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Item Type	Article
Authors	Nkosi, Sebenzile;Sikweyiya, Yandisa;Kekwaletswe, Connie T;Morojele, Neo K
Citation	Male circumcision, alcohol use and unprotected sex among patrons of bars and taverns in rural areas of North-West province, South Africa. 2015, 27 (5):612-7 AIDS Care
DOI	<a href="https://doi.org/10.1080/09540121.2014.983040">10.1080/09540121.2014.983040</a>
Journal	AIDS care
Rights	Archived with thanks to AIDS care
Download date	2024-08-06 23:34:35
Link to Item	<a href="http://hdl.handle.net/11288/583943">http://hdl.handle.net/11288/583943</a>

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Publisher: Routledge

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## AIDS Care: Psychological and Socio-medical Aspects of AIDS/HIV

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/caic20>

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Published online: 27 Nov 2014.

To cite this article: Sebenzile Nkosi, Yandisa Sikweyiya, Connie T. Kekwaletswe & Neo K. Morojele (2014): Male circumcision, alcohol use and unprotected sex among patrons of bars and taverns in rural areas of north-west province, South Africa, AIDS Care: Psychological and Socio-medical Aspects of AIDS/HIV, DOI: [10.1080/09540121.2014.983040](https://doi.org/10.1080/09540121.2014.983040)

To link to this article: <http://dx.doi.org/10.1080/09540121.2014.983040>

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## Male circumcision, alcohol use and unprotected sex among patrons of bars and taverns in rural areas of north-west province, South Africa

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(Received 25 June 2013; accepted 28 October 2014)

Strong research evidence has shown that medical male circumcision significantly reduces heterosexual HIV acquisition among men. However, its effectiveness is enhanced by behavioural factors such as condom use. Currently, little is known of unprotected sex associated with male circumcision (MC) among alcohol-drinking tavern-going men, or whether engagement in unprotected sex may differ between men who have been traditionally circumcised and those who have been medically circumcised. The study sought to determine the relative importance of alcohol consumption and MC as correlates of unprotected sex and to compare the risk of engaging in unprotected sex between traditionally circumcised and medically circumcised tavern-going men from two rural villages in North-West province, South Africa. Data from 314 adult men ( $\geq 18$  years) were analysed. The men were recruited from four bars/taverns using systematic sampling. They responded to questions regarding their demographic characteristics, alcohol consumption, circumcision status and method (where applicable), and engagement in unprotected sex. Descriptive analyses and bivariate and multivariate logistic regression analyses were conducted. Age, education, relationship status, alcohol consumption and traditional male circumcision (TMC) were independently and significantly associated with unprotected sex. Specifically, probable alcohol dependence and traditional circumcision were independent risk factors for engaging in unprotected sex among tavern-going men. Traditionally circumcised men had a higher risk of engaging in unprotected sex than medically circumcised men. Interventions aimed at reducing alcohol consumption, encouraging protective behaviour among men who have undergone TMC, and increasing condom use are needed in bar/tavern settings. HIV prevention education must be urgently incorporated into TMC programmes.

**Keywords:** alcohol; traditional male circumcision; medical male circumcision; unprotected sex; bar patrons; South Africa

### Introduction

Sub-Saharan Africa has the highest HIV prevalence (69%) and incidence (71%) rates globally (UNAIDS, 2012). Medical male circumcision (MMC) may impact the incidence of HIV in generalised epidemic areas, given its effectiveness to reduce men's HIV infection risk through heterosexual contact by approximately 60% (Avert et al., 2005; Bailey et al., 2007; Gray et al., 2007; WHO & UNAIDS, 2007). As a result, the South African Department of Health (SADoH) has been promoting MMC as part of the biomedical HIV prevention package, as evidenced by its inclusion in the recent National Strategic Plan (2012–2016). The SADoH promotes the roll-out of MMC particularly in geographic areas where traditional male circumcision (TMC) has not been recently practised, as well as the incorporation of HIV prevention education in TMC programmes (SADoH, 2012). In South Africa, TMC is a cultural practice that signifies a rite of passage into manhood for

adolescent boys among various ethnic groups. It is commonly practised by the AmaXhosa, BaSotho, AmaNdebele, BaPedi, BaTsonga and BaVenda ethnic groups (Connolly, Simbayi, Shanmugam, & Nqeketo, 2008). While male circumcision (MC) may be appealing for its non-reliance on behavioural adherence, its effectiveness still requires protective behaviours (such as condom use) given that it only provides partial protection. Indeed there have been concerns that MC may inadvertently increase men's risk of HIV risk behaviour through risk compensation, i.e. the protection provided by the procedure may create the impression that condom use is superfluous and consequently lead to decreased condom use among circumcised men (Eaton & Kalichman, 2009). Indeed, several studies have examined the differences in engagement in sexual risk behaviour between medically circumcised and uncircumcised men (Avert et al., 2005; Bailey et al., 2007; Gray et al., 2007; Mattson et al., 2008). However, little is known about sexual risk behaviour associated with TMC

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relative to MMC, given the different contextual factors that accompany these procedures. For instance, there may be different reasons why men opt for TMC or MMC, they may attach different meanings to each method, and the type of health education that accompanies the methods may differ, with MMC practitioners being more likely to emphasise HIV risk reduction than TMC practitioners (Nyembezi et al., 2009).

There is a particular paucity of research on the association between MC and unprotected sex in populations other than clinic and community populations. In particular, little is known of this association among men who are at “high risk” of HIV infection, such as those who engage in heavy alcohol consumption. Men who drink alcohol are most inclined to visit drinking venues, which are high-risk settings for sexual risk behaviour (Kalichman, Simbayi, Vermaak, Jooste, & Cain, 2008; Morojele et al., 2006). Harmful drinking further increases people’s risk of engagement in unprotected sex given alcohol’s impairment of cognition/risk appraisal and psychomotor functioning that enables correct condom use (Chersich & Rees, 2010; Townsend et al., 2010). It is not known how sexual risk behaviour, such as unprotected sex, associated with MC may apply to a drinking population for whom engagement in unprotected sex may be a consequence of their alcohol consumption.

This study sought to determine the relative importance of alcohol consumption and circumcision (MMC and TMC) as correlates of unprotected sex and to compare the risk of engagement in unprotected sex between traditionally circumcised and medically circumcised tavern-going men from two rural villages in north-west province, South Africa.

## Methods

The study was conducted in Bojanala Platinum district (Moretele and Madibeng municipalities) in North-West province. In this setting, Black African people constitute about 95% of the population, of whom almost 50% belong to the BaTswana ethnic group (Statistics South Africa, 2011). Historically, ethnic groups that practise TMC in the area include the BaSotho, AmaNdebele, BaTsonga and BaPedi (Connolly et al., 2008), and these groups combined constitute about 30% of the entire South African population (Statistics South Africa, 2011).

We selected two bars/taverns from each of the two villages for inclusion in the study. Researchers approached every third person crossing a predetermined threshold in the bars/taverns. Of those approached, 417 agreed and completed the interview for a participation rate of 43%. The gender of those approached was not taken note of, but based on observational and formative research that we conducted prior to embarking on the

survey, we expected a male to female ratio of 3:1 in the study bars. For this study, we analysed a subset of data of 314 adult male patrons. Participants responded to an interviewer-administered structured questionnaire regarding their demographic characteristics, alcohol use, circumcision status, method of circumcision (i.e. traditional or medical) and condom use behaviour in the past six months. Alcohol consumption was assessed with the 10-item Alcohol Use Disorders Identification Test (AUDIT), with scores ranging from 0 to 40. AUDIT scores were categorised into four levels of risk, namely no/low risk (total score 0–7), risky/hazardous (total score 8–15), high risk/harmful (total score 16–19) and probable alcohol dependence (total score 20 and above; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). Regarding circumcision, participants were asked to indicate whether they had been circumcised, and whether the procedure was done at a health care facility or at an initiation school. Unprotected sex, the outcome variable, was assessed via participants’ reported sexual experiences in the past six months, including the number of people they had had sex with, the number of times they had had sex with each partner and the number of times they had used condoms with each partner. We defined unprotected sex as having engaged in at least one unprotected sexual episode, with at least one sexual partner in the past six months. We conducted descriptive analyses, followed by bivariate and multivariate logistic regressions. For the multivariate model, we entered independent variables that were significant at  $p < 0.10$  in the bivariate analysis. Ethics approval for the study was given by the South African Medical Research Council Ethics Committee and the Centers for Disease Control and Prevention. All participants signed an informed consent form before participating in the study.

## Results

The participants’ mean age was 30.7 years (SD = 8.93). Table 1 shows the sample’s demographic characteristics, alcohol consumption levels, circumcision status and method, and engagement in unprotected sex. As shown in the table, about half had grade 12 education (54%), and most were single (70%) and employed (66%). As defined by the AUDIT, two-fifths (42%) were in the risky/hazardous category, less than one-fifth (17%) in the high risk/harmful category and just over one-fifth (22%) were in the probable alcohol dependence category. About half were circumcised (52%), of whom 39% were medically circumcised and 13% were traditionally circumcised. Over half (60%) of the study’s sample had engaged in unprotected sex in the past six months.

Table 2 shows the results of the bivariate and multivariate logistic regression analyses. The multivariate model

Table 1. Demographic characteristics, alcohol consumption, circumcision status and method, and unprotected sex of participants ( $N = 314$ ).

Variables	Categories	$N$ (%)
Age	18–24	78 (24.9)
	25–29	88 (28.0)
	30–34	60 (19.1)
	> 34	88 (28.0)
Education	< Grade 12	58 (18.5)
	Grade 12	169 (54.0)
	> Grade 12	86 (27.5)
Relationship status	Single	221 (70.4)
	Non-single	93 (29.6)
Employment status	Employed	207 (66.1)
	Unemployed	106 (33.9)
Alcohol use (AUDIT)	No/low risk	61 (19.4)
	Risky/hazardous	131 (41.7)
	High risk/harmful	53 (16.9)
	Probable dependence	69 (22.0)
Circumcision	Circumcised at doctor/clinic/hospital	116 (38.4)
	Circumcised at initiation school	40 (13.3)
	Not circumcised	146 (48.3)
Unprotected sex in past 6 months	At least once	175 (59.3)
	Never	120 (40.7)

Note: The total number is less than 314 in some instances due to missing data.

revealed that being within the older age groups 25–29 and 30–34, having grade 12 education, having a non-single status, probable alcohol dependence and having been traditionally circumcised were significant risk factors for engagement in unprotected sex.

## Discussion

For this sample, probable alcohol dependence and TMC were risk factors for engagement in unprotected sex. These findings partially support those of a study conducted in Botswana where, similarly, alcohol consumption was

Table 2. Bivariate and multivariate logistic regression results for the total sample ( $n = 284$ ).

Variables	Categories	OR (95% CI)	AOR (95% CI)
Age	18–24	0.88 (0.47–1.65)	1.79 (0.77–4.12)
	25–29	2.01 (1.07–3.79)*	3.53 (1.58–7.88)**
	30–34	2.60 (1.25–5.43)**	4.36 (1.83–10.43)***
	> 34	1.00	1.00
Education	< Grade 12	1.11 (0.55–2.20)	1.13 (0.51–2.49)
	Grade 12	1.80 (1.05–3.10)*	1.99 (1.05–3.78)*
	> Grade 12	1.00	1.00
Relationship status	Non-single <sup>a</sup>	2.25 (1.31–3.84)**	3.49 (1.71–7.11)***
	Single	1.00	1.00
Employment status	Employed	1.61 (0.99–2.62)#	1.56 (0.87–2.81)
	Unemployed	1.00	1.00
Alcohol use (AUDIT)	Probable dependence	2.85 (1.31–6.20)**	2.45 (1.06–5.67)*
	High risk/harmful	1.20 (0.56–2.57)	1.31 (0.55–3.12)
	Risky/hazardous	0.91 (0.48–1.71)	0.78 (0.38–1.59)
	No/Low risk	1.00	1.00
Circumcision	Not circumcised	0.81 (0.49–1.34)	0.71 (0.40–1.25)
	Traditionally circumcised	3.89 (1.51–10.05)**	4.07 (1.48–11.16)**
	Medically circumcised	1.00	1.00

<sup>a</sup>Category includes cohabiting, married, separated, divorced and widowed.

# $p < 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

significantly associated with unprotected sex while, contrarily, traditional (and medical) circumcision was not (Ayiga & Letamo, 2011). Our finding that only probable alcohol dependence of the three alcohol use risk categories (i.e., hazardous, harmful and probable dependence) was a risk factor for engagement in unprotected sex is consistent with previous findings of a study among men in Kenya (Luchters et al., 2011). The significantly higher risk for unprotected sex among the probable alcohol dependence group may be explained by other factors underlying problem alcohol consumption and sexual risk behaviour. For example, individuals with alcohol dependence have been found to have elevated impulsivity, either as a predisposing personality trait or as a result of impaired inhibitory control functions in the brain due to prolonged alcohol use (Lawrence, Luty, Bogdan, Sahakian, & Clark, 2009; Verdejo-García, Lawrence, & Clark, 2008). The compromised impulse control may give rise to other behaviours such as engagement in unprotected sex.

We found that the risk of engagement in unprotected sex was significantly higher among traditionally circumcised men than medically circumcised men, while the risk for uncircumcised men was not significantly different to that of medically circumcised men. There may be various reasons for the significant difference in sexual risk behaviour between the men who had undergone TMC and MMC. It may be that the TMC context does not address all pertinent issues related to MC as an HIV prevention strategy; a likely possibility given the SAdoH's concern with the need to incorporate HIV prevention education at initiation schools (SAdoH, 2012). As such, it is not clear whether traditionally circumcised men in our sample were given information about the benefits of MC for HIV prevention or whether any such information received was accurate or communicated via reliable sources, such that the only partial protection provided by MC was also addressed (Dowsett & Couch, 2007).

On the other hand, the MMC context generally includes risk reduction counselling where MC's partial protection against HIV is usually addressed (SAdoH, 2012). Given that uncircumcised and traditionally circumcised men are less likely to be exposed to risk reduction counselling, we would have expected MMC men's risk of engagement in unprotected sex to be lower than that of both uncircumcised and traditionally circumcised men. However, there was a non-significant difference in the risk of engagement in unprotected sex between the medically circumcised and uncircumcised men. This finding seems to suggest that the MMC context cannot explain the observed difference between medically and traditionally circumcised men. It is also possible that the men who had MMC had had particularly high levels of risk behaviour to begin with, and that the HIV risk reduction counselling that they received had

only brought their risk down to a similar (rather than lower) level to that of their uncircumcised counterparts (Riess, Achieng, Otieno, Ndinya-Achola, & Bailey, 2010).

Furthermore, it is plausible that the meanings attached to the TMC processes and procedures may account for the higher risk of engagement in unprotected sex among traditionally circumcised men. Indeed, although TMC as a rite of passage to manhood historically included sexual education and promoted responsible sexuality among men in many African cultures, there have been concerns that this education may have been eroded and left space for the emergence of risky notions of masculinity, including engagement in risky sexual practices (Vincent, 2008). Additionally, in settings where TMC is practised, it is highly valued as compared to MMC and men who have undergone TMC are likely to attain a higher status in the community and be recognised as "real men". We argue that such men are likely to ascribe to traditional notions of masculinities which have been described by local authors (e.g., Lindegger & Durrheim, 2001) as ones that value and celebrate men's strength, virility and sexual prowess. In practise, such attributes are likely to be demonstrated through engaging in sexual risk taking practices such as engaging in unprotected sex (Lindegger & Durrheim, 2001).

It is also noteworthy that having a non-single relationship status was a risk factor for engagement in unprotected sex. This finding is not uncommon and has been attributed to expectations of monogamy in such relationships (Beksinska, Smit, & Mantell, 2012).

The study had a few limitations. First, the cross-sectional design does not allow for determining the direction of the associations nor causal inferences. Second, self-reporting of alcohol consumption, circumcision experiences and sexual behaviour may have yielded unreliable information given the sensitive nature of these behaviours. Third, we did not ask participants about their ethnic background during data collection. Thus, we are unable to assess whether the obtained associations between circumcision practices and sexual risk behaviour are a function of ethnic group differences. Fourth, our findings may not be generalisable to the larger traditionally circumcising population given the relatively small number of traditionally circumcised men in our study. Last, given the relatively low participation rate (<50%) and possibility of self-selection bias, our findings may not be entirely generalisable to the tavern-going population from which the sample was drawn.

Given that probable alcohol dependence is a risk factor for unprotected sex in this population, specialist services for diagnostic assessment and treatment should be easily accessible to those with alcohol dependence to reduce their risk of unprotected sex. Furthermore, the

promotion of consistent condom use is needed for this population, particularly for people in stable sexual relationships. The escalated sexual risk behaviour associated with TMC as compared to MMC is concerning and requires urgent attention. Traditional surgeons and/or other relevant personnel need to be trained to provide HIV prevention counselling during the initiation period (Nyembezi et al., 2009; Riess et al., 2010). Clear and accurate communication regarding the partial protective effects of MC should be ensured to avoid public misinformation, particularly among traditionally circumcised men.

The apparent difference in sexual risk between traditionally and medically circumcised men needs further study. Of particular value would be an exploration of the form and impact of the messages that are given to men when undertaking MMC and TMC. Considering that TMC is a valued cultural practice and rite of passage to manhood for boys in certain communities (Nyembezi et al., 2009), future studies could explore the potential impact of HIV prevention education on the formulations of masculinities and HIV risk among initiates and recently circumcised men. Longitudinal studies are also needed to examine the occurrence of possible risk compensation among circumcised men, particularly among traditionally circumcised men.

### Funding

The study was supported by the President's Emergency Plan for AIDS Relief (PEPFAR) through the Centers for Disease Control and Prevention [Cooperative Agreement Number 5U2GPS001137-4]. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

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