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HIV misconceptions associated with condom use among black South Africans: an exploratory study

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Abstract

In South Africa, approximately 20% of 15–49-year-olds are infected with HIV. Among black South Africans, high levels of HIV/AIDS misconceptions (e.g. HIV is manufactured by whites to reduce the black African population; AIDS is caused by supernatural forces or witchcraft) may be barriers to HIV prevention. We conducted a cross-sectional study of 150 young, black adults (aged 18–26; 56% males) visiting a public clinic for sexually transmitted infections, to investigate whether HIV/AIDS misconceptions were related to low condom use in main partner relationships. We assessed agreement with HIV/AIDS misconceptions relating to the supernatural (e.g. witchcraft as a cause of HIV) and to genocide (e.g. the withholding of a cure). In multivariate models, agreement that 'Witchcraft plays a role in HIV transmission' was significantly related to less positive attitudes about condoms, less belief in condom effectiveness for HIV prevention, and lower intentions to use condoms among men. The belief that 'Vitamins and fresh fruits and vegetables can cure AIDS' was associated with lower intentions among men to use condoms. Women who endorsed the belief linking HIV to witchcraft had a higher likelihood of unprotected sex with a main partner, whereas women who endorsed the belief that a cure for AIDS was being withheld had a lower likelihood of having had unprotected sex. Knowledge about distinct types of HIV/AIDS misconceptions and their correlates can help in the design of culturally appropriate HIV-prevention messages that address such beliefs.

Keywords

health beliefs; HIV/AIDS knowledge; sexual behaviour; social psychology

Introduction

More people are living with HIV in South Africa than in any other country in the world, with dramatically higher HIV prevalence in the black population group (Shisana, Rehle, Simbayi, Zuma, Jooste, Pillay-Van Wyk *et al.*, 2009). Young people, especially females, are especially affected: an estimated 8% of females aged 15–19 and 27% of females aged 20–24 are infected with HIV, versus 0.3% and 7% of males in the same age groups, respectively (Dorrington, Johnson, Bradshaw & Daniel, 2006). High levels of unprotected intercourse combined with concurrent partnerships (in which individuals have multiple partners in the same timeframe) are the main contributors to the epidemic (Chen, Jha, Stirling, Sgaier, Daid, Kaul *et al.*, 2007; Shisana *et al.*, 2009). In a national survey, only 65% of males and 60% of females over age 15 years reported using a condom during last intercourse (Shisana *et al.*, 2009). Condom use has been found to be less frequent with main partners than with casual or short-term partners (Boule, Hilderbrand, Menten, Coetzee, Ford, Matthys *et al.*, 2008). Moreover, individuals with main partners may be at risk of exposure to HIV due to partner concurrency, which may be accepted as normative among some black South Africans, especially men (Abdool Karim, 2001; Fox, Jackson, Hansen, Gasa, Crewe & Sikkema, 2007). A representative survey of an urban South African settlement found that 29% of men and 9% of women had at least one sexual partner outside of their main relationship in the last year (Boule *et al.*, 2008). Thus, HIV-prevention programmes must focus on increasing levels of condom use in main partner relationships, which may be a primary conduit for the spread of HIV. To design effective programmes, research is needed to determine modifiable correlates of condom use in main partner relationships, including attitudes and belief systems regarding HIV and condoms.

Cultural beliefs, such as illness representations about HIV, may underlie patterns of sexual risk behaviour (Liddell, Barrett & Bydawell, 2005). Theories of illness representations suggest that individuals use lay theories to make sense of negative health outcomes and to serve as a basis for health-behaviour decision-making (Hagger & Orbell, 2003). Illness representations, which ascribe meaning to and explain causes of health outcomes, vary along the dimension of perceived control over an illness — that is, the role of external entities (e.g. spiritual, supernatural) versus internal characteristics (e.g. personal effort, genetics) in controlling health events. In sub-Saharan Africa, illness representations commonly emphasise external entities and fatalistic factors, such as witchcraft and ancestral punishment, in controlling or bringing about a range of ailments (Furnham, Akande & Baguma, 1999; Liddell *et al.*, 2005).

Illness representations specific to HIV have been identified in sub-Saharan Africa through a small amount of qualitative and quantitative research, as well as popular media reports; such illness representations have included both genocidal beliefs (e.g. that HIV has been manufactured by whites to reduce the black African population) and beliefs linking HIV to the supernatural (e.g. that AIDS is caused by witchcraft) (Goldstuck, 1994; Swarns, 2001; SAPA, 2002; Shisana & Simbayi, 2002; Meel, 2003; Groce & Trasi, 2004; Kalichman & Simbayi, 2004; Kaschula, 2004; Leclerc-Madlala, 2005; Niehaus & Jonsson, 2005; Shisana, Rehle, Simbayi, Parker, Zuma, Bhana *et al.*, 2005; Simbayi, Kalichman, Jooste, Cherry, Mfecane & Cain, 2005; Bosch, 2006; Liddell, Barrett & Bydawell, 2006; Bogart, Kalichman & Simbayi, 2008; Dahab, Charalambous, Hamilton, Fielding, Kielmann, Churchyard & Grant, 2008; Liddell, Giles & Rae, 2008; SAPA, 2008; Steinberg, 2008). For example, qualitative interviews in South Africa found that men tended to espouse beliefs blaming the government or racist whites for spreading HIV or withholding a cure, while women tended to endorse beliefs that held men (versus the government) responsible (Niehaus & Jonsson, 2005). Such beliefs appeared to influence some men's behaviour: for example, some men in the study said that they did not use condoms because condoms were infected with 'AIDS

worms.’ Qualitative interviews in Namibia revealed the key spiritual and genocidal beliefs that HIV is a punishment from God and that condoms cannot be trusted (e.g. manufacturers put holes in condoms; condoms spread disease; government condoms are of low quality) (Mufune, 2005). In Zimbabwe, anthropological ethnography revealed a culture of blaming HIV and AIDS on sorcery and conspiracies; common beliefs included that HIV was created by racist whites/Americans, and that HIV is put into the lubricant in condoms (Rödlach, 2006).

Although HIV-related lay beliefs have been identified throughout sub-Saharan Africa, in South Africa the historical context of apartheid and past racist government initiatives against black Africans, in combination with a relatively slow and disorganised governmental response to HIV, may have created a context in which individuals are vulnerable to belief in misconceptions. During apartheid, the government reportedly attempted to develop biological weapons and contraceptive or antifertility drugs to control the black population (Finnegan, 2001; Niehaus & Jonsson, 2005). Although recent South African policies promote HIV prevention and treatment, the government did not officially recognise the threat of the HIV epidemic until 1992, and a single and comprehensive HIV-prevention strategy was not developed until 2000. Furthermore, the South African government did not officially commit to providing antiretroviral (ARV) treatment until 2003, which is estimated to have contributed to a loss of 330 000 lives that could have been saved with more timely treatment (Chigwedere, Gruskin, Lee & Essex, 2008). In addition, several government leaders may have contributed to confusion about the causes and treatment of HIV and AIDS by questioning the link between HIV infection and AIDS illnesses, or by condemning the use of ARVs and endorsing alternative treatments (e.g. herbal remedies) (Nattrass, 2007). In this context, individuals may have difficulty distinguishing between accurate HIV/AIDS information and the misconceptions about HIV present in communities.

HIV/AIDS misconceptions may impede HIV-prevention efforts. Research in the United States found that genocidal HIV-conspiracy beliefs were prevalent among African Americans (Herek & Glunt, 1991; Thomas & Quinn, 1993; Herek & Capitanio, 1994; Klonoff & Landrine, 1999; Parsons, Simmons, Shinhoster & Kilburn, 1999; Bogart & Bird, 2003; Bogart & Thorburn, 2005; Ross, Essien & Torres, 2006; Whetten, Leserman, Whetten, Ostermann, Thielman, Swartz & Stangl, 2006) and these beliefs were associated with decreased condom use among African American men (Bogart & Thorburn, 2005; Ross *et al.*, 2006). In South Africa, endorsement of the belief that ‘HIV/AIDS was developed by white people to control black Africans’ has been associated with never being tested for HIV, among adults visiting a clinic for services to treat sexually transmitted infections (STIs) (Bogart *et al.*, 2008). The belief that HIV or AIDS is caused by spirits or supernatural forces has been associated with greater stigmatising beliefs concerning people with HIV (Kalichman & Simbayi, 2004).

We conducted an exploratory cross-sectional study of young, black adults visiting a clinic for STI testing in order to investigate whether their HIV/AIDS misconceptions were related to low rates of condom use in main partner relationships. We examined whether the endorsement of either of two types of HIV/AIDS misconceptions — relating to the supernatural or to genocide — was associated with the respondents’ attitudes, beliefs, intentions and behaviours regarding condom use. Investigating culturally specific factors that contribute to unprotected sex in main partner relationships is a critical first step for determining ways to target HIV-prevention messages in South Africa, especially to subgroups of young people at risk for HIV.

Methods

Procedures

All study procedures were approved by the institutional review boards of the Medical College of Wisconsin and Stellenbosch University. Participants aged 18 and over were recruited from among clients presenting for services at the Site B Youth Clinic in Khayelitsha, which is a large township about 30 km from the centre of Cape Town. In the 2001 national census, the population of Khayelitsha was 329 000 and unemployment was very high (51%), with more than 70% of the population earning less than R19 200 annually (City of Cape Town, 2003). Xhosa is spoken by nearly all of the township's population. Most of the housing is informal (small, corrugated iron shacks); each plot has an outside toilet and tap, which may be shared across several plots. HIV prevalence among pregnant women in Khayelitsha was estimated at 33% in 2004 — much higher than the regional level of 16% for the Western Cape Province (Shaikh, Abdullah, Lombard, Smit, Bradshaw & Makubalo, 2006).

The Site B Youth Clinic caters to young people under age 30 and is managed by the City of Cape Town Department of Health. This public clinic primarily provides contraceptives, voluntary counselling and testing for HIV (VCT), STI diagnosis and treatment, and sexual-behaviour and HIV-risk-reduction counselling. The clinic is situated in a nexus point in the community, within 200 m of taxi ranks, a railway station and bus terminus, and on the edge of a shopping centre. The clinic has close connections to the community, with both a general community board and a youth committee maintaining links to community structures.

Potential participants were referred to the study recruiter by the clinic nurse following a client's appointment for STI testing; participants were eligible if they were aged 18 or older and reported not having been diagnosed with HIV (based on the criteria for a larger HIV-prevention study, for which the baseline survey data are reported here). The respondents provided informed consent and completed an anonymous self-report survey. Sampling occurred during all hours of the clinic's operation, over a five-month period in 2007 and 2008. Each respondent received R60 (approximately US\$6) for their time.

Measures

HIV/AIDS misconceptions—Respondents were asked to indicate their level of agreement or disagreement with seven stated misconceptions about HIV, using a 5-point scale, from 'disagree strongly' to 'agree strongly.' Three of the items denoted misconceptions about how HIV is spread or cured, and four related to the withholding of a cure for AIDS (see Table 1). Internal consistency of the scale with all seven belief items was low ($\alpha = 0.63$) and could not be improved with item elimination. Therefore, we separately analysed the relationships of the four most frequent beliefs endorsed by the sample (items ranked 4 or 5 on the 5-point scale) with the respondents' beliefs, intentions, and behaviours regarding condoms.

Attitudes, beliefs and intentions regarding condoms—Five items measured the respondents' attitudes about condom use with a main partner in the next three months on seven-point scales with endpoints labelled bad/good, unpleasant/pleasant, inappropriate/appropriate, difficult/easy, and unnecessary/necessary ($\alpha = 0.70$) (see Kamb, Fishbein, Douglas, Rhodes, Rogers, Bolan *et al.*, 1998). One item measured beliefs about condom effectiveness (i.e. 'Using condoms with your main partner during the next three months will protect you from sexually transmitted diseases, including AIDS'). The response options for all six items in this set ranged from 'strongly disagree' (−3) to 'strongly agree' (+3). In addition, intention to use condoms with a main partner was measured with two items: 'How

sure are you that you will use a condom when you have sex with your main partner in the next three months?' and 'How unmotivated, uncertain, or motivated are you to use condoms when you have sex with your main partner in the next three months?' The scores for the responses to these items, which could range from -3 (for 'very certain that you will not' for the first item, and 'very unmotivated' for the second item) to +3 (for 'very certain that you will', and 'very motivated'), were averaged. 'Main partner' was defined throughout the survey as a girlfriend/boyfriend, wife/husband or partner with whom one has a stable relationship.

Condom-use behaviour—We assessed the respondents' recent condom-use behaviour with a main partner. Individuals in South Africa may be at risk of HIV infection through their main partner relationships due to high levels of partner concurrency (Chen *et al.*, 2007). The respondents were asked the number of times they had had sex without a condom with their main partner in the past three months. The responses were dichotomised into any versus no instances of unprotected sex in the past three months; the respondents who said they did not have sex in the past three months ($n = 10$) or who did not have a main partner ($n = 2$) were excluded from calculations of this variable.

Sociodemographic characteristics—As covariates we assessed: gender, age, and highest grade of education completed. Education was dichotomised, with a median split into grade 11 or less, and grade 12 or greater (i.e. those who completed secondary schooling versus those who did not).

Statistical analysis

We conducted descriptive analyses, overall and by gender, to examine the percentages of the sample endorsing (by ranking 4 or 5 on the 5-point scale) each belief regarding HIV/AIDS misconceptions and also reporting unprotected intercourse with a main partner in the past three months. Within gender, multivariate linear regressions were conducted to examine the association of the set of four most frequent beliefs with the respondents' attitudes and beliefs about condoms and their condom-use intentions with a main partner. Multivariate logistic regressions were conducted to examine the association between the four beliefs and the respondents' recent condom-use behaviour with a main partner. Both sets of multivariate analyses controlled for age and education. Separate analyses were conducted for men and women because the South African HIV epidemic and the context of sexual-risk behaviour differ by gender.

Results

Sample characteristics

We recruited a convenience sample of 150 participants aged 18 and older (56% males). The average age of the males was 21.6 years; 52% had 12 or more years of education, 40% were currently attending school, 36% were employed, and 75% had children. The average age of the females was 20.8 years. Only 35% of the women had completed at least 12 years of education, but 46% were still in school; just 28% were employed, and 66% had children. Eighty-two percent of the women reported personally knowing someone who has HIV or AIDS, compared to 62% of the men.

Endorsement of HIV/AIDS misconceptions and recent condom-use behaviour

Substantial proportions of the sample endorsed HIV/AIDS misconceptions related to witchcraft, genocide, or alternative treatments for HIV (see Table 1). Men were more likely than women to agree that a cure for AIDS is being withheld from Africa ($t(144) = 3.8$; $p < 0.001$) and that ARVs are poisonous and make people sicker ($t(144) = 3.1$; $p < 0.01$). Two-

thirds ($n = 100$) reported having had unprotected sex with their main partner in the past three months, but no gender differences emerged in levels of unprotected sex.

Multivariate associations between HIV/AIDS misconceptions and condom-related attitudes, beliefs, intentions and behaviours

As shown in Table 2, agreement that 'Witchcraft plays a role in HIV transmission' was significantly related to less positive condom-related attitudes, less belief in the effectiveness of condoms, and lower intentions to use condoms among men. The belief that 'Vitamins and fresh fruits and vegetables can cure AIDS' was associated with lower intentions to use condoms among men.

As shown in Table 3, the multivariate logistic regression indicates that women who endorsed the belief linking HIV to witchcraft had a higher likelihood of unprotected sex with a main partner. However, women who endorsed the belief that a cure for AIDS was being withheld from Africa had a lower likelihood of having had unprotected sex with a main partner.

Discussion

In our research, young black men at high risk of HIV who endorsed a belief linking HIV to witchcraft had less positive attitudes about condom use, were less likely to believe in the effectiveness of condoms in preventing HIV, and had lower condom-use intentions with a main partner; males who thought that vitamins, fruits and vegetables could cure AIDS also had lower condom-use intentions. Young black women's (but not men's) recent condom-use behaviour was significantly associated with HIV/AIDS misconceptions. The women who perceived a relationship between witchcraft and HIV had a higher likelihood of having had unprotected sex, whereas women who endorsed a belief about a cure for AIDS being withheld had a lower likelihood of having had unprotected sex. Our findings are generally consistent with studies based in the United States indicating links between HIV/AIDS conspiracy beliefs and a lack of condom use (Bogart & Thorburn, 2005; Ross *et al.*, 2006), as well as research in South Africa showing an association between misconceptions about white peoples' role in spreading HIV to black Africans and a lack of HIV testing (Bogart *et al.*, 2008).

The divergent results for the two types of HIV/AIDS misconceptions considered here in relation to recent condom use among the women respondents suggest that different misconceptions may tap into distinct belief systems about health and illness. This variation in the results offers a potential explanation for the relatively low (albeit acceptable) internal consistency of the overall HIV/AIDS-misconceptions scale and suggests that these beliefs need to be treated as distinct entities and explored separately. HIV/AIDS misconceptions relating to the supernatural may represent a fatalistic belief system among many black South Africans, in which health outcomes are attributed to an external, uncontrollable (and possibly evil) force that cannot be overcome (e.g. ancestors, witchcraft, fate, a superior being) (Hess & McKinney, 2007). Research shows that individuals holding such fatalistic health beliefs are less likely to engage in HIV-preventative behaviours (Steptoe & Wardle, 2001; Spurlock & Cullins, 2006). Thus, individuals who hold beliefs about a supernatural cause of HIV may be less likely to protect themselves from HIV infection. Leclerc-Madlala (2003, 2006 and 2008) suggests that at least some of the observed multiple partnerships and unprotected transactional sex among young women in south Africa are a result of fatalistic attitudes in which the immediate benefits from such partnerships (e.g. gifts such as cell phones or resources such as transportation) outweigh the risk of exposure to HIV. Research on indigenous health beliefs in South Africa found that among older (but not younger) blacks, beliefs about ancestral protection from illness (e.g. that ancestors can protect from

harm, and neglected ancestors will not protect from harm) were associated with negative attitudes and low self-efficacy regarding HIV-preventative behaviours; in contrast, beliefs about illness (e.g. traditional medicines can cure illness) were associated with positive attitudes and high self-efficacy (Liddell *et al.*, 2006). Thus, beliefs relating HIV and AIDS to the supernatural may be associated with a low level of confidence in one's ability to engage in safer sexual behaviours. Future research should test the extent to which HIV-specific beliefs about witchcraft are a subset of a larger culturally prevalent fatalistic belief system that has relevance for health and illness cognitions and health behaviours in general (not only about HIV).

In contrast, beliefs about a cure for HIV being withheld may represent another type of world view, in which illness is controllable and the self is autonomous and may be able to take steps to overcome illness; thus, individuals with this world view may attempt to exert control over their own health through condom use. Beliefs that the United States is withholding a cure, for example, suggest that a cure is possible and that the disease can be (and has been) overcome by others. Similarly, beliefs that an external human entity created HIV are not mutually exclusive from beliefs that an individual can control acquisition of the disease (such as through condom use). This interpretation is consistent with prior social psychology research showing that individuals who have an internal locus of control exhibit more positive health behaviours (especially related to disease prevention), better health outcomes, and better mental and physical functioning regarding health threats (Helgeson, 1992; Steptoe & Wardle, 2001; Helgeson, Snyder & Seltman, 2004; Gale, Batty & Deary, 2008).

Although suggestive of a relationship between HIV/AIDS misconceptions and condom use, these results are preliminary and based on a small cross-sectional convenience sample. The respondents were all clients at a youth clinic where they had tested for an STI, and thus they may have been less likely to use condoms and more likely to have engaged in HIV-risk behaviours than would have a sample from the general population. This sample may also have been reluctant to report that they did not use, or did not intend to use, condoms due to a social-desirability bias engendered by their visit to the clinic, in which clients are typically told about the importance of condom use. Another bias related to the nature of the sample is the eligibility criterion of an HIV-negative serostatus due to the larger HIV-prevention study for which the respondents were being surveyed. To address these limitations, further research is needed using longitudinal and probability sampling methods with samples from the general public. Due to the cross-sectional survey method, we cannot conclude that HIV/AIDS misconceptions preceded and influenced respondents' beliefs and decisions about condom use. In addition, the items in our scale likely do not represent the full range of relevant HIV/AIDS misconceptions that exist in communities because we did not conduct in-depth qualitative research on which to base the scale; in addition, the items could have been better refined through cognitive interviews to eliminate double-barrelled questions or any items with multiple interpretations. In-depth qualitative and cognitive-interview research is needed to uncover the breadth of misconceptions present in community discourses, with the goal of designing a psychometrically valid scale that captures different dimensions of HIV/AIDS misconceptions. Qualitative research is also critical to elicit stories and insights about the ways in which such beliefs might be related to health behaviours.

Conclusions

Our findings are preliminary and may have limited generalisability beyond the specific convenience sample of young, black South African men and women attending a clinic for STI testing. Nevertheless, HIV/AIDS misconceptions may be barriers to HIV prevention,

thus it is important to transmit accurate information and overcome misconceptions about HIV and AIDS in communities. Changing men's HIV/AIDS misconceptions may promote men's positive attitudes and beliefs about condoms, and changing women's attitudes may empower them to refuse to enter relationships in which partners demand unprotected intercourse. Knowledge about distinct types of misconceptions and their correlates can help in the design of culturally appropriate HIV-prevention messages that address such beliefs.

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Table 1

Percentages of youth clinic respondents endorsing HIV-related lay beliefs ($n = 150$ clients; 86 men and 63 women; one participant's gender not recorded)

HIV/AIDS misconception	Overall (%)	Males (%)	Females (%)
'Witchcraft plays a role in HIV transmission'	31	31	30
'Some traditional healers can cure AIDS'	5	2	5
'Vitamins and fresh fruits and vegetables can cure AIDS'	19	21	16
'HIV was created by some group, such as the CIA, to kill Africans'	21	21	21
'There is a cure for AIDS, but it is being withheld from Africa'	13	19	5
'Free condoms sometimes contain AIDS'	12	11	13
'Antiretroviral treatments are poisonous and make people sicker'	7	7	5

Table 2

Multivariate linear regressions predicting men's and women's attitudes and beliefs about condoms, and condom-use intentions, in relation to HIV-related lay beliefs; all models controlled for age and education (b = unstandardised coefficient; CI = confidence interval)

	Men	Women
	b (95% CI)	b (95% CI)
Positive attitudes to condom use with a main partner, with:		
'Witchcraft plays a role in HIV transmission'	-0.22 (-0.41, -0.04)*	-0.002 (-0.19, 0.19)
'Vitamins and fresh fruits and vegetables can cure AIDS'	-0.13 (-0.32, 0.07)	-0.13 (-0.35, 0.08)
'HIV was created by some group, such as the CIA, to kill Africans'	0.12 (-0.10, 0.34)	-0.06 (-0.25, 0.14)
'There is a cure for AIDS, but it is being withheld from Africa'	-0.06 (-0.27, 0.16)	-0.17 (-0.45, 0.12)
Belief in condom effectiveness with a main partner, with:		
'Witchcraft plays a role in HIV transmission'	-0.20 (-0.35, -0.06)**	-0.06 (-0.15, 0.02)
'Vitamins and fresh fruits and vegetables can cure AIDS'	-0.08 (-0.23, 0.07)	0.03 (-0.06, 0.13)
'HIV was created by some group, such as the CIA, to kill Africans'	0.04 (-0.13, 0.21)	0.04 (-0.05, 0.12)
'There is a cure for AIDS, but it is being withheld from Africa'	-0.04 (-0.20, 0.13)	0.04 (-0.09, 0.17)
Intention to use condoms with a main partner, with:		
'Witchcraft plays a role in HIV transmission'	-0.51 (-0.98, -0.03)*	-0.17 (-0.72, 0.39)
'Vitamins and fresh fruits and vegetables can cure AIDS'	-0.61 (-1.10, -0.12)*	-0.27 (-0.88, 0.34)
'HIV was created by some group, such as the CIA, to kill Africans'	0.07 (-0.48, 0.63)	0.06 (-0.50, 0.62)
'There is a cure for AIDS, but it is being withheld from Africa'	0.12 (-0.42, 0.66)	-0.50 (-1.33, 0.34)

*
 $p < 0.05$;

**
 $p < 0.01$

Table 3

Multivariate logistic regressions predicting men's and women's condom use with HIV-related lay beliefs; all models controlled for age and education (OR = odds ratio; CI = confidence interval)

	Men	Women
Condom use during past three months with main partner	OR (95% CI)	OR (95% CI)
'Witchcraft plays a role in HIV transmission'	0.99 (0.67–1.42)	4.12 (1.25–13.53) *
'Vitamins and fresh fruits and vegetables can cure AIDS'	0.78 (0.53–1.11)	0.77 (0.42–1.44)
'HIV was created by some group, such as the CIA, to kill Africans'	1.37 (0.89–2.09)	1.28 (0.69–2.39)
'There is a cure for AIDS, but it is being withheld from Africa'	0.86 (0.58–1.27)	0.13 (0.03–0.56) *

*
 $p < 0.05$