Attitudes of Doctors and Nurses towards Task-shifting of Male Circumcision to Nurses in Swaziland

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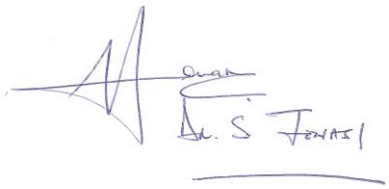
PLAGIARISM DECLARATION

I, Solomon Jonasi, declare that this research report is my original work. It is submitted in partial fulfillment of the requirements for the degree of Master of Public Health, in the field of Health Systems and Policy, in the University of the Witwatersrand, Johannesburg, South Africa. It has not been submitted before for any degree or examination to this or any other University.



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ABSTRACT

Background: Male circumcision (MC) has a substantial effect in reducing HIV infections in men by 60 - 70% making it one of the best available evidence-based biomedical HIV prevention interventions. Swaziland included Voluntary Medical Male Circumcision (VMMC) as part of its comprehensive HIV prevention package but the national scale up has been constrained by the limited availability of trained physicians, who are the only professionals permitted to perform the surgery. Task-shifting has been proposed as a possible strategy to increase service providers in the face of HIV and AIDS and the human resource for health crisis.

Study Aim: The aim of this study was to determine the attitudes of doctors and nurses towards task shifting of male circumcision procedures to nurses in 2012.

Methodology: A cross-sectional, descriptive survey was carried out. A self-administered questionnaire with close-ended rating and reverse coded questions was distributed to all nurses and doctors affiliated to the non-governmental organization (NGO), governmental, missionary and privately-run VMMC clinics nationwide. Data from returned questionnaires were entered, cleaned and analyzed using Statistical Package for Social Science (SPSS) version 22 and Microsoft Excel. Analysis of the internal reliability of the questionnaire scale and sub-scales was conducted. The main statistical procedures were descriptive statistics and tests of association.

Results: The study recruited 398 participants (25.4% doctors and 74.6% nurses), of which 44.2% were male and 56% were Swaziland nationals. This study found that 80.4% of the participants (doctors and nurses) had a positive attitude towards the reform of task-shifting VMMC to nurses. Nurses had a more positive attitude than doctors ($p<0.001$), while male nurses had a significantly more positive attitude than female nurses ($p<0.001$).However, there was no significant difference between the attitudes of male and female doctors ($p=0.130$). The study found that sex ($p=0.001$), profession (doctor vs. nurse) ($p<0.001$), nationality (expatriate vs. local) ($p<0.001$) and having ever practically performed the surgical procedure ($p<0.001$) were significantly associated with the participants attitude. However, their primary role (administrator vs. clinician) ($p=0.059$) and time spent in the VMMC programme ($p=0.112$) did not significantly influence the participants' attitude towards the task-shifting policy reform.

Conclusions and Recommendations: Doctors and nurses in Swaziland generally have a positive attitude towards task-shifting of male circumcision to nurses. Nurses, males, participants with longer exposure and practical experience in VMMC, older participants and expatriates had even more positive attitudes

towards the reform than their counterparts. The findings of the study suggest that the government should consider development of a task-shifting policy after further research that looks into determining attitudes of other stakeholders in VMMC and should also consider strategies to address the special groups that had lower or negative attitudes towards the reform than their counterparts, such as through sensitization campaigns. Feasibility, cost-effectiveness and other practical issues in our setting also need to be taken into consideration, including a possible trial (pilot). The reform should, however, be introduced with consideration of aspects of adequate training, development, supervision and support, administrative regulation, staff motivation and recognition.

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LIST OF ABBREVIATIONS

AIDS: Acquired Immune Deficiency Syndrome

BCC: Behavior Change Communication

DHS: Demographic and Health Survey

ECSA-HC: East, Central, and Southern African Health Community

FLAS: Family Life Association of Swaziland

Government of the Kingdom of Swaziland (GKOS)

HIV: Human Immunodeficiency Virus

HAART: Highly Active Anti-Retroviral Therapy

HRH: Human Resources for Health

HSV: Herpes Simplex Virus

HTC: HIV Testing and Counseling

HPV: Human Papilloma Virus

ICRC: International Committee of the Red Cross

IPC: Interpersonal Communication

MC: Male Circumcision

MSF: *Medecins Sans Frontiers*

MOHSW: Ministry of Health and Social Welfare

MOVE: Model for Maximizing Efficiency

NGO: Non-Governmental Organizations

NPC: Non-Physician Clinician

PSI: Population Services International

SIM: Serving in Mission

STI: Sexually Transmitted Infection

TSH: Task-shifting in health

UNAIDS: Joint United Nations Programme on HIV/AIDS

VMMC: Voluntary Medical Male Circumcision

WHO: World Health Organization

CHAPTER ONE: Introduction, Aims and Objectives and Literature Review

In this first chapter, an introduction of the Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) situation in Swaziland will be given, including the response of the Government of the Kingdom of Swaziland (GKOS) to the growing pandemic. A brief explanation of how research and international influences have shaped the adopted strategies to combat HIV and AIDS will be given.

The national Voluntary Medical Male Circumcision (VMMC) campaign will be the focus of this discussion, highlighting how the critical shortage of human resources for health (HRH), especially trained physicians, has constrained the government's implementation of the national scale-up of the VMMC programme. The introduction ends by highlighting a possible strategy: 'Task-shifting of male circumcision to nurses' as a means of expanding services through increasing the number of service providers. The main barrier to uptake of this strategy is exposed in this account as being embedded in the Swaziland national health policies, such as the Nursing Scope of Practice that does not allow nurses to perform male circumcision (MC) procedures. This research project therefore aims to influence such policies.

The introduction will be followed by a desk-review of literature that discusses different aspects of task-shifting in terms of safety, efficiency, cost-effectiveness, retention and sustainability, ethics, quality issues, successes, acceptability of and attitudes towards task-shifting. Chapter one will end with a Problem Statement and Justification for the study, leading to the Study Question, the Aim and Objectives.

Introduction

Swaziland has one of the most severe HIV epidemics in the world, with 26% of the adult population of reproductive age (15-49 years) being infected with HIV (UNAIDS, 2008; Population Reference Bureau, 2009). According to the 2006/7 Demographic and Health Survey(DHS) results, the age-sex specific HIV prevalence among the 15-19 year age group was estimated at 10% for females and two percent for

males, and the respective prevalence is as high as 49% (females) and 28%(males) for those aged 25-29 (GKOS, 2006).

In response, the Government of Swaziland prioritized HIV prevention within its national response to HIV and AIDS by adopting a comprehensive HIV prevention approach including Behavioral Change communication (BCC), access to HIV Testing and Counseling (HTC), Sexually Transmitted Infection(STI) diagnosis and treatment, safe sex counseling, promotion and provision of condoms and since 2009, VMMC (GKOS, 2009a, 2009b).

VMMC's inclusion as part of the comprehensive HIV prevention package in Swaziland followed the recommendation by the World Health Organization (WHO) in November 2007 (WHO & UNAIDS, 2007a) to include VMMC as part of the comprehensive HIV prevention package. This recommendation was based on a body of evidence ranging from observational studies that found that countries with the lowest MC rate had the highest HIV prevalence rates (Halperin & Bailey, 1999; Westercamp & Bailey, 2007); to the dramatic evidence from the three clinical trials in Africa which demonstrated that male circumcision has a substantial effect in reducing HIV infections in men by 60 -70% (Auvert et al, 2005; Bailey et al, 2007; Gray et al, 2007). This was further bolstered by evidence that MC may reduce the risk of acquiring other STIs such as Herpes Simplex Virus (HSV) type 2, Human Papilloma Virus (HPV), Genital Ulcer Disease and penile cancer (Weiss, 2007; Wawer et al, 2011; CDC, 2008).

The biological explanation of these findings is attributable to the attachment of the HIV to Langerhans cells containing CD4 receptors, which are densely populated in the foreskin. MC, which is the surgical removal of the foreskin of the penis, therefore significantly reduces the opportunity for entry of the virus through sexual intercourse (Szabo & Short, 2000; Muula, 2007). This phenomenon has made MC one of the best available evidence-based biomedical HIV prevention interventions (Peltzer et al, 2001), especially because it is a 'once-off' procedure conferring life-long protection (Krieger at al, 2008; Collins at al, 2002).

In light of international evidence and recommendations, a study was conducted in Swaziland in 2007that estimated the unit cost for a comprehensive package of male circumcision services in Swaziland at 376 Emalangeni per client (equivalent of 376 South African Rand, and approximately US$53) which includes surgical costs (78.6%), communications (14.5%), HIV testing (3.6%) and pre and post operative counseling (3.3%) (GKOS, 2009a). In preliminary analysis, this package of services has been shown to be more cost-effective than other prevention interventions (GKOS, 2009a). Following this analysis and a

country consultation that brought together a wide range of key stakeholders working in HIV, including traditional and cultural leaders, a resolution was made to expand the MC services, spearheaded by the Swaziland Ministry of Health in 2008 (GKOS, 2009b)

High acceptability and demand of the intervention was confirmed by a study carried out in the Manzini region of Swaziland which found that 87% of respondent males were willing to be circumcised (Klausner et al, 2008). The Swaziland VMMC Task Force then developed a National Strategic Plan for VMMC in 2009, that set a goal of circumcising 80% of Swaziland's HIV-negative, uncircumcised males aged 15 to 24 (approximately 112,000 adolescent and adult males) by 2013(GKOS, 2009b).

In order to meet this target, the Ministry of Health VMMC Task Force partnered with Non-Governmental Organizations (NGOs) such as Population Services International (PSI) and Family Life Association of Swaziland (FLAS) to run the national scale-up. Through these partners, four specialized, grounded clinics were opened in two districts (Manzini and Hhohho), two of which are PSI-run and two FLAS-run, where VMMC services are provided free of charge. These two partners also run mobile clinics nationwide, and have also been major players in the integration of VMMC services in the governmental clinics and hospitals in the four districts of Swaziland (PSI, 2010).

The goal of the national scale-up plan however was to have at least 26 sites countrywide dedicated to provision of VMMC services (GKOS, 2009b), with demand creation being carried out through the media and Inter-Personal Communications (IPC) agent mobilization campaigns in the communities.

In fact, Swaziland was well-positioned to successfully implement this national programme and reach the set targets considering the country's small geographic surface area (17,364 sq kms) and population of approximately 1,018,499 according to the 2007 census (WHO, 2006a). The intervention also had the advantage of high acceptability and demand among uncircumcised men (Klausner et al, 2008), especially when services are cheap and safe (Westercamp & Bailey, 2007).However, despite the high acceptability and demand (Klausner et al, 2008; GKOS 2009a),according to reviews at the end of 2010, only 9,309 males had been circumcised (8.3% of the target) (WHO and UNAIDS, 2010a) and by 2011 only 24 315 males had been circumcised (21.7% of the target) (WHO and UNAIDS, 2011b).

The slow progress towards the target has been partly attributed to the lack of human resources for implementation, especially in terms of trained physicians and registered surgeons, similar to other African countries (Samb et al, 2007; WHO & UNAIDS, 2008; WHO, 2011; GKOS, 2008; GKOS, 2009a; PSI,

2010; JHPIEGO, 2010). The greatest challenge has been that the service can only be provided by registered surgeons and medical doctors (physicians), which are in short-supply, as highlighted earlier.

The country health system fact sheet shows that in 2004 there were only 171 physicians and 6,828 nurses and midwives in Swaziland, with a density per 100,000 of 16 and 630 respectively (WHO, 2006a). In 2006, the East, Central, and Southern African Health Community (ECSA-HC), together with the World Bank estimated that the Swaziland doctor population ratio was 10 per 100,000 population (World Bank, 2006; ECSA-HC, 2010).

In many parts of Sub-Saharan Africa there are fewer than five physicians for every 100,000 people (WHO, 2006b), with neighboring countries having similarly low doctor to population ratios as follows: Botswana (34), Malawi (2), Mozambique (3), South Africa (76), and Zimbabwe (6)(World Bank, 2006; ECSA-HC, 2010).This is extremely low when compared to the global average of 139 doctors per 100,000 populations; the United States of America (US) & United Kingdom (UK) ratios are 242 and 277 doctors per 100,000 respectively (Naicker et al, 2009). The shortage of health care workers, especially physicians is therefore a general problem in Africa, resulting in the need to come up with strategies to bridge the gap in human resources for health, especially in the face of the HIV and AIDS pandemic.

In the Swaziland context, the scale-up requires up to 26 doctors for each of these sites (GKOS, 2009b). This is not feasible in the Swaziland setting with a critical shortage of physicians of about 16 physicians per 100,000 population (World Bank, 2006; ECSA-HC, 2010). The proposed scale up would mean that over 15% of the country's physicians would need to be dedicated to provision of VMMC services.

The WHO advocates for task-shifting; the process of delegating clinical care functions from more specialized to less specialized health workers, as a strategy to overcome the human resource constraints in resource poor settings, especially when it comes to addressing the HIV and AIDS epidemic (WHO 2007b;WHO and UNAIDS, 2011). This should be differentiated from task-sharing by which lower cadres may participate in procedures, but are still restricted from taking on certain tasks.

According to the Models for Optimizing Volume and Efficiency (MOVE), which is a task-sharing method that was adopted by the Swaziland MC Taskforce in accordance with the national policy (GKOS, 2009a, GKOS, 2009b; JHPIEGO, 2010); only a physician can perform the actual circumcision procedure of foreskin removal and haemostasis (stopping the bleeding). The nurse assists the physician throughout

this process, and then completes the suturing process after the main (anchor) sutures have been inserted by the physician (WHO, 2010a).

The task-shifting process in this context would therefore entail the allocation of the physician's clinical functions of removal of the foreskin and achieving haemostasis to the nurse, while the physician's role shifts to mentorship, supervision and support of nurses that provide the service. This will have the advantage of increasing the number of service providers and reduce the dependence of service provision on scarce physicians.

Even though task shifting in HIV services, including VMMC and other procedures, has been effectively practiced elsewhere, there are limited data regarding the attitudes of doctors and nurses towards task shifting of medical male circumcision to nurses in Swaziland. This is a concern, as attitudes are a major determinant of the success of the reform, as we shall see below under literature review. Furthermore, it is also not known whether it will be feasible, cost-effective, sustainable and practical to replicate the strategy in Swaziland.

Study Aim

The aim of this study was to determine the attitudes of doctors and nurses towards task shifting of male circumcision procedures to nurses in 2012.

Study Objectives

To achieve the study aim, the study had five specific objectives:

i. Describe the socio-demographic characteristics of the doctors that are involved, or have been involved, in the performance of MC in Swaziland
ii. Describe the socio-demographic characteristics of the nurses that have assisted, or are currently assisting, in the performance of male circumcisions in Swaziland
iii. Describe the attitudes of doctors regarding task-shifting of male circumcision to nurses.
iv. Describe the attitudes of nurses regarding task shifting MC to nurses.
v. Determine a relationship between the socio demographic factors and attitudes towards task shifting male circumcision to nurses

Literature Review

A Literature Review was undertaken to explore the task-shifting reform, including cost effectiveness, safety and efficiency of task shifting, quality, retention and sustainability, the experiences of other countries on task-shifting, successes and challenges. Hereof, all cadres of doctors will be termed 'physicians' and the term 'non-physician clinician' will be interchangeably used to refer to nurses and clinical officers, except in places where specified.

Task-sharing is a method utilized in the health and other non-health care systems to improve efficiency of service delivery. In this method, parts of the process or procedure are designated to different cadres or players to execute (Zachariah et al, 2009). In reference to male circumcision, MOVE is an example of task-sharing, which was developed by WHO and PEPFAR (WHO, 2010a) and specifies clinical functions of the physician and nurse according to cadre. This model was adopted by the Swaziland MC Task-force in 2009 (GKOS, 2009a).

In MOVE, the physicians' duty is to perform the surgical incision and removal of the foreskin, achieve haemostasis (stop the bleeding) and inserting the main stitches called the anchor sutures. The rest of the procedure including anesthesia, assisting in the operation, completing the suturing, applying dressings and recovering the client is left to the nurse, while the physician moves on to the next client. This model was developed because of the need to circumcise large numbers of males at a given time in order to achieve overall health impact. The conventional methods whereby the physician would work with an assistant from beginning to end of a procedure only allowed eight to ten circumcisions to be performed per day, whereby the MOVE model allows a physician to perform over 25 procedures in a day(WHO & PEPFAR, 2012).

Task-shifting in VMMC goes further, delegating the entire process, including making the skin incision, removal of the foreskin, achieving haemostasis and suturing process to nurses, while physicians take on a training, mentoring, support and supervision role(Mullan & Frehywot, 2007). This is aimed at increasing the number of service providers by bypassing the absolute reliance on the physician, based on the larger nurse to patient ratio than the doctor- to-patient ratio in Swaziland (World Bank, 2006; ECSA-HC, 2010; WHO, 2006b). The result is that more clinics would have capacity to perform circumcisions, and the programme scale-up would be possible.

The idea of task-shifting in sub-Saharan Africa has been popularized by the observation that appropriately trained non-physician clinicians (NPCs) can conduct complex surgical procedures such as caesarean sections and vasectomies safely (WHO, 2008b). Some countries that have allowed nurses to perform procedures such as circumcisions after appropriate training, e.g. Kenya, have benefited in terms of successful scale up of their VMMC programmes (Bowa & Lukobo, 2006; WHO, 2008a); however, this can only happen if the national laws and regulations permit the strategy to be implemented.

Task shifting as the recommended approach in resource-poor settings

As attention has been increasing around the need to address human resource shortages for surgery, the potential for task shifting has been encouraged by the findings of numerous studies (Bergstrom, 2005; Phillips et al, 2008; WHO, 2007c; WHO, 2008b; WHO and UNAIDS, 2011a). Task shifting of procedures conventionally performed by physicians has been shown to be effective in overcoming human resource deficits without compromising on quality (Chu et al, 2009; Shumbusho, 2009).

As a result of the growing recognition for this strategy, many international organizations are providing support for training of lower cadres of health workers than physicians for task-shifting in many countries in Africa with the aim of addressing the HRH crisis. Some of these organizations include Medecins Sans Frontiers (MSF), the International Committee of the Red Cross (ICRC), Serving in Mission (SIM), Global Health Access Program and Christian Blind Mission Africa (Chu et al, 2009).The use of NPCs, particularly nurses, in health care delivery is also legitimized and is standard practice in developed nations such the United Kingdom (Sherwood et al, 1997).

Task shifting in non-surgical areas

In non-surgical areas of health care, particularly HIV services, such as ART delivery, it was found that nurse monitored therapy was not inferior to doctor monitored therapy (Sanne et al, 2010). South Africa, Rwanda and Lesotho reported successful task shifting in ART delivery and HIV care by nurses (Emdin, 2012; Callaghan, 2010; Charalambous et al, 2007; Shumbushe et al, 2009; Cohen R et al, 2009; Fairall et al, 2005; Bedelu at al, 2007; Wilson at al, 2005).Screening of cervical cancer in South Africa has also been successfully shifted to nurses (Kawonga& Fonn, 2008).

Task-shifting success in non-MC surgical areas

Almost half of all countries in sub-Saharan Africa use NPCs to perform minor surgical procedures (Mullan & Frehywot, 2007). They have been successfully utilized in Tigray, Ethiopia to perform a significant proportion of emergency obstetric procedures with similar postoperative outcomes achieved under their care as those attained by physicians (Gessessew et al, 2011). In Tanzania and Mozambique, 84% and 92% (respectively) of cesarean sections, obstetric hysterectomies, and laparatomies for ectopic pregnancy are performed by NPCs (Bergstrom, 2008; Pereira, 2007; Kruk et al, 2007). Similar results have been observed in Somalia (Chu et al, 2011) and Malawi (Chilopora et al, 2007) where surgical clinical officers perform 90% of caesarean sections at a district hospital with low morbidity and mortality following the procedures.

Task-shifting success in MC in Africa

At least nine countries have been documented to be practicing task-shifting in MC in Africa namely Ethiopia, Kenya, Malawi, Mozambique, Namibia, Rwanda, Tanzania, Uganda and Zambia (WHO, 2011). Kenya has been a good example of efficient task-shifting in MC, where clinical officers and nurses upon completion of MC training, are tasked to perform the entire procedure from skin preparation, local anaesthetic, incision, haemostasis, suturing, wound dressing and recovery (Government of Kenya, 2012a). Such innovations have been an important ingredient in the success of the Kenya campaign since the government announced this strategic decision in June 17, 2009 (Herman-Roloff, 2011).

Cost effectiveness, safety and efficiency of task shifting

Cost-effectiveness analysis supports the use of nurse practitioners in MC (Bauer, 2010; Chenoweth et al, 2008). Studies have shown that the task shifting process will not only reduce the MC costs, but is also a safe and efficient method of increasing coverage of services (Buwembo et al, 2011). Findings from studies carried out in the MC programmes in Kenya (Krieger et al, 2007) and Zambia (WHO &UNAIDS, 2007b) found MC carried out by nurses to be safe and efficient and recommended that nurses and other NPCs should be considered for MC programmes as providers.

Moreover, because their training can be less expensive and shorter, NPCs are highly cost-effective (Mullan & Frehywot, 2007; Mkandawire et al, 2008; Babigumira et al, 2009; WHO, 2006b), and they can

be as much as 10 times less expensive, with comparable performance, as seen in Mozambique (Vaz et al, 1999). Actually, by one estimate, operations performed by NPCs cost less than a tenth of those performed by physicians (Kruk et al, 2007).

Nurses vs. physicians in quality

In task shifting, quality is the paramount consideration. Studies show that quality is not significantly compromised in health reforms that allow task shifting. For example, a Cochrane review found that nurse practitioners consistently scored better on subjective measures of quality, such as patient satisfaction (Laurent et al, 2006; WHO, 2007a).Other literature also supports the proposition that the quality of general care is maintained (Bauer, 2010; Assefa et al, 2010). In fact, a review in the United Kingdom suggested that there was greater satisfaction from clients who had been attended to by nurses, which they attributed to the better interpersonal skills that nurses have over doctors, who are usually too busy to relate to their clients (WHO, 2007a).

When non-physicians perform clinical functions that society perceives as 'best done by physicians', there is a fear of litigation and increased liability claims by governing bodies especially when complications arise (Buchan & O'May, 2000). However, a recently published analysis of data from 1991 through 2009 in the United States National Practitioner Data Bank clearly showed that nurse practitioners do not increase liability claims or costs, and that nurse practitioners had remarkably lower rates of malpractice claims and lower costs per claim than doctors (Hooker et al, 2009).

The adverse event rate is one of the indicators used to measure quality in male circumcision. Adverse events can include intra- or post-operative bleeding, excessive skin removal, swelling of the penis, infections, scarring or disfigurement of the penis, voiding problems and torsion of the penis among many other complications (WHO, 2008a). Many countries with a male circumcision programme have reported their adverse event rates and these have been summarized below against the cadre of providers performing the MCs as shown in Table 1.

Table 1: Adverse event rate against cadre of MC providers in selected countries

Country	Cadre performing MC procedures	Adverse Event rate
Botswana	Doctors only	<2.0%
Ethiopia	Doctors & Nurses	<0.5%
Kenya	Doctors, Clinical Officers & Nurses	2.0%
Malawi	Doctors, Clinical Officers & Nurses	<2.0%
Mozambique	Doctors & Nurses	<2.0%
Namibia	Doctors & Nurses	1.0-2.0%
Rwanda	Doctors only	<1.-%
South Africa	Doctors only	<3.0%
Swaziland	Doctors only	<5.0%
Zambia	Doctors, Clinical Officers & Nurses	<1.5%
Zimbabwe	Doctors only	<1.0%

Data compiled from WHO and UNAIDS (2011b) report on progress in scaling up voluntary medical male circumcision in East and Southern Africa.

Table 1 demonstrates that there is not much of a significant difference in adverse event rate between the countries where the procedure is carried out by doctors only and where clinical officers and nurses perform MCs. In fact, the highest adverse event rate recorded is from Swaziland (<5.0%) and South Africa where only doctors perform the procedure whereas the rate is <2.0% in places where nurses also perform the procedure; supporting the fact that quality is not significantly compromised by the task-shifting process.

A systematic review and meta-analysis to review the safety of task shifting for circumcision in Africa conducted by Ford et al (2011) confirmed these findings, including other studies such as those carried

out in Mozambique by Vaz et al (1999) and a study done in Israel by Ben et al (2005) that found that the adverse event rate of physicians versus non-physician clinicians was similar, and at times even lower among the non-physician clinician group. The authors speculate that this maybe because NPCs tend to take extra care because they are performing duties which are supposedly above their usual scope of practice. In fact, quality of services has been shown by studies to be a function of training and supervision rather than cadre of providers (Kiggundu et al, 2009; Krieger at al, 2007); the time taken per procedure was also related to experience (Krieger at al, 2007; Buwembo at al, 2011).

Retention and sustainability

Studies show that NPCs are often from the local area, understand local customs and the language and therefore are more likely to remain in their home country. Over 88%of the *técnicos de cirurgia*(clinical officers) trained in Mozambique were still working at district hospitals seven years after their training, while none of the junior doctors who started at the same time remained (Kruk et al, 2007; Pereira, 2010). This is similar to Malawi, where of the 112 orthopedic clinical officers that had been trained since 1984 remained in the country compared to less than 10% of doctors (Mkandawire at al, 2008). This suggests that training clinical officers gave sustainability to the health programmes.

Ethics of task shifting

Public Health principles support the theory of utilitarianism, whereby the greater good of the people or majority is considered as the benchmark for ethical practice (Mill, 1859; Rosen, 2003). In task-shifting, an acceptable standard of care is being maintained, while at the same time, moving towards universal coverage. In other words, the duty to provide the best care is balanced with ensuring universal coverage (Kass, 2001).Therefore, capacitating lower health cadres to undertake specific surgical tasks aims to maximize benefits while minimizing inaccessibility of the highly valued surgical care and benefits (Sherr at al, 2009; Global Health Sciences, 2007).

Acceptability of task shifting (demand and supply side)

Demand for male circumcision services is critical to the success of the programme because for public health impacts to be made, significant numbers of males have to be circumcised within the specified period. From the demand side, the attitude of uncircumcised males towards the task-shifting process is

therefore an important determinant to the success of the reform. Acceptability of task-shifting may be shaped by clients' societal preferences based on how they perceive the delivery of high quality services (Buchan & O'May, 2000).For example, a study carried out by Scott et al (2005) among Zulus in South Africa found that 77% of male Zulus preferred MC by a doctor or medical surgeon, eight percent by a nurse, 11% by traditional circumciser, and three percent by other providers. In other words, the attitudes of the beneficiaries also play a role in the success of the task-shifting process, and it is worthwhile exploring before setting off to implement the reform.

From a supply perspective, the long term success of the task-shifting process hinges on the attitudes of health workers themselves towards the strategy as well as political commitment. The strategy has been effective in countries such as Malawi, Zambia, Mozambique, Ethiopia and Brazil because of the high level of political support and positive health worker attitudes towards the process (Lehmann et al, 2009).

Determinants of attitudes towards task shifting

A major barrier to task shifting has been attitudes of physicians who feel that it may result in competition (financial and professional), 'professional dilution' and reduced quality of care, including the added supervisory roles that doctors will have to undertake post-implementation of task-shifting reform (Mullan & Frehywot, 2007). On that note, an example in Swaziland was that doctors did not feel that they needed an added certification for performing MCs because their medical license sufficed, pointing to an attitudinal perspective to their role in MC (WHO, 2007a).

In fact, attitudes of nurses themselves may influence the success of these reforms. For example, in countries like Ghana, Malawi, Zambia, and Kenya, the nurses had a negative attitude towards the task-shifting to 'enrolled nurses' and their lobbies to ban their training succeeded (Dvolo et al, 2004). Nurses may also feel that they are taking up added responsibilities without the corresponding rewards (Chandler et al, 2009; Dvolo et al, 2004).

Adequate recognition and remuneration for the nurses in the task-shifting process is a major determinant of attitude and success of the task-shifting reform as seen in Mozambique (Kruk et al, 2007), Malawi, Zambia and Tanzania (Lavy et al, 2008) where the government and physicians welcomed non-physician cadres and showed them high appreciation. Local regulations also have a role to play in the implementation of the task-shifting reform, such as what has been seen in Swaziland, South Africa,

and Botswana, which saw resistance from the nursing councils and other professional bodies themselves to the reform (Medecins Sans Frontieres, 2008; Daviaud & Chopra, 2008; WHO, 2011)

Socio-demographic determinants of attitude

As highlighted above, attitudes are a dynamic entity that can be influenced by many determinants such as political, socio-economic and cultural factors. Socio-demographic factors such as age, gender and nationality (ethnic background) can also influence attitudes (Barr, 2007; Kelleher et al, 2003; Ajzen & Fishbein, 1977; Choudhry et al, 2005; Jacobi, 2010).

Increasing age is associated with less adaptive or flexible attitudes, i.e. increased resistance to change and 'stubbornness' (Ajzen & Fishbein, 1977; Rhodes, 1983; Defleur & Westie, 1963). In fact, increasing age was found to shape a 'utilitarian' attitude as feelings of accomplishment and humanitarianism become a major driving force in one's attitudes (Loughlin & Barling, 2001; Andrisani et al, 1978; Gould, 1979; Porter 1963) in contrast to younger age groups that are influenced by the need for self-gain and peer-pressures (Rosen, 2003). In other words, aging shapes attitudes towards a direction that is conservative, caring for humanity and others while younger age comes with more unstable and less conservative attitude according to literature. In a policy reform, younger participants are therefore expected to 'vote' positively to change more than elder participants because of their more flexible attitudes.

It was also found that sex and gender were important determinants because females were consistently found to take 'safer' options than males, who had pre-dilection towards taking 'risky' options (Barr, 2007; Kelleher et al, 2003; Breakwell & Beardsell, 1992), in other words, females would be less likely to take up new policy reforms as they would be considered risky in the light that their success would be unknown as opposed to males.

Exposure has also been cited as a positive determinant of attitude, whereby migrant workers exposed to other practices and experiences from elsewhere would generally be more flexible and positive about policy reforms as do their local counterparts as was seen in a survey in Swaziland that was determining why medical doctors leave government employment and another that set out to explore why nursing staff attrition rates are high in Swaziland (Gumede et al, 1996; Stilwell & Mthethwa, 2004; Kober & Van Damme, 2006). Other influences other than exposure are practical experience (Choudhry et al, 2005; Siassi, 1975; Rhodes, 1983) i.e. increased practical experience has been found to have a positive bearing

on attitude towards a procedure (surgical or non-surgical). In fact, the two (exposure and practical experience) are directly related and have both been shown to be positive influences on attitude.

Problem Statement and Study Justification

The national VMMC scale up in Swaziland has a target of setting up at least 26 VMMC sites nationwide (GKOS, 2009b). With the estimated density of 16 physicians per 100,000 population in Swaziland (World Bank, 2006; ECSA-HC, 2010), it means that over 15% of the country's physicians would have to be dedicated to VMMC, which would not be feasible in the background of their need in curative and other medical services.

This problem is not short-lived in Swaziland because the country does not have a medical school and will therefore have to continue relying on expatriate doctors and also compete with both the public and private health sectors for the limited human resources, which puts a strain on the entire health system and the national VMMC programme (GKOS, 2009a).

MOVE was designed to improve efficiency and allow larger numbers of clients to be circumcised per day; however the disadvantage with this model is that even though it is designed to be an efficient way of moving volumes, it is still absolutely reliant on a physicians direct hands-on participation in the surgical procedure because current legislation in Swaziland does not permit nurses to take over the physicians role (GKOS, 2009b).

Other than legislative constraints, Swaziland has also not adopted the task shifting strategy because, to date, there is no evidence available that task shifting can be replicated in our setting. There is limited evidence on how task-shifting will influence quality, safety, acceptability, cost, management, and practicality in terms of implementation, efficacy, safety, and sustainability in Swaziland. There are also limited data or research in our setting portraying the views or attitudes of VMMC clinical staff and other stakeholders on this matter in Swaziland.

There is therefore need for investigating their attitudes as a preliminary step in informing a possible reform in MC services because their 'buy-in' in critical to the success of the reform. It will also be important to investigate the attitudes of MC policy makers, administrators and even the general public

itself; however because of the scope of our study, we will limit the measurement of attitudes to clinicians (doctors and nurses).

This study sets out to investigate the attitude of the professionals involved in VMMC service provision towards the task-shifting process in Swaziland. The findings are aimed at informing possible legislative or policy reform towards the task-shifting process and also to set a stage for further research around MC services in Swaziland and other similar countries, including advocating for a trial of task shifting in VMMC services.

CHAPTER TWO: Methodology

In this chapter, the methods used to collect data will be described, including the study design, how participants and sites were selected, strategies used to collect data, data analysis methods and ethical considerations taken into account before, during and after the study.

Study Design

This study was a cross-sectional, descriptive survey, using quantitative methods in the form of a self-administered questionnaire to describe the attitudes of doctors and nurses towards task shifting of male circumcision to nurses. The design was influenced by the time and scope of the study, which was a student study and not an ongoing research project. The study was intended to give a synopsis of attitudes on task-shifting among health workers in Swaziland and not to provide a technical analysis of the determinants of task-shifting in Swaziland.

Study Sites

The Swaziland national VMMC scale up program has been running since 2009 in all four districts of Swaziland (Hhohho, Manzini, Lubombo and Shiselweni), with mobile and non-mobile clinics in each of the districts. The clinics are run mostly by NGOs, such as PSI, FLAS and JHPIEGO, in partnership with the MOH. Each government hospital in Swaziland has a VMMC unit where walk-in and booked clients access the services.

The study was carried out at all Government and Mission Hospitals, and also the NGO run clinics (mobile and non-mobile). A comprehensive list given below in Table 2 below divides the clinics according to the organization responsible for the service delivery.

NB: Some of the clinics are privately owned by companies or other organizations such as Red Cross that allow PSI or FLAS to set up and provide VMMC services while on their premises on a continuous or non-continuous basis.

Table 2: Hospitals and clinics providing VMMC services in Swaziland

Ministry of Health (MOH)	**Population Services International (PSI)**	**Family Life Association of Swaziland (FLAS)**
Mbabane Hospital	Litsemba Letfu Men's Clinic	Mbabane FLAS clinic
Raleigh Fitkin Memorial Hospital	*** Illovo (Big Bend) clinic	Manzini FLAS clinic
Piggs Peak Hospital	*** Simunye clinic	* Siphofaneni clinic
Good Shepherd Hospital	* Matsanjeni clinic	*** Siteki Nazarene clinic
Mankayane Hospital	*JCI (Emphelandzaba) clinic	* Sithobela clinic
Dvokolwako Hospital	* Magubheleni clinic	* Mpolonjeni clinic
Mkhuzweni Hospital	*** Sappi (Bhunya) clinic	
Nhlangano health centre	* Bhahwini clinic	
Hlatikhulu Hospital	***Ngomane clinic	
	* Nkalashane clinic	
	* Mangweni clinic	**Table Key**
	** Silele clinic	*** Government clinic**
	* Maguga clinic	**** Red Cross clinic**
	* Ntfonjeni clinic	***** Private clinic**

Study Population

All doctors and nurses (including all clinicians; expatriate and local, and those now involved in administrative and policy making duties)working at the above listed clinics and hospitals in Swaziland were invited to participate in the study. The eligibility criterion was that each of these participants needed to have been directly exposed to an MC procedure, either through observation, assisting or performing a MC. Such exposure is a pre-requisite to form an opinion or attitude towards task-shifting, unlike an individual who is un-exposed to the procedure on a practical level (Choudhry et al, 2005).

In all, 450 questionnaires were sent out, hoping for a number of respondents of at least 384 in order to achieve a significance level of 95% [1.96] after an estimated prevalence of the variable [attitude towards task shifting among doctors and nurses in the VMMC] was set at 50% [0.5] and an acceptable margin of error was set at 5% [0.05].A total of 398 participants responded to our questionnaire, giving us a response rate of 88.4%.

Data Collection

The data collection tool was a self-administered questionnaire (Appendix A), which was in the English language as the participants were all literate trained professionals. It included socio-demographic information and a 20-item Attitude scale, using a 5-point Likert scale for responses.

The overall 20-item Attitude scale, "Attitude of Clinical Staff towards task-shifting of male circumcision to nurses in Swaziland", had a Cronbach's alpha of 0.944. The 20-item 'Attitude scale' included three sub-scales: Firstly, an eight-item sub-scale called "Complexity of the Procedure" assessed the participants' attitude of whether they felt that the VMMC procedure was minor or complex. This was comprised of Questions 1,2,3,4,5,6,9 and 15 (See Appendix A) and had a Cronbach's alpha score of 0.871. The second sub-scale, "Management issues" was linked to attitudes surrounding the clinic inputs that contribute to the success of the procedure, which included seven items (Questions 8, 13, 18,20,21,22 and 23) and had a Cronbach's alpha score of 0.839. The last sub-scale took into consideration the "Client's Interests" and included the following items: Questions 10,12,16,17 and 19, with an alpha score of 0.811.

All questions in the questionnaire were designed as close ended rating questions to ensure uniformity of responses, with some questions reverse coded [Questions 3, 12, 19 and 21] to ensure internal validity in the analysis phase.

For data collection, the investigator visited each site listed above where each participant was presented with a Participants Information Sheet (Appendix B) and an Informed Consent form (Appendix C) before the self-administered questionnaire (Please see also Ethical Considerations below).In order to maximize the response rate, the researcher waited for the participants to fill in their questionnaires, taking into consideration their work schedules and ensuring that the collection process did not interfere with the participants and clinics or hospitals daily running. A clearly labeled collection box was placed at each of the data collection points, so that the participants could drop-in the questionnaires after completion. No questionnaires were handed directly to the researcher to ensure anonymity.

Data Analysis

All returned questionnaires were captured and analysed using the Statistical Package for Social Sciences (SPSS), Version 22 and Microsoft Excel after coding of the variables. Data entry was done in SPSS and analysis was primarily done in SPSS. 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.

Please note that in this study, an attitude that is supportive of the task-shifting reform will henceforth be described as a 'positive attitude' and one that is not supportive of the reform will be termed a 'negative attitude'.

A 5-point Likert scale, with the scores distributed as: Strongly disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5) was used. The score of 3 (neutral) or below was considered as a negative attitude towards the task-shifting reform in this study (Please see discussion). A new variable was created which added item counts for each item to establish an overall Attitude score, with 20 considered as the lowest and most negative score generated from selecting Strongly disagree (1) throughout the questionnaire, and 100 as the highest possible score for each participant, generated from scoring 5(strongly agree) for all 20 items. These continuous scores were then categorized, with neutral scores (60) and below considered negative, those above 60 considered as positive and those

above 80 classified as strongly positive. A similar process was followed for all of the subscales, based on their respective possible ranges.

Reliability analysis using factorial analysis of the scale items used in measuring the attitudes were conducted using factor analysis to ensure internal validity of the scale items. A Cronbach's alpha score of 0.65 was set as the benchmark for internal validity of the scale items in each scale.

The final Attitude scale used for analysis had 20-itemsafterQuestion 7 "Nurses are not the right people to perform MC" and Question 14, "Patient satisfaction is dependent upon the cadre of the provider" were deleted from the questionnaire after conducting a factor analysis. The overall Cronbach's alpha score for the final scale was 0.944.

Descriptive statistics were used to report on the socio-demographic variables. Specifically, frequency distributions mean scores and cross-tabs were run on the data to summarise and aggregate the demographic information. In this study, the variables were either one of the three traditional scales of measurement: nominal, ordinal and scale. Cross-tabulations were used for nominal and scale variables; Pearson's chi square tests of association were used for categorical data and t-tests for continuous data.

Overall scores are presented. In addition tests of association were conducted to compare the scales by profession (doctors and nurses). Simple frequency distributions, graphs and tables were used for presenting the findings.

Ethical Considerations and Declarations

Permission was sought from each of the respective organizations (Ministry of Health, PSI, FLAS, JHPIEGO and the Mission Hospitals) to carry out the study at their respective clinics, health centers and hospitals. A letter of permission was used to make the request through the Human Resource Departments (Appendix D). The letter of permission had a full explanation of the study, including who will be carrying it out, why it is being carried out, when and how it will be carried out including how the findings will be disseminated to the participants.

A brief verbal explanation of the study's Aims and Objectives was given in a group session where possible, and individually as needed. Participants' questions and queries were addressed at this point in order to ensure full informed consent. Time was taken to clarify issues such as anonymity of the study and the benefits of participating. In these forums, the participants were still given an opportunity to opt-

in or out without coercion, through a drop-in collection box available at each study site. Only after every aspect of the study had been clarified and the participants were comfortable, was the consent form provided to the participants and then the questionnaire administered thereafter.

Ethical clearance was obtained from the University of the Witwatersrand Committee for Human Research Ethics Committee (HREC) (Appendix E) and the Swaziland Scientific and Ethics Committee (SEC) (Appendix F).

The questionnaire was accompanied by a Participants Information Sheet (Appendix B), which clearly explained the study to the participants. The information sheet assured the participants that the study was voluntary and that they may withdraw at any time without providing reason, that their contribution would be anonymous and no names were going to be entered into any data base.

No questionnaires were collected directly from any participant, to maintain anonymity and the freedom to withdraw from the study. The collected documents were stored in a locked cupboard, only accessible to the investigator, and only opened for analysis purposes. The questionnaires will be destroyed once all data have been analyzed and the grouped data consolidated and information disseminated to appropriate stakeholders following the stipulated time period.

The results will be presented back to the participants as grouped data so that no individual can be identified in the form of posters pinned up at the respective clinics as summaries of the overall findings.

CHAPTER THREE: Results

Section A of the results section will give descriptive statistics in the form of tables and graphs to describe distributions of socio-demographic variables such as age, gender, profession, role in VMMC and nationality of the participants. Cross-tabulations will also be presented in section A in order to understand relationships between the different socio-demographic variables

Section B will describe the general attitude of doctors and nurses combined, then as separate groups of doctors and nurses. How the attitudes vary across the different themes (sub-scales) in the questionnaire (Complexity of the procedure; Management Issues and Client's interests) will also be described in this section. Section C will then describe whether attitude was associated with the different socio-demographic characteristics of the participants.

Section A: Descriptive Statistics

The study had 398 respondents (88.4% response rate from the 450 questionnaires that were sent out to the various organizations and clinics). The first two study objectives were to describe the socio-demographic characteristics of doctors and nurses involved in MC in Swaziland.

Distribution of sex, age and professions

As presented in Table 3; Of the 398 participants recruited into this study, 176 (44.2%) were males, while222 (55.8%) were females. 101 (25.4%) of the participants were doctors while 294 (74.6%) were nurses. The findings show that a significantly higher proportion of doctors were male 59(58.4%) compared to the 42 females (41.6%) recruited into the study, while the reverse was true for nurses, where 180 (60.6%) were female versus 117males (39.4%) ($p<0.001$).In other words there was an inclination towards male sex among doctors and female sex among nurses in this study population.

Table 3: Distribution of participants by sex and profession

	Profession [n (%)]		
Sex	**Doctors (n=101)**	**Nurses (n=297)**	
Male	59 (58.4)	117 (39.4)	p<0.001
Female	42 (41.6)	180 (60.6)	

The mean age of participants was 33 years, with a range of 43 (minimum age of 17, and maximum of 60). The modal age of participants was 28 and a median age of 32 years. Among doctors, the youngest participant was 23 years and the oldest was 69 years of age, while the age range of the nursing participants was from 17 to 60 years of age.

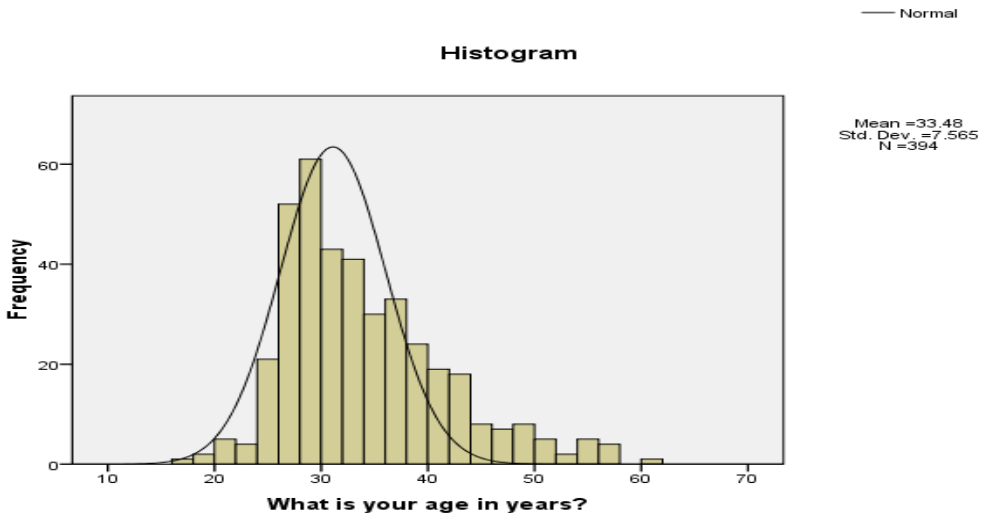

Figure 1: Age distribution of the study participants

Primary role in VMMC by profession

Clinicians were defined in the study as participants that are practically involved in the performance of the VMMC procedures, while those with an administrative role focused on planning and other programmatic duties. It should be noted, however, that some clinicians may assume administrative duties and vice-versa, according to need.

Of those specifying their primary role in VMMC, only seven percent reported being administrative, while 335 (93%) had a clinical role, as illustrated in Figure 2 below:

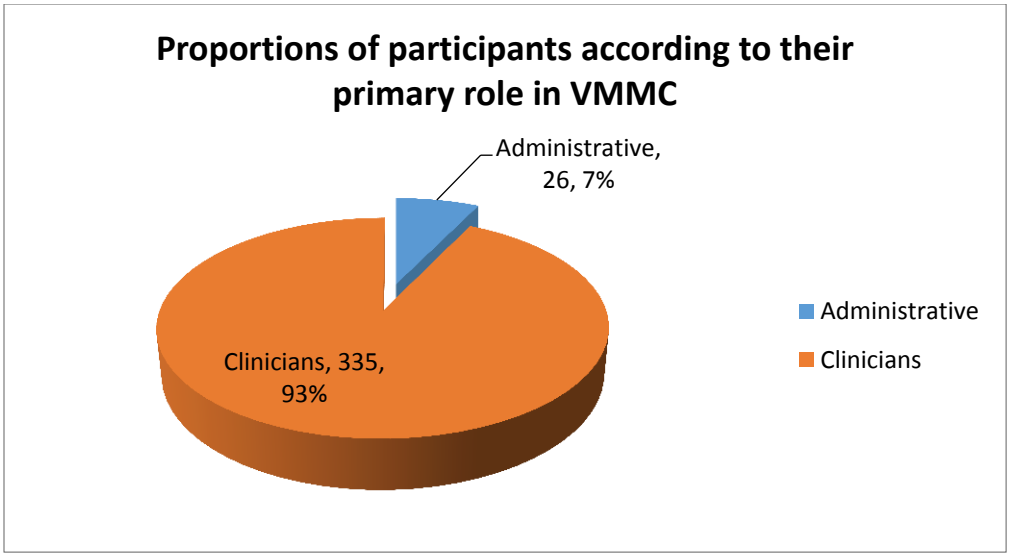

Figure 2: Proportions of participants according to their primary role in VMMC

Nationality of participants

Nationality was categorized as local and expatriate. Local was defined as a being a Swaziland national while expatriate referred to any participant that was not a Swaziland national at the time of the study. Fifty-six percent of those that responded to the question, "What is your nationality?" were Swaziland nationals, while 44% were non-Swazi nationals (see Figure 3 below).

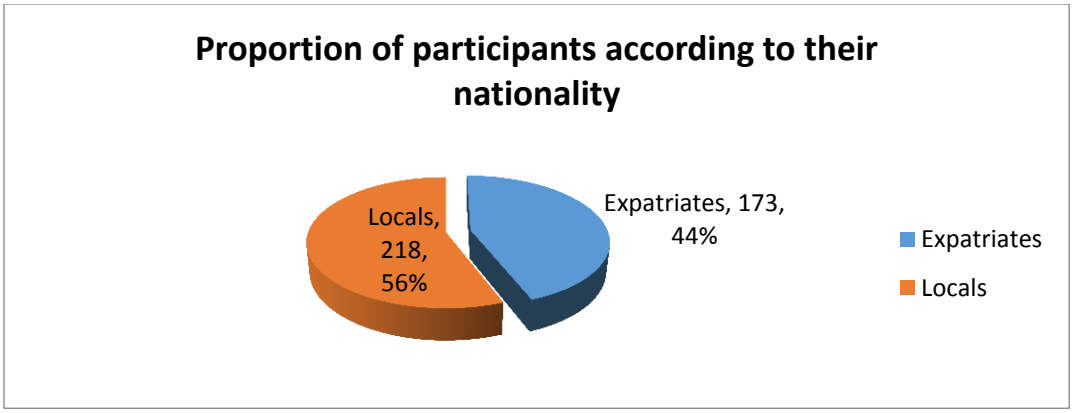

Figure 3: Proportions of participants according to their nationality

Experience (time spent) in VMMC by profession

The experience in VMMC was defined in our context as the duration (time) that the participant had spent in the VMMC programme, and was recognized as being a potential determinant in influencing the overall attitude towards the reform. The majority; 207 (57.5%) of participants had been exposed to VMMC for a year or less, while 153 (42.5%) had been involved in the programme for more than a year.

A cross-tabulation was then made between experience in VMMC and profession. As shown in Table 4, almost the same proportion of doctors had been involved with VMMC for less than a year 50(51.6%) compared to 47 (48.5%) that had been in VMMC for longer. For nurses a larger proportion had been involved in VMMC for less than a year 157(59.7%). However the proportions were not significantly different between professions (p=0.455).

Table 4: Duration of participation in the VMMC programme

Experience in VMMC	Profession [n (%)]		
	Doctors (n=97)	**Nurses (n=263)**	
0 -6 months	22 (22.7)	81 (30.8)	p=0.455
7 -12 months	28 (28.9)	76 (28.9)	
13 -24 months	22 (22.7)	54 (20.5)	
Over 24 months	25 (25.8)	52 (19.8)	

"Ever performing procedure" by profession

Most of the participants; 235 (60.7%) had performed a male circumcision during their career. However, this was not distributed evenly by profession. A significantly higher proportion of doctors; 91 (91.0%of all doctors) had ever performed a male circumcision procedure compared with only 144 (50.2%) of nurses) ($p<0.001$), as summarized in Table 5 below.

Table 5: Doctors and nurses that have performed a male circumcision procedure

Experience in VMMC	Profession [n (%)]		
	Doctors (n=100)	**Nurses (n=287)**	p<0.001
Ever performed MC procedure	91 (91.0)	144 (50.2)	
Never performed MC procedure	9 (9.0)	143 (49.8)	

"Ever performing procedure" by nationality

A comparison of nurse nationality (local vs. expatriate) was also conducted based on whether they had ever performed was made. The findings were that there were significantly ($p<0.001$) more local nurses that had "Never performed MC" compared to the expatriate nurses [103(73.6%) vs. 37(26.4%) respectively].

Table 6: Cross-tabulation of nurses that had Ever performed an MC by nationality

Nationality	Nurses Ever Performed MC [n (%)]		
	Yes (n=142)	**No (n=140)**	p<0.001
Locals (n=172)	69 (48.6)	103 (73.6)	
Expatriates (n=110)	73 (51.4)	37 (26.4)	

An analysis of ever performing MC by nationality with the entire sample mirrored this pattern, with local practitioners significantly more likely to have never performed MC than their expatriate counterparts [109 (71.8%) vs.43 (28.2%); p<0.001), while those who had ever performed MC were similar [104 (45.0%) of locals vs. 127 (55.0%) of expatriates].

The distribution of those that have ever performed MC is represented in Figure 4, where it is even more apparent that numbers of expatriates that had ever performed the procedure was more than for locals in both the doctor and nurse branches.

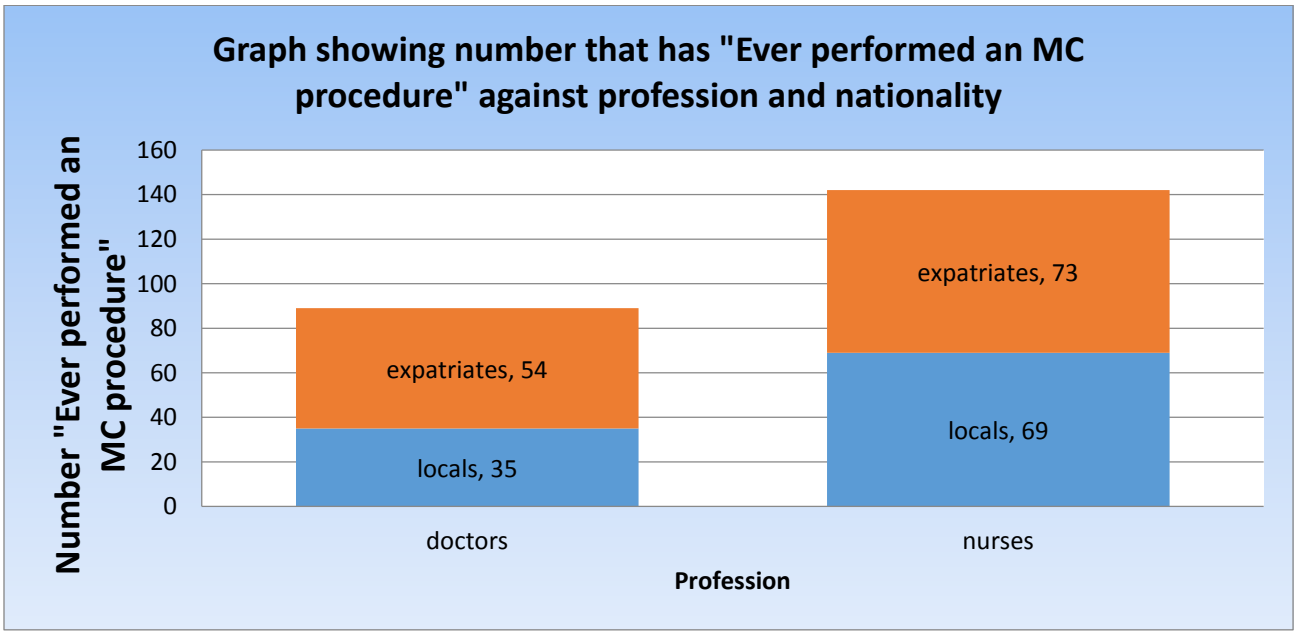

Figure 4: Summary of doctors and nurses that have "Ever performed an MC procedure" by nationality

Section B: General Attitudes and Sub-scales

The study also sought to describe attitudes of doctors and nurses regarding task-shifting. The general attitudes about task-shifting were calculated from the participant's responses in the questionnaire using a 20-item scale, which was categorized into negative, positive or strongly positive attitudes, as described in the Methods Chapter.

As summarized in Table 7 below, the general attitude of all participants (Combined nurses and doctors) was generally positive, with 284 (80.4%) of participants displaying either a positive or strongly positive attitude towards the reform. In fact, 154 (43.6%) of participants were strongly positive.

Analyzing the participants separately according to their profession showed that both doctors and nurses separately had a positive-to-strongly positive attitude towards the task-shifting policy reform, and the difference in proportions of positivity and negativity was statistically significant ($p<0.001$). The attitudes of nurses 224(85.2%) were significantly more positive than doctors 59(66.2%) as summarized in Table 7 below.

The participant's attitudes for the entire group were positive. When analyzed separately by profession, there were significant differences across all sub-scales of Complexity of the procedure; Management Issues and Clients Interests ($p<0.001$). For the Complexity subscale, doctors were twice as likely to express negative attitudes about VMMC being a 'simple procedure' when compared with nurses [30(31.2%) versus 41 (14.8%) respectively). The nurses expressed significantly more positive attitudes in the Management Issues sub-scale than doctors with 218 participants (76.8%) vs. 65 participants (68.4%) respectively ($p<0.001$) and similarly in the Client's Interests sub-scale [193(69.2) vs. 57 (58.1%) ($p<0.001$).

Table 7: Attitudes of participants towards the task-shifting policy reform

	Negative Attitude [n (%)]	Positive Attitude [n (%)]	Strongly Positive Attitude [n (%)]	Statistical Significance [p-value]
General Attitudes [n=353]	69 (19.5)	130 (36.8)	154 (43.6)	
Doctors [n=88]	30 (33.7)	23 (25.8)	36 (40.4)	p<0.001
Nurses [n=262]	39 (14.8)	107 (40.7)	117 (44.5)	
Sub-Scales				
Complexity of the Procedure [n=374]	71 (19.0)	295 (78.9)	8 (2.1)	
Doctors [n=96]	30 (31.2)	26 (27.1)	40 (41.7)	p<0.001
Nurses [n=277]	41 (14.8)	142 (51.3)	94 (34.0)	
Management Issues [n=379]	96 (25.3)	201 (52.9)	83 (21.8)	
Doctors [n=95]	30 (31.6)	59 (62.1)	6 (6.3)	p<0.001
Nurses [n=284]	66 (23.2)	142 (50.0)	76 (26.8)	
Clients' Interests [n=378]	127 (33.6)	240 (63.5)	11(2.9)	
Doctors [n=98]	41 (41.8)	56 (57.1)	1 (1.0)	p<0.001
Nurses [n=279]	86 (30.8)	183 (65.6)	10 (3.6)	

Section C: Associations of Attitudes with Socio-demographic Characteristics

In this section, we will report how different socio-demographic characteristics were associated (or not) with attitudes, as summarized in Table 8 and 9.

Age:

The attitudes were positive throughout all the age groups, as summarized in Table 9. All the participants (5) of the oldest age group of 55-64 had a positive attitude compared to the 12 participants (63.1% positivity) among the youngest group. Above 80% positivity was recorded across all the other groups. However the difference in the participant's attitudes across the ages was not statistically significant, meaning therefore that in this study, the age of the participant did not necessarily influence their attitude towards task-shifting, even though positivity was seen across all ages.

Sex: Table 9 also shows that statistically, there is an association between sex and the general attitude towards the task-shifting process (p=0.001). While all participants (male and female) displayed positive-to-strongly positive attitudes, a higher proportion of males141 (88.7%) displayed a generally positive attitude, compared to the 143 (73.7%) of female participants displaying a positive attitude. Females were also twice as likely as males to express a negative attitude [51(26.3%) versus 18 (11.3%), respectively). It can therefore be concluded that a male respondent was more likely to have a positive attitude towards task-shifting than a female respondent in this study.

It was suspected that male and female doctors may feel differently about the reform, while male and female nurses may also feel differently. Their attitudes were investigated and it was found that 73.6% of 53 male doctors had a positive attitude compared to 55.5% of 36 female doctors. However, statistically, this difference was not significant (p=0.130).

In contrast, when the same tests of association were computed for the nursing branch, the male nurses were found to have a significantly more positive attitude (p<0.001) compared to female nurses. Of 106 male nurses; 96.2% had a positive attitude compared to 77.7% of the 157 female nurses. These findings are illustrated in Table 8:

Table 8: Attitudes of different professions by sex

Attitudes	Male [n (%)]	Female [n (%)]	Statistical Significance
Doctors:			
Negative [n=30]	14 (46.7)	16 (53.3)	0.130
Positive [n=23]	17 (73.9)	6 (26.1)	
Strongly positive [n=36]	22 (61.1)	14 (38.9)	
Nurses			
Negative [n=39]	4(10.3)	35 (89.7)	p<0.001
Positive [n=107]	44 (41.1)	63 (58.9)	
Strongly positive [n=117]	58 (49.6)	59 (50.4)	

Primary role in VMMC: Both clinicians and administrators feel not only positively, but also strongly positive towards the reform. Differences of attitude by their primary role in VMMC were statistically not significant (p=0.059), which means that a person who is clinical or administrative can have more-or-less similar chances of having a positive or negative attitude towards the task-shifting process. In other words, the primary role in VMMC was not found in this study to be a significant determinant of attitude.

Nationality: Expatriates in this study were found to be significantly more positive about task-shifting of VMMC to nurses than the Swazi citizens (p<0.001). In fact, 140 (87.0%) of expatriates were positive while 90 expatriates (55.9%) were strongly positive) towards the reform compared to 138 (74.6%) of the local participants who had a positive attitude and 64(34.6%) of which had a strongly positive attitude). Nationality therefore was found in our study to play an important role in influencing attitude.

Table 9: Overall attitudes according to socio-demographic variables

	Negative Attitude [n (%)]	Positive Attitude [n (%)]	Strongly Positive Attitude [n (%)]	Statistical Significance [p-value]
Age [n=349]				
15-24 [n=19]	7 (36.8)	7 (36.8)	5 (26.3)	0.467
25-34 [n=204]	40 (19.6)	77 (37.7)	87 (42.6)	
35-44 [n=91]	15 (16.5)	32(35.2)	44 (48.4)	
45-54 [n=30]	6 (20.0)	9 (30.0)	15 (50.0)	
55-64 [n=5]	0 (0.0)	3 (60.0)	2 (40.0)	
Sex:				
Male [n= 159]	18 (11.3)	61 (38.4)	80 (50.3)	0.001
Female [n= 194]	51 (26.3)	69 (35.6)	74 (38.1)	
Primary Role[n=321]				
Clinical [n=298]	62 (20.8)	105 (35.2)	131 (44.0)	0.059
Administrative[n=25]	2 (8.0)	6 (24.0)	17 (68.0)	
Nationality [n=344]				
Local [n=185]	47 (25.4)	74 (40.0)	64 (34.6)	P<0.001
Expatriate [n=161]	21 (13.0)	50 (31.1)	90 (55.9)	

Ever Performed Procedure				
Yes [n= 211]	32 (15.2)	63 (29.9)	116 (55.0)	P<0.001
No [n=136]	36 (26.5)	64 (47.1)	36 (26.5)	
Experience (Time spent)				
0-6 months [n=96]	20 (20.8)	38 (39.6)	38 (39.6)	
7-12 months[n=98]	24 (24.5)	24 (24.5)	50 (51.0)	0.112
13-24 months[n=72]	15 (20.8)	25 (34.7)	32 (44.4)	
Over 24 months [n=62]	7 (11.3)	28 (45.2)	27 (43.5)	

"Ever performed procedure": We found in this study that the percentage of those with a negative attitude was higher among those that had never performed the surgery (almost double), whereas more participants that had ever performed the procedure had a positive attitude. Statistically, our findings were significant ($p<0.001$), enabling us to conclude that practical experience had a positive bearing on attitudes in this study.

Experience (time spent in VMMC): Attitudes were generally strongly supportive of the task-shifting process across all those that had spent any time in VMMC. In fact, there was a general recorded increase in percentage of those that had a strongly agreeable attitude towards the reform from 38 (39.6%) among those that had 0-6months in the programme, to 27(43.5%) among those that had spent over two years in the programme, with the highest positivity [55 (88.7%)] recorded among those that had spent over two years in the programme. Statistically, however, it is inconclusive whether time spent in the programme has a positive or negative influence on attitudes ($p=0.112$) because there was no significant difference between the groups that had spent different lengths of time in the programme.

CHAPTER FOUR: Discussion

The study set out to investigate attitudes of doctors and nurses towards task-shifting of VMMC to nurses in Swaziland. The investigation was aimed as being a preliminary step in setting stage for a policy reform in Swaziland that sees the adoption of the task-shifting strategy of the performance of male circumcision surgeries to nurses, with the goal of increasing the number of service providers in the background where only doctors are permitted to perform the surgical procedure.

Chapter One briefly described the situation on the ground, the policy issues that prohibit nurses from performing the surgical procedure in Swaziland, how this policy environment has constrained the national scale-up of the VMMC programme and the recommendations by international organizations such as WHO to uptake the strategy as a means to overcome human resource constraints, especially in response to the HIV and AIDS pandemic.

It was important to determine all stakeholders' attitudes towards the reform, i.e. policy makers, VMMC clients or service beneficiaries themselves, non-medical staff, and government officials, because their attitudes are important in the successful implementation of the strategy (Buchan & O'May, 2000; Scott el al, 2005). However, because of time, budgetary constraints and the scope of the study it was not possible to investigate all of the stakeholder attitudes. The study group of doctors and nurses were chosen because of their direct involvement in the programme and ease of their accessibility.

There was a high response rate (88.4%) to the self-administered questionnaire, which was attributed to the methodology that was used, as described in the Methods Chapter. The researcher (medical doctor) also had the advantage of sharing the same profession as the research subjects, which made response rates high because the potential participants could identify with the study and did not feel prejudiced by the 'outsider' effect.

Below, the five objectives of the study (i-v) will be discussed under the following sub-sections: Socio-demographic characteristics of participants (Objective i & ii); Attitudes of participants regarding task-shifting (Objectives iii and iv), including attitudes according to the sub-scales (Complexity of the procedure, Management Issues and Client's interests), and the Relationship between the socio-demographic factors and attitudes (Objective v)

Socio-demographic characteristics of participants

A total of 398 participants, 101(25.4%) doctors and 297(74.6%) nurses, were recruited in this study. Of these, 176 (44.2%) were male and 222 (55.8%) females while 218 participants (56.0%) were Swaziland nationals as compared to 173 (44.0%) participants that were expatriates (Table 3, Figure 3). The socio-demographic characteristics of participants were described in detail in the Results section A.

A few issues related to the age of participants bears mentioning. For one, the youngest participant (nurse) reported being 17 years old. The young age of 17 however, would mean that the participant entered nursing school at the age of 14, which may be unrealistic, highlighting a limitation in the use of a self-administered data collection tool. The age distribution of the study population is however more-or-less representative of the broader age distribution of health workers in Swaziland except that there is a higher proportion of elder and retired nurses in the broader health care workforce in the country than was sampled in the study, explicable by the fact that many of them are retired or working in the mission and government hospitals as matrons rather than donor-funded programmes such as VMMC (Stilwell and Mthethwa, 2004).

The relatively young average age of the study population, 33 years, may also be of interest from a human resources for health perspective especially in terms of sustainability of programmes. Studies show that there is a high level of migration of nurses (especially among this younger age group) from Swaziland and other surrounding Southern African countries due to factors such as low wages and work-overload (Gumede et al, 1996; Martineau et al, 2004; Marchal & Kegels, 2003). This therefore affects long-term sustainability of programs, highlighting the need for intensive retention reforms such as wage increments and improvement of working conditions (Kober & Van Damme, 2006)

Ninety three percent (335) of participants were clinicians against the 26 (7.0%) that were administrators at the time of the study, and the relationship of this parameter with regards to its influence to attitude is discussed below. A slight majority (56.0%) of the participants was Swaziland citizens; however, the difference was very narrow, reflecting that the national VMMC programme at the time of the study had employed a large number of expatriates which may be related to skills or other socio-economic dynamics that have not been explored in this report. The shortage of health workers however, saw a large influx of expatriates around 2004 as an initiative of the local government and the Global Fund (Kober & Van Damme, 2006), in the background; Swaziland at the time of the study had no medical school for training of doctors and was suffering from a shortage of health care workers in general

including nurses (ECSA-HC, 2010; GKOS, 2009a; GKOS, 2009b; WHO, 2006b), which may partly explain why such a high proportion of participants were expatriates.

Most of the participants; 235 (60.7%) had performed a male circumcision during their career, with a significantly higher proportion of doctors (91.0%) that had ever performed the procedure compared to 50.2% of nurses, which was an expectation of the study in the setting where the policy does not allow nurses to perform MC procedures (see discussion below). Interestingly, more expatriates had ever performed the procedure (Fig 4), reflecting the differences in MC policies across different countries (Bowa & Lukobo, 2006; WHO, 2008; WHO, 2011).

Attitudes of participants regarding task-shifting

The study found that in our setting in Swaziland, the general attitude of both doctors and nurses was positive towards the task-shifting reform, meaning that both groups were generally supportive of the reform. That said, the nurses attitudes were more positive than doctors ($p<0.001$). These findings are similar to those found in a study carried out in South Africa and Zimbabwe (Sheldon et al, 2012) that also found positive attitudes among doctors and nurses, with nurses more positive than doctors.

Task-shifting brings increased employment opportunities to nurses and other lower cadres. The financial and professional gain arising from task-shifting (WHO, 2011, Chandler et al, 2009; Dvolo et al, 2004) may explain why nurses may be more eager to take up the reform. On the other hand, the more negative or moderate attitudes among doctors may be linked to fear of professional dilution and competition for employment opportunities that comes with task-shifting (Mullan & Frehywot, 2007).

A positive attitude around the 'Complexity of the procedure' sub-scale meant that the participants did not feel that the procedure was too complex to be task-shifted. In fact, in this sub-scale, the nurses felt even more strongly about this than the doctors ($p<0.001$). This is also consistent with the above overall findings of this study that nurses were found to have an even stronger positivity in attitude towards task-shifting than doctors. This trend where nurses were more strongly positive was seen across all three sub-scales.

In view of the sub-scale exploring 'Client's interests', the results also show that doctors and especially nurses' attitudes were shaped by their view-point that clients would benefit more from the policy reform i.e. that it is an ethical, safe method that best serves the client's rights without compromising on quality. The doctors, however, had a high level of negativity around the client's interests (41.8%). The

reasons for the doctors to be doubtful or not completely convinced may be because they may have felt that task-shifting may reduce quality of care (Mullan & Frehywot, 2007) and therefore the reform would not be in the client's best interest.

The findings around the 'Management Issues' sub-scale demonstrate that nurses had significantly more positive attitudes than doctors ($p<0.001$) concerning the day-to-day running of the programme; that it was more cost-effective and efficient to allow nurses to manage the clinics and that it was a task that they were capable of performing especially if standard operating procedures (SOPs) and guidelines were in place, together with sufficient support and supervision. In other words, nurses not only showed high interest in performing the procedure (in fact, many were already performing VMMC), but also displayed high interest in managing the VMMC clinics so long as SOPs, guidelines, support and supervision was available.

These expectations align with accepted standards in task-shifting (Jacob, 2010; Herman-Roloff et al, 2012; Chu et al, 2009). This is reinforced by two examples of task shifting in South Africa; the cervical cancer screening programme (Kawonga & Fonn, 2008), and also anti-retroviral therapy monitoring and initiation (Sanne et al, 2010), which were task-shifted to nurses. The success of the programmes were partly attributed to comprehensive task-shifting strategies that included mentorship, appropriate training and development, support and supervision, motivation and incentivization; alongside the government's commitment in terms of policy and legislation (Jacob, 2010; Herman-Roloff et al, 2011; Chu et al, 2009).The use of simplified standard protocols, operating guidelines, reporting systems for monitoring and evaluation helps the lower cadres to feel that they are operating in a larger, coordinated system while at the same time it helps to prevent adverse events and ensure quality in service delivery(Kruk et al, 2007; Lavy et al, 2008). A good example of development of such protocols and guidelines is the Malawi ART national-scale up where complications were minimized (Zachariah et al, 2009).

Relationship between the socio-demographic factors and attitudes

Attitudes can be shaped by many different socio-demographic factors such as age, gender, exposure, and ethnic background (Barr, 2007; Kelleher et al, 2003; Ajzen & Fishbein, 1977; Choudhry et al, 2005; Zachariah et al, 2009; Jacobi, 2010; Defleur & Westie, 1963; Sherif et al, 1965; Krech et al, 1962). Beyond profession, additional factors that were recognized as potential influences to attitudes in our setting

were age, sex, nationality, primary role in VMMC (clinician or administrative), length of time the participant has been involved in the VMMC programme.

Sex: The study found that there was a significant difference in attitudes between the sexes (p=0.001), with male respondents having a more positive attitude than females. The same trend was seen among nurses (p<0.001), but not significantly among doctors (p=0.130). This suggests that gender was an important determinant of attitude in our study, possibly explicable by the fact that MC is a practical surgical procedure and males may have a predilection to be more interested in such activities (Breakwell & Beardsell, 1992). However, whatever the explanation behind these findings; the significance in our settings, especially when it comes to introduction or rolling-out of the reform, is to pay extra attention to female doctors and nurses, and make an extra effort to sell the strategy for their buy-in and acceptance (See recommendations).

Age: This factor was expected to be an important determinant of attitude in our study because increasing age is usually associated with 'less-flexibility' and increased resistance to change in contrast to the younger generation that is often associated with being more 'adventurous' and more receptive to the idea of exploring different methods (Rhodes, 1983; Defleur & Westie, 1963) This study found no significant difference in attitude against age (p=0.467).

In fact, even though not statistically significant, a greater proportion (100.0%) of the oldest age group (55-64) had a positive attitude compared to the 63.1% positivity recorded among the youngest age group (14-24). In other words, there was a higher proportion of positivity among the elderly compared to the younger generation (100.0 vs. 63.1%). At the same time, there was a higher proportion of participants with a negative attitude among the group of the youngest participants (36.8%), meaning that the findings of the study disproved our suspicion that the younger generation would be keener to uptake new innovative methods.

The younger participants, being new to the profession and already feeling over-whelmed with work; the likelihood of even more work- associated with task-shifting may be the reason for the younger generation's skepticism as we have seen that the added responsibilities that come with task-shifting may have a negative impact on the worker's attitudes (Chandler et al, 2009; Dvolo et al, 2004). At this age, the long-term impact may be less important as seen in some studies that suggest that younger workers may be more interested in immediate, personal benefits(Loughlin & Barling, 2001; Andrisani et al, 1978; Gould, 1979; Porter 1963), while in contrast, the older generation's prolonged exposure to the

challenges faced by the health system in terms of human resources and shortage of doctors may have influenced their attitudes to be more positive, possibly driven by the internal utilitarian strive for the need of improvement in health care service delivery, universal coverage and having the client's interests at heart.

The findings of this study are therefore consistent with what has been found elsewhere; that elderly workers find job satisfaction based on utilitarian principles (Rhodes, 1983; Gould, 1979; Mill JS, 1859; Rosen F, 2003; Near, 1978). Having been part of the health system for longer, the elder generation nurses may have also had a chance to witness or experience the success of task-shifting in other countries and sectors, influencing their attitudes positively

Experience / exposure to VMMC: As part of the inclusion criteria, a participant had to have been exposed to VMMC either through observation, assisting in the performance of the procedure or actually having had performed the procedure at least once. It was felt that this exposure was important as a basis to form a firm opinion or attitude towards the reform, rather than an individual with no form of exposure at all, because exposure and practical experience has been found to influence attitude (Choudhry et al, 2005). Most of the doctors that participated in this study (91%) had performed an MC procedure before, but what was remarkable was that a high number of nurses had ever performed the procedure [144(50.2%)]; similar to the number that had never performed the procedure (49.8%) (Table 5).

This was an interesting finding because our setting in Swaziland prohibits nurses from performing the procedure. As such, it would be more likely that nurses would under report on this variable. It is, however, known that in some countries where there are no task-shifting policies in place such as Ethiopia, Malawi, Uganda and Namibia (WHO, 2011); the strategy is still being implemented. The high numbers of nurses that had ever performed the procedure may have influenced the high positivity among nurses, especially with the finding of the study that there exists a positive association between attitude and practical hands-on experience of ever having performed the procedure ($p<0.001$).

On the same note of practical experience, even though it had been suspected that clinicians would have a more positive attitude because of their direct daily exposure than the administrators; the study found that the primary role (clinician vs. administrator) did not influence the attitude of the participants; there was no significant difference between clinicians and administrators ($p=0.059$). Together with the above results, this suggests that just the initial exposure for those that became administrators during the time

that they were practicing, may be enough to develop a positive attitude towards task-shifting, especially if they had an opportunity to have a hands-on experience, and therefore confirming that practical experience does have a bearing on attitude.

Other studies found that the time spent or increased exposure in a programme or profession can influence the attitude(Siassi, 1975; Rhodes, 1983).While this study observed a consistent increase in positivity in relation to time spent in the programme, with the largest proportion of positive attitudes being recorded among those that had been in the programme for more than two years, these differences were not statistically significant and therefore no clear relationship between exposure and attitude could be depicted from this study.

Nationality: Nationality was also identified as a potential determinant of attitudes because of the differences in clinical practice, exposure and national policies in other countries that permit task-shifting of VMMC (Bowa & Lukobo, 2006; WHO, 2008b; WHO, 2011). We found that expatriates had a statistically higher proportion of positive responses than locals ($p<0.001$), meaning that in this study, they were more eager to have the reform in place than locals. It had been expected that locals would be more eager for the policy reform especially in the background of being more directly affected by the HIV and AIDS epidemic in this setting; in terms of impacts on national development, work over-load that the pandemic has brought; socio-economic-cultural issues and other local influences and challenges.

On the other hand, the lack of a medical school for training of doctors in Swaziland at the time of this study brings about the reliance on expatriates, reducing the local ability to self-sustain and expand health services (WHO, 2006b; GKOS, 2009a; GKOS, 2009b). It was therefore expected that the local practitioners would feel more strongly positive about task-shifting, because it would reduce reliance on expatriates and bring opportunity for the national scale-up to be implemented. This would translate into increased employment opportunities beyond the potential health impacts and alleviation of socio-cultural-economic problems that the pandemic brings to Swaziland. The expatriates on the other hand would benefit more from the reform not going through because they gain from the lack of human resources financially and professionally, as we have seen above in socio-demographic characteristics that a large number of expatriates were employed by the national VMMC programme. On the other hand, the expatriates' more positive attitudes may be attributable to exposure. Coming from countries where task shifting has been successfully implemented (Bowa & Lukobo, 2006) may have influenced their more positive attitudes.

Even though, the locals had a generally positive attitude, the skepticism may have arisen from the concerns around added responsibility and work-load not being accompanied by incentives such as extra remuneration or allowances. These concerns are justifiable and consistent with how practitioners felt elsewhere such as in Ghana, Malawi, Zambia and Kenya (Dvolo et al, 2004; Chandler et al, 2009). The seriousness of these concerns resulted in similar reforms being rejected and failing to take-off in some places such as in Botswana (Daviaud & Chopra, 2008; Medecins Sans Frontieres, 2008). Even though not particularly studied in this research, it is acknowledged based on a review of the literature that issues of compensation and adequate recognition are important determinants of attitude towards task-shifting in our setting especially among the local practitioners.

In as much as we have found general positivity in attitudes of both doctors and nurses in our study towards the task-shifting reform, this is only a preliminary step in the entire process. Determining if there will be buy-in from this group was important because, as noted earlier in the literature review, lack of the clinicians' support can sabotage the entire reform (Mullan & Frehywot, 2007; Dvolo et al, 2004; Chandler et al, 2009). The overall success of the reform, however, also hinges on political commitment and support in terms of policy reforms, training, supervision and support (Lehmann et al, 2009; WHO, 2007c) to compliment the positive health worker attitudes towards the process.

Weaknesses and Limitations

Even though it was hoped that all the targeted doctors and nurses would participate in the study, not all responded as expected from the data collection method used, whereby each participant was given the option to opt in or out without coercion in order to satisfy ethical standards. However, the study still had a high response rate (88.4%), and highly significant results were observed at the 95% level of confidence.

As expected with self-administered questionnaires, omissions were made with some entries or questions (non-response bias) i.e. some entries or questions were skipped, while some were incorrectly filled out and therefore during analysis only the valid entries were considered. Because the data collection tool not handed directly to the researcher, but deposited in a drop-in collection box, such errors could not be corrected. For example, the minimum age of our nursing participants was entered as 17 years of age, which is inconsistent with the reality that this age is below the usual age of entry into

nursing school. Despite these limitations, the findings were significant because of the high response rate and large number of study participants.

Another of the weaknesses of our study was in the fact that the study questionnaire included mostly items on the advantages of task-shifting and did not highlight the potential hazards of the process. Nevertheless, the strength of the study was that the overall scale and sub-scales were internally reliable in the final forms in which they were analyzed. Also, it was felt that the overall ethical, cost-effectiveness, sustainability and efficiency benefits of task-shifting outweigh the possible minor compromise on safety and quality, which was reflected in the items that were included.

CHAPTER FIVE: Conclusions and Recommendations

The doctors and nurses in Swaziland have a positive attitude towards the task-shifting policy reform, meaning that they are keen on the development of the task-shifting policy and its implementation. In fact, the study found that in addition to an overall positive attitude of doctors and nurses as a group, nurses were more positive towards the reform than doctors (even across all the sub-scales). Within the socio-demographic groupings, male nurses and doctors were found in this study to be more positive towards the study than female nurses; same way that expatriates, those that have ever performed the procedure and older participants were found to have a significantly higher positive attitude towards task-shifting of VMMC to nurses than their counterparts.

Recommendations

The findings of this study therefore highlight the need to come up with interventions that target the attitudes of different sub-groups, such as female nurses, doctors (as a whole group), local Swaziland citizens, and younger professionals, who displayed a significantly lower positive attitudes compared to their counterparts. This study found that practical experience has a positive bearing on attitude. A suggested intervention would therefore be to include a practical component of VMMC as part of the nursing training curriculum, and also as the continuous nursing education programme.

The reliance on expatriates for provision of medical services in Swaziland including VMMC services as above mentioned reduces local ability to be self-sustainable and expand services. A focus on expanding the currently available nursing training programme would therefore improve sustainability of programmes such as VMMC. This expansion should ultimately see a long-term plan of opening a medical school for training doctors who can play a critical role in the task-shifting reform in terms of supervision and support. Retention of health workers cannot be ignored as we saw above that there is a high attrition rate of health workers due to low wages and poor working conditions (Martineau et al, 2004; Marchal & Kegels, 2003). Wage increments and improvement of working conditions, such as putting in place infection control measures and reducing working hours have been suggested (Kober & Van Damme, 2006). Other concurrent interventions could include awareness and training workshops aimed at addressing concerns of targeted groups such as female nurses, doctors, especially female doctors, local citizens and younger professionals.

Based on these findings, Swaziland should consider a policy reform that sees the development of task-shifting of the performance of the male circumcision procedure to nurses in order to improve overall efficiency and coverage of VMMC service provision after further investigations that explore feasibility, efficiency, efficacy and cost-effectiveness in our setting. Even though the study did not focus on determining the increased efficiency that comes with task-shifting of VMMC in Swaziland, the global literature supports that it brings increased efficiency and coverage. Similar studies exploring other stakeholder's attitudes regarding task-shifting reform will also need to be considered. A trial period that will highlight practical challenges to the reform in our setting is also essential before such a reform could be implemented at scale.

The policy reform should include aspects of adequate training, development and supervision of service providers, health legislation, and administrative regulation, and be implemented as a gradual process after all the above have been taken into consideration. These steps should also include methods put in place for staff motivation such as accreditation, incentives (remuneration or allowances) for taking on added duties, opportunities for career development and recognition. It is the recommendation of this study that the doctors should take the role of supervision and mentorship of the lower cadres in this system.

Conflict of Interest

The researcher at the time of protocol development and data collection was a male circumcision doctor employed by Population Services International (PSI) / Swaziland which is the leading partner and implementer of the national VMMC programme in Swaziland. The study however, is only meant as a thesis for the partial fulfillment of the Master of Public Health (MPH) degree program at Witwatersrand University in South Africa. In as much as the researcher was intimately involved in the national VMMC programme at the time of the study, this project was not meant in any way to challenge the running of health systems in the Governmental and Non-Governmental institutions.

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APPENDIX A: Questionnaire

Section A: Socio-Demographic Information

Please tick the appropriate space Participant No._____

What is your age in years? _____

What is your Gender? Male____ Female____

What is your professional background? Doctor_____ Nurse_____

What is your highest professional qualification? Certificate____ Diploma____ Degree ____

Postgraduate Degree____

For how long have you been working in Male Circumcision clinic? 0-6 months____ 6months- 1 yr___ 1-2 yrs____ 2+ yrs____

What is your primary role in Male Circumcision? Clinical____ Administrative____

Have you ever performed any Male circumcision: Yes____ No____?

What is your nationality? Local ____ Expatriate____

Which organization are you working for?: Ministry of Health____ PSI____ JHPIEGO____ FLAS____ Mission Hospitals_____

Kindly tick the response that best mirrors your opinion on each of the statements below. Tick only one response per statement.

	STATEMENTS.	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	Nurses have adequate practical hands-on experience with minor procedures, and can therefore handle performing Male Circumcisions (MC)	1	2	3	4	5
2	I feel that an MC is too minor a surgical procedure to warrant having a doctor perform it	1	2	3	4	5

3	I feel that MC is a specialized surgical procedure that should be performed only by doctors	1	2	3	4	5
4	The country's scope of practice should allow nurses to perform minor surgical procedures such as MC	1	2	3	4	5
5	With adequate MC training, nurses can perform most minor surgical procedures such as MC	1	2	3	4	5
6	Minor procedures should be performed based on clinical experience	1	2	3	4	5
7	Nurses are not the right people to perform MC	1	2	3	4	5
8	I feel, most nurses want to be able to perform MCs	1	2	3	4	5
9	Doctors are best deployed to do more complex medical procedures than MC	1	2	3	4	5
10	Client satisfaction is more dependent upon the MC provider's attitude towards them than the procedure itself	1	2	3	4	5
12	Clients will only perceive the MC to be of high quality if a doctor has performed it	1	2	3	4	5
13	I feel the cosmetic outcome will be the same for a doctor or nurse because MC has standard operating procedures used	1	2	3	4	5
14	Patient satisfaction is dependent upon the cadre of the provider	1	2	3	4	5
15	Ethically, MC nurses should be allowed to perform MC because they have undergone the basic training	1	2	3	4	5
16	As long as the MC is done well with a good cosmetic effect and minimal adverse event, it does not matter whether a doctor or nurse performed it	1	2	3	4	5
17	It is the client's right to be circumcised, and it will be the health systems fault if that does not happen simply because a doctor is not present	1	2	3	4	5
18	Too much resources already go into MC to make the	1	2	3	4	5

	human resource factor negligible					
19	The clients are only safe if a doctor performs the MC	1	2	3	4	5
20	I feel that nurses can manage adverse events in MC as well as the doctors	1	2	3	4	5
21	Doctors are the most efficient cadre in performing MC	1	2	3	4	5
22	Time taken performing an MC procedure is not a function of training, but experience	1	2	3	4	5
23	Doctors in MC easily get bored and therefore unlikely to stay long in the program	1	2	3	4	5

Abbreviations:

MC: Male Circumcision

AE: Adverse Events

PSI: Population Services International

FLAS: Family Life Association of Swaziland

JHPIEGO: An affiliate of Johns Hopkins

APPENDIX B: Participants Information Sheet

University of the Witwatersrand

School of Public Health, Medical School

7 York Road, Parktown 2193, South Africa

Good day

My name is Dr. Solomon Jonasi and I am a medical practitioner working as a male circumcision (MC) doctor for Population Services International (PSI) in Swaziland. I am also a part-time Master of Public Health (MPH) student at the University of the Witwatersrand in Johannesburg, South Africa, and as part fulfillment requirements for the degree program, I am undertaking a study to determine the attitudes of clinical staff (nurses and doctors) involved in male circumcision (MC), regarding task-shifting of the MC procedures to nurses in Swaziland.

Motivation for carrying out study

Following the dramatic evidence demonstrated by 3 Randomized Controlled Trials (RCTs) in Orange Farm (South Africa), Uganda and Kenya, that MC has a substantial effect in reducing the risk of acquisition of HIV among circumcised men by 60-70% and also other sexually transmitted infections (STIs), the Swaziland government set a goal to scale up MC to circumcise 80% of Swaziland's HIV-negative, uncircumcised males aged 15-24 by 2013. However these plans are heavily constrained by the critical shortage of doctors, who according to the MC policy in Swaziland, are the only professionals permitted to carry out the procedure.

Task-shifting, which is the process of delegating clinical care functions from more specialized to less specialized, or from higher to lower cadre of health workers, is an internationally recognized and recommended strategy to overcome human resource for health constraints especially in poor countries. Studies have shown that nurses are capable of handling many minor medical and surgical procedures in the place of doctors safely, efficiently, cost-effectively without compromising quality of services, but ensuring sustainability of health reforms and programs.

Even though this strategy has been effectively implemented in other countries, there is limited evidence that this model can be adopted in our setting in Swaziland, and before considering taking up the

strategy and changing the MC policy, it is important to have an understanding of the stakeholders (in this case, doctors and nurses) attitudes towards task-shifting MC to nurses i.e. delegating the task of performing MCs to nurses, because their 'buy-in' is important for its successful implementation.

What is expected of the participants?

In this study, the participants will be required to fill-in an anonymous questionnaire that will be used to measure their attitude towards the task-shifting process. After completion, they will be expected to hand in the questionnaire into a collection box provided at their respective clinics, which will be collected by the researcher after 1-2 days for processing.

Are there benefits for the participants?

There will be no direct benefits in the form of incentives or remuneration for participating; however your participation may lead to an MC policy change that will benefit the participants and the program, including changing the direction of health service provision in Swaziland into task-shifting health care functions from doctors to other health care cadres, and therefore increasing accessibility to health services

What about confidentiality

No names will be entered into any database as no names will be required at any stage of the study, and participation is voluntary. The study number will not be linked back to you as the participant, and will only be used for data capturing and analysis. Your response will be anonymous and the results will be presented in a grouped format so that no individual can be identified.

Can you withdraw from the study?

Each participant is free to withdraw from the study at any moment without providing a reason. You are free to leave the questionnaire blank, or decide not to hand it in and no-one will be victimized in any way for not participating or leaving out any answers.

This research project has been approved by the Committee for Research on Human Subjects (CRHS) and the Ethics Committee at the University of the Witwatersrand and the Chairperson can be contacted on +27 11 717 1234

If you require any further information or have any questions / complaints on the study please contact the researcher on +268 7602 2682. The results of the study will be communicated to you through clear posters that will be put up at each study site displaying the grouped data. Your consideration to participate in the study is greatly appreciated. If you are happy to take part in the study, please read and sign the attached consent form.

I thank you in advance for your keen consideration to participate in the study.

Dr. Solomon Jonasi

APPENDIX C: Consent Form

CONSENT FORM

I hereby confirm that I have been given information about the study to my satisfaction. The purpose, procedures involved, benefits and my rights as a participant in the study have been clearly explained to me.

I have received the Information leaflet for the study and have had enough time to read it on my own, and I have been given an opportunity to ask questions, which have been answered. I understand that there will be no direct incentives awarded for participation in this study such as remuneration; however the study has potential to have greater health benefits in Swaziland.

I have been told that the information I give in this study will be kept confidential, and will be anonymously processed into a research report.

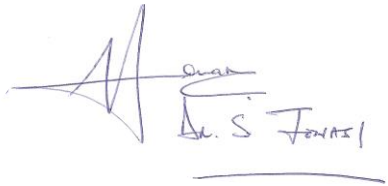
I am aware that it is my right to withdraw my consent in this study without prejudice.

I hereby, freely and voluntarily give my consent to participate in the study

Participant's name: _____ (Please print)

Participant's signature: _____ Date_____

Researcher's name: Dr. Solomon Jonasi



Researcher's signature: Date_____

Witness's name: _____ (Please print)

Witness's name: _____Date_____

APPENDIX D: Letter of Permission

University of the Witwatersrand

School of Public Health, Medical School

7 York Road, Parktown 2193, South Africa

Name of Addressee / Name of Organization

Address of Organization

Dear Sir / Madam

RE: Request for permission to carry out study among health workers

I am a part-time Master of Public Health (MPH) student at the University of the Witwatersrand in Johannesburg, South Africa, and as part fulfillment requirements for the degree program, I wish to undertake a study among the clinical staff (nurses and doctors) at the Population Services International (PSI) that are involved in male circumcision (MC) to determine their attitudes towards task-shifting of the MC procedures to nurses in Swaziland.

As it stands, the plans to achieve the national MC scale up to reach the target of covering 80% of uncircumcised males aged 15-24 by 2013 in order to achieve a significant public health impact have been heavily constrained by the critical shortage of doctors, who according to the MC policy in Swaziland, are the only professionals permitted to carry out the procedure.

Task-shifting, the process of delegating clinical care functions from more specialized to less specialized, or from higher to lower cadre of health workers, is the recommended strategy to overcome this human resource for health crisis in poor countries (Also see attached Participants Information Sheet).

In this study I would like to determine how the nurses and doctors involved in MC in Swaziland themselves feel about delegating the task of performing MCs to nurses. There is limited evidence whether the task-shifting strategy can be adopted in Swaziland even though it has been effectively

implemented in other poor countries in Africa. It is important to have an understanding of the stakeholder's attitudes before embarking on adoption of the strategy and changing the national MC policy, because their 'buy-in' is important for its successful implementation.

The participants of the study will be required to fill in an anonymous questionnaire that will be used to measure their attitude towards the task-shifting process. After completion, they will be expected to hand in the questionnaire into a collection box provided at each research site, which will be collected by the researcher after 1-2 days for processing.

The study is voluntary and participants may withdraw at any time without providing a reason. No person will be victimized in any way by not participating or withdrawing. Confidentiality will be maintained at all times, no names will be required at any stage and the study number will not be linked back to any participant. No incentives such as remuneration will be awarded for participating; however their participation may lead to an MC policy change that will benefit the participants and the entire program, including changing the direction of health service provision in Swaziland to task-shifting health care functions from doctors to other health care cadres, and therefore increasing accessibility to health services

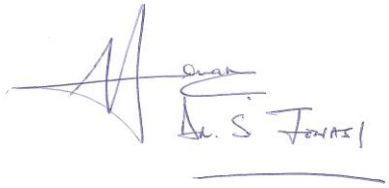
I hereby request for permission to carry out this study among the clinical workers at PSI.

This research project has been approved by the Committee for Research on Human Subjects (CRHS) and the Ethics Committee at the University of the Witwatersrand and the Chairperson can be contacted on +27 11 717 1234.

Should you have any queries or wish to discuss further, kindly do not hesitate to contact the researcher on: +268 7602 268. Please find attached, the Participants Information Sheet, Consent Form and the Ethical Clearance Certificate

I thank you in advance for your clearance

Yours faithfully



APPENDIX E: Witwatersrand Human Research Ethics Committee Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr Solomon Jonasi

CLEARANCE CERTIFICATE	M111153
PROJECT	Attitudes to Clinical Staff Towards Shifting of Male Circumcision (MC) to Nurses in Swaziland
INVESTIGATORS	Dr Solomon Jonasi
DEPARTMENT	School of Public Health
DATE CONSIDERED	25/11/2011
DECISION OF THE COMMITTEE*	Approved unconditionally

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

DATE 28/11/2012 **CHAIRPERSON** .....
(Professor P E Cleaton Jones)

*Guidelines for written 'informed consent' attached where applicable

cc: Supervisor : Maggie Mokonto

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 F: Swaziland Scientific and Ethics Committee Clearance Letter

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
P. O. Box 5
Mbabane

TO: Solomon Jonasi
Principal Investigator

DATE: 07th May 2012

REF: MH/599C

RE: Attitudes of Clinical Staff towards task shifting of male circumcision to nurses in Swaziland

The committee thanks you for addressing the issues raised by the 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

Yours Sincerely,

DIRECTOR OF HEALTH SERVICES
MINISTRY OF HEALTH
08 MAY 2012
P. O. BOX 5, MBABANE
SWAZILAND

Dr S.M. Zwane
Chairperson Scientific and Ethics Committee
cc: Sec Members