator Dr Nelson Igaba can be contacted during office hours at (074 0485 933), or on his cellular phone at (074 0485 933). Should you have any questions regarding the ethical aspects of the study, you can contact the Acting Chairperson of the UFH HREC, Prof Leon van Niekerk, during office hours at leonvn@ufh.ac.za or tel. no: +27 (0) 40 602 2435.

How will you know about the findings?

- The findings of the research will be shared with you through a meeting, the EC Province Administrative Management and UFH through reports and articles will be published in peer-reviewed journals.

Declaration by participant

By signing below, I agree to take part in a research study titled: Knowledge, Attitude and Perception of Uninitiated Adolescents Towards Customary Male Initiation Practices in Selected Schools in Buffalo City Municipality, Eastern Cape.

I declare that:

- I have read this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions to both the person obtaining consent, as well as the researcher and all my questions have been adequately answered.

- I understand that I will not be taking part in this study other than availing patients' medical records as approved by the Head: Free State Health and I have not been pressurised to do so.

Signed at (place) on (date) 20....

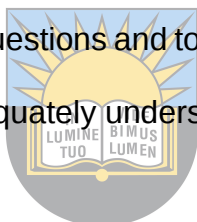
Do you agree to provide patients' medical records as approved by the Head: Free State Health for this study? (Mark your answer with an X)

Yes, I consent	
No	

Declaration by person obtaining consent

I (name) declare that:

- I explained the information in this document to
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use a interpreter.



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Signed at (place) on (date) 20....

.....
Signature of person obtaining consent

.....
Signature of witness

Declaration by researcher

I (name) declare that:

- I explained the information in this document to
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use a interpreter.

Signed at (place) on (date) 20....

.....
Signature of researcher

.....
Signature of witness



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Annexure E: Ethics Clearance Certificate



Figure 6. Letter of Approval from DoE to conduct research in schools in BCM

Annexure G: Approval letter from ECHoTL

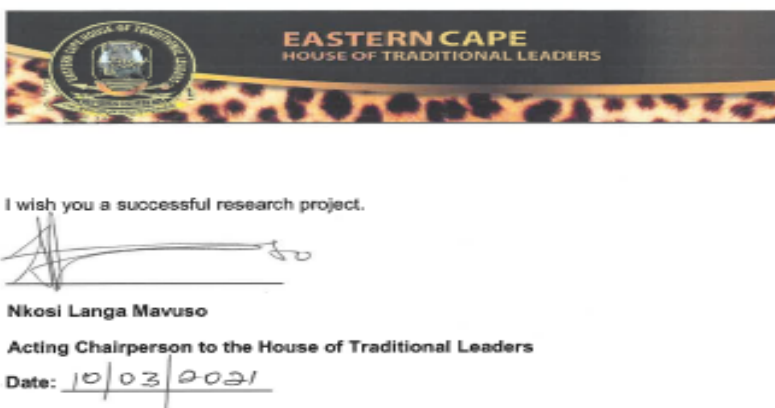
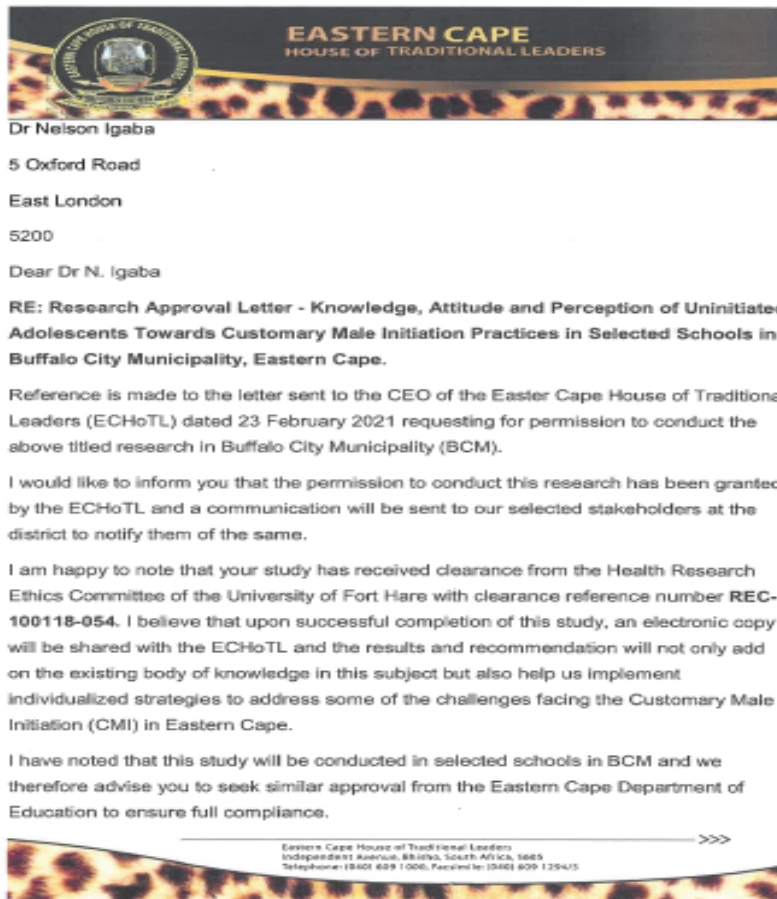


Figure 7. Letter of approval from ECHoTL to conduct research on a traditional initiation related topic

Annexure H: Budget

No.	Line item	Quantity	Unit Price	Total Amount
1	Human Resource			
	Research assistant wages	1	3500	3500
2	Stationery and printing			
	Pens	200	10	2000
	Notebooks	300	12	3600
	Paper rims	10	65	650
	Clip files	10	45	450
	Stapling machines and staples	10	75	750
	Highlighters	50	12	600
	Printing	1	2500	2500
3	Communication			
	Airtime	1	2500	2500
	Cell Phone	1	1500	1500
4	Travel		7200	
	Car rental	1	1500	1500
	Lodging	12	650	7800
	Fuel (liters)	100	16	1600
	Flights tickets (return) ELS-OR T	6	3500	21000
5	Research Equipment			
	Laptop	0	5000	0
	Hard drive	1	900	900
6	Publication and dissemination	2	3500	7000
	Journal application Fee	2	900	1800
	Printing and binding of thesis	3	1800	5400
7	<u>Participants</u> honorarium	250	15	3750
	Total			68800