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ISSN 0189-6016©2008**EVALUATION OF A SAFER MALE CIRCUMCISION TRAINING PROGRAMME FOR TRADITIONAL SURGEONS AND NURSES IN THE EASTERN CAPE, SOUTH AFRICA****Karl Peltzer^a, Ayanda Nqeketo^b, George Petros^c and Xola Kanta^d**

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Abstract

Training designed to improve circumcision knowledge, attitude and practice was delivered over 5 days to 34 traditional surgeons and 49 traditional nurses in the Eastern Cape, South Africa. Training included the following topics: initiation rites; statutory regulation of traditional male circumcision and initiation into Manhood (TCIM); structure and function of the male sex organs; procedure of safe circumcision, infection control; sexually transmitted infections (STIs); HIV/AIDS; infection control measures; aftercare of the initiate including after care of the circumcision wound and initiate as a whole; detection and early management of common complications of circumcision; nutrition and fluid management; code of conduct and ethics; and sexual health education. The evaluation of the training consisted of a prospective assessment of knowledge and attitude immediately prior to and after training. Significant improvement in knowledge and/or attitudes was observed in legal aspects, STI, HIV and environmental aspects, attitudes in terms of improved collaboration with biomedical health care providers, normal and abnormal anatomy and physiology, sexually transmitted infections and including HIV, circumcision practice and aftercare of initiates. We concluded that safer circumcision training can be successfully delivered to traditional surgeons and nurses.

Key words: Evaluation, training programme, safer male circumcision, knowledge, attitudes, traditional surgeons, traditional nurses, Eastern Cape, South Africa

Introduction

Traditional male circumcision is a widely practiced ritual by the Xhosa speaking ethnic groups in South Africa. It is the initiation of a boy into the rights and responsibilities of manhood. The procedure is performed under most cases by an experienced traditionally circumcised man (traditional surgeon) on 18 years and above boys. The boys are circumcised by permanently removing the foreskin without any anaesthetics. The procedure is performed in a secluded initiation school (mountain or forest). Under these conditions the procedure is very painful and involves excess blood loss. Since the procedure involves permanent amputation of a living tissue, it is a procedure that is characterized by some risk of infection, temporal or permanent complication to the male sex organ (Mayatula and Mavundla, 1997, Meintjies, 1998).

Research indicates many complications and even deaths due to traditional male circumcision (Mayatula and Mavundla, 1997; Magoha, 1999; Meintjies, 1998). Examples of these problems include: botched circumcision, infection of circumcision wounds, gangrene of the penis, severe hemorrhage, respiratory infection, dehydration leading to penile amputation, torture and assault resulting in serious injuries, disability or even deaths (Crowley and

Kesner 1990; Du Toit and Villet, 1979; Gounden, 1990; Kanta, 2004; Mayatula and Mavundla, 1997, Mogotlane et al., 2004; Ngqaza, 1997).

Many authors explain that there are different techniques for performing the operation but usually complications arise as a result of the operator's inexperience rather than the method applied. Cultural prejudices may be so great that uncircumcised men may be attacked and beaten for their lack of conformity. Such beatings have occurred in the Xhosa nation of South Africa (Williams and Kapila, 1993). Various causes for this tragic state of affairs were identified (Mogotlane et al., 2004) including: lack of proper community regulation of circumcision and initiation of young men, circumcision and traditional nursing being done by inexperienced and careless men, restriction of fluid intake, poor and unhealthy living conditions in the circumcision schools like, cold and dusty holding rooms, initiates going to circumcision school whilst they are not fit for the conditions in the "mountain", e.g. due to a pre-existing general illness or abnormality of the penis or some other vital organ system of the body, lack of observation and maintenance of proper health standards at circumcision schools. Traditional surgeons tend to use the same knives to circumcise large groups of more than twenty boys at a time. There is, therefore, a risk of transmission of HIV and other infections such as hepatitis B during male circumcision (Marck, 1997).

This unacceptable state of affairs led the Eastern Cape Legislature to promulgate a law, known as Application of Health Standards in Traditional Circumcision Act No. 6 of 2001 (Province of the Eastern Cape, 2001). The key elements of this legislation are that:

Each child must get parental/guardian consent before he undergoes traditional circumcision; Each prospective initiate must be examined by a medical doctor to ensure that he is "fit and healthy" to undergo circumcision and initiation into manhood; Each traditional surgeon must get permission from a designated health officer to do a circumcision on each child, and the instrument and procedure used to perform the circumcision must be approved; An instrument used to perform a circumcision on one initiate must not be used again to perform a circumcision on another initiate, and the traditional surgeon must use clean instruments at all times before a circumcision, and shall use only substances prescribed by a medical officer for the sterilization of the instruments. Each traditional nurse must get permission to nurse each initiate in the circumcision school; Permission to hold a circumcision school must be obtained from a health officer and from the traditional leader, e.g. chief, and/or ward councilor; Designated health officers have a right to inspect each and every circumcision school, and to institute whatever remedial action is necessary if the health of the initiates is at risk; Penalties for transgression of any of the above, are stipulated for transgression of any aspect/clause of the act.

Traditional surgeons and nurses are now supposed to undergo training. A training programme was developed and implemented with the objectives of increasing traditional surgeons' and nurses' abilities to practice safer circumcision and after care (Kanta, 2004). The aim of this study was an evaluation of the training based on a pre-training and post-training assessment of the traditional surgeons' and nurses' knowledge and attitudes.

Methods

Sample

The sample included 34 Xhosa traditional surgeons (mean age= 43.8, SD=15.8, range 22-76) and 49 Xhosa traditional nurses (*ikhankatha*) (mean age= 29.2, SD=10.4, range 19-64) from Nyandeni and Quakeni Local Service Areas (LSAs). The number of years of formal education among traditional surgeons was 7.2 years (SD=2.7), range 1 to 13 years, and among traditional nurses 8.7 years (SD=2.8), range 2-14 years. Apart from being involved in male circumcision traditional surgeons were mostly unemployed (75.8%), working as a labourer (15.2%) or traditional health practitioner (9.1%), while traditional nurses were either mainly unemployed (75.5%), or working as a labourer (18.4%), traditional health practitioner (4.1%) and professional nurse (2%).

Training intervention

Xola Kanta and George Petros conducted two trainings in May/June 2007 with the assistance of Eastern Cape Department of Health personnel for five days and above. The training curriculum for the traditional surgeons and nurses included the following content areas: Introduction into initiation rites; Traditional Community Regulation as well as statutory regulation of Traditional Male Circumcision and Initiation into Manhood; Structure and Function of the Male Sex Organs; Procedure of safe circumcision, Infection control; STIs/STDs; HIV/AIDS; Infection Control Measures; Aftercare of the initiate including after care of the circumcision wound and initiate as a whole; Detection and early management of common complications of circumcision; Nutrition and Fluid

Management; Code of conduct and ethics for traditional Health Practitioners; Sexual health education (Kanta, 2004; UNAIDS/AIDSMARK, 2005).

The training covered all the above areas, starting from the role of the parents to that of the surgeon and nurses and traditional leaders. Also the role played by the department of health as the monitoring body of initiation schools in the province was addressed, and sanctions applied against those who violate the rules. Trainees were taught about the anatomy of the male organ and its function. Normal and abnormal male organs were discussed. Referral issues were also explored for example, when to refer an initiate to hospital/clinic when he shows signs and symptoms of sexually transmitted infections, dehydration or excessive bleeding. HIV and AIDS signs and symptoms were addressed extensively, and issues of cross infection and prevention were discussed and wound management. The purpose of the Circumcision Act of 2001 in preventing the harm of the initiate and as a standard document that provides a guide in admission of young boys into initiation was addressed. Surgeons used a variety of instruments to remove the foreskin (e.g. assegai; knives; deggars; surgical blades, etc.). Some of the instruments were sharpened on both sides and varied in length. Surgeons cleaned the instruments using various liquid mixtures (e.g. dettol, methylated spirits, savlon, warm water, etc). Some surgeons used a mixture of some of the liquids mentioned. They stored the instruments using various containers (e.g. animal skins; wrap in plastic; wrap in a cloth). Keeping the instrument under sterile conditions was a major problem.

Theoretical basis for the intervention

The Information-Motivation-Behavioral (IMB) skills model of health behavior change (Fisher and Fisher, 2000) was used as a theoretical framework for safer circumcision skills training and information transfer. This theory states that safer circumcision information is a necessary precursor to risk reduction. In addition, motivation to change a behaviour is a function of one willing to act on the information about risk and risk reduction. Also the model suggests that behavioural skills related to preventive actions are a final common pathway for information and motivation to result in preventive behaviour change. Research conducted in South Africa has supported the IMB model, for example, IMB constructs predicting sexual risk behavior in STI clinics (Simbayi *et al.*, 2004). What was critical was the change in behaviour of the trainees and the sustainability of that change over time. Also the motivation to change on the part of the trainees was an area needing attention. For example, the unwillingness of some of the trainees to use gloves, use different surgical instruments to circumcise different boys, and referral of initiate to the hospital/clinic on time for fear of not being labeled immature.

Traditional surgeons were also provided with a tool box including surgical (scalpel) blades, scalpel handles, latex hand gloves, sterilization instruments, and paper towel rolls, and traditional nurses also received the tool box including latex hand gloves, sterilization instruments, and paper towel rolls.

Evaluation design

The evaluation design of the training was based on a questionnaire administered immediately prior and immediately after each of the two training sessions. The questionnaire was administered in a face-to-face interview and contained 72 items which assessed participant demographic and practice characteristics, knowledge, attitude, and practice (pre-training only). Knowledge and attitude questions on male circumcision related issues included for traditional surgeons and nurses the following components: Legal aspects, STI, HIV, environmental aspects (5 items); Attitudes towards collaboration with biomedical health workers (4 items); Normal anatomy and physiology (skin layers of penis, types of blood vessels of penis, tubes that form the body or shaft of the penis) (6 items); abnormal anatomy and physiology (paraphimosis, intersex, one testis in the scrotum) (4 items); sexually transmitted infections and diseases including HIV (names, causes, symptoms, management procedure in initiation school) (4 items); circumcision complications (contraindications, surgical complications infection control) (3 items); and aftercare of initiates (signs and causes of infection, delayed wound healing, and dehydration)(6 items). Main messages from the Circumcision Act were assessed from the following messages and scored from 0=poor to 2=very good:

The applicant must not be circumcised unless he meets the following requirements set out in Annexure A of the Act:

Each child must get parental/guardian consent before he undergoes traditional circumcision; Each prospective initiate must be examined by a medical doctor to ensure that he is "fit and health" to undergo circumcision and initiation into manhood; Each traditional surgeon must get permission from a designated health officer to do a circumcision on each child, and the instrument and procedure used to perform the circumcision must be approved. Each traditional nurse must get permission to nurse each initiate in the circumcision school from both parent and

a designated health officer; Permission to hold a circumcision school must be obtained from a health officer and from the traditional leader, e.g. chief, and/or ward councilor.

Legal requirements for a traditional surgeon or nurse were assessed from the following components and scored from 0=poor to 2=very good:

- Each traditional surgeon must get permission from a designated health officer to do a male circumcision on each child, and the instrument and procedure used to perform the circumcision must be approved;
- Each traditional nurse must get permission to nurse each initiate in the circumcision school;
- Permission to hold a circumcision school must be obtained from a health officer and from the traditional leader, e.g. chief, and/or ward councilor;
- A traditional nurse must stay with the initiates 24 hrs in the first 8 days and after be available once a day till the end;
- Each traditional nurse must get permission to nurse each initiate in the circumcision school from both parent and a designated health officer;
- Permission to hold a circumcision school must be obtained from a health officer and from the traditional leader, e.g. chief, and/or ward councilor.

Half of the knowledge and practice questions were open-ended. Summary scores were calculated for each knowledge or attitude category sub-scale. Knowledge summary scores were the number of "correct" responses. For attitudes, responses were coded into "positive" and "negative". The attitude summary score consisted of the number of positive responses. The questionnaire was developed from a literature review (Bailey *et al.*, 2002; Chabikuli and Obunbanjo, 2001; Kanta, 2004; Krieger *et al.*, 2001; Meel, 2005; Mattson *et al.*, 2004; Methar and Fass, 2001).

A database of all traditional nurses and surgeons both trained and untrained was accessed from the Department of Health in the Eastern Province (male circumcision programme). The Eastern Cape Department of Health personnel (district and provincial coordinators) after identifying untrained traditional surgeons and nurses in the study areas (Nyandeni and Quekeni Local Service Area) then transported all the identified untrained traditional surgeons and nurses to the training venues. At training venues, all the participants were briefed about the study and questions, clarifications from their side were addressed. After the group information session individual consent to participate was obtained. The research protocol was reviewed and approved by the Human Sciences Research Council (HSRC) research ethics committee protocol REC 1/17/05/06. The Provincial Health Department of the Eastern Cape, the district health office and traditional authorities in the study areas approved the study.

Data analysis

Paired t-tests were used to compare pre-training and post-training knowledge and attitude summary scores, and descriptive statistics were applied using SPSS version 14.0. The relationship between trainee characteristics (independent variable) and pre-training post-training changes (dependent variables) in total knowledge and attitude were analyzed using Analysis of Variance (ANOVA).

Results

Practice characteristics of traditional surgeons and nurses

The number of male circumcisions performed by traditional surgeons in the past 12 months were 85.6 (SD=99.9), with a range of 1 to 385. The amount of money in Rand charged for conducting a male circumcision was 132.2 (SD=83.5), with a range of 1 to 370 Rand. The number of male circumcisions cared for by traditional nurses in the past 12 months was 25 initiates (SD=43.3), with a range of 0 to 250 initiates. Most traditional surgeons (94%) had been trained by another traditional surgeon, and 73.5% of traditional nurses had learnt from observation of other traditional nurses (Table 1).

Table 1: How did you get involved in this practice? (multiple responses possible)

	Traditional surgeons (n=34)		Traditional nurses (n=49)	
	N	%	N	%
1) Trained by a traditional surgeon or nurse (not a relative)	18	52.9	26	53.1
2) Trained by my relative (father, brother, grandfather, etc.)	14	41.2	10	20.4
3) Is a gift from my ancestors	10	29.4	13	26.5

Attitudes towards male circumcision

Almost all traditional surgeons (88%) and nurses (92%) endorsed that the main reason for male circumcision was tradition, followed by a number of health reasons (e.g., penile hygiene) including the prevention of sexually transmitted infections and HIV, and peer pressure. Generally, traditional surgeons endorsed more frequently various reasons for male circumcision than traditional nurses (Table 2).

Table 2: What are the main reasons for male circumcision? (multiple responses possible)

	TS %	TN %
1) Peer pressure	44.1	32.7
2) Tradition	88.2	91.8
3) Better penile hygiene	64.7	44.9
4) Good appearance	70.6	34.7
5) Circumcision improves male sexual potency in adulthood.	64.7	55.1
6) Circumcision effectively prevents premature ejaculation by decreasing penile sensitivity.	44.1	36.7
7) Circumcision facilitates penile growth.	29.4	26.5
8) Circumcision strengthens the urinary stream	58.8	44.9
9) Circumcision may help prevent penile cancer	47.1	26.5
10) Circumcision may help prevent bladder or kidney infection.	50.0	34.7
11) Circumcision may help prevent cervix cancer of the sexual partner.	44.1	26.5
12) Circumcision may help prevent genital tract infection of the sexual partner.	44.1	36.8
13) Circumcision may help prevent sexually transmitted diseases	55.9	51.0
14) Circumcision may help prevent HIV	44.1	24.5
15) Religious reason	47.1	34.7
16) Other, specify	21.2	0

Experience of complications with male circumcision by traditional surgeons and nurses

Half (50%) of the traditional surgeons reported that they had not had any complications with male circumcision in the past three years, while eight (28.6%) reported complications with one initiate and six (21.3%) with two and more initiates. Two in five traditional surgeons (40.6%) and seven (14.3%) of the traditional nurses had handled an initiate with an abnormal external sex organ; 8 traditional surgeons were confident and five were scared or confused about handling such a case. A few of the traditional surgeons (12.1%) reported to have cut herself during circumcision. Four (12.1%) traditional surgeons and 13 traditional nurses (26.5%) reported that they experienced that an initiate became very sick and in two and four instances respectively, leaving the initiate dead. Signs and symptoms of those initiates included mainly excess bleeding and extreme dehydration. Critical cases could be successfully managed by involving a medical doctor and to a lesser extend traditional health practitioners (Table 3).

Table 3: Experience of complications with male corcumale corcumcisionision by traditional surgeons

	Traditional surgeons (n=34)		Traditional nurses (n=49)	
	N	%		
Have you ever cut yourself when caring for an initiate?	4	12.1		
Have you had any experience of an initiate that became very sick in a life threatening manner or died?	4	12.1	13	26.5
<i>If so, what were the signs and symptoms of the last case?</i>				
1) Excess bleeding	2	5.9	6	12.2
2) Extreme dehydration	2	5.9	6	12.2
3) Sores in mouth & not eating	1	2.9	5	10.2
4) Excessive loss of weight	1	2.9	4	8.2
5) Other, specify: mentally ill, fainted, swelling of testis	0	0	5	10.2
<i>How was the (last) case handled?</i>				
Initiate died in the bush	2	5.9	4	8.2
Initiate was referred to the hospital/doctor	1	2.9	5	10.2
Initiate was referred to the traditional healer	1	2.9	5	10.2
Initiate was treated successfully in the bush after inviting a medical doctor	2	5.9	2	4.1
Initiate was treated successfully after inviting an experienced traditional nurse	2	5.9	3	6.1

Circumcision knowledge, attitude and practice

Circumcision knowledge about legal aspects, STI, HIV and environmental aspects increased from pre- to post training assessment significantly ($p < 0.01$). Attitudes in terms of improved collaboration with biomedical health care providers also increased from pre- to post training assessment significantly ($p < 0.01$, Table 4).

Table 4: Knowledge and attitudes related to male circumcision

<i>Knowledge (legal, STI/ HIV, environment)</i>	Pre %	Post %
1) Main messages of the circumcision corcumcisionision act (good or very good) (rating 0-2)	51.6	58.7
2) Legal requirements for a traditional surgeon or nurse (good or very good) (rating 0-2)	60.0	74.4
3) Traditional health practitioners should be made aware that HIV/AIDS may be an occupational hazard to them as well.	91.6	100
4) The curriculum of initiation schools should include issues of prevention of STIs and diseases, including HIV/AIDS	91.6	97.5
5) Lodges build from plastic and corrugated iron should be prohibited.	78.0	91.1
Total: M (SD), $t=3.05$, $P<0.01$ (Paired sample t-test)	4.4 (1.3)	5.4 (1.1)
<i>Attitude (collaboration with biomedical health care providers)</i>		
1) Each traditional authority should identify and request local health professionals and institutions to work hand in hand with traditional health practitioners.	89.2	93.7
2) Western medical treatment for an initiate with acute or chronic illness should be allowed.	89.2	98.7
3) Complications which can not be treated traditionally should be referred to or managed by health professionals.	94.0	94.9
4) Initiates who are referred to clinic or hospital should be managed by a team of male professionals who themselves have been initiated traditionally.	89.2	96.2
Total: M (SD); $t=2.60$, $P<0.01$ (Paired sample t-test)	3.6 (0.7)	3.8 (0.4)

Circumcision knowledge

Traditional surgeons and nurses were assessed on various forms of male circumcision and related knowledge issues. For both traditional surgeons and nurses there were significant increases ($p < 0.001$) between prior to immediately after the training knowledge regarding normal and abnormal anatomy and physiology, sexually transmitted infections and diseases including HIV, circumcision practice and aftercare of initiates (Table 6).

Table 6: Circumcision knowledge: Pre-post assessment

	Traditional surgeons (n=34)		Paired samples t-test	Traditional nurses (n=49)		Paired samples t-test
	Pre	Post		Pre	Post	
	M(SD)	M(SD)	t-value	M(SD)	M(SD)	t-value
Normal anatomy and physiology (6 items, range 0-6)	2.6 (1.8)	4.9 (1.4)	-6.64***	1.9 (1.7)	4.3 (1.6)	-8.09***
Abnormal anatomy and physiology (4 items, range 0-5)	1.5 (1.4)	2.8 (1.1)	-4.65***	1.0 (1.1)	2.5 (0.9)	-8.11***
Sexually transmitted infections and diseases including HIV (4 items, range 0-6)	3.2 (1.2)	4.3 (0.6)	-4.63***	3.1 (1.2)	3.8 (0.8)	-3.59***
Circumcision complications (3 items, range 0-5)	2.9 (1.0)	3.5 (0.8)	-2.25*	2.8 (1.1)	3.4 (0.7)	-2.72**
Aftercare of initiates (6 items, range 0-12)	4.8 (1.6)	7.3 (1.4)	-6.30***	5.6 (2.4)	7.7 (2.0)	-6.56***

*** $P < 0.001$; ** $P < 0.01$; * $P < 0.05$

Relationship between traditional surgeons and nurses characteristics and magnitude of change

We investigated if any of the following characteristics of the trainees were related to the magnitude of total knowledge and attitude change: age, years of practice, formal education and type of practitioner (traditional surgeon, nurse). None of the characteristics of the trainees were significantly or marginally related to change.

Discussion

This study evaluated a training intervention with 34 traditional surgeons and 49 traditional nurses in the Eastern Cape, South Africa. Traditional surgeons were found to have on average 86 circumcisions in the past year (at an average cost of 132 Rand per initiate), while traditional nurses had on average 25 initiates they had cared for in the past 12 months.

The training has resulted in significant ($P < 0.01$) improvement in all areas of training content: circumcision knowledge about legal aspects, STI, HIV and environmental, attitudes in terms of improved collaboration with biomedical health care providers, normal and abnormal anatomy and physiology, sexually transmitted infections and diseases including HIV, circumcision practice and aftercare of initiates. This finding indicates that most of the desired short-term changes were achieved by the training. Somsé et al. (1998) also found that an AIDS training can be successfully delivered to traditional healers in the Central African Republic.

We determined that the magnitude of knowledge and attitude change was not related ($P < 0.05$) to trainee characteristics: age, years of practice, formal education and type of practitioner (traditional surgeon, nurse). This finding indicates that the impact of the training was relatively uniform across practitioners, implying that specific types of practitioners do not need to be targeted for special training.

There is an urgent need to review interventions involving traditional surgeons and nurses. Our study is probably the first training for traditional surgeons and nurses on safer circumcision and HIV prevention with a pretest and posttest evaluation of change in knowledge and attitude. It therefore was difficult to find data from previous studies to which we could compare the result of our evaluation.

Although the short-term changes in knowledge and attitude are valuable, it is also important to be able to demonstrate a longer term change in knowledge, attitude, and most importantly, practice. We will conduct an assessment of knowledge, attitude and practice 6 months after the training.

The implications of our findings are fourfold. First, our findings reinforce Peltzer et al. (2006) recommendation for a careful design of curriculum adapted for training traditional surgeons and nurses. Second, our findings also support the necessity to use an educational strategy which respects principles of adult education (Somsé et al., 1998). Third, consistent with Kanta (2004), our study suggests critical areas of knowledge and attitude to which attention must be paid when designing a curriculum for training traditional surgeons and nurses. Finally, a one-shot training probably can not achieve the desired level of performance in trainees' knowledge and attitudes. As other studies have suggested, further supportive trainings may be the most effective way for promoting cognitive, attitudinal, and behavioural change (Green, 1994; Peltzer et al., 2006).

The authors believe that traditional surgeons and nurses, already accustomed to performing circumcisions, could help meet the demand provided they received training on how to perform the procedure safely.

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