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Social intolerance, risky sexual behaviors and their association with HIV knowledge among Ugandan adults: results from a national survey

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ABSTRACT

Understanding the link between HIV knowledge, risky sexual behaviors, and social intolerance such as stigma and discrimination is important for HIV prevention and treatment program planning. We investigated whether intolerant attitudes and practices among Ugandan adults were associated with HIV-transmission knowledge.

We analyzed data from a nationally representative population-based household survey, the 2011 Uganda AIDS Indicator Survey. A total of 15,526 participants who responded to questions on HIV knowledge, social intolerance and risky sexual behavior were included in this analysis.

Results show that 34.8% of respondents reported having fear of casual contact with people living with HIV (PLWA), 21% blame PLWAs for their disease, 62% would not want HIV infection in their family disclosed, while 25% reported engaging in risky sexual behaviors. After adjusting for age, sex, residence, and level of education, people with low HIV-transmission knowledge had almost three-fold higher odds of fear of casual contact with a PLWA (aOR = 2.70, 95%CI = 2.33–3.13), and had 30% higher odds of HIV-related stigmatizing attitudes (aOR = 1.29, 95%CI = 1.07–1.54). Further, they had 47% higher odds of having sex under the influence of alcohol (aOR = 1.47, 95%CI = 1.25–1.73) and 40% higher odds of having unprotected sex with any of their last three sex partners (aOR = 1.39, 95%CI = 1.06–1.89).

Our findings show that intolerant attitudes such as stigma still persist, particularly among people with low HIV-transmission knowledge. Improving knowledge about HIV/AIDS can foster positive attitudes and building safe practices among populations, and is critical for improving prevention and treatment programs.

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KEYWORDS

Social intolerance attitudes; risky sexual behaviors; HIV knowledge

Introduction

HIV-related social intolerance attitudes of stigma and discrimination violate human rights and undermine public health efforts to implement HIV/AIDS-related responses. Social intolerance attitudes related to HIV/AIDS take two major forms – isolating, and blaming or shaming (Nyblade & MacQuarrie, 2006). These may be manifested as fear of casual transmission and refusal to make contact with people living with HIV/AIDS (PLWAs), or through moral or value driven assumptions about how PLWAs contract HIV infection (Chan et al., 2015; Kelly, Reid, Lahiff, Tsai, & Weiser, 2017; Takada et al., 2014). Understanding the link between social intolerance, HIV knowledge, and risky sexual behaviors is important for HIV prevention and treatment program planning.

In Uganda, most adults are knowledgeable about risky sexual behaviors related to HIV-transmission. Over 90% of Ugandan adults reported knowing that having only

one uninfected, faithful partner can reduce the chances of acquiring HIV infection. However, among people aged 15–49 who were sexually active in the 12 months preceding the 2011 national AIDS indicator survey, 17% of women and 34% of men engaged in sex with a non-marital, non-cohabiting partner, and only 29% of women and 38% of men reported using condoms at the most recent high-risk sexual encounter (UBOS & ICF International, 2012). We investigated whether HIV-transmission knowledge was associated with social intolerance attitudes and risky sexual behaviors among Ugandan adults.

Methods

We analyzed data from a nationally-representative population-based household survey, the 2011 Uganda AIDS Indicator Survey (UAIS), which included all consenting women and men aged 15–59 years who were present in sampled households the night before the survey.

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The detailed methods are described elsewhere (UBOS & ICF International, 2012).

We measured fear of casual contact with PLWAs using questions 1–3 below. Any answer that was not a “Yes” from the response options of Yes/No/Refused to Answer/Don’t Know was considered fear of casual contact with PLWAs.

1. If a member of your family became sick with the virus that causes AIDS, would you be willing to care for her or him in your own household?
2. If a female teacher has the AIDS virus but is not sick, should she be allowed to continue teaching in the school?
3. Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had the AIDS virus?

Questions 4–6 below, having responses of “Agree/Disagree/Don’t Know” were used to measure stigmatizing attitudes towards PLWAs. Any response that was not “Disagree”, was considered stigmatizing.

Table 1. Characteristics of sample respondents ($N = 15,526$).

Variable	Number (%)
<i>Sex</i>	
Male	6914 (45.1)
Female	8612 (54.9)
<i>Place of residence</i>	
Urban	2954 (19.0)
Rural	12572 (80.9)
<i>HIV sero-status</i>	
Know	5823 (37.4)
Don’t know	9703 (62.6)
<i>Age in years</i>	
15–29	7131 (46.0)
30–44	6006 (38.9)
45–59	2389 (15.1)
<i>Highest education level</i>	
No education	1890 (11.9)
Some primary	9203 (59.2)
Secondary or higher	4433 (28.9)
<i>HIV-transmission Knowledge level</i>	
Low	1321 (7.8)
Moderate	2911 (18.3)
High	11294 (73.9)
<i>Fear to make casual contact with PLWAs</i>	
Willing to care for a relative with HIV/AIDS in own household (No)	995 (6.2)
A female teacher with HIV/AIDS be allowed to teach (No)	3140 (19.8)
Would buy fresh vegetables from a vendor with HIV/AIDS (No)	3714 (23.7)
<i>Attitude to shame, judge or blame PLWAs</i>	
People with HIV/AIDS should be ashamed of themselves (Agree)	3286 (20.9)
People with HIV/AIDS should be blamed for the disease (Agree)	3323 (21.0)
Would want HIV infection in a family to remain a secret (Yes)	9455 (61.8)
<i>Risky sexual behaviors related to HIV transmission</i>	
Engaged in sex under alcohol influence with most recent partner (Yes)	3879 (24.8)
Had unprotected sex with at least one of most recent 3 partners (Yes)	13889 (89.5)
Has had other sexual partners excluding spouse in last 12 months (Yes)	3582 (23.5)

4. People with the AIDS virus should be ashamed of themselves.
5. People with the AIDS virus should be blamed for bringing the disease into the community.
6. If a member of your family got infected with the AIDS virus, would you want it to remain a secret?

We defined unprotected sex acts as not using a condom during a respondent’s last sexual encounters with any of their three most recent sexual partners in the 12 months preceding the survey. Respondents who responded affirmatively to whether s/he and/or any of her/his last three sexual partners had drunk alcohol before they engaged in sexual intercourse were scored as having had sex under the influence of alcohol. Finally, we defined having had at least one sexual partner other than a spouse in the 12 months preceding the survey as a risky sexual practice.

Twelve questions (positively and negatively framed) relating to HIV transmission were used to assess knowledge (Appendix A). We adopted the same scoring procedure as Sallar (2009) and Thanavanh, Harun-Or-Rashid, Kasuya, and Sakamoto (2013). That is, a score of 1 was assigned for correct and 0 for incorrect answers (including refused or don’t know), summed to generate a score for each respondent, and the sums were categorized as “low level” for scores $\leq 50\%$, “moderate level” for 51–74%, and “high level” for $\geq 75\%$.

Statistical analyses

To determine associations between HIV-transmission knowledge, social intolerance attitudes and risky sexual practices, we employed survey-weighted logistic regression. For bivariate analysis, we used a Rao-Scott chi-square test to assess significance, as it is design-adjusted to take sample design into account. Multi-variable adjusted models included all variables irrespective of statistical significance at bivariate level. All tests were two tailed and a p -value < 0.05 was considered significant. All statistical analyses were performed using SAS version 9.3 (SAS Institute, 2011).

Results

A total of 15,526 of 21,741 (71.4%) survey participants who responded to questions on HIV knowledge, social intolerance and risky sexual behavior were considered for analysis. About 55% were female, 46% were aged 15–30 years, 59% had attained primary education,

Table 2. Unadjusted and adjusted odds ratios for factors associated with social intolerance attitudes.

Variables	Fear of casual contact with PLWAs		Shame, judge or blame PLWAs	
	Unadjusted	Adjusted ^b	Unadjusted	Adjusted ^b
Sex (Females)	1.40(1.28–1.54)**	1.34(1.21–1.45)**	1.64(1.48–1.81)**	1.65(1.48–1.84)**
Residence (Rural)	2.40(2.00–2.90)**	1.65(1.38–1.97)**	1.13(0.95–1.34)	1.02(0.85–1.22)
HIV status (Know)	0.61(0.56–0.66)**	0.71(0.66–0.77)**	0.77(0.70–0.84)**	0.70(0.63–0.78)**
<i>Age in years (45–59^a)</i>				
15–29	0.89(0.79–0.99)*	1.19(1.05–1.35)*	1.26(1.13–1.41)**	1.28(1.15–1.44)**
30–44	0.82(0.73–0.92)**	0.93(0.82–1.04)	1.05(0.94–1.18)	1.07(0.96–1.20)
<i>Education level (Secondary/Higher^a)</i>				
No education	4.30(3.68–5.03)**	2.61(2.23–3.06)**	1.70(1.44–2.00)**	1.40(1.17–1.68)**
Some Primary	2.65(2.39–2.94)**	2.00(1.80–2.22)**	1.24(1.13–1.37)**	1.13(1.02–1.26)*
<i>HIV-transmission knowledge (High^a)</i>				
Low	3.77(3.23–4.41)**	2.70(2.33–3.13)**	1.54(1.29–1.83)**	1.29(1.07–1.54)*
Moderate	2.25(2.04–2.48)**	1.88(1.70–2.07)**	1.09(0.97–1.22)	1.01(0.90–1.13)

^aRepresents reference category.

^bAll variables under study were retained in the adjusted model, irrespective of statistical significance at bivariate level.

** $p < 0.001$, * $p < 0.01$, and * $p < 0.05$.

majority lived in rural settings and 63% were not aware of their HIV status at survey time. 74% had a high HIV-transmission knowledge score (Table 1) which was highest among women (40%) and those aged 15–29 years (36%).

A total of 72.5% of respondents showed stigmatizing attitudes toward PLWAs. Furthermore, 34.8% reported having a fear of casual contact with PLWAs, including almost 20% who would not want a female teacher with HIV/AIDS to continue teaching and almost 24% who reported that they would not buy vegetables from a vendor with HIV/AIDS. Almost 21% reported that people with HIV/AIDS should be ashamed of themselves and blamed for the disease, while 62% would want HIV infection in their family to remain a secret. Of respondents who were sexually active in the previous 12 months, 90% reported having unprotected sex with at least one of their most recent sexual partners, while 25% had sexual encounters under the influence of alcohol, and 24%

reported having other sexual partners aside from their spouse.

Unadjusted and adjusted associations between knowledge about HIV transmission with social intolerance attitudes and risky sexual practices are in Tables 2 and 3. Women, younger people, those living in rural areas, those with no education, those with low HIV-transmission knowledge, and those who did not know their HIV status had higher odds of fearing casual contact with PLWAs. Similar characteristics were associated with higher odds of stigmatizing attitudes towards PLWAs, apart from residential location. People who knew their HIV status had lower social intolerance attitudes than those who did not. After adjusting for age, sex, urban or rural residence, and level of education (Table 2), people with low HIV-transmission knowledge had an almost three-fold higher fear of casual contact with a PLWA, and had 30% higher odds of stigmatizing attitudes. For adjusted models, low HIV-transmission

Table 3. Unadjusted and adjusted odds ratios for the factors associated with risky sexual behaviors.

Variables	Sex under influence of alcohol		Unprotected sex ^b		Multiple sex partners	
	Unadjusted	Adjusted ^c	Unadjusted	Adjusted ^c	Unadjusted	Adjusted ^c
Sex (Female)	0.96(0.88–1.05)	1.01(0.14–1.12)	1.45(1.25–1.68)**	1.56(1.34–1.81)**	0.41(0.37–0.45)**	0.35(0.31–0.39)**
Residence (Rural)	1.69(1.44–1.99)**	1.26(1.05–1.50)*	2.73(2.35–3.16)**	1.82(1.57–2.12)**	0.46(0.41–0.52)**	0.56(0.49–0.64)**
HIV status (Knows)	0.81(0.72–0.90)**	0.97(0.87–1.09)	0.85(0.76–0.96)*	1.05(0.92–1.20)	0.67(0.61–0.73)**	0.61(0.55–0.67)**
<i>Age in years (45–59^a)</i>						
15–29	0.37(0.32–0.42)**	0.42(0.37–0.49)**	0.24(0.19–0.29)**	0.26(0.21–0.33)**	4.10(3.48–4.82)**	5.06(4.22–6.07)**
30–44	0.82(0.72–0.93)*	0.88(0.77–1.00)	0.69(0.53–0.89)*	0.73(0.56–0.94)*	1.30(1.09–1.54)*	1.41(1.17–1.70)*
<i>Education level (Secondary/Higher^a)</i>						
No education	2.72(2.28–3.25)**	1.71(1.42–2.05)**	5.77(4.33–7.69)**	2.58(1.86–3.58)**	0.20(0.17–0.25)**	0.43(0.34–0.54)**
Some Primary	1.68(1.50–1.87)**	1.37(1.22–1.54)**	2.81(2.40–3.29)**	1.98(1.67–2.34)**	0.47(0.43–0.53)**	0.62(0.55–0.69)**
<i>HIV-transmission knowledge (High^a)</i>						
Low	1.93(1.64–2.28)**	1.47(1.25–1.73)**	2.45(1.82–3.31)**	1.39(1.06–1.89)*	0.61(0.51–0.73)**	0.86(0.71–1.04)
Moderate	1.43(1.28–1.59)**	1.21(1.08–1.35)*	1.25(1.07–1.46)*	0.91(0.77–1.08)	0.86(0.77–0.96)*	1.03(0.91–1.16)
<i>Intolerance attitudes</i>						
Fear contact (Yes)	1.31(1.19–1.44)**	1.14(1.04–1.25)*	1.60(1.41–1.82)**	1.23(1.08–1.41)*	0.83(0.75–0.93)*	0.99(0.88–1.11)
Shame/blame (Yes)	0.88(0.80–0.97)*	0.85(0.77–0.94)*	1.04(0.91–1.18)	0.96(0.84–1.09)	1.19(1.08–1.31)*	1.33(1.20–1.47)**

^aRepresents the reference category.

^bHaving unprotected sexual intercourse with any of a respondent's last three sex partners in the 12 months preceding the survey.

^cAll variables under study were retained in the adjusted model, irrespective of statistical significance at bivariate level.

** $p < 0.001$, * $p < 0.01$, and * $p < 0.05$.

knowledge was associated with 47% higher odds of having sex under influence of alcohol and 40% higher odds of having unprotected sex (Table 3).

Discussion

The overall UAIS 2011 survey findings showed that 99% of Ugandans aged 15–49 years had heard of HIV/AIDS and the majority did not have misconceptions related to HIV (UBOS & ICF International, 2012). In this paper, we demonstrate that although overall understanding of HIV transmission exists, distinctions in levels of this knowledge show important areas for improvement. Specifically, our results show that people with lower HIV-transmission knowledge had higher odds of engaging in risky sexual behaviors and of having intolerant attitudes towards PLWAs. We found higher social intolerance among women, younger ages and those living in rural areas, those who did not know their HIV sero-status, those who had lower education and those who had lower HIV knowledge. These findings are consistent with other studies (Chan et al., 2015; Delavande, Sampaio, & Sood, 2014; Takada et al., 2014; Thanavanh et al., 2013).

Social intolerance attitudes directed towards PLWAs limit people from adopting HIV-preventive behaviors and accessing HIV/AIDS programs (Chan et al., 2015; Kelly et al., 2017; Takada et al., 2014). Furthermore, HIV-related social intolerance attitudes have been shown to contribute to avoidance of HIV testing, reduced demand for or non-adherence to HIV treatment, inadequate self-care, difficulties with safer sex negotiation and condom use (Obermeyer & Osborn, 2007; Preston et al., 2004; Vanable, Carey, Blair, & Littlewood, 2006; Wolitski, Pals, Kidder, Courtenay-Quirk, & Holtgrave, 2009). Reducing social intolerance may promote safer sexual behaviors, especially among men, and potentially reduce the number of new infections (Delavande et al., 2014).

A limitation of our analyses is that we analyzed knowledge of HIV status, but were not able to assess actual HIV status. We attempted to control for this by adjusting our models for knowledge of HIV status, as those who have tested for HIV are by definition more motivated to learn about HIV. Another limitation is that approximately one-third of participants did not respond to the included questions. If non-responders were more likely to have accepting attitudes it would attenuate our findings. Since the demographics of non-responders were similar to those associated with increased stigma and risk, we hypothesize that this is unlikely.

In conclusion, results from our analyses show that although awareness about HIV and transmission in Uganda has reached high levels, intolerant and

stigmatizing attitudes persist and were higher among those with lower levels of knowledge about HIV. Increasing the quality of knowledge about HIV/AIDS can be a powerful means of fostering positive attitudes and building safe practices among populations, which is critical for improving prevention and treatment programs. Efforts to increase knowledge could focus on quality HIV education and counseling, including implications for individual behavior and exploring self-perceived risk. Further, policies that decriminalize behaviors associated with HIV, such as sex work and men who have sex with men would be a positive step towards reducing stigma and enabling health-seeking behavior.

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Disclosure statement

No potential conflict of interest was reported by the authors.

Ethical approvals

We conducted secondary data analysis using the Uganda AIDS Indicator Survey de-identified data that is publicly available and requires no ethical approvals. However, permission to use these data was obtained from the Demographic and Health Surveys division at ICF International, from where the data was downloaded. The Ministry of Health of Uganda carried out data collection for the 2011 UAIS.

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Appendix

Questions used to compute scores for HIV-transmission knowledge levels are available in the questionnaire for men and women aged 15–49 years of the Aids Indicator Survey (UBOS & ICF International, 2012) and these are:

- (1) Can people reduce their chance of getting the AIDS virus by having just one uninfected sex partner who has sexual intercourse with no other partners?
- (2) Can people get the AIDS virus from mosquito bites?
- (3) Can people reduce their chance of getting the AIDS virus by using a condom every time they have sex?
- (4) Can people get the AIDS virus by sharing food with a person who has AIDS?
- (5) Can people reduce their chance of getting the AIDS virus by not having sexual intercourse at all?
- (6) Can people get the AIDS virus because of witchcraft or other supernatural means?
- (7) Is it possible for a healthy-looking person to have the AIDS virus?
- (8) Does male circumcision help prevent getting infected with the AIDS virus?
- (9) Are there any special drugs that a doctor or a nurse can give to a woman infected with the AIDS virus to reduce the risk of transmission to the baby?
- (10) Can the virus that causes AIDS be transmitted from a mother to her baby during pregnancy?
- (11) Can the virus that causes AIDS be transmitted from a mother to her baby during delivery?
- (12) Can the virus that causes AIDS be transmitted from a mother to her baby by breastfeeding?