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THE PERCEPTIONS AND ATTITUDES OF DOCTORS AND MIDWIVES TOWARDS NEONATAL MALE CIRCUMCISION: A STUDY IN FOUR MATERNITY UNITS IN SWAZILAND 2012

By

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A research report submitted to the School of Public Health, University of the Witwatersrand in partial fulfillment of the requirements for the Degree of Master of Public Health with the University of the Witwatersrand, Johannesburg.

26th February, 2015

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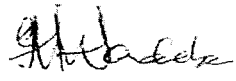

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ABSTRACT

Background:

Male circumcision (MC) is increasingly being considered as a tool to reduce the transmission of Human Immunodeficiency Virus (HIV). The relentless spread of the HIV epidemic (a prevalence of 26% for the reproductive age group 15 – 49 years, in the year 2006/7) in Swaziland, led to the adoption of a MC policy following the recommendation of the World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS). Despite considerable national efforts, the country has been unable to reach national targets for the number of neonates who are circumcised within five days of birth.

Purpose:

The low level of NMCs performed in Swaziland required a study to explore possible fundamental reasons for the low uptake of this service, if this service was to serve its intended purpose of the reduction of new HIV infections. The purpose of the study was to investigate the knowledge, perceptions and attitudes of doctors and midwives in the maternity wards of four hospitals in Swaziland towards neonatal male circumcision (NMC). This was an attempt to determine if the failure to reach the national NMC targets could be due to the negative perceptions and attitudes of health care workers, in doctors and midwives.

Moreover, there is relatively little published documentation on the perceptions and attitudes of doctors and midwives towards NMC.

Methods:

A cross-sectional descriptive study using a structured self-administered questionnaire was conducted to collect data from seven doctors and sixty midwives at four hospitals in Swaziland, including the national referral hospital, in 2012.

The questionnaire collected data on the socio-demographic profile of the respondents and their perceptions about and attitude towards NMC.

Results:

The respondents were predominantly female (88.1%) and midwives (89.6%). Swazi citizens formed 77.6% of the study population and 41.8% had spent their childhood in a rural area. The majority, 80.6% (n=50) of the respondents reported to have been working in maternity unit, for a period between one to five years and most of them (85.1%) had not been trained to perform NMC.

Overall, doctors and midwives had positive perceptions about and attitudes towards NMC. There was no statistically significant relationship between perceptions and attitudes towards NMC and most of the socio-demographic characteristics.

However, there was a statistically significant association between number of years qualified as a doctor or midwife and perception of NMC (p=0.053), meaning, the more the years qualified, the more positive was the perception towards NMC. There was also a statistically significant association between the number of years working in the maternity unit and attitude towards NMC (p=0.031), meaning the longer time spent working in the maternity unit; the more positive was the attitude towards NMC.

Conclusion and recommendation:

Even though the majority of the study respondents were not trained on NMC, they demonstrated positive perceptions and attitudes towards NMC. It was evident, from this study that, doctors' and midwives' perceptions and attitude towards NMC were not contributory towards the low neonatal circumcision service coverage in the country.

Further studies are recommended to ascertain the reason why the country could not meet the intended circumcision targets.

DEFINITION OF TERMS

Attitudes. A positive or negative evaluation of people, objects, events, activities, ideas or just about anything in the environment (Pickens, 2005)

Doctor. A professional who practices medicine, which is concerned with promoting, maintaining or restoring human health through the study, diagnosis, and treatment of disease, injury, and other physical and mental impairments, who is registered with the Swaziland Medical and Dental Council.

Midwife. A health care professional that provides offer care to childbearing women during pregnancy, labour and birth, during the postpartum period, and between pregnancies, who is registered with the Swaziland Nursing Council.

Neonatal male circumcision. Circumcision of male neonates within five days of birth.

Perceptions. The synthesizing, organizing and interpreting sensory information in a meaningful way (Cherry, 2010)

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Lastly, my sincere gratitude goes to my family for their endless love and support, tolerance and understanding throughout this tough experience.

ACRONYMS

AIDS	:	Acquired Immunodeficiency Syndrome
ANOVA	:	Analysis of variance
DHS	:	Demographic Health Surveys
FLAS	:	Family Life Association of Swaziland
HIV	:	Human Immunodeficiency Virus
HPV	:	Human Papilloma Virus
HTC	:	HIV Testing and Counselling
IQR	:	Interquartile range
MC	:	Male Circumcision
MCP	:	Multiple Concurrent Partnerships
NERCHA	:	National Emergency Response Council on HIV/AIDS
NMC	:	Neonatal Male Circumcision
NSF	:	National Strategic Framework
PEPFAR	:	President's Emergency Fund for AIDS Response
PMTCT	:	Prevention of Mother to Child Transmission
SAM	:	Service Availability Mapping
SDHS	:	Swaziland Demographic Health Survey
STIs	:	Sexually Transmitted Infections
UNAIDS	:	Joint United Nations Programme on HIV/AIDS
UNICEF	:	United Nations Children's Fund
UTIs	:	Urinary Tract Infections
USAID	:	United States Agency for International Development
WHO	:	World Health Organization

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CHAPTER ONE: BACKGROUND INFORMATION ON THE RESEARCH STUDY

1. Introduction

The first chapter will provide the background information to the research study and will also include background information on the male circumcision (MC) programme and Human Immunodeficiency Virus (HIV) epidemic in Swaziland. The problem statement, the aim and objectives of the study as well as the justification for the study are also provided.

1.1 Background

Globally, male circumcision is one of the oldest and most common surgical procedures and can be performed for social, cultural and medical reasons. Circumcision is done at a wide range of ages and neonatal and child male circumcision is routinely practiced in some parts of the world. It is estimated that one in three males worldwide are circumcised (UNAIDS/WHO, 2007).

Recent findings from research studies have documented persuasive substantiation that MC is associated with a reduced risk of contracting HIV infection. Randomized controlled trials have shown that adult circumcision reduces the risk of acquiring HIV infection in heterosexual males by 50–60% (Gray *et al.*, 2007; Bailey *et al.*, 2007; Auvert *et al.*, 2005). As a result of these studies, MC is being considered as an additional HIV prevention strategy, particularly in countries with a high prevalence of HIV. The initial focus of male circumcision for HIV prevention has been on adolescents and adult men. However, a longer-term HIV prevention strategy now includes the offering the circumcision services to new born male neonates, called Neonatal Male Circumcision (NMC) (Swaziland MC policy, 2009).

Circumcision has been widely practiced for religious and non-religious reasons for many centuries (Kinyeki, 2012). In West Africa, demographic and health surveys (DHS) showed a high prevalence of circumcision (97% in Benin, 96%in Côte d'Ivoire, 95% in Ghana and 90% in Burkina Faso) among both non-Muslim and Muslim men. Contrary to West Africa, circumcision is less common in southern African countries, with prevalence estimates of around 15% in Botswana and Swaziland, 10% in Zimbabwe, 17% in Zambia, 21% in Malawi and Namibia and 35% in South Africa. The prevalence estimates are higher in Mozambique (60%), Angola (>80%) and Madagascar (98%) (Drainet *et al.*, 2006; Connolly *et al.*, 2004; Zambia Sexual Behaviour Survey, 2000).

1.2 HIV and Adult Male Circumcision in Swaziland

Swaziland is one of the Southern African countries most heavily affected by the HIV/AIDS epidemic, with one of the highest prevalent rates of HIV in the world and the most recent data depicting HIV prevalence in Swaziland is the Socio Demographic Health Survey which was last conducted in 2006/7(SDHS, 2006/7). This survey indicated that, among the population aged two years and older the prevalence was 19% and 26% for the reproductive age group 15 - 49 years (SDHS, 2006/7).

Several initiatives have been undertaken to mitigate the impact of HIV since the first case reported in 1986 (Zungu-Dirwayi, N., 2004). However, the incidence rate of HIV remains relatively high. According to the 2011 Swaziland HIV Measurement Study (SHIMS), the overall incidence rate of HIV is 2.38/100 population per year. The ever increasing prevalence of HIV necessitates the consideration of an additional HIV prevention strategy, that is, male circumcision.

After the country adopted male circumcision as one of the strategies to combat HIV, the programme was initiated through a non-governmental organization (NGO), the Family Life Association (FLAS) with the support of the Jerusalem AIDS Project (JAIP). The MC project was successfully piloted in FLAS clinics in 2006. The pilot project included the training of fifty local doctors to perform MC, and a number of procedures were piloted in preparation for the scale-up of safe MC services, were undertaken (FLAS, 2008).

A Male Circumcision Task Force was launched in 2008 and in the following year (2009) the national MC policy was developed, with the aim of providing a framework for policy makers and implementers to support the scale up of safe, accessible and sustainable MC services (Swaziland MC policy, 2009). The established MC policy initially focused on the adult males, since they were already at risk of HIV infection. The policy identified registered surgeons and medical doctors as the primary providers of the NMC services but further stated that task shifting strategies targeted at nurses and midwives would be a key component of enhancing the numbers of service providers.

In 2010, national sensitization and demand creation campaigns were conducted through the national media, both radio, print and billboards. A number of sensitization campaigns were conducted at the community level.

1.3 Neonatal Male Circumcision in Swaziland

The promotion of MC in Swaziland has now expanded to include circumcision of infants as a long-term measure for HIV prevention. According to the National Multi-sectoral Strategic Framework for HIV and AIDS (NSF) (2009 – 2014), and in line with the national MC policy, the national NMC targets were to increase the number of new-borns who are circumcised within five days of birth to 13,200 by 2011 and to 33,000 by 2014. There are approximately 33,000

deliveries that are registered every year and of these, just under 50% are males (MoH (a). 2010). The majority of these deliveries, almost three quarters of the deliveries in Swaziland occur in health facilities and are attended to by a health professional (SDHS, 2006/7). As it is an internationally agreed upon public health goal that all women should deliver in health facilities, the targets for NMC in Swaziland should technically be achievable.

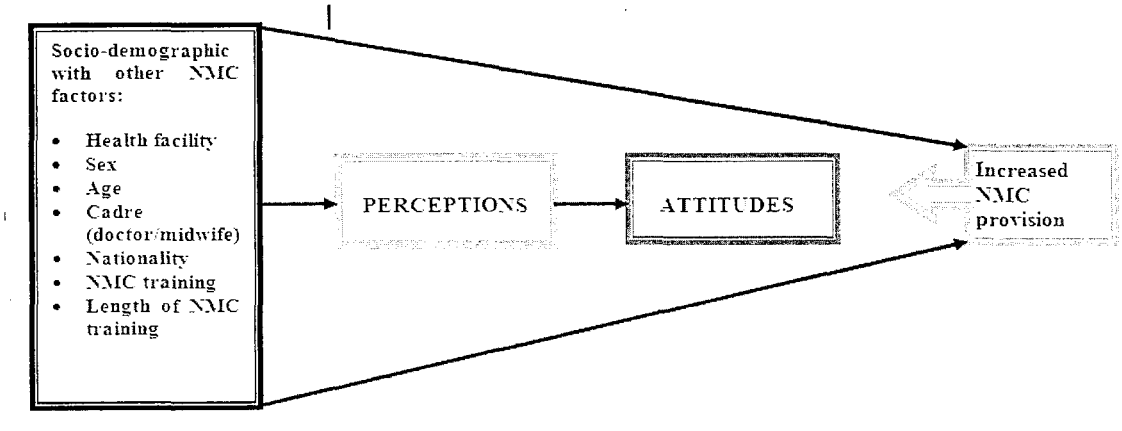
1.4 Literature Review

The aim of this section is to review research related to perceptions and attitudes of health care workers, and in particular by doctors and midwives, towards NMC.

1.4.1 Conceptual Framework

A conceptual framework is a scheme of concepts or variables which the researcher will operationalize in order to achieve set objectives (Ouchi, 1992). Socio-demographic variables are conceptualized to influence the way that one perceives NMC which in turn influence attitude. Socio-demographic variables may also directly influence attitudes. For this study the socio-demographic variables are independent, while perceptions and attitudes will be outcome variables and this can be depicted as shown in Figure 1.

Figure 1: Conceptual framework



1.4.2 Non-HIV medical indications for circumcision

Circumcision removes some, or all, of the foreskin from the penis. The foreskin is a continuation of skin from the shaft of the penis that covers the glans penis and the urethral meatus. The goal of circumcision is to remove enough shaft skin and inner foreskin to uncover the glans (al-Samarrai *et al.*, 2000). The most common medical reasons for circumcision range from conditions such as phimosis (a stricture of the foreskin that narrows the opening and prevents it from being retracted to uncover the glans), untreatable paraphimosis (in which the foreskin is trapped behind the corona and forms a tight band of constricting tissue, causing swelling of the glans and foreskin) to conditions like balanoposthitis (inflammation of the foreskin and glans) and balanitis xeroticaobliterans (a chronic sclerosis and atrophic process of the glans penis and foreskin, a risk factor for penile cancer). Moreover, conditions such as excessive skin and tears in the frenulum indicate the need for circumcision (Rickwood, 1999) There are, contraindications to circumcision particularly for newborn male children which include haematological disorders, jaundice and any abnormality of the penis, including hypospadias and epispadias (Rickwood, 1999). In addition to the afore-mentioned indications for circumcision, recent evidence suggests a potential benefit regarding the prevention of HIV. According to WHO and UNAIDS, (2007) circumcision inhibits factors that make it easy for HIV to penetrate broken mucous membranes during heterosexual intercourse.

1.4.3 Circumcision and HIV Prevention

Randomized controlled trials have shown that circumcision reduces the risk of heterosexually acquired HIV infection in men by between 50–60% (Gray *et al.* 2007; Bailey *et al.*, 2007; Auvert *et al.* 2005). The reduction in the risk of HIV risk is reported to be even higher if circumcision occurs in the neonatal period (Weiss *et al.*, 2000).

The actual mechanism by which circumcision reduces the risk of HIV has been studied. According to Fleming and Wasserheit (1999) there is an increased risk of genital ulcer diseases in uncircumcised men, which in turn increases the risk of HIV, as the disrupted mucosal surface of the ulcer increases the risk of HIV acquisition. The foreskin is likely to increase the risk of HIV infection directly as tissue from the inner surface of the foreskin mucosa contains accessible HIV target cells, those being CD4 and T cells, macrophages and Langerhans cells (Patterson, 2002). Findings further reported the density of the afore-mentioned HIV target cells in the outer foreskin to be similar to those in the glans penis, but those in the inner foreskin are closer to the epithelial surface than those situated elsewhere in the penis, due to the relative lack of keratin (McCoombe and Short, 2006). Within the inner foreskin, Langerhans cells are more likely to be found near the epithelial surface than other cells, and are likely to be the first to be infected by HIV (Donoval *et al.*, 2006).

Patterson et al., (2010) found that the infectivity of the inner mucosal surface was greater than that of cervical tissue, a primary site of HIV acquisition in women. In an uncircumcised man, the cells in the inner foreskin are directly exposed to vaginal secretions during heterosexual intercourse, and the superficial location of the HIV target cells presumably increases the risk of infection. However, in circumcised men, the penile shaft is covered with a thickly keratinized epithelium that provides some protection from infection (McCoombe and Short, 2006).

1.4.4 Socio-demographic factors and MC

Circumcision has been practiced for many centuries, for religious and non-religious reasons, in parts of West Africa, Israel, the Gulf States, and the USA. Circumcision is practiced in parts of Central, East and Southern Africa, as well as among aboriginal Australians (Dunsmuir, 1999). In some cultures, circumcision is an integral part of a rite of passage to manhood (Doyle, 2005).

Amongst the various socio-cutural factors that determine whether or not circumcision is practiced, ethnicity has been reported to be a determinant of male circumcision. This was documented in several African countries using the overall prevalence of MC as a marker. For example, although an estimated 84% of all Kenyan men are circumcised, the percentage is much lower among the Luo and Turkana ethnic groups (17% and 40%, respectively). Similarly, male circumcision is not practised among the Jopadhola, Acholi and other Luo-speaking River-Lake Nilotic groups in Uganda and southern Sudan, from where the Luo migrated (WHO/UNIDS, 2007).

According to Schoen (1996) neonatal circumcision has many potential advantages: The procedure helps prevent urinary tract infections, penile cancer, sexually transmitted diseases and, perhaps, acquired immunodeficiency syndrome. The risk of complications from the procedure is low. Fewer penile problems occur in circumcised boys than in uncircumcised boys.

The issue of urinary tract infection was also observed as a socio-demographic factor for NMC in a study conducted earlier by Wiswell *et al*, (1987), in the United States of America. This study discovered that, there was a concomitant increase in the total number of urinary tract infections among male infants ($P < .02$) as the circumcision rate declined in some areas during the course of this study. This increase was due to the increase in the overall number of uncircumcised boys (who had a greater than 11-fold increased infection rate compared with circumcised boys.

1.4.5 Perceptions and attitudes towards NMC

In a study conducted by Stein et al, 1982, among a group of 92 randomly selected primary care physicians and 103 parents of male infants, 65% percent of the physicians conveyed a positive attitude about routine NMC to their patients. In the same study, pediatricians were more likely to

have a neutral attitude, and both family and general practitioners were more likely to encourage routine neonatal circumcision (P less than.01). Routine neonatal circumcision was favored more often by older, male, and circumcised physicians.

In this study, parents rarely perceived physicians as influential in the decision-making process (P less than.001). In contrast, fathers' circumcision status and parental belief in medical indications were positively related to the decision to circumcise (P less than.001 and P less than.01, respectively.

Another element of positive perceptions about NMC were demonstrated in a study conducted Xu and Glodman in Victoria, Australia. The study found that the most common reasons for newborn circumcision were hygiene (77.9%), family tradition (57.4%) and medical reasons (36%). The most common perceived benefit was hygiene (95.6%). As indicated earlier, pain was the most common concern for NMC, at 79.4%. The same study also found that, the more a mother had boys who were already circumcised, the more she was supportive of NMC ($P = 0.024$) (Xu and Goldman, 2008).

Elements of positive perceptions and attitudes towards NMC were also demonstrated in a study conducted in Korea. In this study with a 76.1% response rate, NMC was only second to circumcision of boys at 11 years, in frequency. Of the parents, 91.3% believed that circumcision was necessary. The principal reasons given for NMC were; i) to improve penile hygiene (82.4%), and ii) to improve future sexual potency (7.5%). Most (88.4%) of the parents believed that smegma is not a clean material, and is infected by microorganisms. Most parents (80.6%) thought that circumcision would prevent genital tract infection of the future spouse (Oh *et al*, 2008).

The American Academy of Paediatrics supported infant circumcision when it stated that, the health benefits of the procedure clearly outweigh any risks, concluding that there is clear evidence that supports the health benefits of circumcision (Gray *et al*, 2012). This organization which represents about 60,000 pediatricians nationwide in the U.S.A. demonstrated a positive attitude towards NMC when it stated that, circumcised males are far less likely to get infected with a long list of sexually transmitted diseases.

According a report from the National Center for Health Statistics, one of the theories for this was a shift in social attitudes, for both the public and practitioners toward whether or not male circumcision is really a medical necessity.

Positive perceptions and attitudes towards circumcision were observed in a quantitative study, assessing the feasibility and acceptability of male circumcision among men, women, and health providers of the Altagracia Province, Dominican Republic in 2010 (Brito et al, 2010). Though only 23% practitioners reported to have had experience with MC, almost universally (95%), the providers knew that MC has health benefits. All agreed that MC improves hygiene and 67% knew that MC decreases the risk of HIV infection.

Brown and Broun (1987), in a study conducted in the United States of America had hypothesized that parents based their circumcision decision on circumcising their new born baby boys predominantly on social concerns rather than on medical ones. They prospectively surveyed parents of newborns soon after they made the circumcision decision to learn their reasons for the decision. This study revealed that the strongest factor associated with the circumcision decision was whether or not the father was circumcised (P.0001). The survey also showed that concerns about the attitudes of peers and their sons' self concept in the future were prominent among

parents deciding to circumcise. This report further discovered that circumcision decision in the United States is emerging as a cultural ritual rather than the result of medical misunderstanding among parents.

1.4.6 Association between socio-demographic characteristics and perceptions and attitudes towards NMC

Male circumcision is associated with factors such as masculinity, self-identity and spirituality (Peltzer *et al*, 2006). For instance, in Turkey, male circumcision is perceived to be part of becoming a man and a member of society (Kavakli *et al.*, 2000.) In fact it can be seen as unacceptable to remain uncircumcised (Sahin *et al.*, 2003). In other settings, circumcision is most commonly carried out in the neonatal period or during childhood, with the primary reason being perceived improved penile hygiene, or to fit with social norms (WHO, 2008).

Ngo and Obhai (2012) reported that a shortage of skilled practitioners was a significant barrier for practicing male circumcision. In Florida, a study conducted among Hispanics established lack of support by health care providers, cost, and cultural tradition as variables significantly associated with poor neonatal circumcision rates (Castro *et al.*, 2010).

A study conducted in Florida reported that 85% of pregnant women were willing to circumcise their future sons if the circumcision was offered for free and performed in a hospital within 30 days of birth (Castro *et al.*, 2010). Similarly, a review conducted in 2006, stated that, in thirteen studies done in nine traditionally non-circumcising countries in sub-Saharan Africa, 70% to 90% of women reported to be willing to circumcise their sons (Westercamp and Bailey, 2006). In Kenya, among the Luo tribe, which had no previous history of circumcision, 50% of the participants in a focus group discussion supported circumcising in the course of infancy (Bailey *et al.* 2011).

In Swaziland, 70% of women supported circumcision for their partners, and both men and women were willing to circumcise their sons (Tsela and Haplerin, 2006).

Rennie *et al*, (2007) stated that, although promoting male circumcision at all ages simultaneously is possible in principle, limits of human and material resources in the health systems of developing countries may necessitate a less ambitious approach. As such circumcising soon after birth could have some important advantages than the older ages. Some studies indicate that the protective effect is greater when circumcision takes place early in a man's life, presumably due to the thickening of the skin on the head of the penis. Another possible advantage is cost: neonatal circumcision could be integrated into existing reproductive health clinics, postnatal care services or programmes to prevent mother-to-child transmission of HIV. Neonatal circumcision also avoids lost days from school and work, associated with circumcision at later ages. Circumcising at an early age can also avoid the thorny problem of risk compensation, which is the common psychological phenomenon of an increase in risky behaviour due to a decrease in perceived risk. However, if circumcision takes place at an early age, it is unlikely that the intervention would have an impact on a man's HIV risk perception when he engages in sexual relations more than a decade later. (Rennie *et al*, 2007).

Feyza *et al,* (2013) in a study conducted in Turkey, they found that circumcision was generally performed by physicians (63.5%), in hospital conditions (52%), and primarily due to religious reasons (50.4%). In t his study though, most circumcisions were performed above 6 years (403%) and only 7% between zero to one month. Most of the circumcisions were performed in infants whose parents had a high economic condition ($p=>0.05$) and higher educational levels ($p=<0.05$).

1.5 The problem statement

Since the MC programme was adopted in Swaziland in 2008, and the component was incorporated, the country has not been able to reach national targets for circumcised male infants. According to routine data collected by the MC programme, only a total number of 1,149 NMCs were performed by June 2012 (MoH, 2012).

This failure to reach the NMC targets undermines the potential benefits of MC regarding HIV prevention and the reasons for the failure are unknown.

This study sets out to investigate whether the perceptions and attitude of the doctors and midwives in the target maternity units towards NMC may have contributed to sub-optimal provision of services. These health professionals may have concerns about routinely performing this procedure on clients delivering in the health facilities and the way in which they (health professionals) perceive the value of NMC will determine their acceptability of the service and therefore the provision of the service.

1.6 Justification for the study

The low levels of NMC in Swaziland necessitate an urgent need to investigate possible underlying reasons for the unmet national target for this service, if it is to be prioritized for the reduction of new HIV infections.

There is relatively little published documentation on the perceptions and attitudes of doctors and midwives around the practice of NMC.

Since the scale-up of circumcision for HIV prevention was recommended in regions with high HIV prevalence it is envisaged that the findings of this study will bring insight into the perceptions and attitudes of doctors and midwives towards NMC in order to meet the national

targets of circumcised male infants. One concern about circumcision as an HIV prevention measure is that it may not be acceptable in communities that do not traditionally circumcise or to health care workers. This study aimed to identify whether the perceptions and attitudes of health care workers towards the provision of NMC services has contributed to the country not meeting its intended targets. This will contribute towards facilitating the attainment of the set national targets, thereby optimizing the benefits relating to HIV prevention.

1.7Aim of the study

The aim of the study was to explore the perceptions and attitudes of hospital based doctors and midwives towards NMC.

Though there is a thin line between perceptions and attitudes, K. Cherry (2010) defines perceptions as a process that involves synthesizing, organizing and interpreting sensory information in a meaningful way. In this study context, though the health workers may have other convictions about NMC, their academic and scientific information and preparation may have an influence on how they see NMC for HIV prevention purposes. On the other hand, attitudes may be defined as positive or negative evaluation of people, objects, events, activities, ideas or just about anything in the environment (Zimbardo *et al.*, 1999). In this study context, a practitioner may have issues with circumcision of neonates yet she / he may be aware of the benefits and health gains of NMC.

1.8 Objectives of the study

The study has the following objectives:

1. To determine perceptions and attitudes of doctors and midwives towards NMC in the maternity units of the Hlathikhulu, Mankayane, Mbabane and Good Shepherd hospitals towards NMC, in 2012.
2. To determine any association between socio-demographic characteristics and the perceptions and attitudes of doctors and nurses towards NMC in the maternity units of the Hlathikhulu, Mankayane, Mbabane and Good Shepherd hospitals towards NMC, in 2012.

CHAPTER TWO: METHODOLOGY

2. Introduction

This chapter presents a detailed description of the research methodology. Methodology refers to the detailed procedure to be followed to realize the research objectives. The methodology includes a description of the research design, sampling techniques, instrumentation as well as the data analysis techniques. This section will describe, in detail, what and how the study was conducted.

2.1 Research design

This study was a cross-sectional survey in which a self administered questionnaire was used to collect data on the perceptions and attitudes of hospital based doctors and midwives towards neonatal male circumcision (NMC).

2.2 Study setting

The country is divided into four administrative regions; Hhohho (which incorporates the capital city, Mbabane, and all government ministries), Manzini (which contains the largest industrial area in the country), Lubombo (where most of the agricultural plantations are located) and Shiselweni (the least developed region).The country therefore has four regional hospitals and one national referral hospital - Mbabane government hospital. The regional hospitals provide public health services and offer hospital admissions, including maternity services. The setting of the study included three of the four regional hospitals and the national hospital in Mbabane. The regional hospital in the Hhohho region, which is Piggs Peak hospital, was used in this study as the pre-test site. This hospital was chosen to test the data collection tool in a setting the same calibre with the study institutions.

These are the largest health care facilities in Swaziland, in terms of capacity in the provision of services and bed occupancy and the number of deliveries, for in-patients and are designated to provide NMC services to the new-born baby boys before they can be discharged with their mothers after delivery

The total population of Swaziland is estimated to be 1 018 449, and 53% of the population is female (SDHS, 2006/7).

About 97% of pregnant women in Swaziland attend ante natal care (ANC) at least once during their pregnancy and 74% of these women deliver in a health facility (hospitals, health centres or public health clinics), including the four sites selected for this study. (SDHS, 2006/7). This means that the remaining 26% of pregnant women deliver at home or anywhere else but not at a health facility. However, this survey does not report on specific facilities that offer NMC and as a result it cannot be said that a certain percentage of women only delivered in facilities that offer NMC. A rapid assessment that was conducted between March and May, 2011, showed a total of 1 019 babies delivered in these hospitals and 556 of these babies were male (Table1).

Table 1: The numbers and gender of babies born in the four study hospitals in Swaziland between 01 March, 2011 and 31 May, 2011

Facility	Number of deliveries	Males	females
Mbabane	402	197	205
Hlathikhulu	226	112	114
Good Sheppard	208	80	128
Mankayane	255	167	88
Total	**1 019**	**556**	**535**

2.3 Study Population

The study population comprised of doctors and midwives working in the Maternity Departments of the four regional hospitals of the Kingdom of Swaziland. The population was targeted because they are the ones designated to perform NMC since they are working in the maternity units.

No sampling was done. All doctors and midwives working at the maternity units of these health facilities at the time of data collection were included. According to the Service Availability Mapping (SAM) Report 2011, the number of doctors in Swaziland 23 per 100 000 population and the number of midwives is 93 per 100 000 population in all health facilities. However, based on this report, this study recruited 67 health workers which consisted of 60 midwives (about 64.5% of the 93 per 100 000 population) and seven doctors (about 30% of the 23 per 100 000 population) across the study sites. These were all and only respondents recruited for this study and those who were on leave were not included.

2.3.1 Inclusion and exclusion criteria

Recruitment of study subjects was done through the institutions' administration department of the different health facilities, two weeks before data collection. Participants were eligible to participate in this study if they were qualified as a doctor and as a midwife working in the maternity department. The selection status was not affected by whether or not a respondent was trained on NMC. Doctors and midwives not working in the maternity unit were excluded from the study regardless of their willingness to participate.

2.4 Data collection instrument

A questionnaire based on the literature review was developed and used to collect data. The questionnaire was thoroughly reviewed by a similar target audience of doctors and midwives, to

the one used as the study population, to include all indicators of interest and objectives of this study. The questionnaire consisted of three parts: 1) Socio-demographic information, 2) perceptions towards NMC and 3) attitudes towards NMC. Contextual and content validity of the questionnaire was ascertained by experts in male circumcision in Swaziland, and then piloted with 10 health practitioners (two doctors and eight midwives). A valid questionnaire with 40 variables consisting of 8 socio-demographic variables, 25 variables on perceptions and seven variables on attitudes towards NMC was used to collect the data. (See ***Appendix A***).

This section of the data collection instrument comprised of 8 questions aimed at gathering basic and background information on the respondents. The questionnaire obtained data on the name of health facility, gender, age, designation, area where their childhood was spent (rural, peri-urban and urban), length of time working in the maternity unit and number of years since qualified as a doctor or midwife.

Twenty-six statements on perceptions towards NMC aimed to assess the way in which health practitioners perceived NMC. These twenty six statements from the questionnaire were the following; # 11 – 16, 18 – 27, 33, 35 - 43

Respondents were asked to indicate their level of agreement with the statements on a five point Likert scale (strongly agree (SA), agree (A), Unsure (U), disagree (D) and strongly disagree (SD). A scale "perception" that comprised of all the variables that measured perception was computed. The highest score of (5) allocated for the most positive perception towards NMC and (1) for the most negative attitude.

Seven statements on the doctors' and midwives' attitude towards NMC were posed to the respondents to assess their attitudes towards NMC. The seven statements from the questionnaire that were the following; # 17, 28 – 32, 34

Similarly, as with the perceptions, respondents were asked to indicate their level of agreement with the statements on a five point Likert scale (strongly agree (SA), agree (A), Unsure (U), disagree (D) and strongly disagree (SD).

A scale "attitudes" that comprised of all the variables that measured attitude computed with the highest score of (5) allocated for the most positive perception towards NMC and (1) for the most negative attitude.

2.5 Pre-testing

Prior to the study, a pre-test was conducted in among ten health practitioners, two doctors and eight midwives at Piggs Peak Government Hospital, to test the questionnaire for clarity and comprehension. The aim of the pre-test was to validate the questionnaire's content and context for doctors and midwives working in the maternity ward. Following the pre-testing the questionnaire was modified accordingly; numbering was altered for clarity, the sequence and flow of the questions were revised including the Likert Scale ratings. The pre-test comments and other relevant observations made thereafter assisted in the fine tuning the questionnaire for the study institutions ***(Appendix B)***.

2.6 Reliability

Reliability arises from the stability and consistency of the measurement and provides an indication of the random error in the measurement (Burns & Grove, 2005). The questionnaire was analyzed with SPSS to determine Cronbach's scores. Cronbach's score is an index of

reliability and it measures internal consistency of a test or scale and describes the extent to which all items in a test measure the same concept or construct, hence it is connected to the inter-relatedness of the items within the test (Takavol and Dennick, 2011). A Cronbach's alpha score of 0.65 was set as the benchmark for internal validity of the scale items in each scale.

The overall 26-item scale, "Perceptions towards NMC" had a Cronbach's alpha of 0.107. On the other hand, the overall 7-item scale, "Attitudes towards NMC" had a Cronbach's alpha of 0.068.

2.7 Data collection method

Self-administered questionnaires were distributed to the study population by the researcher. In addition to data collection, the researcher was responsible for all logistics pertaining to data collection, which included packaging and transportation of the questionnaires, holding meetings with the facilities' authorities and distributing the questionnaires to the research respondents. The completed questionnaires were collected by the researcher from all the study facilities.

2.8 Data handling

Data were kept in lockable filing cabinets at the researcher's personal office at United Nations Office on Drugs and Crime (UNODC) in Mbabane. All data were cleaned by the researcher, coded and keyed and entered into Statistical Package for Social Sciences (SPSS) version 20.

In order to ensure accurate data entry, all 67 surveys were entered twice and random checks were also performed. Discrepancies in a questionnaire were resolved by reviewing the original hard-copy of the questionnaire. Random checks for accurate data entry were done to ensure quality. Some of the questions were left unanswered by some of the respondents and these were coded as missing

Some visuals were created in Excel, using imported reports from SPSS. Data were checked for missing and wrong values. All missing data were coded and excluded from analysis. The analysis included simple descriptive statistics for the socio-demographic variables.

2. 9 Statistical data analysis

The Statistical Package for Social Sciences (SPSS) version 20 was used to capture data and for analysis.

2.9.1 Descriptive statistics

Descriptive statistics were performed on socio-demographic characteristics of the participants such as facility, sex, age, nationality, time where childhood was spent, profession, duration of time since started working in the maternity unit and time since qualified as a doctor or midwife and training on NMC.

As a statistical technique used to explore continuous variables, we ran descriptive statistics such as mean, standard deviation, minimum and maximum values. For categorical variables, we ran frequencies, and explored data central tendencies as well as distribution.

2.9.2 Developing the perception and attitude scores

Perceptions

Once all statements were scored, an overall perceptions score was calculated.

Please note that, in this study, a perception and attitude that is supportive of NMC will henceforth be described as a "positive" and one that is not supportive of NMC will be described as "negative".

Scores for the two scales (perceptions and attitudes) were computed based on the Likert scale that ranges from strongly disagree to strongly agree. All the points along the Likert scale were multiplied by the number of items comprised in each measurement scale (perception and attitude) to get a representative score of each Likert point. Calculated scores would fall between two categories (positive or negative) along the Likert scale; determined by whether a score is greater or less than the middle point in the Likert scale (unsure).

The expected minimum score was 26 which indicate having an extremely negative perception towards NMC, and expected maximum score was 130 which indicate an extremely positive perception towards NMC (Table 2). A respondent could have a score anywhere between 26 and 130. The cut-off point for positivity and negativity was 78. The respondent's scores above 78 were considered positive and the scores below 78 were considered negative. Therefore, 78 was regarded as a cutoff point because it's a score that indicated that a respondent neither agreed or disagreed and such a score wouldn't indicate if a respondent was positive or negative. The order of the Likert scale places neither agree nor disagree at point {3}, which then is multiplied by the 26 questions that measured attitude and the product was 78 as the score for "unsure". The overall 26-item scale, "Perceptions towards NMC" had a Cronbach's alpha of 0.107.

Table 2: Perceptions expected score table

	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
	{1}	{2}	{3}	{4}	{5}
x 26 items	26	52	78	104	130

Attitudes

The expected minimum score was seven which indicate having an extremely negative attitude towards NMC, and expected maximum score was 35 which indicate an extreme positive attitude towards NMC (Table 3). A respondent could have a score anywhere between 7 and 35. As with

the perceptions, cut-off point for positivity and negativity within the attitudes scale was 21. The respondent's scores above 21 were considered positive and the scores below 21 were considered negative. Therefore, 21 was regarded as a cutoff point because it's a score that indicated that a respondent neither agreed or disagreed and such a score wouldn't indicate if a respondent was positive or negative. The order of the Likert Scale places neither agree nor disagree at point {3}, which then is multiplied by the 7 questions that measured attitude and the product was 21 as the score for "unsure". The overall 7-item scale, "Attitudes towards NMC" had a Cronbach's alpha of 0.068.

Table 3: Attitudes expected score table

	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
	{1}	{2}	{3}	{4}	{5}
x 7 items	7	14	21	28	35

2.9.3 Bivariate analysis

The association between socio-demographic variables and the perceptions and attitudes scores towards NMC were investigated using the Pearson's Chi-square test of association. Lancaster (1969) defined Chi Square test as the sum of squares of independently distributed standard normal random variables, which explains the additive property of independent chi-square random variables. Different Chi-squared tests were used. Kendall's tau-b was used to test the association for independent variables that are categorical and ordinal and Cramer's V test was used for nominal variables that have more than two levels.

In light of the small sample size for this study and considering meeting requirements of association tests and mean difference tests, a decision to bin the age and childhood variable into two categories each was made.

The "age" variable has been re-coded into two groups, 24 – 39 years and 40 – 55 years, and the "where childhood was spent" variable has been transformed into to only two groups; rural and urban.

Considering the socio-demographic variable's difference in the perception and attitude scores, further tests were run to test if the differences were statistically significant or not. Our null hypothesis was that there isn't any difference in the scores. An independent sample t test was run to test for the mean differences for variables that have only two groups and a one way ANOVA for variables with more than two groups. The use of either of these tests is dependent on the non-violation of the following assumptions:

- Observations are independent, meaning one person's score shouldn't provide any clue as to how any of the other people should score.
- Variances on the dependent variable are equal across groups.
- The dependent variable is normally distributed for each group.

Bivariate analysis was performed to test significance in the mean scores' differences as per the socio-demographic variables.

Table 4 below shows which tests were conducted for each socio-demographic variable against perceptions and attitudes.

Table 4: Testing for mean differences on socio-demographic characteristics			
Socio- demographic characteristic	**Measurement**	**Test used**	
		Perceptions	**Attitudes**
Sex	Categorical	Sample t-test	
Age	Continuous	Sample t-test	
Nationality	Categorical	One-way ANOVA	
Where childhood was spent	Categorical	Sample t-test	
Profession (doctor or midwife)	Categorical	Sample t-test	
Length of time working in maternity unit	Continuous	One-way ANOVA	
Length of time qualified as doctor or midwife	Continuous	One-way ANOVA	
Training in NMC	Categorical	Sample t-test	
Length of NMC training	Continuous	Sample t-test	
Facility	Categorical	One-way ANOVA	

2.10 Ethical considerations

Ethical clearance of the study was obtained from University of the Witwatersrand Human Research Ethics Committee (***Appendix C***) and the Scientific Ethics Committee (SEC) of the Ministry of Health in Swaziland (***Appendix D***) as well as the various health facilities. The study maintained anonymity, confidentiality, sensitivity and informed consent from the respondents were obtained before proceeding with the interview (***Appendix E***). Respondents were not harmed and were free to withdraw from the study at any stage without giving reasons.

CHAPTER THREE: RESULTS

3. Introduction

This chapter presents results of data analysis conducted to investigate the perceptions and attitudes of doctors and midwives towards NMC. The results are organized in the following distinct sections:

1. **Section A** of the results section describes statistics in the form of tables and graphs to describe distributions of socio-demographic variables such as facility, sex, age, nationality, time where childhood was spent, profession, duration of time since started working in the maternity unit and time since qualified as a doctor or midwife and training on NMC.
2. **Section B** of the results section describes the respondents' perceptions and attitudes towards NMC.
3. **Section C** describes whether there is an association between socio-demographic characteristics and perceptions and attitudes towards NMC through the development of the overall scores.
4. **Section D** presents analysis to determine any statistically significant mean difference between both perception and attitude scores and the socio-demographic variables.

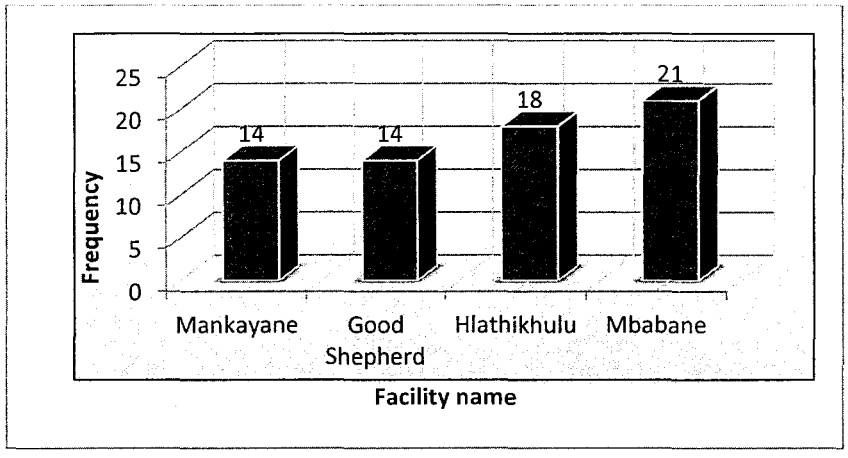
3.1 Section A: Descriptive Statistics

At the time of the study, there were 67 doctors and midwives and the response rate was 100%.

3.1.1 Distribution of respondents by facility

The numbers of respondents per facility is shown in Figure 2 below.

Figure 2: Distribution of respondents by facility (n=67)

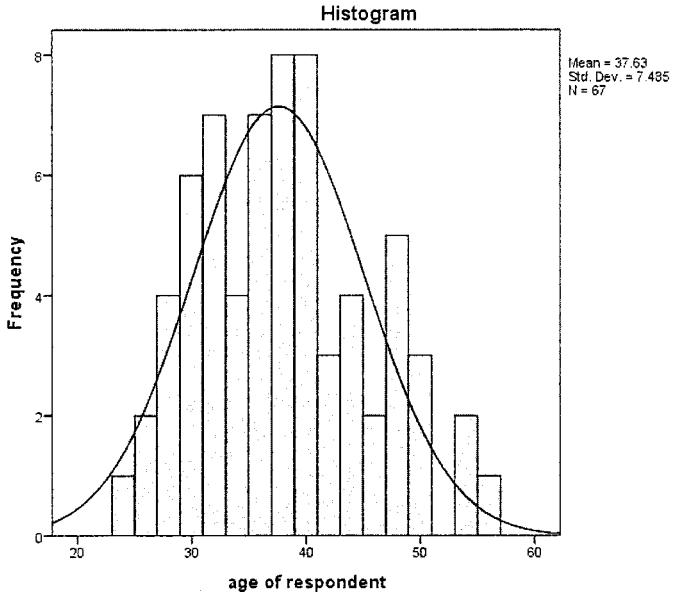


The majority of the respondents were from the Mbabane Government Hospital, since this is the largest facility than the rest and is also the national referral hospital, situated in the capital city of Swaziland.

3.1.2 Respondents' socio-demographic characteristics

The respondents were predominantly females, 88.1% (n=59) and mostly midwives, 89.6% (n=60). Their ages ranged from 24 to 55 years and the mean age was 37.63 (See Figure 3 below). The standard deviation describes the distribution of t he respondents' ages and for this data set the standard deviation is 7.485. This means that the ages are distributed 7 points away from the mean age. Respondents' ages are widely distributed within the recruited group.

Figure 3: Age distribution of respondents (n=67)



Over 77% (n = 52) of the respondents were Swazi citizens. The non-Swazi citizens were from a number of Southern African countries including Zimbabwe (19.4%), Malawi (1.5%) and the Democratic Republic of Congo (1.5%).

Almost 42% of the respondents had spent their childhood in a rural area, as opposed to a peri-urban (35.8%) or urban (22.4%).

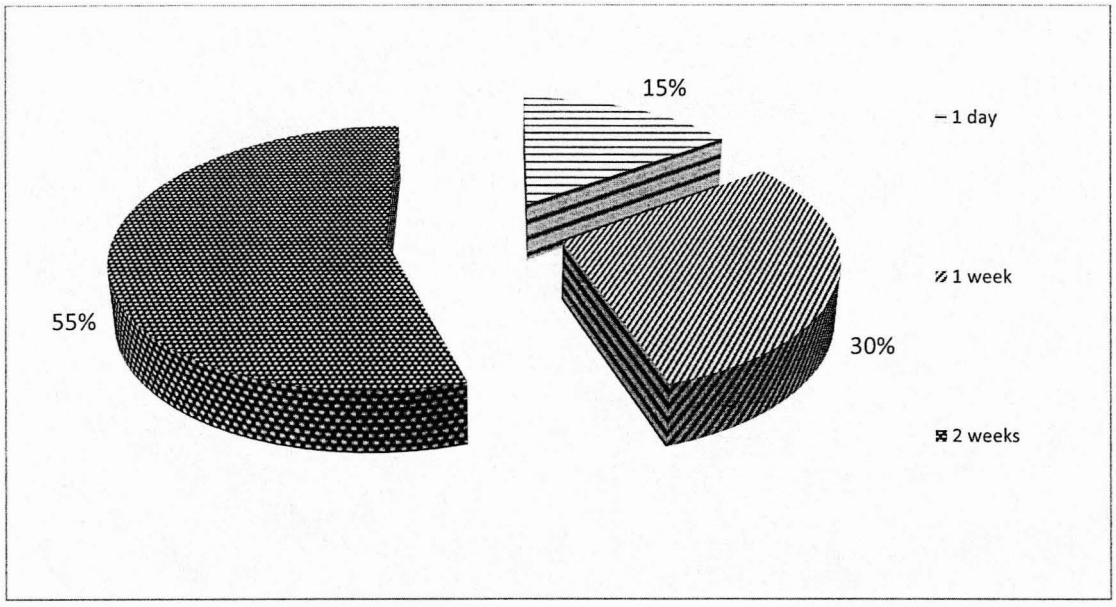
With regards to the time spent working in a maternity unit of a health facility, 80.6% (n=50) of the respondents reported to have been working in maternity unit, for a period between one to five years (See Table 5).

Table 5: Socio-demographic characteristics of the respondents (n=67)		
Variable	n	%
Sex		
Male	8	11.9
Female	59	88.1
Age		
24-39	42	63
40 - 55	25	37
Nationality		
Swazi	52	77.6
Zimbabwe	13	19.4
Malawi	1	1.5
DRC	1	1.5
Residence during childhood		
Rural	28	41.8
Peri-urban	24	35.8
Urban	15	22.4
Profession		
Doctors	7	10.4
Midwives	60	89.6
No. of years working in Maternity		
1-5 years	50	80.6
6-10 years	7	11.3
11-15 years	2	3.2
16-20 years	2	3.2
21-25	0	0
26-30 years	1	1.6

3.1.3 Training on NMC

Only 14.9% (n=10) of the respondents reported to have been trained on NMC. Of these, their training period varied between 1 day and 2 weeks (Figure 4). This was not accordance with the Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHPIEGO) adapted curriculum which stipulated 2 weeks as the standard NMC training period.

Figure 4: Distribution of respondents by length of training on NMC (n=10)



Training had been done by a number of different people and institutions. These included a doctor at the Mbabane Government Hospital, The Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHPIEGO) (an international NGO), Population Services International (PSI) (an international NGO) and Raleigh Fitkin Memorial Hospital (RFM) in Manzini.

3.2 Section B: Describing respondents' perceptions and attitudes

3.2.1 Respondents' perceptions towards NMC

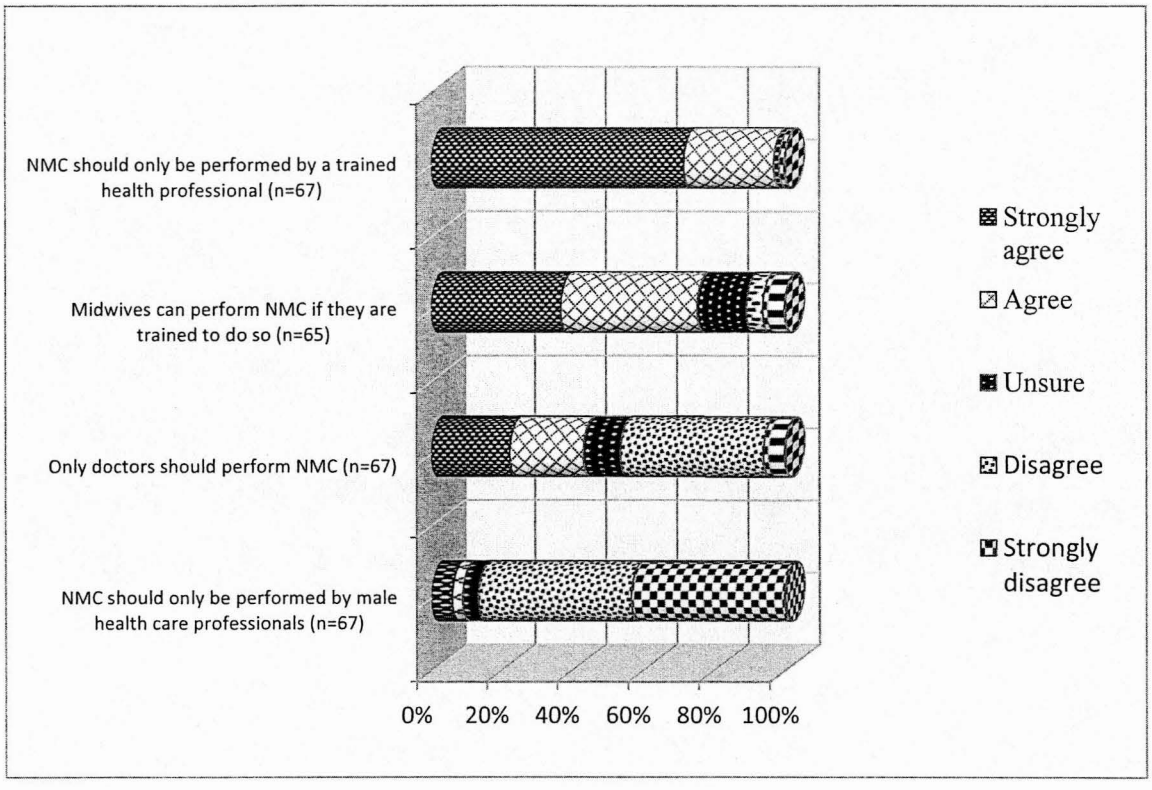
Respondents were asked to respond to twenty six statements designed to determine their perceptions towards NMC.

3.2.2 Perceptions about who should do NMC

The majority of the respondents, 71.6% (n=48) and 25.4 (n=17) strongly agreed and agreed respectively that NMC should be done by trained professionals, irrespective of whether they were doctors or midwives. They did not feel that NMC should be done only by male

professionals as 43.3% both disagreed and the same percentage strongly disagreed with this statement (Figure 5).

Figure 5: Distribution of respondents' responses to statements on who should do NMC



3.2.3 Perceptions on safety of performing NMC

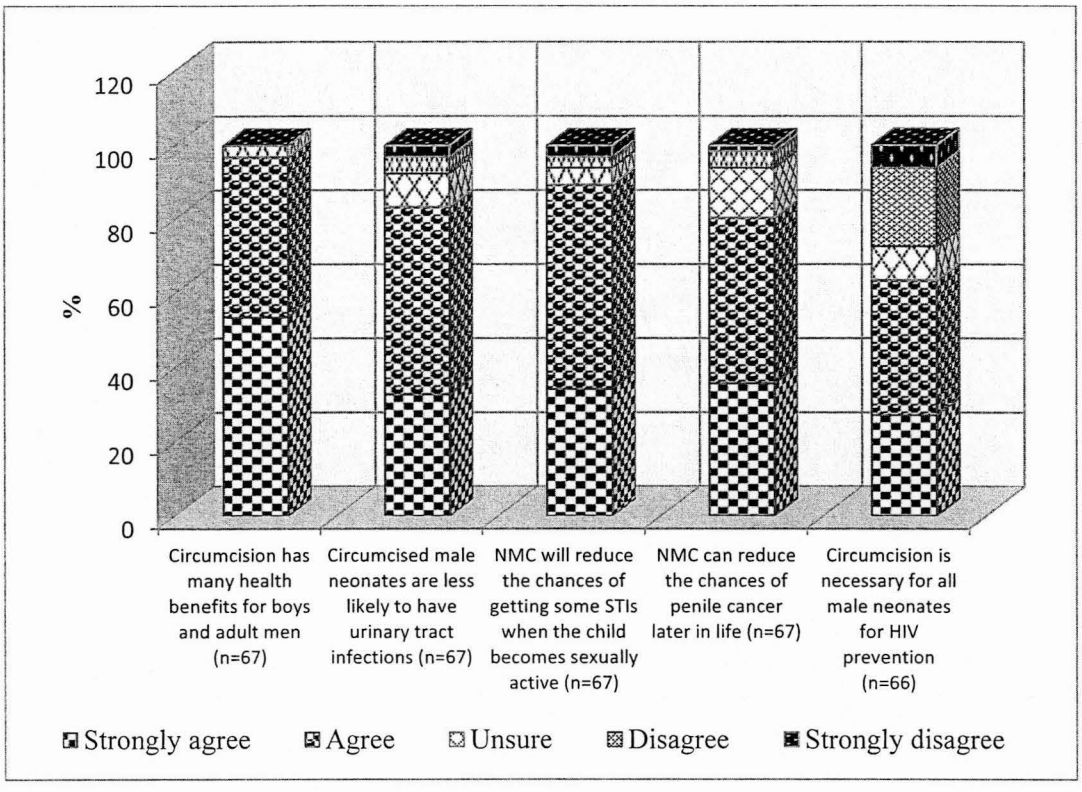
The majority of the study respondents, 56.7% (n=38) and 41.8% (n=28) strongly agreed and agreed respectively that NMC is safe for the male neonates if it is performed by a trained health care professional.

3.2.4 Perceptions about the benefits of NMC

Most of the respondents were in agreement with the statements that NMC has numerous benefits for both boys and adult males. These statements included reduction of urinary tract infections, reducing chances of getting sexually transmitted infections when the children become sexually

active and the reduction of penile cancer later in life. However, over 9% were unsure that NMC is necessary for all males for the prevention HIV infections, 21.2% of the respondents disagreed with this statement and 6.1% strongly disagreed (Figure 6).

Figure 6: Distribution of respondents' responses to statements on the benefits of NMC



Further to the benefits on NMC, a larger percentage of the respondents did not agree that NMC is merely a cosmetic procedure as 10.7% (n=7) strongly disagreed and 37.9 (n=25) disagreed to this statement. An equal 21.2% (n=14) were unsure and agreed, in that order, and only 9.1% (n=6) strongly agreed with this statement.

3.2.5 Perceptions on resources for performing NMC

The respondents were asked to respond to a number of statement designed to to assess the availability of resourcers to do NMC in ther facility in terms of time, space, equipment and human resources. They were also asked to respond to two statements on whether they felt that

they had time to do NMC. The majority of the respondents, 16.4% (n=11) and 53.7% (n=36) strongly agreed and agreed respectively that that there was sufficient time to do NMCs and similarly, 15.2% (n=10) srtongly agreed and 50% (n=33) agreed that NMC could be incorporated into routine maternity unit procedures (Table 6).

Table 6: Perceptions about the availability of time for NMC

	SA		A		U		D		SD	
	respondents		respondents		respondents		respondents		respondents	
	n	%	n	%	n	%	n	%	n	%
NMC is not a time consuming procedure (n=67)	11	16.4	36	53.7	9	13.4	9	13.4	2	3
NMC can be incorporated into the routine maternity unit procedures (n=66)	10		33		7		7		9	

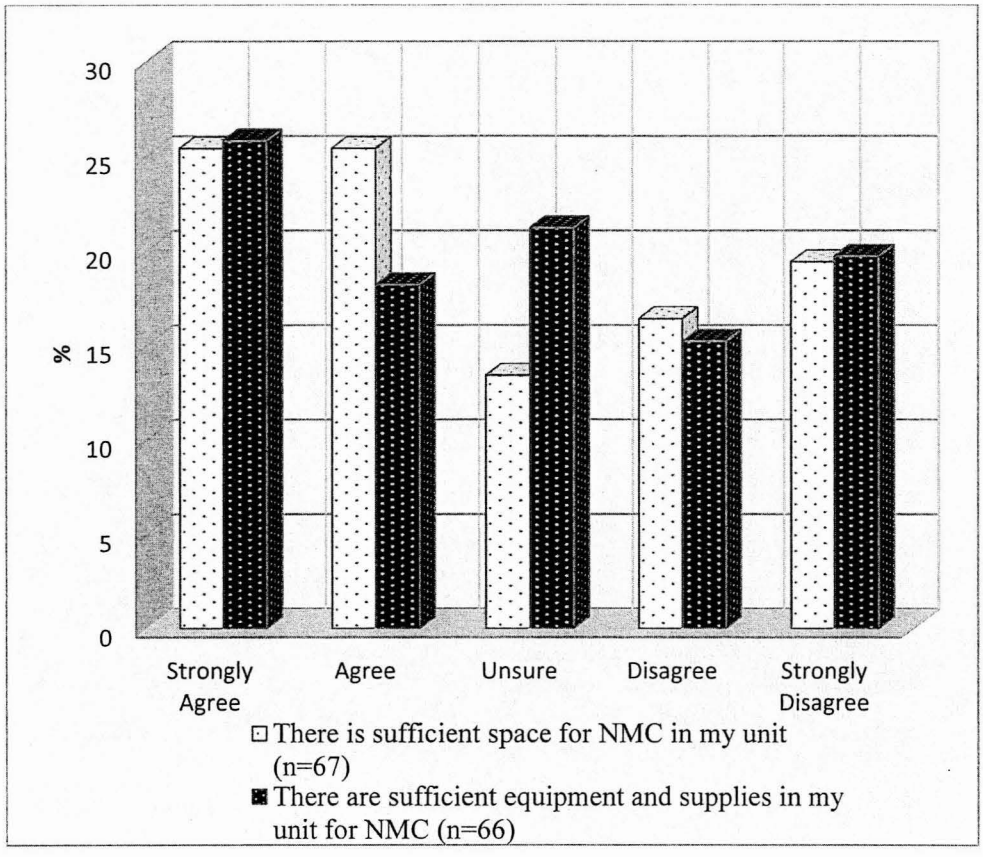
SA=strongly agree; A= agree; U=unsure; D=disagree; SD=strongly disagree

Despite the positive reaction on time for NMC in the maternity units, the majority of respondents, 35.8% (n=24) disagreed and 14.9% (n=10) strongly disagreed that doctors would have time for one more procedure. It is worth noting that a significant 15% (n=15) were unsure.

3.2.6 Space and equipment for performing NMC

The majority of the respondents had positive perceptions about the availability of space and equipment for NMC although a significant percentage (21.2%) was unsure about the availability of equipment (Figure 7).

Figure 7: Distribution of respondents' responses to statements on space and equipment for NMC



3.2.7 Perceptions on the availability of human resources for NMC

Although the majority of the respondents were positive that allowing midwives to be trained in NMC would increase uptake of the service, they were predominantly negative that doctors and midwives were readily available to perform NMC (Table 7).

Table 7: Perceptions about human resources (doctors and midwives) for NMC

	SA	A	U	D	SD
	respondents	respondents	respondents	respondents	respondents
There are insufficient human resources in my unit to do NMC (n=65)	27	15	1	12	10
Allowing midwives to be trained in NMC will increase uptake of the service (n=64)	32	25	5	2	0

Doctors are readily available to perform NMC (n=66)	6	16	14	22	8
Midwives are readily available to perform NMC (n=67)	8	9	9	28	13
SA=strongly agree; A= agree; U=unsure; D=disagree; SD=strongly disagree					

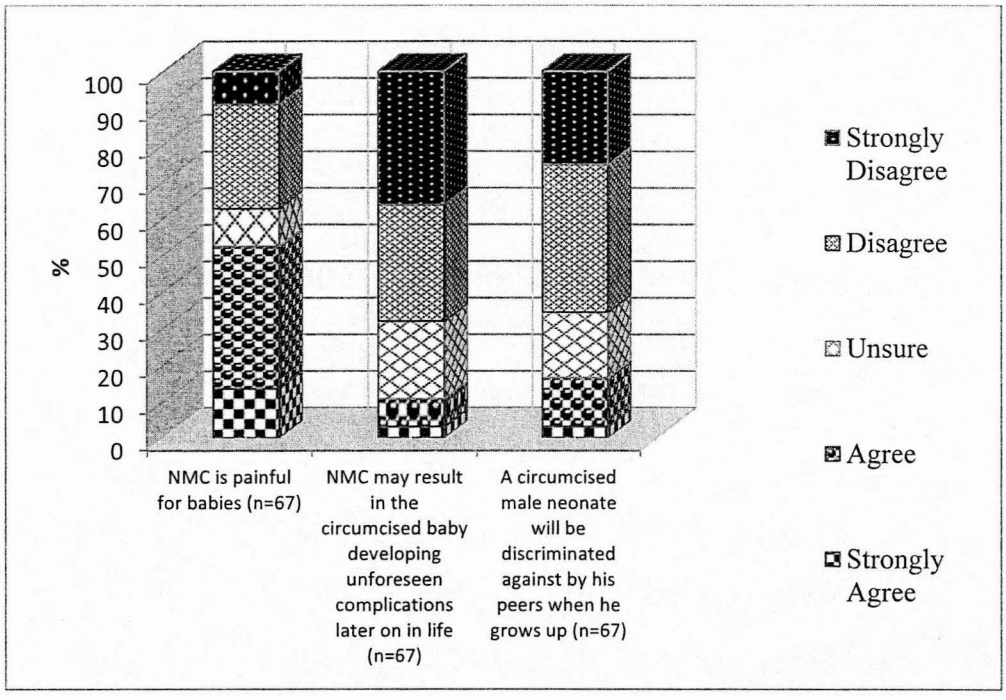
3.2.8 Perceptions about allowing midwives to be trained to perform NMC

Half of the respondents, 50% (n=32) strongly agreed that if midwives would be allowed to be trained to perform NMC, services (NMC) provision would be increased. Just below 40% (n=25) agreed and only smaller percentage were unsure and disagreed, 7.8% (n=5) and 3.1% (n=2) respectively.

3.2.9 Perceptions on barriers to NMC

The respondents were asked some statements which referred to some of the possible barriers to NMC. The majority perceived that NMC was painful for the babies. Most of the respondents did not agree that the circumcised babies would develop unforeseen complications later in life and that they would be discriminated against by their peers when they get older (Figure 8).

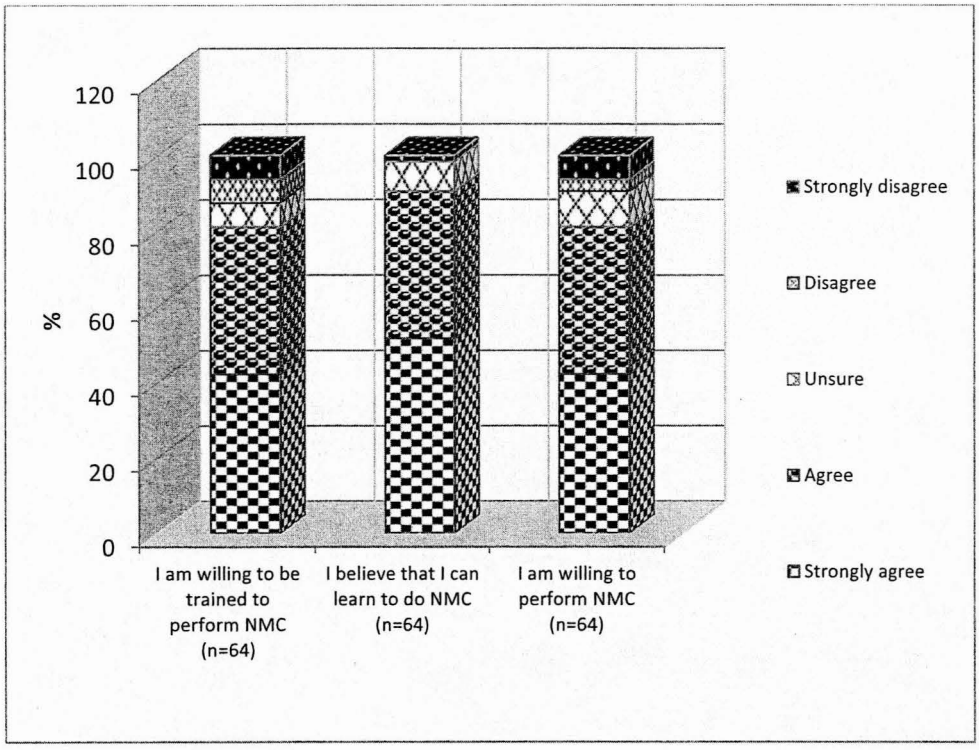
Figure 8: Distribution of respondents' responses to statements on barriers to NMC



3.2.10 Respondents' attitudes on willingness to perform NMC

Respondents were asked to respond to seven statements designed to determine their attitudes towards NMC. Most of the respondents were willing to be trained on NMC, believed that they could learn to do the procedure and and were willing to perform the procedure (Figure 9).

Figure 9: Distribution of respondents' responses to statements on willingness to do NMC



3.2.11 Respondents' values towards NMC

A small percentage of respondets 4.8% (n=3) strongly agreed and 9.5% (n=6) agreed that performing NMC was against their values, and 42.9% (n=27) and 41.3% (n=26) disagreed and strongly disagreed respectively with the statement that "performing NMC is against my values".

3.2.12 NMC and children's rights

more that half of the respondents disagreed 27.7% (n=18) and 26.2% (n=17) strongly disagreed with the statement that circimcising newborns was a violation of their rights. . A further 20% (n=13) were neutral, while over a quarter either agreed 4.6% (n=30) or srtongly disagree 21.5% (n=14) that NMC violates children's rights.

3.2.13 Encouraging parents to circumcise their male infants

Most of the study respondents were positive about encouraging all parents to circimcise their male infants as 40.9% (n=27) and 42.4 (n=18) strongly agreed and agreed respectively.

3.2.14 NMC and consent

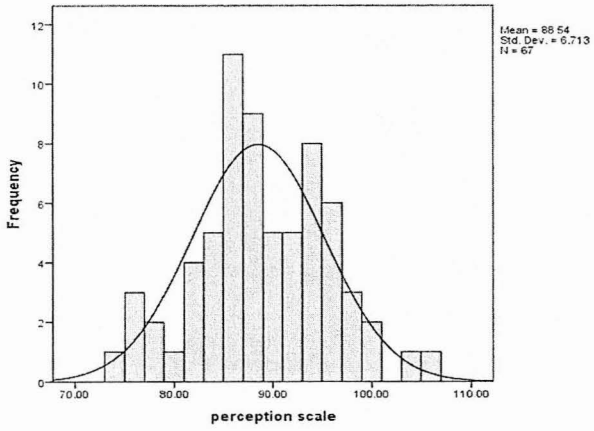
The majority of the respondents perceived that ccircumcision should only be performed on consenting clients as 18.2% (n=12) strongly agreed and 37.9% (n=25) agreed with this statement. A significant percentage, 25.8% (n=17), disagreed while only 12.1% (n=8) strongly disagreed.

3.3 Section C: Association between scales and socio-demographic characteristics

3.3.1 Overall perceptions

The mean perception score was 88.5, and standard deviation was 6.713, the range was 31 and Interquartile range was 9. This indicated that, on average, doctors and midwives had positive perceptions of NMC. The skewness of the frequency distribution, as computed with SPSS, is between -1/+1 which indicates that the frequency of the response scores perfectly normally distributed as shown in Figure 10.

Figure 10: Distribution of the frequency of the perceptions scores

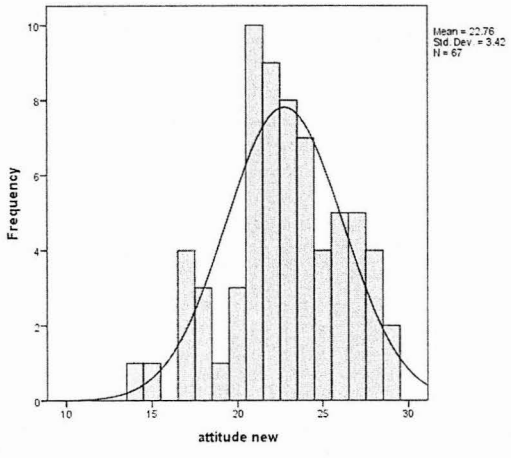


3.3.2 Attitude score

The mean attitude score was 22.76 and standard deviation was 3.420, the range was 15 and Interquartile range (IQR) was 4. Overall, doctors and midwives had a positive attitude towards NMC.

The skewness of the frequency distribution, as computed through SPSS, is negative thus skewed to the left which indicates that most of the distribution of the response scores under the attitude scale is on the right as shown in the Figure 11.

Figure 11: Distribution of the frequency of the attitude response scores



3.3.3 Perceptions and attitudes by socio-demographic characteristics

Table 8 below shows the summary of perception and attitude scores by socio-demographic characteristics. There was statistically significance difference / association noted between perceptions and most of the other socio-demographic characteristics except for the number of years qualified as a midwife or doctor, at p-value 0.053. This indicated that the more years the practitioners had as a professional, the more positive were their perception towards NMC.

Furthermore, there was statistical significance difference / association between attitudes and most of the other socio-demographic characteristics except for the number of years of working in maternity unit at p-value 0.031). This indicated that the more years the practitioners had spent working in the maternity unit, the more they had positive attitudes towards NMC.

Table 8: Perception and Attitude scores by socio-demographic variable (n=67)

Socio-demographic characteristic		**Perception %(n)**		**p-value**	**Attitude % (n)**		**p-value**
		Pos	Neg		Pos	Neg	
Sex	Female	90 (53)	6 (10)	0.572	54 (30)	49 (29)	0.537
	Male	100 (8)	0		63 (5)	37 (3)	
Age	24 - 39	90 (38)	10 (4)	0.477	67 (28)	33 (14)	0.266
	40 - 55	92 (23)	8 (2)		64 (16)	36 (9)	
Facility	Mankayane	93 (13)	7 (1)	0.259	57 (8)	43 (6)	0.413
	G.Shepherd	93 (13)	7 (1)		57 (8)	43 (6)	
	Hlathikhulu	89 (16)	11 (2)		78 (14)	22 (4)	
	Mbabane	90 (19)	10 (2)		67 (14)	33 (7)	
Nationality	Swazi	90 (47)	10 (5)	0.473	67 (14)	33 (7)	0.260
	Zimbabwe	100 (13)	0		65 (34)	35 (18)	
	Malawi	100 (1)	0		69 (9)	31 (4)	
	DRC	100 (1)	0		100 (1)	0	
Profession	Doctor	100 (7)	0	0.544	86 (6)	14 (1)	0.169
	Midwife	90 (54)	10 (6)		63 (38)	37 (22)	
Where childhood was spent	Urban	92 (36)	8 (3)	0.150	56 (26)	44 (13)	0.072
	Rural	89 (25)	11 (3)		61 (17)	39 (11)	
# of years working in maternity	1-5	90 (45)	10 (5)	0.053	68 (34)	32 (16)	**0.031**
	6-10	100 (7)	0		43 (3)	57 (4)	
	11-15	50 (1)	50 (1)		50 (1)	50 (1)	
	16-20	100 (2)	0		50 (1)	50 (1)	
	21-25	100 (1)	0		68 (34)	32 (16)	
	26-30	90 (45)	10 (5)		43 (3)	57 (4)	
# of years	1-5	83 (15)	17 (3)	**0.053**	56 (10)	44 (8)	0.941

qualified as a doctor or midwife	6-10	97 (28)	3 (1)		69 (20)	31 (9)	
	11-15	86 (6)	14 (1)		57 (4)	43 (3)	
	16-20	80 (4)	20 (1)		80 (4)	20 (1)	
	21-25	100 (5)	0		60 (3)	40 (2)	
	26-30	100 (3)	0		100 (3)	0	
Experience on NMC	Yes	100 (13)	0	0.825	54 (7)	46 (6)	0.623
	No	89 (47)	11 (6)		68 (36)	32 (17)	
Training on NMC	Yes	100 (10)	0	0.480	70 (7)	30 (3)	0.216
	No	89 (51)	11 (6)		69 (38)	61 (35)	
Length of training period	1 day	100 (2)	0	0.416	33 (1)	67 (2)	0.290
	1 week	100 (7)	0		100 (3)	0	
	2 weeks	100 (2)	0		50 (2)	50 (2)	

Pearson Chi-Squared was used in testing for association between the perception and attitude scales and the socio-demographic characteristics.

3.4 Section D: Difference in perception and attitude scores among the socio-demographic variables

Doctors in general were found to have a more positive perceptions and attitudes towards NMC than midwives (Table 9). The length of training has been removed from the table since there are no negative responses on perceptions scale hence there is nothing to compare with.

Table 9: Testing for differences on socio-demographic characteristics' scores

Socio- demographic characteristic	**p-value**	
	Perceptions	**Attitudes**
Sex	0.093	0.674
Age	0.864	0.466
Nationality	0.983	**0.023**
Facility	0.687	0.276
Profession	**0.041**	0.120
Length of time working in maternity unit	0.770	0.382
Length of time qualified as doctor or midwife	0.677	0.858
Training in NMC	0.651	0.677

CHAPTER FOUR: DISCUSSION

4. Introduction:

This chapter contains a discussion of the key findings that were presented in the preceding chapter. The purpose of the study was to investigate the perceptions and attitudes of doctors and midwives towards neonatal male circumcision (NMC).

4.1 Perceptions towards NMC:

This study found that the respondents mostly had positive perceptions and attitudes towards NMC. The majority were of the idea that the procedure should be done by a trained professional. Similar perceptions, though not by health professional, were displayed when 91.9% of women, in a study conducted in Botswana, mentioned that they would be interested in circumcision for their newborn son if the procedure was performed in a hospital by a trained doctor (Plank *et al*, 2010). Furthermore, the majority chose the hospital or clinic as the ideal place for NMC as compared to home. In this study was that 93% of the women chose a trained physician as the provider of the service yet a larger percentage of this study population did not agree that only doctors should perform NMC.

In this study, the respondents perceived human resources to be one of the hindrances to NMC. The majority of the respondents did not agree that doctors and midwives were readily available to perform NMC. A similar scenario was also mentioned in a study that was conducted in Kenya, which reported a shortfall of health workers prior to the introduction of the MC services (Perchal *et al*, 2011). The Kenyan Government had to rely on the support from international partners in order to make a considerable progress in closing the gap in the number of trained MC health workers needed to meet MC targets. This Kenya study also found that there had been no

forecasting of human resource and training needs associated with the introduction of the MC programme, which was the similar case with Swaziland. Similar sentiments were shared by Pincock (2007) when he mentioned that, one of the most formidable challenges facing the roll-out of the MC programme in Swaziland would be establishing an appropriately trained medical workforce to do tens or hundreds of thousands of operations. He also noted that, in this country, there were around 100 doctors treating a population of 1 million people with the world's highest HIV rate.

Sawires et al, (2007) identified the cost of equipment and its maintenance, and the treatment of complications as some of the potential challenges for scaling up the MC programme. In this study, though the majority of the respondents (44%) perceived that there was sufficient equipment and supplies to perform NMC, there was quite a substantial proportion (34%) that did feel that facilities did not have sufficient equipment to undertaken NMC. For the success of the MC programme implementation and for reaching the national set NMC target, a strong supply chain management system for NMC equipment and supplies is a requirement.

The majority of the respondents in this study agreed that NMC and MC have many health benefits for boys and adult men. Warner and Strashin, (1981) also had similar findings when they stated that, circumcising the newborn facilitates penile hygiene, prevents cancer of the penis and decreases the incidence of genital herpes in later life. They also mentioned that NMC is associated with much lower morbidity and mortality and with lower costs than therapeutic circumcision and recommended prophylactic circumcision for the male population as a whole.

4.2 Attitudes towards NMC

The attitudes towards NMC among the study population were predominantly positive. Similar findings were found in a study conducted by Stein *et al*, (1982) focusing on attitudes, knowledge, and personal factors related to circumcision in the newborn period. This study discovered that 65% of the physicians conveyed a positive attitude about routine neonatal circumcision to their patients. Likewise in a descriptive cross-sectional study undertaken amongst 4th year pharmacy and nursing students studying at a university in KwaZulu-Natal, although they had moderate knowledge of male circumcision and HIV prevention, their attitudes were also positive toward circumcision. The majority even felt that promoting MC, including NMC is appropriate and should be encouraged (Naidoo, et al, 2012).

The respondents in this study were supportive of NMC, and willing to incorporate it in their routine services. These findings concurred with a study that was conducted in Zimbabwe. It reiterates that, although public health benefits would take longer to realize from infant MC, there was a relatively high acceptability and positive attitudes towards MC. This study also suggested that an enabling environment saw a pre-requisition for NMC, which includes receptive attitudes among health care providers for the scale-up of the programme, though which attaining high national MC targets would be important in furthering the HIV decline in Zimbabwe (Mavhu et al, 2011). It is worth to note that the previous statement is also the intended target for Swaziland as well.

4.3 Influence of socio-demographic characteristics and perceptions and attitudes towards NMC

This study did not find any statistically significance difference between men and women and their perceptions and attitudes towards NMC. Even though men had more positive perceptions

and attitudes towards NMC than females, as stated in Table 8, this difference was not statistically significant.

Umar, et al (2013), in a study conducted in Malawi, concluded that, men preferred that MC should be conducted by male health providers only. He further mentioned that, traditionally, male circumcision has been a male-only affair shrouded in secrecy and rituals.

Age was another socio-demographic characteristic that did not show any statistically significant relationship between perceptions and attitudes towards NMC. The findings in this study demonstrated mixed findings, in which the older respondents (40-55 years) had slightly more positive perceptions (92%) than the younger group (24-39 years). The reverse was observed with the attitudes, where the younger group had slightly positive attitudes than their older counterparts. In a survey of randomly selected primary care physicians in USA, age was found to be a socio-demographic determinant to circumcision. This study showed that circumcision was more often supported by doctors who were older and male.

The number of years working in the maternity units in Swaziland was found to be statistically significant in this study [p=0.031]. The respondents with a fewer years working in the department were found to have more positive attitudes (68%) as compared to the other categories. An explanation for this phenomenon is that, those who have been working the maternity unit for a longer time and feeling already over whelmed with work, may feel that adding another procedure, like NMC, may be an extra work burden as compared the intended public health benefits. A similar observation was made by Ford, *et al* (2002) who stated that, people tend to be more resistant to the background in which change is being initiated rather than to the change itself.

On the other hand, the number of years since the respondents were qualified as doctors or nurses, was also significantly related with perceptions [p=0.053]. Their prolonged exposure to the challenge of HIV faced by the country may have influenced their perceptions to be more positive, possibly driven by the internal functional strive for the need to change this situation around, having the clients' interests at heart. In a study conducted by the US Embassy in Botswana, (which Letamo, (2003) stated that had one of the highest HIV prevalence in the world), in 2014, health officials from that country agreed that, not only will infant circumcision help protect boys from HIV when they become sexually active later in life, but that it also protects infants and boys from serious health complications such as urinary tract infections and paraphimosis, a condition that can lead to pain and swelling of the penis and may require surgery (US Embassy, 2014)

Even though most of the respondents in this study were not trained on NMC (85.1%), they indicated that they were willing to be trained and to perform the procedure. Sheldon, et al (2012) also reported similar findings in a study conducted on the clinicians in South Africa and Zimbabwe. They also showed willingness to integrate new HIV prevention evidence into practice and to become trained to offer the procedure to patients. Even in this study, most nurses were not trained on NMC but were eager to be trained to perform the procedure.

This study found that doctors have more positive perceptions and attitudes towards NMC than midwives. This could be a cause for concern since, according to the Service Availability Mapping (SAM) report of 2011, there are 93.5 midwives per 100 000 population as opposed to 23.0 medical doctors or physicians per 100 000 population (SAM, 2011). The more midwives are positive towards NMC the better for the increased uptake of the services. Therefore,

midwives' role amongst others is to give information to the public in order to increase knowledge on HIV and to prevent HIV transmission which in this case includes NMC strategy.

Findings from this study identified that there was no significant relationship between perceptions and attitudes towards NMC irrespective of where one spent her/his childhood. On the other hand, Bengo *et al.*, (2010) in a situational analysis of male circumcision in Malawi, found that urban residents were more knowledgeable and had more positive attitudes towards circumcision than residents of peri-urban and rural areas. . These findings were consistent with Nnko, *et al* (2001) when he discovered that, male circumcision was becoming more popular among a traditionally non-circumcising ethnic group in Tanzania, especially in urban areas and among boys who have attended secondary schools.

4.4 Impact of the study on provision of services

The positive perceptions and attitudes that were demonstrated in this study indicate a fertile ground upon which to strengthen the NMC programme. Though the majority of the respondents were not trained on NMC, they were aware of the benefits from the procedure and were willing to be trained in order to professionally provide the service, irrespective of their sex and profession/cadre.

Although most of the respondents were willing to incorporate NMC into their routine services, the issues of human resource, in terms of both quantity and quality would need to be strengthened.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5. Introduction

This chapter will present the conclusion of this study and recommendations. Also in this chapter will be the strengths and limitation of the study.

5.1 Conclusion

This study explored the perceptions and attitudes of hospital based doctors and midwives towards NMC in four regional hospitals are Swaziland, namely Good Shepherd Hospital, Hlathikhulu Government Hospital, Mankayane Government Hospital and Mbabane Government Hospital.

The perceptions and attitudes of doctors and midwives in this study were found not to be negative, even though the majority had had no formal training on NMC, irrespective of the number of socio-demographic characteristics explored in this study.

The study attempted to empirically fill the gap in literature regarding NMC perceptions and attitudes of hospital based doctors and midwives in Swaziland regional hospitals, in relation to the provision of the service. Therefore, to improve perceptions and attitudes towards NMC, capacity building with regards to NMC is of utmost importance since the majority of doctors and midwives reported that they were not trained on NMC.

5.2 Strengths and Limitations of the study

5.2.1 Strengths of the study

This is the first study to report on perceptions and attitudes of doctors and midwives towards neonatal male circumcision in Swaziland. Perceptions and attitudes demonstrated by doctors and midwives are important because, these are the practitioners that are designated to perform NMC and / or rather influence mothers to agree that NMC be performed on their neonates. Thus, the findings of the study bear plausible and valuable information for planning and implementing NMC programmes. Another the strength of the study was that it clearly defined inclusion and exclusion criteria and the items in the perception and attitude scales were valid and reliable as denoted by Cronbach's scores above the benchmark of 0.65.

5.2.2 Limitations of the study

Regardless of the strengths of the study, some limitations were noted. Since the study is cross-sectional, causal directions between perceptions, attitudes and influence of socio-demographic variables require stronger methodologies such as longitudinal study designs, therefore could not be examined in this cross-sectional study. The lack of similar studies posed a limitation in comparing results from other institutions, however, this study forms a base upon which other studies could be undertaken. Though the study sought to determine perceptions and attitudes towards NMC, knowledge was also determined even though there were a few statements focusing towards this variable.

The study population (N=67) may not have been large enough and ideal for a quantitative research study.

5.3 Recommendations:

The following recommendations are made based on findings of the current study:

5.3.1 Training

- Given the low number of respondents who were trained in NMC, all doctors and midwives should be exposed to a structured in-service training on NMC by an accredited training institution, according to the national standards. Emphasis should be put to incorporating NMC into the nursing and midwifery in-service curriculums since these constitute the larger cadre of health care providers in the maternity wards of Swaziland and they are predominantly trained locally.
- NMC procedure should be incorporated into the pre-service training curriculum to ensure that every doctor or midwife is able to perform NMC whey they graduate from their respective training institutions.

5.3.2 Community Mobilization

- Fear of pain for the children was one of the noted barriers to NMC in this study. Although this study did not focus on the parents' perceptions and attitudes towards NMC, it may be recommended that community mobilizations aimed at educating the public, especially to-be parents, on the NMC procedure, the benefits and address the myths and misconceptions attached to it as well as demand creation. This would assist in obtaining consent for NMC even before delivery and improve access to the NMC service.

5.3.3 Equipment

- More than half of the respondents in this study reported to be having insufficient equipment in their units to sufficiently perform NMC, procurement of sufficient equipment to perform the procedure is recommended.

5.4. Study implications

The implications of the study findings shall be deliberated on in as far as training; practice, administration and research are concerned.

5.4. 1 Training

The majority of the respondents in this study were not trained on NMC but they demonstrated positive perceptions and attitudes towards the procedure. Systemic training is necessary in order to influence positively toward practice. Therefore structured training on NMC, for both doctors and midwives, would be required to ensure that the services are provided in all the relevant health facilities.

5.4.2 Practice

Some positive perceptions and attitudes towards NMC were observed in the current study. Research shows that perceptions and attitudes influence behavior or practice. With this positive perceptions and attitudes observed in this study, it forms an enabling environment for expanding the NMC service provision. This could be enhanced with practical inputs like NMC tools such as procedure manuals, brochures that provide specific NMC messages to translate this into improved service provision.

Health workers can also enhance NMC practice by identifying all uncircumcised male children during immunization sessions and provide individualized NMC knowledge and advocacy, to the

mothers, in order to enhance a positive NMC behavior from parents; however, it all begins with positive perception and attitudes that health workers possess.

5.4. 3 Administration

Administrators play an important role in educating professionals and making policies that enhance NMC such as mass education in the community and promotion of adverts in favor of NMC. Administrators can also introduce appropriately designed NMC programs to the health facilities on suitable NMC practices targeting all mothers during the pre-natal period. Collaborations with the Rural Health Motivators (RHMs) may also be explored so that home visits are conducted to encourage clients who do not deliver their babies in health facilities to still brig their male neonates for circumcision. Finally, policies are required to focus on improvement of NMC in all aspects and this requires a multi-structural framework and harmony in various stakeholders.

5.4. 4 Research

The essence of research is to build a body of knowledge. The findings of this study serve as a basis for other scholars to conduct further studies on NMC behavior

Since the community also a significant stakeholder in the uptake of NMC services, another study could be undertaken to explore perceptions and attitudes in the community as well.

Furthermore a qualitative aspect would have enriched this study in order to enhance informing policy makers and the Ministry of Health.

5.6 Dissemination of findings

The findings of the study will be published in a peer, scholarly reviewed journal. Copies of the research study will be made available to the University of Witwatersrand Library, Ministry of Health-Swaziland and presentations will be made in selected national and international fora. The study findings will also be presented to the four study institutions, more especially those working in the maternity units.

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APPENDICES:

Appendix A: Questionnaire

Feel free to respond genuinely and correctly. Completed questionnaires should be placed in a sealed envelope into the box provided. Please put a tick (√) in the box corresponding to your answer of choice or fill in the blanks paces as applicable.

Name of Health Facility _____

1. What is your sex?	Female:		Male:
2. How old are you?			
3. What is your nationality?			
4. Where did you spend most of your childhood?	Rural area	Peri-urban area	Urban area
5. Are you a doctor or a midwife	Doctor		Midwife
6. If you are neither a doctor, nor a midwife, what is your profession			
7. When did you start working in this maternity unit?	Years		
	Months		
8. When did you qualify as a midwife / doctor?	Years		
	Months		
9. Do you have any experience in doing neonatal circumcisions?			
Explain what experience that you have:			
10. Have you been trained to do NMC?	YES		NO

10.1 If yes, when were you trained?	
10.2. How long was your training?	
10.3. By whom were you trained?	

Tick (√) appropriate box	Strongly agree	Agree	Unsure	Disagree	Strongly disagree
11. NMC is a minor surgical procedure.					
12. If performed by a trained health care professional, NMC is safe for the new born					
13. NMC should only be performed by a trained health professional.					
14. Only doctors should perform NMC					
15. Midwives can perform NMC if they are trained to do so.					
16. NMC should only be performed by male health care professionals					
17. I am willing to be trained to perform NMC					
18. Circumcision has many health benefits for boys and adult men					
19. Circumcised male neonates are less likely to have urinary tract infections					
20. NMC will reduce the chances of getting some STIs when the child becomes sexually active					
21. NMC can reduce the chances of penile cancer later in life					
22. NMC is a cosmetic procedure					

23. NMC is painful for babies.					
24. A circumcised male neonate will be discriminated against by his peers when he grows up					
25. NMC may result in the circumcised baby developing unforeseen complications later on in life					
26. Circumcision is necessary for all male neonates for HIV prevention					
27. Circumcision should only be performed for consenting boys or adult males					
28. I would encourage all parents to circumcise their male infants.					
29. I am confident about performing NMC					
30. I believe that I can learn to do NMC					
31. I am willing to perform NMC					
If not please indicate why you would not be willing to perform NMC					
32. Performing NMC is against my values					
33. Allowing midwives to be trained in NMC will increase uptake of the service					
34. Circumcision of newborn is violation of children's rights					
The following questions are about the feasibility of performing NMC in your unit. As a procedure, NMC takes approximately 10 – 15 minutes and is usually using a combination of equipment, supplies, instruments, local anaesthesia and post-circumcision equipment for controlling of bleeding.					
35.NMC can be incorporated into the routine maternity unit procedures					
36. NMC is not a time consuming procedure					

37. The doctors here will not have time for one more procedure					
38. The midwives here will not have time for one more procedure					
39. There is sufficient space for NMC in my unit					
40. There are sufficient equipment and supplies in my unit for NMC					
41. There are insufficient human resources in my unit to do NMC					
42. Doctors are readily available to perform NMC					
43. Midwives are readily available to perform NMC					
44. Are there any comments you would like to make about NMC					

Appendix B. Research questionnaire pre testing. Comments from Piggs Peak Government Hospital.

The general comment is that the respondents understood the questionnaire well and there was no response which indicated some confusion on the questionnaire.

A total of 10 questionnaires were filled and of these, 25% did not answer the questions on the last page which made me to realize the importance of numbering the questionnaire pages and stating the number of pages in the instructions section.

The questions were not properly numbered and this has been corrected.

I also realized the need to ensure th**at the Likert Scale ratings are included at the top of every page of the questionnaire**

The findings from the answered questionnaires were as follows:

1. Sex: 75% were females and the rest were males.

2. Age: 50% were aged between 25 – 30 years, 12.5% between 30 and 35 years, and 37.5% between 45 and 50 years.

3. Nationality: 100% of the respondents were Swazi nationals.

4. Childhood: 50% of the respondents spend their childhood in the peri-urban area, 25% in the rural and 25% in the urban areas.

5. Profession: 100% of the respondents were midwives.

6. Neither a doctor nor a midwife: None of them were neither a doctor nor a midwife.

7. Time working in the maternity unit: 1-2 years were 50%, 3-4 years 12.5% and 37.5% did not state the number of years they have worked in the maternity unit

8. Time qualified as a doctor or midwife: 1-10 years were 50%, 11 – 20 years were 12.5% and 20 – 30 years were 25%. 1 respondent did not answer this question.

9. Experience in ding NMC: 100% of the respondents had not experience in doing NMC.

10. Training on NMC: 100% had not been trained on NMC and as such, questions 10.1 to 10.3 were not applicable.

11. NMC is a minor surgery: 100% of the respondents agreed that NMC is a minor surgery

12. NMC is safe if performed by a trained health care professional: 75% strongly agree and 25% agree.

13. NMC should only be performed by trained health professionals: 75% strongly agree and 25% agree.

14. Only doctors should perform NMC: 62.5% of the respondents disagreed, 25% were unsure and 12.5% agreed.

15. Midwives can perform NMC if they are trained to do so: 62.5% of the respondents disagreed, 25% agreed and 12.5% disagreed.

16. NMC should only be performed by male health care professionals: 75% of the respondents strongly disagreed and 25% disagreed.

17. I am willing to be trained to perform NMC: 62.5% of the respondents strongly agreed, 12.5% agreed, 12.5% disagreed and 12.5% strongly disagreed.

18. Circumcision has many health benefits for boys and adult men: All the respondents strongly agreed that circumcision has many health benefits for boys and adult men.

19. Circumcised male neonates are less likely to have urinary tract infections: of the all the respondents, 50% strongly agreed that circumcised male neonates are less likely to have urinary tract infections, 37.5% agreed and 12.5% strongly disagreed.

20. NMC will reduce the chances of getting some STIs when the child becomes sexually active: 75% of the respondents strongly agreed and 25% agreed.

21. NMC can reduce the chances of penile cancer later in life: 62.5% agreed, 25% strongly agreed and 12.5% was unsure.

22. NMC is a cosmetic procedure: 62.5% of the respondents disagreed, and 12.5% agreed, 12.5% were unsure and another 12.5% strongly disagreed.

23. NMC is painful for babies: 37.5% of the respondents strongly agreed, 25% were unsure, 12.5% agreed, 12.5% strong disagreed and the other 12.5% disagreed.

24. A circumcised male neonate will be discriminated against by his peers when he grows up: 50% of the respondents strongly disagreed, 25% were unsure and 25% disagreed.

25. NMC may result in the circumcised baby developing unforeseen complications later on in life: 25% of the respondents were unsure, 25% disagreed and 25% strongly disagreed. 25% did not answer this question.

26. Circumcision is necessary for all male neonates for HIV prevention: 75% of the respondents agreed and only 25% strongly agreed.

27. Circumcision should only be performed for consenting boys or adult males: 37.5% strongly agreed, 25% strongly disagreed, 12.5% were unsure, 12.5% disagreed and the other 12.5% did not answer the question.

28. I would encourage all parents to circumcise their male infants: 50% strongly agreed, 37.5% agreed, 12.5% disagreed.

29. I am confident about performing NMC: To this question, 87.5% of the respondents strongly disagreed and only 12.5% were unsure.

30. I believe that I can learn to do NMC: 62.5% said they strongly agree and 37.5% agreed.

31. I am willing to perform NMC: 62.5% strongly agreed, 12.5% agreed, 12.5% were unsure and 12.5% strongly disagreed. When asked if not please indicate why you would not be willing to perform NMC; 37.5% of the respondents answered this questions and the reasons that were given were that, there is too much work already, due to staff shortage, they would not be able to do NMC and one cited the issue of not wanting to inflict unnecessary pain to the newborns.

32. Performing NMC is against my values: 50% of the respondents strongly disagreed, 37.5% disagreed and 12.5% strongly agreed.

33. Allowing midwives to be trained in NMC will increase uptake of the service: 50% of the respondents agreed, 37.5% strongly agreed and 12.5% were unsure.

34. Circumcision of newborn is violation of children's rights: 37% strongly disagreed, 12.5% strongly agreed 12.5% agreed, 12.5% disagreed, 12.5% were unsure and 12.5% did not answer this question.

35. NMC can be incorporated into the routine maternity unit procedures: 50% of the respondents agreed, 25% disagreed, 12.5% strongly agreed and 12.5% strongly disagreed.

36. NMC is not a time consuming procedure: 62.5% of the respondents were unsure, 25% agreed and only 12.5% disagreed.

37. The doctors here will not have time for one more procedure: 62.5% agreed, 25% were unsure and 12.5% strongly agreed.

38. The midwives here will not have time for one more procedure: 25% of the respondents were unsure, 25% disagreed, 25% strongly agreed, 12.5% strongly agreed and 12.5% strongly disagreed.

39. There is sufficient space for NMC in my unit: 37.5% strongly disagreed, 25% disagreed, 12.5% strongly agreed and 25% did not answer all questions on this page.

40. There are sufficient equipment and supplies in my unit for NMC: 25% disagreed, 12.5% agreed, 12.5% strongly agreed, 12.5% strongly disagreed, 12.5% were unsure and 25% did not answer all questions on this page.

41. There are insufficient human resources in my unit to do NMC: 62.5% of the respondents strongly agreed, 12.5% agreed and 25% did not answer all questions on this page.

42. Doctors are readily available to perform NMC: 37.5% were unsure, 25% strongly disagreed, 12.5% agreed and 25% did not answer all questions on this page.

43. Midwives are readily available to perform NMC: 50% of the respondents disagreed, 25% strongly disagreed and 25% did not answer all questions on this page.

When asked to make comments about NMC, the respondents had different views which included the issue of staff shortage, and that if it is introduced in the maternity unit, more staff should be added, violation of the newborns' rights and that MC should be done to concerting adults, it is against some of the health workers' value and some felt that a different unit should be used for NMC not the maternity unit.

Appendix C: Letter from the University of the Witwatersrand Human Research Ethics Committee (Medical)

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Mr Innocent M Hadebe

CLEARANCE CERTIFICATE	M111149
PROJECT	Perceptions and Attitudes of Doctors and Midwives Towards Neonatal Male Circumcision: A Study in Four Maternity Unit in Swaziland 2012
INVESTIGATORS	Mr Innocent M Hadebe.
DEPARTMENT	School of Public Health
DATE CONSIDERED	25/11/2011
M1111490DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 25/02/2012 CHAIRPERSON .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Dr Julia Moorman

DECLARATION OF INVESTIGATOR(S)
To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

Appendix D: Research approval letter from the Scientific and Ethics Committee

Telegrams:
Telex:
Telephone: (+268 404 2431)
Fax: (+268 404 2092

MINISTRY OF HEALTH
P.O. BOX 5
MBABANE
SWAZILAND

THE KINGDOM OF SWAZILAND

FROM: The Chairman
Scientific and Ethics Committee
Ministry of Health
P. O. Box 5
Mbabane

TO: Mahlubi Hadebe

DATE: 13th July 2012

REF: MH/599C

RE: Perceptions and Attitudes of doctors and midwives towards neonatal male circumcision: A study in four maternity units in Swaziland

The committee thanks you for your submission to the Scientific and Ethics Committee and the clarity on responses to the protocol amendment

In view of the responses submitted after concerns raised and the fact that the study is in accordance with ethical and scientific standards, the committee therefore grants you authority to conduct the study. You are requested to adhere to the specific topic and inform the committee through the chairperson of any changes that might occur in the duration of the study which are not in this present arrangement.

The committee wishes you the best and is eagerly awaiting findings of the study to inform proper planning and programming to use for analysis

Your prompt response to these issues will enable the committee to help speed up this process

Yours Sincerely,

Dr S.M.Zwane
DIRECTOR OF HEALTH SERVICES
(THE CHAIRMAN)
cc: SEC members

DIRECTOR OF HEALTH SERVICES
MINISTRY OF HEALTH
13 JUL 2012
P. O. BOX 5, MBABANE
SWAZILAND

Appendix E: Information document and consent form

Study title:

"PERCEPTIONS AND ATTITUDES OF DOCTORS AND MIDWIVES TOWARDS NEONATAL MALE CIRCUMCISION: A STUDY IN FOUR MATERNITY UNITS IN SWAZILAND 2012"

Dear Sir/Madam

I, Innocent Mahlubi Hadebe am conducting a research on the perceptions and attitudes of doctors and midwives towards neonatal male circumcision (NMC): a study in four maternity units in Swaziland in 2012.

The aim of this study is to explore the perceptions and attitudes of the doctors and midwives in the maternity units of the Hlathikhulu, Mankayane, Mbabane Government Hospitals and the Good Shepherd Hospital towards NMC for HIV prevention.

I am asking you to participate in a research study and you are not by any means pressured to do so.

There are no risks involved by participating in this study and your participation is totally voluntary. There will be no reimbursement for participating and your participation will assist me towards fulfilling my requirements for the Degree of Master of Public Health with the University of the Witwatersrand, Johannesburg.

All the information gathered in this study will be treated with the greatest confidentiality and you are not required to write your name on the questionnaire. The information may be only made available to the Research Ethics Committee and the Medicines Control Council of the University of Witwatersrand, Johannesburg, for quality assurance.

For further information or any questions concerning this research study please do not hesitate to reach me at the mobile phone number: 7606 0235.

Should you have any concerns or complains about this research; you are free to contact my supervisor Dr. Julia Moorman at this number: 0027828884857 or e-mail at Julia.Moorman@wits.ac.za

I thank you in advance for your participation.

Consent form

I agree to participate in this study of perceptions and attitudes of doctors and midwives towards neonatal male circumcision: a study in four maternity units in Swaziland in 2012 as outlined in the information document.

Participants' Name ..... Signature .....

Date .....