KNOWLEDGE, ATTITUDES AND PRACTICES OF MALE CIRUCUMCISION FOR HIV PREVENTION AMONG VOLUNTARY COUNSELING AND TESTING CLIENTS IN ONANDJOKWE DISTRICT HOSPITAL, NAMIBIA

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A mini-thesis submitted in partial fulfilment of the requirement for the degree Master of Public Health, in the School of Public Health, within the Faculty of Community and Health Sciences, at the University of the Western Cape.

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November 2010

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KEY WORDS

Male Circumcision
Acceptability
HIV/AIDS
Namibia
Knowledge, Attitudes and Practices
Onandjokwe District Hospital
Voluntary Counselling and Testing
HIV Transmission
Sexually Transmitted Infections
HIV Prevention

DECLARATION

I declare that *Knowledge, Attitudes and Practices of Male Circumcision for HIV Prevention among Voluntary Counselling and Testing Clients in Onandjokwe District Hospital, Namibia* is my own work, that this work has not been submitted for any degree or examination in any university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

Terthu Kutupu Ngodji November 2010

Signed_____

DEDICATION

This work is dedicated to my beloved grandparents, the late Meekulu Fransiska Ndaangala Hamutoko (Ngodji) and Tatekulu Andreas Mwahafa Ngodji (Wanashikondo) who laid the foundation of my education. I would also like to dedicate my work to all men and women who are infected and affected by the HIV/AIDS epidemic in Southern Africa.

ACKNOWLEDGEMENT

First of all, I would like to thank the Almighty God, for strength and to protect me throughout my study period.

Secondly I wish to extend my appreciation to my study supervisor Ms. Jessica Rebert and my co-supervisor Dr. Ehimario Igumbor for their guidance, encouragement, support and patience throughout my entire study. My appreciation goes to the PET department staff, specifically to Ms. Rudo Ngara, who provided the constructive comments and proof-reading throughout the writing period.

Thirdly, I would like to give my appreciation to the management of Onandjokwe District Hospital in Namibia, for granting me a permission to conduct the study. I would also like to thank Tate Naftal Shimali for his assistance in conducting interviews. My gratitude is extended to all males who visited the Onandjokwe VCT department and offered their time to be interviewed, without them the study would not have been possible.

Fourthly, I would like to thank my fiancé, Joseph Elago Shuumbwa, my friend Josephine Njose Nashongo and my uncle Dr Martin Ngodji and family for their financial support and their inspirations and encouragement during my study period.

I greatly appreciate the care and prayers of my mother (Eunike), sisters (Saima and Laudika), brother (Haimbili) colleagues and friends. In particular, I would like to thank the following friends and colleagues who contributed in many ways to this study: Dan Lole (for database development and statistical analysis guidance), Dessy Haufiku, Lydia Shilongo and Phillemon Nakathingo as well as all other fellow students at the UWC School of Public Health.

MAY GOD BLESS YOU ALL!

LIST OF ABBREVIATIONS

AIDS:	Acquired Immune Deficiency Syndrome
ART:	Anti-Retroviral Therapy
DHS:	Demographic and Health Survey
HIV:	Human Immunodeficiency Virus
HPV:	Human Papilloma Virus
FGD:	Focus Group Discussions
GRN:	Government Republic of Namibia
MC:	Male Circumcision
MOHSS:	Ministry of Health and Social Services
N$:	Namibian dollars
NDHS:	Namibia Demographic and Health Survey
RCT(s):	Randomized Clinical Trial(s)
RR:	Relative Risk
UNAIDS:	Joint United Nations Programme on HIV/AIDS
VCT:	Voluntary Counselling and Testing
WHO:	World Health Organization

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ABSTRACT

Background: There is compelling evidence that male circumcision (MC) is associated with reduced risk of contracting Human Immune-Deficiency Virus (HIV) infection. For this reason, it is being considered as an additional HIV prevention strategy for roll-out in communities where it is not traditionally practiced and where heterosexually transmitted HIV infection rates are high. Little is known about its acceptability in non-circumcising communities in northern Namibia.

Aim: This study assessed the knowledge, attitudes and practices about MC as an HIV prevention intervention among adult males presenting for HIV Voluntary Counselling and Testing (VCT) services at Onandjokwe District Hospital in northern Namibia.

Methodology: A cross-sectional descriptive study design was used. A pre-tested, semi-structured questionnaire was administered to a sample of 331 Oshiwambo-speaking males aged 18 years and older, presenting for VCT services. Data was analyzed using Epi-Info 2008, Version 3.5.1. Descriptive statistics of the demographic characteristics, and scores for the level of knowledge, attitudes, and practices (KAP) and barriers to MC were presented. Chi square tests were used to determine the associations between KAP and the socio-demographic characteristics of respondents. The level of significance was set at 0.05.

Results: The self-reported prevalence of MC in the study sample was 15.4% with 38% circumcised during their childhood (1-13 years) and 44% circumcised for health related reasons. Most respondents 241 (74.4%) had heard that MC reduces the man's risk of HIV infection. Furthermore, 214 (66%) of the respondents had heard that MC reduces the man's risk of STIs and 259 (79.9%) heard that MC enhances penile hygiene. After

assigning scored points on knowledge questions, up to 53.1% of the respondents had good knowledge regarding MC and health aspects (such as HIV infection risk reduction of sexual transmitted infections (STI) risk reduction, penile cancer risk reduction and penile hygiene enhancement). The majority of the respondents, 194 (66.6%), reported that, it is easier for uncircumcised men to acquire HIV infection. After the respondents received the information about the benefits of MC, 75.5% reported that they would like to be safely circumcised if circumcision reduces the risk of HIV infections and at lower cost. Men were more willing to be circumcised if they were 25-34 years, 83.9% (p<0.001), unmarried, 82.1% (p<0.001) and had a secondary education level or higher, 79.8 %(p<0.011). Furthermore, 16 (25%) respondents mentioned fear of pain and that "it is against their tradition" to be circumcised as the main reason not to circumcise.

Conclusions and recommendation: A high level of knowledge of MC, particularly its potential to reduce the risk of HIV infection, STIs and enhance penile hygiene exists among VCT attendees in Onandjokwe District Hospital. MC will most likely to be accepted in this study area, especially when it is implemented to reduce the risk of HIV infection. The study recommends a comprehensive education and information program targeting males and their partners and a training for traditional and medical circumcisers to ensure a high quality of MC services.

CHAPTER 1: ORIENTATION OF THE STUDY

1.1.Introduction

The Human Immunodeficiency Virus (HIV) has claimed the lives of millions of people and continues to be a socio-economic and public health burden around the globe. The *Global AIDS Epidemic Update* estimates that about 33.4 million people were living with HIV and an estimated 2.7 million new infections were recorded in 2008 (Joint United Nations Programme on HIV/AIDS [UNAIDS], & World Health Organization [WHO], 2009). Sub-Saharan Africa carries the largest burden of the global HIV/AIDS pandemic. In 2008, it was estimated that 35% of new HIV infections and 38% of Acquired Immune Deficiency Syndrome (AIDS) deaths occurred in this region, which is now home to 67% of all people living with HIV/AIDS (UNAIDS & WHO, 2009). Of these HIV infections, as much as 80% are estimated to have occurred through sexual activity (UNAIDS & WHO, 2009; WHO, 2003).

The HIV epidemic in Sub-Saharan Africa varies significantly between and within countries in both scale and scope. For instance, in 2008, the adult national HIV prevalence in several West and Central African countries was below 2% but exceeded 15% in Southern African countries (UNAIDS & WHO, 2009). Similarly, in Namibia, the HIV prevalence varies considerably across the country ranging from less than 10% in the north-western and central regions, to more than 20% in the northern regions (Ministry of Health and Social Services [MOHSS], 2008a).

Namibia is one of the Southern African country heavily affected by the HIV/AIDS epidemic (UNAIDS &WHO, 2009), with HIV primarily being transmitted through heterosexual transmission (MOHSS, 2009). The *Annual HIV Sentinel-Survey of Pregnant Women in 2008* in Namibia, gave a national HIV prevalence rate of 17.8%, rising to as high as 31% in the north-eastern region of the country (MOHSS, 2008a). Furthermore, the *Estimates and Projections of the Impact of HIV/AIDS in Namibia* estimates that there are an average 39 new HIV infections in Namibia per day (MOHSS, 2008b). Of these, 9% occur among children under the age of 15, while the remainder occurs among adults (15-49 years) and mostly through heterosexual intercourse.

In spite of the rapid spread of HIV, implementation of various HIV preventive programs such as Voluntary HIV Counselling and Testing (VCT), condom use promotion, promotion of abstinence, and treatment programs for sexually transmitted infections (STIs) has resulted in the remarkable decrease in HIV prevalence and incidence in countries such as Thailand, Uganda and Senegal (Wegbreit, Bertozzi, De Maria & Padian, 2006). However, the rate of HIV infection is increasing in some parts of Africa, for example in Lesotho and some parts of Mozambique (UNAIDS & WHO, 2008) and as pointed out, in Namibia. Given the limited effectiveness in implementing such prevention programs, additional prevention strategies to limit the spread of the HIV infections are urgently needed.

There is increasing evidence that male circumcision (MC) can protect against HIV transmission (Cameron, Simonsen, D'Costa, Ronald *et al.*, 1989; Halperin & Bailey,

1999; Szabo & Short, 2000; Weiss, Quigley & Hayes, 2000). Three Randomized Controlled Trials (RCTs) conducted in South Africa, Kenya and Uganda gave strong evidence that safe MC can reduce a male's chance of becoming infected with HIV by approximately 60% (Auvert, Taljaard, Lagarde, Sobngwi-Tambekou *et al.*, 2005; Bailey, Moses, Parker, Agot *et al.*, 2007; Gray, Kigozi, Serwadda, Makumbi *et al.*, 2007). In March 2007, WHO and UNAIDS (2007a), convened an international consultation to review the results of the three RCTs and other evidence on MC and HIV prevention. WHO and UNAIDS recommends that "MC be recognized as an additional HIV prevention strategy to reduce the risk of heterosexually acquired HIV infections in countries with low MC prevalence and high HIV prevalence" (WHO & UNAIDS, 2007a). Since then interest has been raised by several Southern and Eastern African countries[1] to consider the introduction of MC for HIV prevention (UNAIDS, 2008; WHO & UNAIDS, 2007b).

Several studies on the impact of MC on HIV infection in sub-Saharan Africa, indicated that MC at 60% efficacy level could substantially reduce the burden of HIV, by reducing the male's chance of HIV infection, especially in Southern Africa where the prevalence of MC is low and the prevalence of HIV is high (Podder, Sharomi, Gumel & Moses, 2007; Williams, Lloyd-Smith, Gouws, Hankins *et al.*, 2006;). It is shown that MC alone can significantly reduce HIV infection, but not eliminate the HIV burden in the community. However, Podder *et al.*, (2007) concluded that "disease elimination is

1 Botswana, Kenya, Lesotho, Malawi, Namibia, South Africa, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

feasible if MC is combined with other interventions, such as the modest antiretroviral therapy (ART) and condom use"

In 2007, the Namibian Minister of Health and Social Services, Dr. Richard Kamwi, announced the government's commitment to embark on assessing the possible introduction of safe MC as part of the national strategy for HIV prevention. The Namibian government established the MC Task Force2 in 2008 to lead the MC scale-up, (Katuta, 2009). Little is known about the acceptability of MC intervention programs among Oshiwambo speaking people where MC is not traditionally practiced. In particular, it is unclear whether males who have embraced other HIV prevention strategies such as VCT will do the same with MC if implemented as part of a comprehensive HIV prevention programs.

This study was therefore designed to assess the knowledge, attitudes and practices of MC; and to identify the barriers among men presenting for VCT in a traditionally non-circumcising ethnic group, the Oshiwambo in Northern Namibia prior to the implementation of MC as an HIV prevention strategy. The results of the study will assist with the implementation of MC as a strategy to reduce HIV infection in Namibia.

1.2.Background information

Namibia is located in the South-West part of Africa. It covers approximately 824,000 square kilometres and consists of 13 political regions. It shares borders with Angola and

2 The Male Circumcision Task Force is responsible for the coordination and oversight of the situation assessment, and comprises representatives from Namibian government ministries, United Nations Agency, Local NGOs and Private sectors.

Zambia to the North and Northeast, Zimbabwe to the East, Botswana to the Southeast, and South Africa to the south and the Atlantic Ocean to the west (MOHSS, 2008c). The Namibian population consist of 1,826,854 people, of which 942 572 (52%) are female and 887721 (48%) are male (MOHSS, 2008c).

About 50% of the Namibian population belongs to the Oshiwambo tribes. There are eight dialects among Oshiwambo, the Kwanyamas, the Ndongas, the Kwambis, the Ngandjeras, the Kwaluudhis, the Mbalantus, the Kolonkadhis and the Mbadjas (Kaminga, 2000). The highest number of Oshiwambo tribes occupies Ohangwena, Oshana, Omusati and Oshikoto regions of northern Namibia, the regions that makes up the former colonial Ovamboland (Republic of Namibia, 1997). The Oshiwambo tribes have slight differences amongst them such as leadership structures, customary laws and traditional courts. For instance five of the ethnic groups are headed by a king, while the other two are led by a senior headman (Kamminga, 2000). Despite these differences, similarities such as religious beliefs, traditions, and agricultural practices are greater.

Male circumcision among the Oshiwambo tribes was practiced as part of the initiation rituals (from child to adulthood). According to Salokoski (2006), the initiation ritual or male circumcision belonged to the recognized tradition of all Owambo societies of Northern Namibia. The author argues that circumcision was thought to give supernatural skills to men going out to war and qualify them to be kings (Salokoski, 2006). To date the Oshiwambo tribes do not practice MC. Iipinge & Shitundeni (1999) argued that the introduction of Christianity discouraged many of the traditional practices including male

circumcision among the Oshiwambo tribes. However, another author (Salokoski, 2006) argued that the practice was abolished by the two kings who were known to have consolidated kingship among some Owambo kingdoms for the reason that circumcised men become a threat to these kings.

Based on the *Bi-annual HIV Sentinel-Survey of Pregnant Women in 2008*, the four northern regions are adversely affected by HIV/AIDS (MOHSS, 2008a). Conversely, these regions have relatively low levels of circumcision ranging from 1% in Ohangwena region to 14% in Oshana region (MOHSS, 2008c). According to the Namibia Demographic and Health Survey (NDHS), multiple partnerships over a 12-month period are fairly common among men in these regions, combined with low frequency of circumcision, average condom use, and an insufficient understanding of HIV/AIDS transmission (MOHSS, 2008c). These factors are likely to drive the epidemic in these regions (MOHSS, 2009).

1.3.Problem Statement

Despite the multiple prevention programs being implemented in the country, Namibia records 39 new cases of HIV infections on a daily basis (MOHSS, 2008b). The HIV prevalence exceeds 20% in the northern part of Namibia (MOHSS, 2008a) while MC is below 14% (MOHSS, 2008c). The northern regions are home to a larger ethnic group of Oshiwambo who do not practice MC (MOHSS, 2008c). In 2007, the Namibian government announced the intention to introduce safe MC as part of the national strategy for HIV prevention. The possibility of implementing MC as a preventative measure for

HIV infection becomes a concern in traditionally non-circumcising areas. No study has been done in the Onandjokwe district of northern Namibia, to determine the knowledge, attitudes and practices of community members towards MC especially if offered as an HIV prevention intervention.

1.4.Purpose of the study

The purpose of this study was to provide information on the knowledge, attitudes and practices of MC as an HIV prevention strategy prior to its implementation in the Onandjokwe District Hospital of Oshikoto region in northern Namibia. The results of the survey can provide baseline information that will assist in program planning for HIV/AIDS prevention as well as identification of implementation gaps and development of training manuals, policies and guidelines.

1.5.Aim of the study

The aim of this study was to assess the knowledge, attitudes and practices of MC as an HIV prevention intervention among adult males attending VCT at Onandjokwe District Hospital.

1.6.Objectives

1. To measure the MC prevalence among VCT attendees at Onandjokwe Hospital
2. To measure the level of knowledge about MC among male VCT attendees
3. To describe attitudes of VCT attendees regarding MC
4. To identify barriers to MC among VCT attendees.

1.7.Definition of terms

- **Acceptability of MC**: The willingness of respondents to accept MC procedures as an additional HIV prevention strategy.
- **Adult:** Individual of 18 years of age and above.
- **Barriers to MC**: Circumstances or factors that limit the individual to accept MC.
- **Circumcision preference**: The degree to which one agrees or disagrees to MC.
- **Male circumcision:** Refers to a total removal of all parts of the foreskin of the penis.
- **Heterosexual HIV transmission**: Transmission of HIV between individuals of the opposite sex through sexual intercourse.

CHAPTERT 2: LITERATURE REVIEW

2.1.Background of male circumcision.

Male circumcision is a surgical procedure during which all or part of the foreskin (the fold of skin covering the head of the penis) is removed by making a surgical cut around the head of the penis (Cichocki, 2008). Globally, there are different types of MC. However, the most common type is where the foreskin of the penis is completely removed, exposing the entire glans of the penis (Doyle, 2005).

Historically, MC has been associated with religious and cultural identity (Rizvi, Naqvi, Hussain & Hasan, 1999). Worldwide, the primary determinant of MC is religion, with almost all Muslim and Jewish males being circumcised because of the belief that a covenant was made between Abraham and God (Rizvi *et al.*, 1999). In some societies, MC has been associated with health benefits such as prevention of local foreskin problems, cancer of the penis, urinary tract infections, STIs and genital hygiene enhancement (Cichocki, 2008; Morris, 2007; Schoen, 1997). Female partners of circumcised males have also reported a lower risk of acquiring Human Papilloma Virus (HPV) and cervical cancer (Castellsague, Bosch, Munoz, Meijer *et al.*, 2002; Morris, 2007).

Approximately 30% of the world's males aged 15 years or older are circumcised (WHO & UNAIDS, 2007b). Of these, around two thirds are Muslim (living mainly in Asia, the Middle East and North Africa), 0.8% are Jewish, and 13% are non-Muslim and non-Jewish men living in the United States of America.

In Southern Africa, the prevalence of adult MC is rather low and is estimated to be around 15% in countries like Swaziland, Zambia and Zimbabwe (WHO & UNAIDS, 2007b). However, the prevalence of adult MC is higher in other countries such as Malawi (21%), Botswana (25%), South Africa (35%), Lesotho (48%), Mozambique (60%), Angola (66%) and Madagascar (80%) (WHO & UNAIDS, 2007b). Nevertheless, in each country, the proportion of circumcised men varies with provinces and ethnicities (WHO & UNAIDS, 2007b). For example in Kenya, the 2003 Demographic and Health Survey (DHS) indicated that the majority of Kenyan men (83%) were circumcised. However, the prevalence is lower among men living in Nyanza Province (46%), and among the Luo ethnic group (17%) (Central Bureau of Statistics [CBS], Ministry of Health [MOH] & ORC Macro, 2004).

The recent DHS in Namibia indicates that 21% of adult males are circumcised (n=3,915, aged 15-59) with vast difference in the prevalence between regions (MOHSS, 2008c). In the central regions of Omaheke, Otjozondjupa and Kunene where the Herero and Himba tribes reside, MC prevalence ranges from 41% to 57 %, while in the Northern regions of Oshana, Omusati, Oshikoto and Ohangwena where the Oshiwambo tribes reside, MC prevalence is lower than 14% (MOHSS, 2008c). This variation in MC prevalence in most African countries and as noted in Namibia is partly due to some groups who are traditionally non-circumcising, and also due to different ethnicities living in various parts of Africa. (WHO & UNAIDS, 2007b).

Evidence from a study among the Sukuma ethnic group in North-west Tanzania, revealed that MC is becoming a popular practice in traditionally non-circumcising groups because of the HIV prevention programs implemented in those areas (Nnko, Washija, Urassa & Boerma, 2001). The study further revealed that perceived health-related reasons such as enhanced penile hygiene and reduced STI risk among those communities popularize the MC practice. In some sub-Saharan African countries, there is an indication that a high socio-economic status is associated with higher rates of circumcision in traditionally non-circumcising communities. For instance, the rate of circumcision is higher among men with higher levels of education (Halperin, Fritz, McFarland & Woelk, 2005; Nnko *et al*., 2001), and those who live in urban areas (Nnko *et al*., 2001). It was pointed out that, higher levels of education may imply social contact with a broader mix of different ethnic and religious groups. This in turn increases the likelihood of circumcision given such socio-behavioural interactions (Urassa, Todd, Boerma, Hayes *et al*., 1997).

Across different populations, the preferred age for circumcision varies with ethnicity and religious beliefs. In Judaic societies, the ritual is performed on the eighth day after birth, but for Muslims, there is no clearly prescribed age for circumcision (Rizvi *et al.,* 1999). For many tribal cultures in Africa, MC is performed in early adult life as a "rite of passage" or a shift to puberty, adulthood or marriage (Doyle, 2005; Dunsmuir & Goldon, 1999; Marck, 1997). For example the Xhosa tribe of South Africa and the Masai tribe of Kenya value MC practice as a way to show their attainment of manhood (Doyle, 2005). Among these tribes, the boys are usually circumcised from the age of 13 to 23, usually in groups, but in a few cases, they are circumcised as individuals or in pairs. Even with the

school education programs, Christian teaching and prolonged contact with Europeans in migrant employment, these tribes were not discouraged to continue with MC to prove their manhood (Papu & Verster, 2006). No information on the average age of circumcision in Namibia and specifically among the Oshiwambo speaking people was found. However, Salokoski (2006) concluded that traditional MC within the Oshiwambo tribes was commonly practiced only among adult men and only among the noble, wealthy persons or those of high standing, especially the headmen serving the king.

2.2.Male circumcision and HIV Infection

Since the beginning of the HIV/AIDS epidemic in the 1980s, researchers have been exploring the correlation between MC and a lowered risk of HIV infection (Rennie, Muula & Westreich, 2007). The first paper which suggested a protective effect of MC against HIV infection was published in 1986 by Fink (Fink, 1986, as cited by Auvert *et al*., 2005). Since then, approximately 40 observational epidemiology studies have reported significant associations between MC and HIV-1 infection (Bailey, Plummer & Moses, 2001; Bongaarts, Reining, Way & Conant, 1989; Moses, Bradley, Nagelkerke, Ronald *et al.,* 1990). Two meta-analyses of observational studies published in 1999 and 2000 reported a reduced risk of HIV infection among circumcised men, as high as half that of uncircumcised men (crude Relative risk (RR). 0.52, 95% CI 0.46-0.68) (Van Howe, 1999; Weiss *et al*., 2000).

In 2005, Auvert *et al.,* (2005) conducted a RCT among 3,274 uncircumcised men, aged 18–24 years. The incidence rate was 0.85 per 100 person-years in the intervention group

and 2.1 per 100 person-years in the control group, corresponding to a RR of 0.40 (95% CI: 0.24%–0.68%; *p*= 0.001) (Auvert *et al.,* 2005). Similar RCTs were done in 2007 in Kisumu, Kenya; and Rakai, Uganda among 2784 (aged 18–24 years) and 4996 (aged 15-49 years) uncircumcised HIV negative men respectively (Bailey *et al*., 2007; Gray *et al*., 2007). The reduction in the risk of acquiring an HIV infection was 53% in the Kenyan RCT (Bailey *et al*., 2007) and 51% in Uganda RCT (Gray *et al*., 2007).

Biological evidence shows that the presence of a significantly higher concentration of Langerhans cells, which are target cells for HIV-1 in the mucosal layer of the foreskin, makes the man more susceptible to the HIV infection (Patterson, Landay, Seigel, Flener *et al.,* 2002; Szabo & Short, 2000). Evidence exists that, the keratinized, stratified squamous epithelium that covers the penile shaft and outer surface of the foreskin provides a protective barrier against HIV infection (De Vincenzi & Mertens, 1994; Fink, 1989; Szabo & Short, 2000). McCoombe & Short (2006) further argues that the penile shaft and outer foreskin surface are well keratinized, while the inner mucosal layer of the foreskin is not. Furthermore, the sensitive foreskin may be more susceptible to micro-abrasion during sexual intercourse, which could provide an entry for STIs and HIV (Szabo & Short, 2000).

2.3.Acceptability of MC as an HIV prevention strategy

Despite the strong evidence of a protective effect of MC against HIV, the concern with the effective application of this knowledge to preventing HIV is the acceptability of MC, especially in non-circumcising communities. It is logical that a higher uptake of MC in

non-circumcising communities will be determined by the degree to which the intervention is accepted. In fact the morality of introducing an intervention, which is not culturally acceptable, even where it is potentially beneficial, is questionable. Van Dam and Anastasi (2000:10) stated that *"*to be an effective intervention, circumcision must be acceptable to local health ministries, religious and political leaders, health care personnel, and residents of the community".

A review carried out by Westercamp and Bailey (2007) to establish the acceptability of MC for prevention of HIV infections in non-circumcising societies in Eastern and Southern Africa, revealed that the median proportion of uncircumcised men willing to become circumcised was 65%, ranging from 29% in Uganda to 81% and 87% in Swaziland and Botswana respectively. The review further found that the huge variation of acceptability of MC is dependent on the context of the study and how the question was posed. For example, one of the highest acceptability levels of 81% in Botswana is that the participants agreed to a procedure after information sessions were performed about the health benefits and the risk associated with the procedure, compared to 61% before the information sessions (Kebaabetswe, Lockman, Mogwe, Mandevu *et al.,* 2003).

In the Dominican Republic the number of men willing to be circumcised increased to 67% after an information session compared to 29% before the information session explaining the benefits of the procedure (Brito, Caso, Balbuena & Bailey, 2009). Furthermore, 74% of men in the same study reported that they would be willing to circumcise their sons after attending the session. The difference in acceptability levels

before and after the information session indicates that knowledge about the benefits of MC is an important determinant of acceptability of the procedure in non-circumcising societies. In different African countries where circumcision is not commonly practiced, men were more willing to be circumcised if they lived in urban areas and were employed (Scott, Weiss & Viljoen, 2005) and had higher levels of education (Halperin *et al.,* 2005; Scott *et al.,* 2005). The reason being that, people living in urban areas and who are educated are believed to be exposed to circumcising tribes in schools and working areas, thus thought to increase their acceptance of MC (Nnko *et al.,* 2001).

2.4.Beliefs about health benefits of male circumcision

Data on the beliefs and attitudes of Namibians towards MC was found to be limited. However, recent qualitative research on the acceptability of MC as an HIV prevention strategy in 8 of the 13 traditionally non-circumcising communities provided information on the knowledge, attitudes and beliefs of MC in Namibia (Pappas-DeLuca, Simeon & Kustaa, 2008). Using 46 focus group discussions (FGD) of males and females, the study revealed that, regardless of whether or not MC was typically done in the culture or area, participants had a general understanding that the moist and closed environment of the foreskin contributes to the growth of bacteria and that this may be related to negative health consequences

Generally, penile hygiene was believed to be a major facilitator of MC in both traditionally circumcising and non-circumcising communities (Halperin *et al.,* 2005; Kebaabetswe *et al.,* 2003; Lukobo & Bailey, 2007; Mattson, Bailey, Muga, Poulussen *et*

al., 2005; Ngalande, Levy, Kapondo, & Bailey, 2006; Niang & Boiro, 2007; Nnko *et al.*, 2001; Rain-Taljaard, Lagarde, Taljaard, Campbell *et al.,* 2003).

In fact, in some societies, being uncircumcised is unacceptable and it is believed to cause diseases. For instance, in a qualitative study to analyze the cultural concepts, practices and social relations associated with MC in two West African countries, Senegal and Guinea-Bissau, the foreskin was believed to be dirty, a source of bad smells and disease, and even evil (Niang & Boiro, 2007). The study further showed that sexual relations between a man who is not circumcised and a woman who is a virgin is perceived to cause a terrible disease whose symptoms are similar to those of AIDS (Niang & Boiro, 2007).

In Kenya, a study conducted in Nyanza province among 107 men and 110 women found that 91% of men in Nyanza province associated MC with better penile hygiene, even among those who preferred to remain uncircumcised (Mattson *et al.,* 2005). The same study found that the majority of women, irrespective of their partners' circumcision status, believed that uncircumcised men are more likely to contract STIs and even HIV (Mattson *et al.,* 2005). In some African countries such as Zambia and Malawi, there is a belief that women's STI transmission is linked to their husbands/partners circumcision status (Lukobo & Bailey, 2007; Ngalande *et al.*, 2006). Women in Malawi mentioned that maintaining proper penile hygiene of a circumcised partner is easier and reduced a women's chance of STI infection including HIV (Ngalande *et al.,* 2006). The study further indicated that women are considered responsible for cleaning their partners'

penises after sexual intercourse as their cultural responsibilities, thus increasing their preferences to favour circumcision for their partner (Ngalande *et al*., 2006).

Although prevention of STI was overwhelmingly mentioned as a health benefit of MC in non-circumcising communities, the association of MC and HIV specifically, was less evident (Halperin *et al.*, 2005; Ngalande *et al.*, 2006; Nnko *et al*., 2001). Even in some societies where MC prevalence was high, MC is believed to be beneficial for penile hygiene and reduction of STIs. There was however no mentions of a potential benefit on the reduction of HIV transmission even though HIV is an STI (Niang & Boiro, 2007). In Zimbabwe, 80% of the 86 males interviewed had heard of the positive health benefits of MC, such as the reduction of STIs and maintaining penile hygiene (Halperin *et al.*, 2005). However, the reduction of HIV or AIDS was only mentioned by 7% of men in the study sample. A similar knowledge pattern was reported in Malawi (Ngalande *et al.*, 2006) and Tanzania (Nnko *et al*., 2001) where MC and HIV associations are less known.

Circumcised men were found to have positive beliefs with regard to MC and its benefits when compared with uncircumcised men (Westercamp & Bailey, 2007). In a Korean study, circumcised men favoured MC more than uncircumcised men (81.0% versus 53.5%, $p < 0.001$) and were more willing to request MC for their sons (Ku, Kim, Lee & Park, 2003). Similar findings were reported from studies done in Botswana and South Africa, where circumcised men were more likely to state positive health benefits of being circumcised and agreed about the advantages of MC (Kebaabetswe *et al*., 2003; Lagarde, Dirk, Puren, Reathe *et al.*, 2003).

2.5.Sexual pleasure and satisfaction related to MC

In some societies, MC is believed to influence sexual performance and sexual pleasure for the man himself and for his female partner. According to Westercamp & Bailey (2007), the perception that circumcision influences sexual drive, sexual performance, and sexual pleasure for the man and for his partner, which is likely to influence the decision to circumcise. Nevertheless this belief was found to vary between societies. In a survey with 217 men and women in Kenya, a high proportion of men (43%) and the majority of women (76%) believed that circumcised men enjoy sex more and confer pleasure to their female partners more than uncircumcised men (Mattson *et al*., 2005). The study further revealed that women enjoy sex more with circumcised men. In 12 FGDs with both young and adult men in South Africa, MC was believed to enhance sexual performance, enlarge the penis and make the penis more appealing to women (Rain-Taljaard *et al.*, 2003). Furthermore, in a qualitative study in Malawi, all sex workers and younger men interviewed reported that circumcised men enjoy sex more and give more pleasure to their partners (Ngalande *et al*., 2006). In contrast, older and married participants believe that a circumcised penis is dry, not warm, and less sensitive and induces pain (pricking) during penetration (Ngalande *et al.,* 2006). Scott *et al.* (2005) concluded that beliefs around sexual pleasure is more influential in some societies, thus a MC promotion campaign within the societies with influential belief about sexual pleasure, might have more impact if it were to promote ‘better sex’ over ‘safer sex’.

2.6.Preferred age of MC

Westercamp and Bailey (2007), argue that the age at which males become circumcised will have an effect on how rapidly MC interventions may impact the HIV epidemic. In their review of acceptability studies in Africa, the study found two leading directions; either to circumcise males as babies due to a simpler procedure, less fear, easier care, and faster healing, or circumcise males around puberty and adolescence when boys can decide and take care of the wound for themselves (Westercamp and Bailey, 2007).

Pre-pubertal circumcision[3] was found to be associated with reduced HIV risk in a survey conducted in the Rakai district of rural Uganda among 6281 men aged 15-49 (Kelly, Kiwanuka, Wawer, Serwadda *et al.*, 1999).

Neonatal circumcision was also found to have several benefits. Using a cost-effectiveness model in Rwanda, neonatal circumcision was found to be cost-effective safer than circumcision in adulthood, carrying lower risks for surgical errors, infection, and other adverse events (Binagwaho, Pegurri, Muita & Bertozzi, 2010). The study concluded that neonatal MC should be considered a priority in comprehensive HIV prevention plans for Southern Africa. In addition, neonatal MC had a high acceptability for HIV prevention in Rwanda. In countries such as Botswana, Dominican Republic, South Africa and India, the highest percentage of males prefer their young sons to be circumcised even if they themselves have not been circumcised or are not willing to be circumcised (Brito, Caso, Balbuena & Bailey, 2009; Kebaabetswe *et al.*, 2003; Lagarde *et al.*, 2003; Madhivanan, Krupp, Chandrasekaran, Karat *et al.*, 2008).

2.7.Implementation of MC for HIV prevention

There are several issues of concern with regard to the implementation of MC. One of the main concerns is risk compensation4, especially the reduction in condom use or increases in number of sexual partners that may arise from the belief that MC offers total protection to HIV/STI transmission (Kalichman, Eaton, & Pinkerton, 2007). Evidence indicates that in some population groups, people perceive MC as total protection against HIV infection, and it has even been referred to as the "invisible condom" (Van Dam & Anastasi, 2000). For example, in a study in Westonaria district of South Africa, 9% of 108 circumcised men and 7% of 374 uncircumcised men reported that circumcised men do not need to use condoms (Lagarde *et al*., 2003). The same study found that 30% of circumcised men and 18% of uncircumcised men believed that circumcised men can safely have sex with many women (Lagarde *et al*., 2003). In a similar study of 100 men and 44 women in the South Africa, 2% of males and 5% of females cited that MC could afford total protection from HIV (Scott *et al.,* 2005).

Another issue raised is the possibility of complications of the MC procedure. Complications generally include bleeding, infection and surgical accidents, including penile necrosis and penile amputations (Williams & Kapila, 1993). These complications are mostly associated with poor health care or traditional circumcision by untrained personnel under non-sterile conditions. A retrospective review of the incidence of complications of 1279 cases 407 cases performed by unlicensed traditional circumcisers

3 Pre-pubertal circumcision - Circumcision carried out before or at age 12 years
4 Risk compensation is an effect whereby individual people may tend to adjust their behavior in response to perceived changes in risk

and 782 circumcision cases performed at a urology clinic by licensed surgeons) in Turkey found that 85% of the complications arose from cases performed by unlicensed traditional circumcisers (Atikeler, Gecit, Yuzgec & Yalcin, 2005). In another review involving a sample of 1007 males aged 5-25 in Western Kenya, the overall rate of adverse events was approximately 25%, with 35% of those circumcised traditionally experiencing at least one adverse event, compared to 17% of those circumcised medically (Bailey & Egesah, 2006).

Several studies have reported that most individuals in non-circumcising African societies prefer MC to be performed by medical personnel in a hospital setting (Kebaabetswe *et al*., 2003; Rain-Taljaard *et al*., 2003), whereas in some societies where MC is a traditional practice, men prefer to be circumcised in a traditional settings by traditional surgeons. For instance, in a study of 100 males aged 10-65 years in the Eastern Cape Province of South Africa, 63% of the respondents favoured traditional surgeons (Meel, 2005). The fact that 67% of the 100 participants in the same study were unaware of any risks associated with traditional circumcision indicates that the practice is deeply embedded in the cultural and behavioural setting of the people and few think of it as a health risk (Meel, 2005). In order to address concerns of safety of MC and risk compensations proper education for service providers and communities should be a component of a MC roll out programme. .

2.8.Barriers to circumcision

Several barriers have been cited which are thought to limit the uptake of MC. These include: 1) health related barriers; 2) fear of pain, death, or complications; and 3) and MC

procedure cost. A recent qualitative research study involving 46 FGDs with both males and females in Namibia found that some men perceived the foreskin to be a physical barrier or a protective covering for the penis. For these men, becoming circumcised was perceived as leaving one physically vulnerable to injury (Pappas-DeLuca *et al.,* 2008). Other health related barriers included bleeding, and infections such as HIV transmission due to the use of one surgical blade used on various males in traditional MC settings (Halperin *et al.*, 2005; Lagarde *et al.,* 2003; Rain-Taljaard *et al.*, 2003). There is evidence that there is a great deal of trust of western medical practitioners and a strong preference for circumcision services to be made available in public health facilities by trained health professionals (Westercamp & Bailey (2007).

In many non-circumcising communities, fear of pain during and after the procedure was perceived by people as a major barrier to MC acceptability (Kebaabetswe *et al.*, 2003; Lukobo & Bailey, 2007; Mattson *et al.,* 2005; Ngalande *et al.,* 2006). In traditionally circumcising communities this was not a barrier as circumcision was meant to be painful especially if it is practiced as rite of passage from child to adulthood for the reason that endurance to pain indicates the sign of adulthood (Ngalande *et al.*, 2006; Westercamp & Bailey, 2007). However, for the societies that are not required to practice MC, fear of pain was seen as a reason to avoid circumcision.

Another perceived barrier to circumcise is that traditionally non-circumcising societies perceive MC as "other societies' cultural practices". In Namibia some respondents expressed a concern that they would feel they were adopting the culture of another group

if they decided to circumcise (Pappas *et al.*, 2008). The study further indicates that to circumcise is against God by altering a part of your natural body. Furthermore, participants of studies in Kenya and Zambia expressed the opinion that if circumcision was promoted by the government, it should be provided at health clinics and hospitals for free or at reduced cost (Lukobo & Bailey, 2007; Mattson *et al.*, 2005). In fact, in Kenya 60 men (65% of total respondents) reported that they would only be circumcised if the procedure costs 200 Shillings (approximately N$20.00/ US$ 3.00), or less (Mattson *et al.*, 2005). This indicated that some people may prefer not to be circumcised if the procedure is to be costly.

In conclusion, MC is not a common practice worldwide, with only 30% of the male population estimated to be circumcised. Historically, MC is associated with religious and cultural identity and there is an increasing account of the health benefits notably in terms of its protective effect against HIV infection. For the MC intervention to be successful, societal knowledge, beliefs and practices should be considered when implementing MC procedure as an additional HIV prevention strategy.

CHAPTER 3: METHODOLOGY

3.1.Study design

This was a cross-sectional descriptive study. The design employed quantitative methodologies to quantify the level of knowledge, perceptions and attitudes, and identify barriers to MC. Comparison of the knowledge; perceptions and attitudes by socio-demographic characteristics of respondents were also made.

3.2.Study setting

The study was conducted in the Onandjokwe District Hospital, situated in the Oniipa suburb of the Oshikoto region in northern Namibia. The Onandjokwe district has a population of 159 621 people (Onandjokwe Hospital, 2008a), which is 85% of an estimated 187 500 people living in the Oshikoto region. The district consists of twelve clinics and two health centres. Onandjokwe serves as a referral point to Eenhanha and Okongo district hospitals in the neighbouring Ohangwena region. Over 90% of the people in the Onandjokwe District speak Oshiwambo as their native language (Health Communication Partnership, 2004). The Onandjokwe District Hospital runs a special centre, which offers comprehensive HIV services including prevention, treatment and home based care and STIs treatment services The Onandjokwe District Hospital VCT Centre receives an average of 11 adult male clients on a daily basis for HIV counselling and testing (Onandjokwe Hospital, 2008b). This study was conducted in the VCT centre of Onandjokwe District Hospital.

3.3.Study population

All adult males aged 18 years and older who belonged to the Oshiwambo ethnic groups were eligible to be included in this study. There are seven Oshiwambo speaking groups with autonomous, hereditary leadership structures, customary laws and traditional courts (Kamminga, 2000). Although these seven Oshiwambo speaking groups have important differences related to their history, there are greater similarities between them (Kamminga, 2000).The study was conducted among those from the Oshiwambo tribes because they are among non-circumcising groups in Namibia (MOHSS, 2008c). The study population was narrowed to include only those adult males visiting Onandjokwe VCT centre for HIV counselling and testing. Clients who were from non-Oshiwambo tribes as well as those under the age of 18 years were excluded from the study.

3.4.Sample size

Approximately 3500 adult males attend Onandjokwe VCT centre every year for HIV counselling and testing (Onandjokwe Hospital, 2008b). Based on the records that more than 80% of the Onandjokwe district population belongs to the Oshiwambo ethnic group (Republic of Namibia, 1997), 80% of the male adult population was used to calculate the required sample size. From a total population of 2800 (80% of 3500 clients visiting the VCT centre annually), with a 95% confidence level, a presumed acceptance rate of MC of 65% (Westercamp and Bailey, 2007) and a 5% margin of error, a required sample size of 311 study units was calculated using CDC Epi Info 2008 version 3.5.1.

3.5.Sampling procedure

A convenient sample of consecutive patients presenting for VCT was used in this study. All male clients who visited the Onandjokwe VCT Centre between 28 April 2009 and 6th June 2009 and met the selection criteria, were approached and asked to voluntarily participate in the study, until the required size was reached. This sampling procedure was selected to achieve the target sample population with limited resources and time. In addition, this sampling procedure was chosen because a random sampling technique was not possible given that a concise sampling frame of all attendees to the clinic could not be determined prior to data collection. At the same time, the period of data collection (April through June) has no expectation of particular types of patients attending the clinic.

3.6.Data collection

An anonymous structured questionnaire with close-ended questions developed by the investigator (Appendix C) was used to collect information from participants. Questions were adapted from previous studies on the acceptability of MC done in South Africa (Scott *et al*., 2005) and Kenya (Mattson *et al*., 2005). The questions from each of the above mentioned questionnaires were adjusted and re- arranged to fit in with the specific study objective. The questionnaire was designed in English and was translated into Oshiwambo by the investigator and was later revised by an independent native Oshiwambo speaker after the tool was pre-tested. A meeting was held between the translator and the investigator to gain consensus on the final version of the questionnaire. The questionnaire consisted of the following sections: 1) socio-demographic information;

2) knowledge of MC and HIV; 3) beliefs and attitudes regarding MC; 4) MC preferences; 5) barriers to MC; and 6) MC status.

Due to the sensitivity of the topic and because the investigator is a female, a 42 years old, male interviewer with more than five years experience in conducting interviews conducted all the interviews. The interviewer was trained by the investigator and weekly meetings were held with the interviewer to cross check the data collected, note progress and clarify concerns. The training included research methodology, clarifications of terms in the questionnaire, confidentiality and the interview skills. The training took 5 hours and was repeated after the pre-testing of the tool.

Participants were introduced to the study just after the HIV pre-test counselling, which they received at the Onandjokwe Hospital VCT centre to voluntarily participate in the study. This was done while the participants were waiting for their HIV test results. All those who consented were interviewed individually, using the developed questionnaire. The interviews, which took 15-20 minutes, were conducted in both Oshiwambo and English depending on the participant's preference. The data was collected during the period 28 April to 9 June 2009. To avoid participants being interviewed more than once, participants were asked if they had previously been interviewed before commencement of the interview.

3.7.Validity

The sample size was sufficiently large and it was drawn from the same ethnic group. The questionnaire was pre-tested prior to the actual data collection on 10 participants with

similar characteristics to the sample. The questionnaire was administered in languages understood by both the respondents and interviewer. A research assistant was trained to ask questions and record the answers in order to ensure standardization and to avoid interviewer bias. Data quality checks were done in the field as well as before and during the data processing for completeness and consistency.

3.8.Reliability

To address the reliability in this study, the same questionnaire was used to collect data from participants and only one trained interviewer conducted all the interviews. Given the limitation of time and resources, no further assessment of reliability was feasible.

3.9.Generalisability

The findings of this study can only be generalized to adult males from Oshiwambo communities who attend VCT services. Because the study sample represents those who have taken up a HIV prevention intervention (VCT), it may not be reflective of the knowledge, attitudes and behaviours of the general population of Oshiwambo male adults. It may however give an impression of the knowledge, attitudes and behaviours of the population so far met by HIV interventions. The study is however not generalizable to non-Oshiwambo communities.

3.10. Data analysis

Questionnaires were checked for completeness and verified with the interviewer by the investigator, before being coded and entered into a MS Access database. The obtained data was analyzed using the CDC Epi-Info 2008, version 3.5.1. Descriptive statistics of

the demographic characteristics, knowledge, attitudes, beliefs and barriers were presented using absolute numbers, simple percentage, range and measure of central tendency (mean, mode) where appropriately. The Chi square test was used to test the association between categorical variables. The level of significance of all statistical tests was set at 0.05.

Variables were categorized and defined as follows:

Socio-demographic information:

- **Age –** was collected in complete years and categorized as
    - <24 years
    - 25-34 years
    - 35-44 years
    - 45-54 years
    - 55+ years

- **Marital status-** defined as "married" if the respondents were married or living together as if married and "unmarried" if they were single, widowed, divorced or separated.
- **Level of education** was categorized as "primary and lower" for none or lower primary (up to grade 7) and "secondary and higher" for secondary and tertiary education.
- **Religion** was categorized as "Christian" if the respondent belonged to a Christian faith such as Roman Catholic, Lutheran or Anglican and "non-Christian" if they reported other religions apart from Christian.

- **Employment** was categorized as "Employed" if the respondent is full time, part time or self employed an "Unemployed" if the respondent is unemployed or student.

Knowledge, attitudes and practices of MC was categorizes as:

Knowledge*:* "Yes" responses to questions about knowledge were given a score of one point. Based on these grading, a total of 6 points were allocated to the section on knowledge about MC and health aspects (MC and risk of HIV, STIs, and penile cancer and MC penile hygiene). No point was given for "No" answers

Respondents were then categorized as

- Good knowledge when scored 4-6 points
- Fair knowledge when scored 2-3 points
- Poor knowledge when scored 0 or 1

MC-risk related beliefs and attitudes were indicated by a statement it is easier to acquire HIV, STI, and penile cancer or maintain penile hygiene and categorized when a male is

- Circumcised
- Uncircumcised
- No difference
- Do not know.

Other beliefs of MC included when participants indicated "agree" or "disagree" or "do not know" regarding sexual feelings and MC; women's sexual preferences; MC and unsafe sex; pain involved with the MC procedure; and necessity of MC.

Acceptability was indicated **as r**espondents' willingness to circumcise for HIV prevention or encouraged their son or male relative to circumcise.

MC preferences: was indicated as respondents preferred age of circumcision, person who would conduct the procedure, and cost of the MC procedure.

Barriers to MC: Reported reason not to circumcise.

Circumcision status: Self-reported circumcision status, age when circumcised, reason for circumcision, person who performed circumcision.

3.11. Ethical and legal considerations

The research proposal was granted ethical approval by the University of the Western Cape Faculty Research and Ethics Committee. Permission to conduct the research amongst VCT clients was granted by the Namibian Ministry of Health and Social Services, for the Onandjokwe District Hospital. Participants were given an information sheet explaining the purpose of the study. The study was strictly voluntarily and participants could withdraw at any time. To ensure confidentiality, no questionnaire identification was used. Participants were assured that data from the study would only be used for research purposes and that data would be kept in a database in a computer that will be password protected.

CHAPTER 4: RESULTS

Chapter 4 presents the findings of the study. The findings are presented as descriptive summaries, simple percentages, means, frequency distributions, as well as cross tabulations. The chapter is divided into five main sections. A description of the study sample is presented in the first section. In the second section, knowledge of MC and risk associations to HIV infection, STIs and penile cancer as well as MC and penile hygiene, followed by attitudes and beliefs about of MC in the third section. The fourth section of the results presents acceptability of MC preferences. The last section presents barriers to MC.

4.1.Description of study sample

A total of 331 adult males visited Onandjokwe VCT centre for HIV counselling and testing between 28. April 2009 and 6th June 2009. All 331 were approached and agreed to participate in the study yielding a response rate of 100%. Three hundred and eighteen (96%) adult males responded to all the questions in the questionnaire while 13 (4%) participants did not respond to all the questions in the questionnaire. All 331 records (318 complete and 13 incomplete) were included in the analysis.

4.1.1. Socio-demographic characteristics of study population

Table 1 presents demographic characteristics of the respondents in the study. Their ages ranged from 18–65 years (mean age 31 years, standard deviation 9.96; age mode 28 years). The majority, 143 (43.2%) of the respondents were aged between 25 to 34 years. Eighty seven (26.3%) of the respondents had no formal or primary education, while 240

(72.2 %) had a secondary education or higher. Nearly two thirds of the respondents, 244 (74.2%) were unmarried and 86, (26%) were married or cohabitating. Almost all the respondents 324 (97.9%) were Christians. Most of the respondents, 244 (73.7%), were unemployed.

Table 1: Socio-demographic characteristics of study participants

Characteristics	**Study Sample N = 331**	**Percentage**
Age		
18-24	95	28.7
25-34	143	43.2
35-44	54	16.3
45-54	26	7.9
55+	13	3.9
Marital Status		
Un-married	244	73.7
Married/Cohabitating	86	26
Not specified	1	0.3
Level of Education		
Primary and lower	87	26.3
Secondary and higher	239	72.2
Not specified	5	1.5
Employment		
Employed	85	25.7
Unemployed	244	73.7
Not specified	2	0.6
Religion		
Christians	324	97.9
Non-Christians	5	1.5
Unspecified	2	0.6

4.2.Prevalence of male circumcision

Among 320 respondents 50 (15.6%) reported that they were circumcised. Two hundred and seventy (84 4%) reported that they were not circumcised.

4.2.1. Age of respondents when circumcised

The majority of the respondents, 19 (38%) were circumcised during their childhood age (1 -13 years) whereas 9 (18%) during their adult ages (>20years), 9 (18%) as infant (<1 year) and 7 (14%) as adolescents (14-19 years) (Table 2).

Table: 2 Age of respondents when circumcised

Age (years)	Frequency	Percentage
Less than 1 year	9	18
1-13years)	19	38
14-19years	7	14
More than 20 years	9	18
Age not known	6	12
Total	**50**	**100**

4.2.2. Reasons for circumcision

Questions were asked regarding the reasons for circumcision and were cross-tabulated to investigate whether these reasons differed by age of circumcision. Among fifty respondents who were circumcised, 22 (44%) circumcisions were performed for health related reasons, 16 (32%) for traditional/cultural reasons, 10 (20%) for unknown reasons and 2 (4%) for other reasons. The majority of respondents 8 (36.4%) who were circumcised for health related reasons and 6 (37.5%) who were circumcised for traditional/cultural reasons were circumcised during the 1-13 age period. Almost all the respondents 9 (90%) with an unknown reason to circumcise, were circumcised below the age of 13 years (Table 3).

Table 3: Reason for circumcision by age of circumcision

Age of circumcision	Health related reasons		Traditional reason		Other reasons		Reasons unknown	
	n	%	n	%	n	%	n	%
Infant(<1year)	3	(13.6)	1	(6.3)	0	(0)	5	(50%)
Child(1-13 years)	8	(36.4)	6	(37.5)	1	(50%)	4	(40 %)
Adolescent(14-19 years)	4	(18.2)	3	(18.8)	0	(0)	0	(0)
Adult(>20 years)	7	(31.8)	1	(6.3)	1	(50%)	0	(0)
Age unknown	0	(0)	5	(31.3)	0	(0)	1	(10%)
Total	**22**	**(44%)**	**16**	**(32%)**	**2**	**(4%)**	**10**	**(20%)**

4.2.3. Person performed male circumcision

Of the 50 respondents who were circumcised, most of them 31 (63.3%) were circumcised by a doctor at a health facility, 17 (30.6%) were circumcised by the traditional circumciser and 2 (6.1%) did not know who performed the MC procedure.

4.2.4. Comparison of circumcised and uncircumcised respondents by socio-demographic characteristics

In order to identify whether there is socio-demographic differences between circumcised and uncircumcised men, the study assessed whether demographic characteristics differed according to the MC status of the respondents in the study. Age, employment, marital status, level of education and religion were each compared by circumcision status and the differences were not statistically significant.

Table 4: MC status by socio-demographic characteristics

Socio-demographic characteristic	Circumcised (N=50)		Uncircumcised (N=270)		Total (N=320)		*p*-value
Age							
18-24	14	(14.7%)	80	(85.3%)	94	(29.7%)	0.9375
25-34	21	(15.0%)	119	(85.0%)	140	(43.8%)	
35-44	11	(20.4%)	43	(79.6%)	54	(16.9%)	
45-54	4	(16.7%)	20	(83.3%)	24	(7.5%)	
55+	0	(0)	8	(100%)	8	(2.5%)	
Employment							
Employed	15	(17.9%)	69	(82.1%)	84	(26.3%)	
Unemployed	35	(14.8%)	201	(85.2%)	236	(73.8%)	0.3101
Marital Status							
Married/Cohabitating	12	(15.0%)	68	(85.0%)	80	(25.0%)	0.5082
Un-married	38	(15.2%)	202	(74.8%)	240	(75.0%)	
Level of education							
Primary and lower	10	(11.6%)	76	(88.4%)	86	(26.9%)	
Secondary and higher	40	(17.1%)	194	(82.9%)	234	(73.1%)	0.1663
Religion							
Christians	49	(15.6%)	266	(84.4%)	315	(98.4%)	0.5748
Non-Christian	1	(20.0%)	4	(80.0%)	5	(1.6%)	

4.3.MC risk-related knowledge

Risk-related knowledge of respondents about MC, HIV/AIDS, STIs and cancers was determined by the respondents' general knowledge of MC and its risk associations to HIV infection, STIs and penile cancer as well as MC and penile hygiene.

4.3.1. Respondents knowledge of MC and related health aspects

Excluding the seven participants who did not respond to the knowledge questions, most respondents 241 (74.4%) had heard that MC reduces the man's risk of HIV infection. The majority, 214 (66%) had heard that MC reduces the man's risk of STIs. Three hundred and twenty four participants were asked if they had ever heard MC enhances penile hygiene. The majority of the respondents 259 (79.9%) said "yes". Eight (24.7%)

respondents had indicated heard that MC reduces the man's risk of penile cancer. Further, only 30 (9.3%) respondents had heard that complications can arise from MC (Table 5). After assigning scored points to the "Yes" responses regarding MC and the associated health aspects (HIV infection risk reduction, STI risk reduction, penile cancer risk reduction, penile hygiene), 172 (53, 1%) of the respondents had good knowledge whereas, 121 (37.3%) had a fair and 31(9.6%) had a poor knowledge (Table 6) .

Table 5: Respondents reported heard of MC and health aspects

Responses	Frequency (N=324)	Percentage (%=100)
MC reduces the risk of HIV infection		
Yes	241	74.4
No	83	25.6
MC reduces the risk of other STIs		
Yes	214	66.0
No	110	34.0
MC enhances penile hygiene		
Yes	259	79.9
No	65	20.1
MC reduces the risk of penile cancer		
Yes	80	24.7
No	244	75.3
Complications arises from MC		
Yes	30	9.3
No	294	90.7

4.3.2. General knowledge of male circumcision and health aspects by demographic characteristics

Table 6 shows a comparison of respondent's MC risk related knowledge according to socio-demographic characteristics. The analysis excludes the 7 participants who did not respond to knowledge and demographic questions. When age, marital status, religion, educational level and employment status was compared with the level of knowledge, people who are employed were likely to have a good knowledge of MC and related health aspects (p<0.003).

Table 6: MC risk related knowledge by socio-demographic characteristics.

Socio-demographic characteristic	Good knowledge (N=172)		Fair knowledge (N=121)		Poor knowledge (N=31)		Total (N=324)		*p*-value
	n	(%)	n	(%)	n	(%)	n	(%)	
Age group(years)									
18-24	41	(43.6)	44	(46.8)	9	(9.6)	94	(29.0)	0.415
25-34	79	(55.6)	51	(35.9)	12	(8.5)	142	(43.8)	
35-44	31	(32.1)	15	(28.3)	7	(13.2)	53	(16.4)	
45-54	15	(28.3)	8	(30.8)	3	(11.5)	26	(8.0)	
55+	6	(66.7)	3	(33.3)	0	(0)	9	(2.8)	
Employment									
Employed	57	(68.7)	19	(22.9)	7	(8.4)	83	(25.6)	0.003
Unemployed	115	(44.7)	102	(42.3)	24	(10.0)	241	(74.4)	
Marital status									
Married/Cohabitating	46	(56.1)	26	(31.7)	10	(12.2)	82	(25.3)	0.384
Unmarried	126	(52.1)	95	(39.3)	21	(8.7)	242	(74.7)	
Level of education									
Primary and lower	49	(57.0)	27	(31.4)	10	(11.6)	86	(26.5)	0.374
Secondary and higher	123	(51.7)	94	(39.5)	21	(8.8)	238	(73.5)	
Religion									
Christians	170	(53.3)	119	(37.3)	30	(9.4)	319	(98.5)	0.686
Non-Christian	2	(40.0)	2	(40.0)	1	(20.0)	5	(1.5)	

4.3.3. Reported complications of MC procedure

The most common complication of MC reported was infection (n=16, 45.7%), followed by bleeding 5 (14.3%). Other complications reported include tissue loss, 3 (8.6%); urinal retention, 1 (2.9%); incomplete circumcision, 1 (2.9%); and the remainder of 9 (25%) was other complications (Table 7).

Table 7: Reported complications of MC procedure

MC complications	N=35	%
Infection	16	(45.7)
Tissue loss	3	(8.6)
Urinary retention	1	(2.9)
Incomplete circumcision	1	(2.9)
Bleeding	5	(14.3)
Other complications	9	(25.7)

4.4.Attitudes and beliefs about male circumcision

4.4.1. Risk-related beliefs and attitudes of respondents about male circumcision

Table 8 presents risk related beliefs about MC by circumcision status. The analysis excludes the eleven participants who did not report their circumcision status. The results indicate that 194 (66.6%) of the respondents [37 circumcised and 157 uncircumcised] reported that it is easier for uncircumcised men to acquire HIV infection. A high proportion of uncircumcised respondents, 155 (57.4%) and a majority of circumcised respondents, 35 (70%) believed that it is easier for uncircumcised men to acquire STIs. Only 143 (44.7%) of the respondents (54% circumcised and 43% uncircumcised) believed than it is easier for uncircumcised to get penile cancer. However, uncircumcised respondents (24.1%) were much more likely than circumcised respondents (6%) to report that there is no difference between circumcision status and risk of penile cancer (*p*=

0.0335). Furthermore, the higher proportion of the respondents 267 (83.4%) reported that it is easier for a circumcised man to maintain good penile hygiene. Circumcised and uncircumcised respondents did not differ in their beliefs about the relationship between circumcision status and maintaining penile hygiene (84% versus. 83.3%, $p = 0.5339$).

Table 8: Risk-related beliefs and attitudes of respondents about male circumcision

Beliefs/Attitudes	**Circumcised N=50**		**Uncircumcised N=270**		**Total N=320**		***Chi-square p*-value**
	n	**(%)**	**n**	**(%)**	**n**	**(%)**	
Easier to get HIV when							
Circumcised	0	(0)	10	(3.7)	10	(3.1)	0.105
Uncircumcised	37	(74)	157	(58.1)	194	(66.6)	
No difference	12	(24)	83	(30.7)	95	(29.4)	
Do not know	1	(2)	20	(7.4)	21	(6.6)	
Easier to get other STIs when							
Circumcised	2	(4)	11	(4.1)	13	(4.1)	0.347
Uncircumcised	35	(70)	155	(57.4)	190	(59.4)	
No difference	11	(22)	79	(29.3)	90	(28.1)	
Do not know	2	(4)	25	(9.3)	27	(8.4)	
Easier to keep penile hygiene when							
Circumcised	42	(84)	225	(83.3)	267	(83.4)	0.533
Uncircumcised	0	(0)	7	(2.6)	7	(2.2)	
No difference	6	(12)	33	(12.2)	39	(12.2)	
Do not know	2	(4)	5	(1.9)	7	(2.2)	
Easier to get penile cancer when							
Circumcised	3	(6)	9	(3.3)	12	(3.8)	0.033
Uncircumcised	27	(54)	116	(43.0)	143	(44.7)	
No difference	3	(6)	65	(24.1)	68	(21.3)	
Do not know	17	(34)	80	(29.6)	97	(30.3)	

4.4.2. Other beliefs about male circumcision

Table 9 shows other beliefs about MC among all the respondents. Two hundred (60.4%) respondents disagreed that circumcised men have more sexual feelings than

uncircumcised men. Only 134 (39%) respondents agreed that circumcised men enjoy sex more than uncircumcised men and 139 (42%) respondents agreed that women prefer men who are circumcised. Almost all the respondents, 289 (87.3%) disagreed that circumcised men can safely have sex without using a condom and do not get infected with HIV. Two third of the respondents, 261 (78.9%) disagreed that MC proves manhood, and 264 (79.8%) disagreed that MC is an old practice in their community and does not need to be re-introduced. Moreover, 264 (74%) respondents agreed that it is very important for all males to be circumcised irrespective of their ages.

Table 9: Other beliefs about male circumcision (N=331)

Beliefs/Perceptions	Agree		Disagree		Do not know		Unspecified	
	n	(%)	n	(%)	n	(%)	n	(%)
Circumcised men have more sexual feelings then uncircumcised men	64	(19.3)	200	(60.4)	61	(18.4)	6	(1.8)
Circumcised men enjoy sex more than uncircumcised men	131	(39.6)	150	(45.3)	44	(13.3)	6	(1.8)
Women prefer men who are circumcised	139	(42.0)	129	(39.0)	56	(16.9)	7	(2.1)
Circumcised men can safely have sex without using a condom and don't get infected with HIV.	25	(7.6)	289	(87.3)	11	(3.3)	6	(1.8)
The MC procedure pain is unbearable	112	(33.8)	142	(42.9)	71	(21.5)	6	(1.8)
The tip of the penis needs to be covered with a foreskin	80	(24.2)	217	(65.6)	28	(8.5)	6	(1.8)
It is very important for all males to be circumcised irrespective of their age	245	(74.0)	70	(21.1)	9	(2.7)	7	(2.1)
MC proves manhood	43	(13.0)	261	(78.9)	21	(6.3)	6	(1.8)
MC is an old practices in our community and don't need to be re-introduced.	47	(14.2)	264	(79.8)	14	(4.2)	6	(1.8)

4.5.Acceptability of male circumcision

4.5.1. Respondents willing to be safely circumcised and at low cost.

Figure 1 indicates that among two hundred and seventy uncircumcised respondents, 204 (75.5%) reported that they would like to be safely circumcised if circumcision reduces the chance of HIV infections and at lower cost.

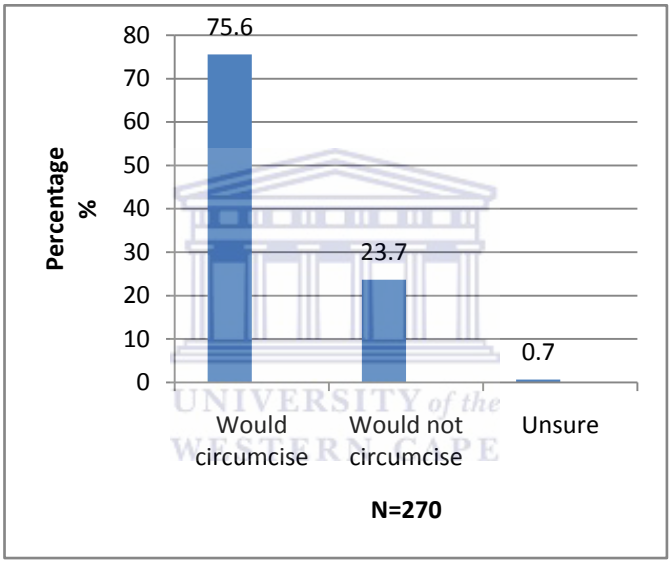

Figure 1: Respondents willing to be safely circumcised and at lower cost (N=270)

4.5.2. Willingness of MCs by demographic characteristics

Table 10 shows a comparison of respondents who either would or would not want to circumcise according to socio-demographic characteristics. The analysis excludes the two respondents who were unsure. When compared, men were more willing to be circumcised if they are they were 25-34 years, 83.9% (p<0.001), unmarried, 82.1% (p<0.001) and had a secondary education level or higher, 79.8 %(p<0.011). No other

socio-demographic characteristics were found to be statistical associated with uncircumcised men's willingness to be circumcised.

Table 10: Male circumcision preferences according to demographic characteristics

Socio-demographic characteristic	Would circumcise (N=204)		Would not circumcise (N=64)		Total (N=268)		*p*-value
	n	(%)	n	(%)	n	(%)	
Age group(years)							
18-24	63	(78.8)	17	(21.3)	80	(29.9)	0.000
25-34	99	(83.9)	19	(16.1)	118	(44.0)	
35-44	33	(78.6)	9	(21.4)	42	(15.7)	
45-54	6	(30)	14	(70)	20	(7.5)	
55+	3	(37.5)	5	(62.5)	8	(3.0)	
Employment							
Employed	51	(75.0)	17	(25.0)	68	(25.4)	
Unemployed	153	(76.5)	47	(23.5)	200	(74.6)	0.802
Marital status							
Married/Cohabitating	39	(58.2)	28	(41.8)	67	(25.0)	0.000
Unmarried	165	(82.1)	36	(17.9)	201	(75.0)	
Level of education							
Primary and lower	50	(66.6)	25	(33.3)	75	(28.0)	
Secondary and higher	154	(79.8)	39	(20.2)	193	(72.0)	0.011
Religion							
Christians	201	(76.1)	63	(23.9)	264	(98.5)	0.957
Non-Christian	3	(75.0)	1	(25.0)	4	(1.5)	

4.5.3. Respondents who prefer their son to be circumcised

Almost all the respondents, 302 (94.4%) prefer their sons or any young males they know to be circumcised. Respondents, who are circumcised, indicated a higher level of preference than uncircumcised respondents (98% versus. 93.7%), $p < 0.05$(Table 11).

4.5.4. Respondents' age preferences of male circumcision

The majority of respondents, 132 (39.9%) preferred "less than 1 year" as the ideal age of performing MC, while 89 (26.9%) preferred "1-13 years". Only 11 (3.3%), respondents preferred adult (>20 years) as the ideal age of performing MC.

Table 11: Respondents who prefer their son to be circumcised

Response	Circumcised (N=50)		Uncircumcised (N=270)		Total (N=320)	
	n	%	n	%	n	%
Yes	49	(98.0%)	253	(93.7)	302	(94.4)
No	0	(0)	17	(6.3)	17	(5.3)
Unsure	1	(2%)	0	(0)	1	(0.3)

***p*< 0.0134**

4.5.5. Preferred setting to perform male circumcision

Three hundred and four respondents (91.8%) preferred MC to be performed at a health facility by a medical staff. Only 1 (0.9%), respondent preferred MC to be performed outside the health facility by a traditional circumciser and 16 (4.8%) had no preferences.

4.5.6. Preferred cost of MC procedure when done at the public health facility.

Two hundred and six (64.8%) respondents preferred the MC procedure to be performed for free, 83 (26.1%) respondents preferred the procedure to cost "less than N$ 10, while 19 (6%) respondents preferred the cost to be more than N$ 20.

4.6.Barriers to male circumcision

A total of sixty four (23.7%) respondents who preferred to remain uncircumcised, were further asked to indicate the primary reason for not wanting to be circumcised. Sixteen respondents (25%) indicated that "it is against their tradition to circumcise", another 16

(25%) respondents mentioned fear of pain, while 12 respondents (19%) mentioned fear of MC procedure complication. The remainder 2 (3.1%) and 12 (18.8%) indicated cost and other reasons, respectively (Table 12).

Table 12: Respondents' primary reasons for not wanting to be circumcised

	Frequency	Percentage
Against the tradition	16	25
Fear of complications	12	18.8
Cost	2	3.1
Fear of pain	16	25
No reason stated	6	9.4
Other reasons	12	18.8
Total	**64**	**100**

In conclusion, this chapter presented the socio-demographic characteristics of participants. The prevalence of MC, knowledge of MC, attitudes of MC and willingness of MC were presented and were all compared by socio-demographic to determine whether there is an associations. Barriers to MC acceptance were identified and presented. The next chapter will discuss the findings and highlights the important facts in order to draw conclusions and to make recommendations.

CHAPTER 5: DISCUSSION

In this chapter the results of the study will be discussed in relation to the study aim, objectives and review of the literature. The study provided information on knowledge, attitudes and practices of MC and identified barriers to MC among adult males who attended the Onandjokwe District Hospital VCT in a large traditionally non-circumcising ethnic group, the Oshiwambo tribes of Northern Namibia.

5.1.Prevalence of male circumcision

The prevalence of MC of men aged 18–65 years in the study area was relatively low (15.6%). The study concurs with the regional results of the Demographic and Health Survey of 2006, which indicated the MC prevalence of 14% in the same region (MOHSS, 2008c). This is an indication that MC is not commonly practiced in the area, which is dominated by the Oshiwambo tribes.

Although male circumcision practice was said to be practiced among Oshiwambo tribes as part of initiation rituals over 100 years ago (Salokoski, 2006), the discontinuation was apparent because of the low prevalence. Social developments such as the development of combined kingship and the introduction of Christianity by the arrival of Europeans in Namibia may have contributed to the discontinuation of the practice of MC among Oshiwambo speaking people (Iipinge & Shitundeni, 1999; Salokoski, 2006). Although the vast majority of men in the study area are still not circumcised, the study data and evidence from a study in Tanzania (Nnko *et al.,* 2001) suggest that the proportion of

circumcised men may increase in the coming years following the MC and HIV prevention intervention programs.

The result of the current study revealed that circumcision is performed at young ages (below 13 years) among the study population and mostly for health related reasons. This result contradicts reports by Salokoski (2006), that MC within the Oshiwambo tribes is said to have been practiced only on adult men for initiation from child to adulthood. This may partially suggest a long shifting of MC practices from traditional practices to a health-related practice among this study group. No literature was found to establish the actual reason of circumcision practice among the general population of Oshiwambo tribes. Even the reason of the actual historical practices of the Herero and the Himba tribes in the central regions of Namibia who practice MC to date is not known (MOHSS, 2008d).

The findings from studies in traditionally non-circumcised societies in Tanzania, Zimbabwe and South Africa indicated that factors such as higher levels of education, living in urban areas and marital status were associated with higher rates of circumcision among non-circumcising societies (Halperin *et al.,* 2005; Nnko *et al.,* 2001; Rain-Taljaard *et al.,* 2003). However, the socio-economic status such as marital status, employment, and education were not found to influence the rate of MC in the current study.

5.2.Knowledge, beliefs and attitudes of male circumcision

The results of the study confirmed the good knowledge of MC among the study group, in spite of the fact that is not commonly practiced. Although the majority (85%) of the participants was not circumcised, almost all the participants (98%) were aware of MC practice. The results are similar to those of studies done in Botswana (Kebaabetswe *et al.*, 2003) and Zimbabwe (Halperin *et al*., 2005). More than 70% of the respondents had heard that MC reduces the risk of acquiring HIV infection and more than 60% had heard that MC reduces the risk of acquiring STI is indicating that there is available information about the health benefits of MC among this study group. The awareness of MC may be attributed to the recent announcement of the South Africa, Kenya and Uganda RCTs on MC and HIV infection association (Auvert *et al.,* 2005; Bailey *et al.,* 2007; Gray *et al*., 2007) and the recent announcement by the Namibian government to embark on the introduction of safe MC to the public.

The association between MC and health benefits (reduced risk of HIV and STI, penile hygiene enhancement) was prevalent in this study area. Despite residing in the area where circumcision is little practiced and despite being uncircumcised, the majority of men (79.7%) associate MC with better penile hygiene, even among those men who prefer to remain uncircumcised. Equally, this study revealed that a high proportion of men associate circumcision with a reduced risk of acquiring STIs and HIV. These results concur with those of other studies in Africa where circumcision is not a traditional practice including Botswana (Kebaabetswe *et al.,* 2003), South Africa (Lagarde, 2003;

Rain-Taljaard *et al.*, 2003; Scott *et al.*, 2005), Zimbabwe (Halperin *et al.*, 2005) and Kenya (Mattson *et al.*, 2005).

Similar to other studies in non-circumcising societies in South Africa, Korea and Botswana (Kebaabetswe *et al*., 2003; Ku *et al.*, 2003; Lagarde *et al.*, 2003), circumcised men in this study expressed more positive beliefs about circumcision and the health benefits than uncircumcised men. Compared to 58.1% of uncircumcised men, 74% of circumcised men reported that it is easier to acquire HIV infection if the male is uncircumcised. Even though a higher proportion of participating men expressed a belief that circumcision reduces the chance of getting HIV infections, 7.6% of the 331 respondents agreed that circumcised men can safely have sex without using a condom and do not get infected with HIV. These results suggest the perception of false HIV safety, as some people may believe that MC provides complete protection. Lagarde *et al*. (2003) and Mattson *et al.* (2005) found similar results in South Africa and Kenya, respectively. Therefore, MC intervention programs must stress that circumcision does not provide a complete protection from HIV/STIs and should not be considered a substitute for other prevention methods.

The results gave an indication that circumcision influences sexual performance for men themselves and for their female partner. About 39.6% of the respondents agreed that circumcised men enjoy sex more than uncircumcised men, while 42% of the respondents agreed that women prefer men who are circumcised. Although the study could not establish if those who were circumcised were circumcised to attain sexual pressure, it has

been demonstrated in some societies that beliefs around sexual pleasure is more influential (Mattson *et al.,* 2005; Scott *et al.,* 2005). In Kenya, more than half of the uncircumcised men (55%) believed that women enjoy sex more with circumcised men, and this belief is a strong predictor of preference to be circumcised (Mattson *et al*., 2005). Therefore, it is worthwhile to note the conclusion that a MC promotion campaign within this study population might have more impact if it were to promote 'better sex' over 'safer sex' (Scott *et al.,* 2005). It is unlikely that men in Onandjokwe district may decide to undergone the procedure because of the belief that MC enhances sexual pleasure.

5.3.Acceptability of male circumcision

Male circumcision appears to be highly acceptable among adult males presenting for VCT at Onandjokwe hospital. Although 84.4% of men in the study population are currently uncircumcised, 75.6% of respondents indicated after being informed of the risks and benefits of male circumcision that they would like to safely circumcise if the procedure was said to lower the risk of HIV and at lower cost. Results of this study are consistent with other acceptability studies in non-circumcising communities of sub-Saharan Africa such as South Africa (Lagarde *et al*., 2003), Botswana (Kebaabetswe *et al.,* 2003) and Kenya (Mattson *et al*., 2005), thus suggesting that MC may generally be more acceptable. Surprisingly, acceptability in men in the 45 years and above age-group was very low. They were the least likely to be willing to be circumcised with only 32.1% of them indicating that they would like to undergone MC if it is offered to them. The result suggests that if MC would be implemented in the 18-45 age groups, it will be more likely to be accepted.

The levels of educational and marital status also influence the decision to circumcise among this community, as more educated and unmarried respondents were more likely to willing to circumcise. These results agree with other studies in Zimbabwe and South Africa where men were more willing to be circumcised if they have higher levels of education (Halperin *et al*., 2005; Scott *et al.,* 2005) and are unmarried (Halperin *et al*., 2005; Scott *et al.*, 2005).

Corresponding with the study by Kebaabetswe *et al*. (2003), Lukobo & Bailey (2007) and Scott *et al.* (2005), almost all the respondents (91.8%) in the current study prefer the circumcision procedure to be carried out at the hospital. Although, this study has not established the reasons behind their preferences, Westercamp and Bailey (2007) in their review reported that, individuals in non-circumcising communities had reported fear of infection, bleeding and excessive pain when circumcision is performed by traditional circumcisers. It is also important to note that only 9% of the respondents in this study are aware of complications arising from MC. However, this study did not established whether the reported complications were linked to circumcision performed at a medical or traditional setting.

One of the main findings of this study is that most of the participants prefer MC to be performed during the infancy period (less than 1 year). Similar results were found from the study in non-circumcising community in Botswana (Kebaabetswe *et al.,* 2003). This study found that 64 (23.7%) of men in Onandjokwe district were not willing to undergone the procedure, even if it could possibly reduce the risk of HIV infection or was

safe and affordable. To establish the perceived barriers of MC in this study, the respondents were asked further to report the reasons for not wanting to be circumcised. Despite few respondents who mentioned tradition as a reason not to be circumcised, most participants mentioned the far of pain associated with the procedure and fear of complications related to the procedure. These results correspond with those from studies carried out in South African (Scott *et al.,* 2005) and Kenya (Mattson *et al*., 2005).

Because MC is less common in the Onandjokwe district community, some men held the belief that it is against their tradition to circumcise. This is similar to the results of Pappas-DeLuca *et al.* (2008), in which some of the Oshiwambo speaking respondents expressed a concern that being circumcised is adopting the culture of other societies, thus preventing them from taking the procedure. Of concern is that 28% of the participants indicated "other reasons" or gave no response to the question. However, the analysis could not unpack the "other reasons not to circumcise" mentioned by these participants.

5.4.Study limitations

There are several limitations of this study. Firstly, the focus of the study on users of health VCT services limits the external validity (generalisability) of the study to non-users of the health facility. This group however represents an important proportion of the general population as they indicate those who have so far been met by available HIV prevention programs.

Secondly, the time-delimited sampling procedure could have led to selection bias in the study. Given that this was a facility-based study, only those who made use of the Onandjokwe VCT centre in the period of the study could have been selected. However, the relatively large sample size and excellent response rate was sufficient to minimize the possibility of selection bias in this study.

Thirdly, the study relied on self reports on circumcision status amongst respondents. However, 4-7% self-reports on circumcision have not been found to be precise (Risser, Risser, Eissa, Cromwell *et al.,* 2004). Since no clinical examinations were performed during the interview to confirm the circumcision status, results on the circumcision prevalence rate reported in this study should be interpreted cautiously.

Fourthly, the study may also have recall bias as circumcised participants may not have accurately recalled their precise ages when they were circumcised, who performed the circumcision and the setting where circumcision took place. Such information is not routinely recorded and as such investigations have to rely on interviews to collect them.

The limitation identified here however, are very unlikely to bear on the value of the study findings of providing information on the KABs of adult male VCT attendees on MC as a preventive strategy for HIV transmission.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1.Conclusion

This study aimed to assess the knowledge, attitudes and practices of MC as an HIV prevention intervention among adult males attending VCT at the Onandjokwe District Hospital. A high level of knowledge of MC was found; particularly its potential to reduce the risk of HIV infection, STIs and enhance penile hygiene exists among VCT attendees in Onandjokwe District Hospital. The majority of the respondents reported that, it is easier for uncircumcised men to acquire HIV infection, STIs and that it is easier for circumcised men to enhance penile hygiene. MC will most likely be accepted in this study area especially when implemented to reduce the risk of HIV infection. Almost all respondents would want MC to be performed in a hospital. Despite the high acceptability of MC, barriers to effective implementation still exist. These barriers include the fear of pain associated with the procedure, the fear of complications and the belief that MC is against the culture/tradition of the Oshiwambo tribes. The study finding would be useful to health policy makers in the design of community health education programs of MC implementation.

6.2. Recommendations

From this study, it is recommended that:

- A behaviour change communication campaign for both women and men would help strengthen the facilitators of MC and identify the perceived barriers to MC.

This can be done through community discussion approaches aiming to change some of negative perceptions mentioned in this study.

- Medical male circumcision should be encouraged in order to minimize the risk of complications that may arise from traditional male circumcision procedure.
- To promote the uptake of MC, there is a need to train medical personnel involved in performing MC, as well as increase the collaboration between the traditional and medical circumcisers to increase the level of quality of MC services, thus increase acceptability
- There is need to design an Information, Education and Communication (IEC) strategy to achieve an appropriate promotion of MC as an HIV prevention strategy, with proper explanation that MC is not a total protective intervention for HIV transmission. The IEC should address the role of MC as an additional to several HIV prevention strategies that, including the practice of safer sex (use of condom, being faithful and sexual abstinence).
- Information regarding MC and HIV should be made available, accessible and acceptable to the public with a focus on males and their partners. It is also important to improve/initiate the training availability for medical and traditional circumcisers and information availability to all males and their partners.

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APPENDICES

Appendix A: Participant information sheet

UNIVERSITY OF THE WESTERN CAPE
School of Public Health

Private Bag X17 ● **BELLVILLE** ● 7535 ● South Africa
Tel: 021- 959 2809, Fax: 021- 959 2872

April 2009

Dear Participant

Thank you for your willingness to hear about this study. My name is _____and I work for Onandjokwe VCT Department. I am interviewing men on behalf of Terthu Ngodji who is a student at the University of the Western Cape. She is contacting a piece of study in Onandjokwe Hospital in which you are a potential participant. This is a requirement for the Masters Degree in Public Health which she is busy completing.

Title of the research
Knowledge, Attitudes and Practices of Male Circumcision for HIV Prevention among

Voluntary Counselling and Testing clients in Onandjokwe district hospital, Namibia.

Purpose of the study
The purpose of this study is to provide background information on knowledge, attitudes and perceptions of MC as an additional HIV prevention strategy as well as the barriers that may hinder its implementation. The results of the survey can provide baseline information that will assist in program planning for HIV/AIDS prevention as well as identification of implementation gaps and development of training manuals, policies and guidelines.

What is your involvement?
You will be asked to answer questions and provide your demographic information such as, age, marital status, religion and level of education. You will also be asked to provide your circumcision status, your knowledge, perception, attitudes about MC and what you think is the barriers to MC. The whole interview will take 15 to 20 minutes of you time.

How will you benefit from the study?
You will benefit from this study by providing essential information that will help in introducing appropriate intervention to improve the future health of the general population.

Any risk involved?
Some question may make you feel embarrassed and uncomfortable.

Confidentiality
You name will be kept confidential at all times. I will keep all records of your participation, including a signed consent form which I will need from you, should you agreed to participate in this study, locked at all times and destroy them when the research is completed.

Can you withdraw from the study?
Your participation is totally voluntarily. If you choose not to participate, to withdraw, or not to answer a specific question, you can do that without providing any reason.

Informed Consent
What follows now is an informed consent to participate in this study, before I proceed with an interview. You will be able to review the consent form and then decide to or not to participate.

Further questions
Should you have further question or wish to know more, she can be contacted at the following details:

Terthu Kutupu Ngodji
Student Number: 2522491
Mobile phone: 0811440045
E-mail: terthungodji@yahoo.com
Telephone at work: 065-248351
Fax number: 065-248389

She is also accountable to Jessica Rebert, my supervisor at University of the Western Cape. Her contact details are +277 21 959 3563(office) +277 71 207 8101(mobile)

Or c/o The School Of Public Health
Fax: +27 21 959 2872
By e-mail: jrebert@uwc.ac.za
WEBSITE: www.uwc.ac.za/comhealth/soph

Appendix B: CONSENT FORM

UNIVERSITY OF THE WESTERN CAPE

School of Public Health

Private Bag X17 ● **BELLVILLE** ● 7535 ● South Africa
Tel: 021- 959 2809, Fax: 021- 959 2872

April 2009

Title of Research Project:

Knowledge, Attitudes and Practices of MC for HIV prevention among Voluntary Counseling and Testing clients in Onandjokwe district hospital, Namibia.

This study has been described to me in language that I understand and I freely and voluntarily agree to participate. I understand that my identity will not be disclosed and the consent I am going to give will be kept confidential. I may choose to withdraw or not answer specific questions in this study without giving a reason at any time and this will not negatively affect me in any way.

*Participant's name*_____*Date*_____

*Participant's signature*_____*Date*_____

*Interviewer's name*_____*Date*_____

*Interviewer's signature*_____*Date*_____

Appendix C: Participant's Questionnaire and Answer sheet - English

Study Title: Knowledge, Attitude and Practices of MC for HIV Prevention among Voluntary Counseling and Testing Clients in Onandjokwe District Hospital, Namibia.

(For clarification of meanings and words, all interviews will be conducted in Oshiwambo. Please use the Oshiwambo version of the questions and answers)

100 Interview Number ☐☐☐☐☐☐☐☐

101 Date of the interview *(DD-MM-YY)* ☐☐ - ☐☐- ☐☐

102 Start time: ***(****24 hr clock, e.g. 16:30)* _____:_____

(After the participants information sheet and signed consent from the participant start the interview

103 May I ask you some questions?

Yes…….1 ***(****Go to Q201)* **No**……2

Ok, I understand and it is perfectly fine. There's no problem. Thank you very much for your time.

Demographic Information			
No	**Questions and filters**	**Coding Categories**	**Enter answer code**
Q201	How old were you at your last birth day?	Age in complete years Don't know……88	
(If younger than 18 years at his last birthday, please thank the participant for their time and do not continue the interview. Keep the questionnaire even if it is not complete.)			
Q202	What is the main language spoken in your home?***(Read responses to the participant and choose one)***	Oshiwambo……1 English……2 Afrikaans……3 Other(Specify)……4	
Q203	What is your married status? *(Read responses to the participant and choose one)*	Single, never married……1 Married……2 Living together, not married……3 Divorced or Separated ……4 Widowed ……5	

Q204	What is the highest level of education you have completed?	Did not attend any formal education.....1 Primary(up to Grade 7).....2 Secondary(up to Grade 12).....3 Tertiary level and above.....4 Don't know.....88	☐
Q205	What is your religion?	Roman Catholic.....1 Anglican.....2 Lutheran.....3 No religion.....4 Other _____.....5 Don't know 88	
Q206	Employment status	Unemployed.....1 Employed.....2 Current student/learner.....3	
Knowledge, Attitudes and Practices of MC and HIV Now I am going to ask you some questions about your knowledge of MC and its associated risks and benefits.			
Q301	Have you ever heard of MC? ***(if the participant never heard of MC, explain to him what MC is and continue with Q401)***	Yes.....1 No...**SKIP TO Q401**.....2	
Q302	Have you ever heard that MC reduce the risk of HIV infection?	Yes.....1 No...**SKIP TO Q401**.....2	
Q303	Have you ever heard that MC reduce the risk of other STIs?	Yes.....1 No...**SKIP TO Q401**.....2	
Q304	Have you ever heard that MC helps improve penile hygiene?	Yes.....1 No...**SKIP TO Q401**.....2	
Q305	Have you ever heard that MC reduces risk of penile cancer?	Yes.....1 No...**SKIP TO Q401**.....2	
Q306	Have you ever heard of any complications arises from MC?	Yes.....1 No.....**SKIP TO Q401**.....2	
Q307	Can you mention any complications of MC procedures *(Do NOT read list. Choose ALL that are mentioned.)*	A) Bleeding .....1 B) Infection .....2 C) Incomplete circumcision.....3 D) Urinary retention .....4 E) Tissue loss .....5 F) Other(specify_____.....6	A ☐ B ☐ C ☐ D ☐ E ☐ F ☐
Now, tell me what do you think about circumcised and uncircumcised men based on the following statements *(Read a statement and a possible answer and choose one)*			
Q401	It is easier to get HIV when a male is	Circumcised.....1 Uncircumcised.....2 No difference.....3 Don't know.....88	

Q402	It is easier to STD if a male is	Circumcised.....1 Uncircumcised.....2 No difference.....3 Don't know.....88	
Q403	It is easier to maintain penile hygiene when a male is	Circumcised.....1 Uncircumcised.....2 No difference.....3 Don't know.....88	
Q404	It is easier to get penile cancer if a male is	Circumcised.....1 Uncircumcised.....2 No difference.....3 Don't know.....88	
I would now like to read some statements to you. For each, indicate whether you agree or disagree with the statement. If you do not know what to say, just tell me that you do not know *(Read a statement and choose one)*			
Q501	Circumcised men have more sexual feelings then uncircumcised men	Agree.....1 Disagree.....2 Don't know.....88	
Q502	Circumcised men enjoy sex more then uncircumcised men	Agree.....1 Disagree.....2 Don't know.....88	
Q503	Women prefer men who are circumcised	Agree.....1 Disagree.....2 Don't know.....88	
Q504	Circumcised men can safely have sex without using a condom and don't get infected with HIV.	Agree.....1 Disagree.....2 Don't know.....88	
Q505	The MC procedure pain is unbearable	Agree.....1 Disagree.....2 Don't know.....88	
Q506	The tip of the penis needs to be covered with a foreskin	Agree.....1 Disagree.....2 Don't know.....88	
Q507	It is very imprtant for all males irrespective of their age to be crcumcised	Agree.....1 Disagree.....2Do n't know.....88	
Q508	MC proves manhood	Agree.....1 Disagree.....2Do n't know.....88	
Q509	MC is an old practices in our community and dont need to be re-introduced.	Agree.....1 Disagree.....2Do n't know.....88	

Please read the following statement to the respondent*:*

Three studies conducted in Africa demostrated that that MC is an important and effective means of reducing the risk of HIV infection. In March 2007, in the international consultation held from 6-8 March 2007 in Montreaux, Switzerland, the World Health Organization (WHO) and UNAIDS officially recognized MC as an additional important intervention to reduce the risk of heterosexually acquired HIV infection. Based on the recommendation by WHO and UNADS, the governmentof Namibia is considering recommending that males be offered circumcision to reduce the chances of the men becoming infected with HIV and other STIs. In Oshikoto region which mainly consists of Oshiwambo speaking people, only 8.3% of adult males are believed to be circumcised. As an Oshiwambo male Namibian living in this district, I would like to get your opinions regarding the acceptability and the challenges that would have to be addressed to promote MC and make it available to a large number of males in this District.

Q601	Based on the statement above, would you choose to be circumcised, if it said to be reducing the risk of HIV infection? *(Read a statement and a possible answer and choose one)*	Yes, I will definitely do.....1 No I will remain uncircumcised....2 Already circumcised.....3 Don't know.....88	
Q602	What if it is offered free of charge, will you choose to be circumcised?	Yes, I will definitely do.....1 No I will remain uncircumcised....2 Already circumcised.....3 Don't know.....88	
Q603	Given that, there is no or minimal complications, will you choose to be circumcised, *(Read a statement and a possible answer and choose one)*	Yes, I will definitely do.....1 No I will remain uncircumcised....2 Already circumcised.....3 Don't know.....88	
Q604	Would you recommend circumcision for your son or any young male you know?	Yes, I will definitely do.....1 No .....2 Don't know.....88	
Q605	In your opinion what is the ideal age of performing MC *(Read a statement and a possible answer and choose one)*	Infant <1 year.....1 Child (1– 13 years).....2 Adolescent(14-19 years).....3 Adult >20 years.....4 No preferences.....5 Don't know.....88	
Q606	In your opinion at who is the ideal person to perform MC *(Read a statement and a possible answer and choose one)*	Medical doctors.....1 Nurses.....2 Traditional circumcisers.....3 No preferences.....4 Other(Specify).....5 Don't know.....88	
Q607	In your opinion at what is the ideal place of performing MC *(Read a statement and a possible answer and choose one)*	Health facilities(state/Private).....1 At home.....2 No preferences.....3 Other(Specify).....4 Don't know.....88	

Q608	How much do you think is an ideal cost of MC procedure?	Free.....1 Less than N$6.00.....2 Between N$6-N$10.....3 Between N$11-N$20.....4 More than N$20.....5 No preferences.....6 Don't know.....88	
Barriers to MC Now, I would like to get your opinion on what you think are the barriers to MC. If you don't know, just indicate that to me.			
Q701	***For all the participants who choose not to be circumcised, ask this question)*** You choose not to be circumcised, what is your primary reason?	It is costly..... 1 It is against my religion..... 2 It is against my tradition..... 3 fear of complications..... 4 It is painful.....5 No reason.....6 Other(specify).....7	
Circumcision Status Lastly I would like to ask you about your circumcision status			
Q801	***If you noted the circumcision status from the previous questions, don't ask the question again but rather just confirm with the participant)*** Are you circumcised?	Yes.....1 No(end the interview) ..... 2 Don't know(end the interview) 88	
Q802	At what age were you circumcised?	Infant <1 year.....1 Child (1– 13 years) ..... 2 Adolescent(14-19 years) ..... 3 Adult >20 years..... 4 Don't know.....88	
Q803	What was the reason for circumcision?	Traditional.....1 Religious.....2 Medical.....3 Other.....(Specify)..... 4 Don't know.....88	
Q804	Who performed the circumcision procedure?	Medical staff (Nurse/Doctor/other) ..... 1 Traditional circumciser..... 2 Other(Specify)..... 4 Don't know..... 6	
Q805	Where did the circumcision take place	Health facility(state/Private)..... 1 At home..... 2 Other (Specify).. 3 Don't know..... 88	

Q806 End Time: ***(****24 hr clock, e.g. 16:30)* _____ **:** _____

Thank you for your participation in this study. Do you have any questions about the survey or any comments you would like to make?