



Sexual Transmitted Infection (STI) Risk Associated with Beliefs about Virginal Sex and Perceived Social Norms among Inmates in KwaZulu Natal

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Authors' contributions

This work was carried out in collaboration between all authors. Authors TS and RLB designed the study. Author TS wrote the protocol and wrote the first draft of the manuscript. Authors DG and KJ managed the literature searches. Author TS did the statistical analyses of the study and author SS conducted the reliability and validity portion of the study. All authors read and approved the final manuscript.

Original Research Article

Received 23rd April 2014
Accepted 14th July 2014
Published 23rd July 2014

ABSTRACT

This study examines the association between self-reported beliefs of primarily Zulu speaking inmates regarding virginal sex and its perceived utility for the prevention of HIV/AIDS and STIs and its impact of perceived social norms regarding sexual activity. This exploratory study was conducted to identify bivariate correlates of beliefs regarding having sex with virgins among men who were incarcerated in two prisons in KwaZulu Natal, South Africa. Findings are based on self-reported data obtained from 180 participants. The mean age of the inmates was 28.14 (SD=7.57) years of age. This exploratory study of inmates housed in KwaZulu Natal prisons found that in general, the belief that sex with virgins can cure HIV/AIDS is marginal if that among this population, yet still has a profound impact on perceived social norms regarding sexual behavior among this inmate population.

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Keywords: Sexual transmitted infections; South Africa; inmates; perceived norms; virginal sex.

1. INTRODUCTION

Incarcerated populations experience a disproportionate risk of infection with HIV [1,2]. This is related to the beliefs and practices of inmate populations that place them at increased risk for STIs including HIV [3-5]. In South Africa, inmate populations are one attribute that contribute to the extremely high infectious rates across the country [6,7]. This is especially consistent given that heterosexual transmission plays a significant role in the increasing spread of HIV/AIDS across the country [7].

Although the body of literature covering HIV/AIDS risk behaviors among incarcerated and/or formally incarcerated populations is increasing and ranges to include disease specific risk factors [8,9] and substance abuse practice [10], there is limited information available regarding South African Inmate populations. Several recent studies do attempt to bridge this gap. However, they do not explore specific risk practices associated with Zulu speaking inmates.

One particular belief that has been documented to exist, involves the perception among primarily Zulu men, that having sex with a virgin can cure and/or prevent HIV/AIDS [11-14]. Specifically, it is postulated that virgins have special healing powers to even cure a man of HIV/AIDS [14]. Also called the “Virgin Rape myth”, the topic has been spoken and written on but not from a quantitative perspective.

Based on the aforementioned, it is important to identify the extent to which the belief, in particular among incarcerated population, is associated with perceived social norms related to sexual behavior and practice. Consequently, based on the need to expand this corpus of research regarding South African Inmate populations, we implemented an exploratory study designed to identify bivariate correlates of perceived social norms regarding sexual behaviors and the perceived beliefs regarding that sex with a virgin can cure/prevent HIV/AIDS.

2. METHODS

2.1 Study Sample

This cross-sectional descriptive study formed part of a larger study that was aimed at developing health education intervention programmes for prison inmates in the KwaZulu-Natal and Mpumalanga provinces of South Africa. Data collected was obtained during baseline from the participating inmates prior to them receiving the health education intervention program. The study received full ethical approval from the South African Medical Association Research Ethics Committee and the South African Department of Corrections.

The study sites consisted of 4 prisons in the provinces of KwaZulu-Natal (KZN) and Mpumalanga (MP) provinces. Eshowe and Umzinto prisons were selected in KZN and Middelburg and Witbank prisons were selected in MP. The four selected prisons were housing a total number of about 3022 inmates. All participants were selected from the prison records of individuals who had been earmarked for release on parole or end of prison sentence. A total of 362 inmates were selected to participate in the intervention programme,

of which 180 were in the two KZN prisons. For this analysis, only inmates in the KZN prisons are presented because the belief of having sex with virgins to cure HIV/AIDs is limited to ethnic Zulu's living in KwaZulu Natal.

Signed informed consent forms were obtained from all participants. Copies of the informed consent were given to each participant. Trained research assistants identified themselves as researchers with investigation and that they would like first to ask them whether they would like to take part in a study looking at the relationship between HIV risk taking, sexual behavior and incarceration. If men expressed a willingness to participate, then the research assistant provided a more detailed description of the study.

In accordance with NIH and the Medical Research Council of South Africa's policies, a data and safety-monitoring plan has been developed for the proposed study. Project investigators provided oversight of all recruitment and study procedures and quality assurance checks were conducted as detailed in the intervention study. All records pertaining to the study and all of the original and electronic files containing collected data were securely stored. To protect against risks to confidentiality, information from the questionnaire and from medical records were kept private to the extent allowed by the law, even if outside review occurs. A study I.D. number rather than names was used on all study records except for the tracking form. Names and other facts will not appear when we present this study or publish its results. Therefore, all responses were kept confidential. All completed questionnaires and other study forms were held in a locked file drawer located in the principal investigator's office until the data are entered into a computer for data analysis. Once data have been entered into the computer, questionnaires and study forms will be placed in storage boxes, and subsequently transferred to a private, locked, storage facility for a designated time period, after which the questionnaires and other study forms will be shredded and destroyed.

2.2 Reliability and Validity

Given that establishing the reliability of a measure is prerequisite to assessing its validity, in an effort to determine the reliability of self-reports used in our analysis, test-retest reliability was employed. Prior to the major funded study, we administered to the same participants twice and the results are compared for congruency. It should be noted that this was accomplished via a subgroup of study participants that were not included in the major portion of the intervention study. Moreover, results were compared to responses from a pilot study implemented in a prison not included in the major study for validation purposes. This is essential since prior to our investigation there existed no data on the distribution of high-risk sexual behavior or normative data in the population of inmates in Kwa Zulu Natal. Study participants from Kwa Zulu Natal were used because these were the only inmates that reported Zulu as their ethnicity.

Moreover, this allowed the research team to examine the concordance of respondent responses to measure accuracy at the individual level as well as patterns related behavior with results from other surveys with the similar pilot sample. The survey instrument was not only based on prior surveys administered to measure the same construct but also on data collected from focus groups [15,16] and back translation from English to isiZulu and isiZulu to English, since in concert, language specificity and qualitative research during measurement development cannot be over-emphasized. Lastly, exploratory factor analysis was performed to validate our finding in a multi-sample confirmatory factor analysis involving the pilot study sample, prior U.S. samples and main intervention study sample. More

detailed reliability and validity information is presented in prior studies with this sample [17,18].

2.3 Data Collection

The questionnaire was prepared in English and translated from English to Zulu. To ensure the accuracy of the translations, the Zulu version of the questionnaire was back translated to English by a team of research assistants who were involved in the project as data collectors and health educators. The questionnaire was administered by peer educators since most prison inmates had reported low literacy levels. There are no conflicts of interest regarding this investigation. All procedures including anonymity and confidentiality were maintained and approved by Institutional Review Boards of all participating University and Government bodies.

2.4 Measurement of Having Sex with Virgins

A single item, "having sex with a virgin can cure HIV/AIDS" was extracted from the Beliefs about HIV/AIDS scale. The Belief about AIDS scale was comprised of Eight items, (reliability coefficient $\alpha = .74$, for all eight items in total and not for the individual item singularly) each of which ranged from 1 (strongly disagree) to 5 (strongly agree). Example questions asked addressed beliefs such as "woman expect payment in return for sex", "I need to have sex with my partner in order not to lose them", "I need to commit crime in order to be able to pay for sexual favors" and "it is okay for a man to demand sex from their partner. For this analysis, the extracted item "having sex with a virgin can cure AIDS" was dichotomized (disagree/agree) using Median test.

2.5 Measurement of Social Norms

Perceived social Norms. Eleven items measured on a 5-point scale (1=strongly agree, 5=strongly disagree) the perceived social norms about males playing a controlling and dominant role in relationship (male control in relationships; reliability coefficient $\alpha = .67$). Questions were asking issues such as (i.e., "Married couples should not use condoms when having sex" and "It is only important to use condoms with girlfriends and not with wives".

2.6 Data Analysis

The data was analyzed using the statistical software package SPSS, version 14.0. Frequencies were tabulated for the demographic variables and the items within each scale and Chi Square was used to assess associations between demographic categorical variables. In addition, means and standard deviations were calculated for demographic variables. Associations between dichotomous correlates regarding the belief that "sex with virgins can cure AIDS" and perceived social norms were assessed by contingency table analyses using ordinal logistic regression. Significance was defined by an alpha level of 0.05 or less. Missing data was excluded from the analysis.

3. RESULTS

3.1 Characteristics of the Sample

3.1.1 Demographics

Table 1 details the demographic characteristics of study participants by prison location. A total of 180 of the 357 inmates reported that they were located in prisons in KZN. The mean age of the inmates was 28.14 (SD=7.57) years old in Kwazulu-Natal. The participants had been incarcerated for an average period of about 3 years in Kwa Zulu-Natal. In Kwazulu-Natal 63.3% of inmates were serving prison sentences for the first time. No significant differences were noted with respect to study participants in terms of prison location. Specific information regarding ethnicity, income prior incarceration, education and marital status of all self-reported inmates indicating their ethnicity as Zulu is presented in Table 1 by prison.

Table 1. Socio-demographic characteristics (%) of study participants by prison location (n=180)

Value	Eshowe	Umzinto	p
Ethnicity/race			.10
(1) Black	91	86	
(2) Indian	2	-	
(3) Coloured	1	-	
Education			.22
(1) Primary	32(34.0%)	29(33.7%)	
(2) STD 6	19(20.2%)	7(8.1%)	
(3) STD 8	20(21.3%)	22(25.6%)	
(4) Matric	14(14.9%)	15(17.4%)	
(5) Tertiary/technikon	-	1(1.2%)	
(6) University	-	1(1.2%)	
(7) No formal education)	9 (9.6)	11(12.8%)	
Income			.28
(1) Under R10,000	51(54.3%)	33(38.4%)	
(2) R10,000-R19,999	29 (30.9%)	36(41.9%)	
(3) R20,000-R29,999	11(11.7%)	11(12.8)	
(4) R30,000-R39,999	2(2.1%)	2(2.3%)	
(5) R40,000-R49,999	1(1.1%)	3(3.5%)	
(6) +R50 000	-	1(1.2%)	
(7) Unemployed			
Marital status			.35
(1) Yes	63(67.0%)	70(81.4%)	
(2) No	31(33.0%)	16(18.6%)	

3.2 Bivariate Associations

Table 2 displays the percentage of men reporting they believe that "having sex with a virgin can cure AIDS" stratified by their responses (disagree versus agree) to the assessed dichotomous correlates of perceived social norms. In addition, Table 1 also provides prevalence ratios, the 95% confidence intervals, and respective p values. As shown, four indicators of perceived social norms pertaining to STI risk perception for this sample of Zulu

Speaking inmates achieved significance. Those inmates that held “having sex with a virgin can cure AIDS” were 13 times more likely to agree with the statement “sometimes the only way a man can get a woman turned on is to use force,” ($p < .003$). Furthermore, inmates referencing the aforementioned category were 17 times more likely to agree that their fellow gang members looked at raping another person as a good way to demonstrate power (5.4% vs. 50.0%; $p < .009$) and that raping a young child can cure an individual of HIV/AIDS (5.3% vs. 50.0%; $p < .008$).

Table 2. Bivariate associations between dichotomous perceived social norms correlates and belief that sex with a virgin can cure HIV/AIDS, among inmates in KwaZulu-Natal, (N=180)

Correlate	% agree (virgin)	Prevalence ratio	95% confidence interval	P value
There is something wrong with a woman who does not want to have children. disagree agree	5.1 6.8	1.35	.261-7.02	.71
A wife/girlfriend should never contradict her husband in public. disagree agree	3.7 5.9	1.62	.192-13.78	.65
A woman should be a virgin when she marries disagree agree	2.3 8.2	3.82	.463-31.5	.18
In a dating relationship, a woman is largely out to exploit a man. disagree agree	4.3 8.3	2.03	.464-8.87	.34
Many times a woman will pretend she doesn't want to have an intercourse because she doesn't want to seem loose, but she'll really hoping the man will force her. disagree agree	4.3 5.7	1.32	.156-11.33	.34
Sometimes the only way a man can get a woman turned on is to use force. disagree agree	1.2 13.6	13.17	.1.60-108.44	.003*
Married couples do not need to use condoms when having sex disagree agree	6.1 5.6	.90	.106-7.68	.92
My fellow gang members think that raping another person is good a way of demonstrating power disagree agree	5.4 50.0	17.37	.993-303.98	.009*
Raping a young child can cure you of HIV and AIDS disagree agree	5.3 50.0	17.75	1.01-310.51	.008*
When having sex with men they do not need to use condoms disagree agree	6.1 7.7	1.28	.146-11.35	.82
It is only important to use condoms with girlfriends, not wives disagree agree	1.5 9.3	6.69	.801-55.89	.04*

It was also observed that inmates who reported that having sex with a virgin can cure HIV/AIDS were almost 7 times more likely to agree with the perceived norm that it was only important to use condoms with their girlfriends and not their wives was statistically significant (1.5% vs. 9.3%; $p < .04$). None of the other correlates approached significance.

4. DISCUSSION

The exploratory study of inmates housed in KZN prisons found that in general, the belief that sex with virgins can cure HIV/AIDS is marginal among this population. In particular, findings suggest that most inmates did not believe in this myth with 13.4% unsure. However, it is noticeable that those inmates that do believe in sex with a virgin can cure HIV/AIDS have distorted views regarding some selected perceived social norms. In particular those beliefs and social norms that involve to how women are treated and other factors affiliated with power and control. This observation is consistent with the findings of Langen, who documented some of the issues and factors that impact the sexual practice of women in South Africa. Specifically as they pertain to the gender power imbalance between South African men and women [19].

The findings of this study have implications on several levels. First, they demonstrate the significance of evaluating cultural and ethnic beliefs among African populations such to design and put in place more effective interventions. Thus, the evaluation of inmates perceived norms can represent an essential avenue for reducing the general community risk for HIV/AIDS, since they eventually return back to the community.

In addition, our analysis seems to contradict findings in newspapers and other information sources regarding the extent to which the belief that sex with virgins can cure HIV/AIDS. This is essential since new problem behaviors may manifest that may increase the risk of HIV/AIDS transmission among the general population. For example, after the Virgin rape cases became an issue in the main stream media, a new trend of virgin testing was started in some communities in South Africa [20,21].

Further studies should attempt to evaluate myths regarding infectious disease transmission with respect to perceived cultural norms. Based on the current data, it would be difficult to compare our findings to any other inmate and/or ethnic population given the unique nature of our sample. None the less, there is a need for additional empirical and qualitative investigations addressing any practices and/or beliefs among inmate populations that increase their risk of acquiring or transmitting STIs, including HIV.

Albeit we feel that we have added to the scientific literature by looking at the so-called "Virgin rape myth", via the use of a random sample, our study does have several limiting factors. One limitation is reliance on the validity of inmates responses to the interview questions, since the items employed were adapted from a survey instrument that was designed for English speaking inmates. Further, although our analysis evinced adequate power to detect medium or larger effect sizes, our study may have benefited from an effect size for comparing proportions. This assertion is based on the wide confidence interval produced with respect to some of the items that proffered to be significant in the analysis. Several social scientists have documented the merit of such statistical analysis given the known limits of statistical inferences as a function of dichotomous decision making [22,23].

5. CONCLUSION

In conclusion, if researchers are to understand the assorted factors that influence the sexual practices on inmates in South Africa, it is essential to consider the influence of perceived social norms in concert with cultural factors that may impact behavior. Health educators who work with incarcerated populations, always deal with high risk behavioral factors, but seldom address issues that may be compensatory to related problem behaviors that place inmate and others at risk for STIs like HIV. Moreover, STI, especially HIV risk reduction among incarcerated populations may prove to be more effective if they deal with cultural beliefs and how these factors promote and/or retard other risk practices.

CONSENT

Not applicable.

ETHICAL APPROVAL

Not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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