

HIV-related stigma and its association with HIV transmission risk behaviors among *boda boda* motorcyclists in Mbarara Municipality, southwestern Uganda

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Abstract

Background: Key populations have a disproportionate burden of HIV compared with the general population. HIV-related stigma has been recognized as a major barrier to HIV prevention and treatment efforts. It remains unclear whether HIV-related stigma is a significant driver of HIV transmission risk behavior among *boda boda* (motorcycle taxi) riders, a key population in Uganda. **Methods:** We conducted a cross-sectional study among *boda boda* motorcyclists in Mbarara Municipality of southwestern Uganda. Using multistage sampling, we recruited participants aged 18–59 years who had been riding for at least 6 months. The primary explanatory variable of interest was HIV-related stigma, measured using the 7-item STRIVE scale and dichotomized at “no stigma” versus “any stigma.” Self-reported HIV transmission risk behaviors included: condomless sexual intercourse, sexual intercourse under the influence of alcohol, having non-primary sexual partners, and sexual intercourse with a commercial sex worker. We used multivariable logistic regression to estimate the association between HIV-related stigma and HIV transmission risk behavior. **Results:** We enrolled 401 *boda boda* motorcyclists. All were men. Most [330 (82%)] were classified as having HIV-related stigma, particularly among younger men aged 18–29 years. One hundred and thirty-two (34%) participants reported their last sexual encounter was with a non-primary partner, 153 (39%) did not know the serostatus of their last sexual partner, and 138 (36%) reported sexual intercourse with a sex worker in the past 6 months. In multivariable logistic regression, HIV-related stigma (adjusted odds ratio [aOR] = 1.88, 95% CI: 1.06–3.34) had a statistically significant association with any HIV transmission risk behavior. Men who reported either minimal alcohol use (aOR = 1.81, 95% CI: 1.07–2.95) or harmful alcohol use (aOR = 3.5, 95% CI: 1.92–6.54), compared with men who reported no alcohol use, also reported greater odds of HIV transmission risk behavior. **Conclusions:** HIV transmission risk behavior is common among *boda boda* motorcyclists in the municipality and is associated with both HIV-related stigma and alcohol use. Interventions aimed at reducing HIV-related stigma and alcohol use may potentially reduce the high rates of HIV transmission risk behavior in this key population.

Keywords

HIV stigma, transmission risk behavior, motorcycle taxi riders

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Background

Globally, there has been a decline in the number of new cases of HIV.¹ The decline has been unequally distributed between countries, as well as between key populations within countries.² Notably, high HIV incidence and prevalence have been documented among key populations such as commercial sex workers,³ fisher folk,^{4,5} and *boda boda* (motorcycle taxi) riders⁶ in Uganda.

HIV-related stigma is thought to be an important driver of the epidemic. Among people in the general population, HIV-related stigma is associated with reduced uptake of

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voluntary counseling and HIV testing^{7,8,9} and HIV transmission risk behavior.^{10,11} HIV transmission risk behaviors consist of a constellation of sexual behaviors such as having condomless sexual intercourse and/or inconsistently using condoms with a person of unknown HIV status, having multiple sexual partners, and having sexual intercourse with a commercial sex worker. Among people with HIV, HIV-related stigma has been associated with depression,^{12,13} HIV transmission risk behavior,¹⁴ and reduced adherence to antiretroviral therapy (ART).¹⁵ The widespread scale-up of ART was expected to have an ameliorating effect on HIV-related stigma by reducing symptoms of HIV infection, restoring physical functioning, and weakening its association with death and disability.^{16,17–20} HIV-related stigma has attenuated somewhat with the scale-up of ART,^{21,22} but has nonetheless persisted in rural Uganda,²³ supporting the notion that the provision of ART alone may be insufficient to counter the entrenched feelings of blame and/or moral outrage associated with HIV in the general population.^{24–26} Further initiatives to counter stigma are likely necessary, such as education campaigns,²⁷ changes to laws that institutionalize stigma,²⁸ and livelihood interventions for people living with HIV.²⁹

While much is known about HIV-related stigma, it remains a persistent contributor to the HIV epidemic. Young adult men, who comprise the majority of *boda boda* motorcyclists in Uganda and elsewhere in sub-Saharan Africa, may experience more stigmas because traditional African society normatively portrays men as adhering to strong masculine ideals, for example, men never fall sick.³⁰ According to a qualitative study conducted in South Africa, men were found to commonly ignore their poor health and continue working despite illness.³¹ Other qualitative studies have consistently found a link between HIV-related stigma and norms of masculinity.³²

HIV-related stigma has not been assessed within emerging key populations such as *boda boda* motorcyclists. One study of *boda boda* motorcyclists in Kampala estimated an HIV prevalence rate of 7.5%, comparable to that of the general population.⁶ However, the association between HIV-related stigma and HIV transmission risk behavior has not been previously reported in this key population. To address this gap in the literature, we assessed the level of HIV-related stigma and estimated its association with HIV transmission risk behavior among *boda boda* motorcyclists in Mbarara Municipality, Uganda.

Methods

Study design and settings

We conducted a cross-sectional study in Mbarara Municipality in southwestern Uganda, with a population size of approximately 195,318. The municipality consists of urban and predominantly peri-urban areas and has four divisions

or sub-counties. Motorcycle taxis, also known as *boda bodas*, are the most common mode of motorized transport in this setting. In Mbarara, the motorcyclists are organized by stage (i.e., the locations from which they operate), with each stage representing 5–20 motorcyclists. According to the *boda boda* association of Mbarara Municipality, there are close to 20,000 motorcyclists operating in the municipality.

Inclusion and exclusion criteria

We enrolled *boda boda* motorcyclists who were between 18–9 years of age and who had reported that they been riding for at least 6 months. Six months represents the minimum time frame required for a *boda boda* motorcyclist to be officially recognized and registered by the commercial officers of the municipality. Participants were required to provide written informed consent to participate in the study. *Boda boda* motorcyclists who either did not consent to participate, operated at stages outside of the municipality, or operated exclusively at night were excluded. We excluded those who operated exclusively at night, given the difficulty of enrolling and interviewing them during business hours.

We identified 43 *boda boda* stages, aiming to recruit 10 participants per stage. We obtained a list of the parishes within the four divisions or sub-counties of the municipality and selected the most densely populated parishes within each division. We then obtained a sampling frame of the *boda boda* stages within the parish and listed those that had at least 10 members. We randomly selected the stages from each division, with the larger divisions providing more stages, using fractions proportional to size of the population in the division as the basis for selecting the number of stages per division. For each *boda boda* stage, 10 participants were randomly selected for recruitment.

Data collection tool and measurements

The *boda boda* motorcyclists were invited to participate in the study, with interviews conducted in Runyankole or English, depending on the language of fluency of the respondent. We collected data on demographic features, earnings, and time when they ended their workday. For each motorcyclist, we categorized the end of the workday as afternoon (before 5 PM), early evening (between 5 and 7 PM), and late evening (after 7 PM).

To measure HIV-related stigma, we used the STRIVE scale³³ which has specific questions for measuring key conceptual domains of stigma and discrimination. We extracted the questions that focus on stigma in the general population. We examined six different domains applicable to the general public: fear of infection (e.g., “Do you fear that you could contract HIV if you come into contact with the saliva of a person living with HIV?”), social judgment (e.g., “Do you agree or disagree with the following statement: I would be ashamed if someone in family had HIV”),

anticipated stigma (e.g., “In your opinion, are people hesitant to take an HIV test due to fear of people’s reaction if the test result is positive for HIV?”), perceived stigma (e.g., “Do people living with or thought to be living with HIV lose respect or standing?”), experienced stigma (e.g., “Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?”), and discrimination (e.g., “In your opinion, if a female teacher has HIV but is not sick, should she be allowed to continue teaching in the school?”). The responses to the questions were dichotomous in nature with the respondents, given the option to choose between “agree” or “disagree.”

We interviewed participants about their sexual behavior over the past 6 months and asked questions for heterosexual contacts only. HIV transmission risk behaviors were defined as having condomless sexual intercourse with a person of unknown HIV status and/or inconsistent condom use, having multiple sexual partners, and/or having sexual intercourse with a commercial sex worker. We asked participants about the type of sexual partnership, namely, primary or non-primary. We defined primary partners as those that the respondent met on a regular basis, such as a girlfriend or wife. Non-primary partners were those with whom the respondent had sexual intercourse outside a romantic relationship. We defined having multiple sexual partnerships as having more than one partner in the past 12 months.

To measure alcohol consumption, we used the Alcohol Use Disorders Identification Test (AUDIT), a 10-item screening tool developed by the World Health Organization to assess alcohol consumption, drinking behaviors, and alcohol-related problems, with responses coded in terms of standard drinks.³⁴ Scale scores range from 0 to 40, with a score of eight or more indicative of hazardous or harmful alcohol use.

Data analysis

Data were entered into Epi Data 3.1 and were analyzed using Stata version 14. The outcome variable was any HIV transmission risk behavior, specified as such if participants reported engaging in any of the previously described behaviors. The primary explanatory variable of interest was HIV-related stigma, dichotomized at “no stigma” if they scored zero to all the questions in the six domains of stigma versus “any stigma” if they scored ≥ 1 on any of the stigma domains. We conducted descriptive analysis to determine the distribution of the various sociodemographic characteristics based on stigma category. We fitted multivariable logistic regression to estimate the association between HIV transmission risk behavior and HIV-related stigma, adjusting for other covariates. Explanatory variables that had any association with the outcome on bivariate analysis ($p < 0.2$) were included in the multivariable regression model. We set our level of significance at 0.05.

Ethics statement

This study was approved by Research Ethics Committee of Mbarara University of Science and Technology. We obtained voluntary written informed consent from all study participants. Interviews were conducted in a quiet room away from the *boda boda* stages. Participants received a nonalcoholic drink after the interview and 5000 Ugandan shillings (equivalent to US\$1.5 at the time the study was conducted) as compensation for their time and income lost during the 45 min interview.

Results

We approached 425 prospective participants; 24 declined to participate, so the final sample included 401 participants. They were recruited from 43 stages in four divisions of Mbarara Municipality. In Kakoba Division, we enrolled at 15 stages, 13 stages in Nyamitanga, 11 in Kamukuzi, and four in Biharwe. The overall sociodemographic characteristics of the participants are shown in Table 1.

Most participants were younger than 30 years of age (368 [92%]). Over half (226 [57%]) had primary school education, and one-third had a secondary education or more. Two-thirds (272 [68%]) were currently married/cohabitating. Only a minority (80 [20%]) reported earning more than US\$5 per day. Most study participants (330 [82%]) provided survey responses consistent with HIV-related stigma, with some evidence of differential stigma responses by age, education, and income.

HIV transmission risk behavior

Almost half (153 [40%]) of the respondents did not know their partner’s HIV serostatus, one-third (135 [35%]) reported sexual intercourse under the influence of alcohol, and one-third (138 [36%]) reported having had sexual intercourse with a commercial sex worker in the past 6 months. One-third (132 [34%]) reported having sexual intercourse with a non-primary partner at their most recent encounter, and 161 (41%) had condomless sexual intercourse at the most recent encounter. More participants whose survey responses were consistent with HIV-related stigma also reported HIV transmission risk behavior (60% vs. 47%, $p = 0.042$), with the differences driven principally by condomless sexual intercourse (45% vs. 27%, $p = 0.006$). Table 2.

Factors associated with HIV transmission risk behavior

The factors associated with HIV transmission risk are shown in Table 3. On bivariate analyses, stigma, marital status, alcohol use, end of workday timing, and number of children had statistically significant associations with

Table 1. Sociodemographic characteristics of *boda boda* motorcyclists in Mbarara Municipality ($n = 401$).

| Variable | n (%) | Stigma | | p value ^a |
|--------------------------------------|-----------|-------------|------------|----------------------|
| | | Yes | No | |
| Location (division) | | | | |
| Kakoba | 133 (33%) | 105 (32%) | 28 (39%) | 0.236 |
| Nyamitanga | 103 (25%) | 91 (28%) | 12 (17%) | |
| Kamukuzi | 125 (31%) | 103 (31%) | 22 (31%) | |
| Biharwe | 40 (9.9%) | 31 (9%) | 9 (13%) | |
| Age, years | | | | |
| 18–29 years | 368 (92%) | 187 (57%) | 26 (37%) | 0.002** |
| ≥30 years | 33 (8%) | 143 (43%) | 45 (63%) | |
| Religion | | | | |
| Catholic | 148 (37%) | 125 (38%) | 23 (32%) | 0.581 |
| Protestant | 176 (45%) | 141 (43%) | 35 (49%) | |
| Other | 77 (18%) | 64 (19%) | 13 (18%) | |
| Education level | | | | |
| No formal education | 22 (5.5%) | 16 (4.9%) | 6 (8.5%) | 0.090 |
| Primary | 226 (57%) | 188 (57%) | 38 (54%) | |
| Secondary | 132 (33%) | 105 (32%) | 27 (38%) | |
| Tertiary | 21 (5.2%) | 20 (6.1%) | 0 (0.0%) | |
| Marital status | | | | |
| Never married | 108 (30%) | 89 (27%) | 19 (27%) | 0.591 |
| Married/cohabiting | 272 (68%) | 222 (67%) | 50 (70%) | |
| Divorced, separated, or widowed | 21 (2.3%) | 19 (5.8%) | 2 (2.8%) | |
| Income | | | | |
| ≤US\$3/day | 154 (39%) | 131 (40%) | 23 (32%) | 0.018* |
| >3 and ≤US\$5/day | 167 (42%) | 127 (39%) | 40 (56%) | |
| >US\$5/day | 80 (20%) | 69 (21%) | 8 (11%) | |
| End of workday | | | | |
| Early afternoon (1–5 pm) | 51 (13%) | 37 (11.4%) | 12 (17%) | 0.444 |
| Evening (5–7 pm) | 291 (73%) | 240 (74%) | 49 (69%) | |
| Night (after 7 pm) | 59 (15%) | 47 (15%) | 10 (14%) | |
| Number of children | | | | |
| 0 | 99 (25%) | 84 (25.6%) | 15 (21.1%) | 0.227 |
| 1–2 | 162 (40%) | 136 (41.5%) | 25 (35.2%) | |
| >2 | 140 (35%) | 108 (32.9%) | 31 (43.7%) | |
| Number of people in household | | | | |
| 1–2 | 125 (31%) | 104 (37%) | 21 (30%) | 0.211 |
| 3–5 | 204 (51%) | 169 (56%) | 32 (45%) | |
| >5 | 72 (18%) | 54 (17%) | 18 (25%) | |

^aTesting done using the chi-square test

any HIV transmission risk behavior. In the multivariable regression model, HIV-related stigma (adjusted odds ratio [aOR] = 1.8, 95%CI: 1.06–3.34) continued to have a statistically significant association with any HIV transmission risk behavior, even after adjustment for covariates. Men who reported either minimal alcohol use (aOR = 1.7, 95% CI: 1.03–2.95, $p < 0.05$) or harmful alcohol use (aOR = 3.5, 95% CI: 1.92–6.54, $p < 0.01$), compared with men who reported no alcohol use, also reported greater odds of HIV transmission risk behavior.

We also estimated the association between stigma and HIV transmission risk behaviors specifying HIV-related stigma as a continuous variable. On bivariate analysis, stigma was associated with HIV transmission risk behaviors, but the estimated association was not statistically significant (odds ratio = 1.16, p value = 0.06). In the multivariable model, using the same variables as those in the multivariable model with stigma specified as a dichotomous variable, stigma when specified as a continuous variable had a statistically significant association with HIV transmission risk behaviors. A unit increase in stigma was associated with a 21% increase in the

Table 2. HIV transmission risk behaviors in the past 6 months, stratified by HIV-related stigma, among *boda boda* motorcyclists in Mbarara Municipality ($n = 401$).

| Variable ^a | Overall n% | Stigma status | | p value |
|---|------------|---------------|----------|---------|
| | | Yes | No | |
| Knowledge of partner's serostatus | | | | |
| Yes | 237 (61%) | 189 (59%) | 48 (70%) | 0.099 |
| No | 153 (39%) | 132 (41%) | 21 (30%) | |
| Sexual intercourse under the influence of alcohol | | | | |
| Yes | 135 (35%) | 113 (35%) | 22 (33%) | 0.686 |
| No | 251 (56%) | 206 (65%) | 45 (67%) | |
| Sexual intercourse with a commercial sex worker | | | | |
| Yes | 138 (36%) | 117 (37%) | 21 (31%) | 0.365 |
| No | 249 (64%) | 202 (63%) | 47 (69%) | |
| Condomless sexual intercourse at last encounter | | | | |
| Yes | 161 (41%) | 143 (45%) | 18 (27%) | 0.006 |
| No | 228 (59%) | 178 (56%) | 50 (74%) | |
| Partner type at last sexual intercourse | | | | |
| Primary partner | 256 (66%) | 206 (65%) | 50 (72%) | 0.210 |
| Non-primary partner | 132 (34%) | 113 (35%) | 19 (28%) | |
| Had any sexual intercourse | | | | |
| Yes | 334 (86%) | 278 (87%) | 56 (81%) | 0.242 |
| No | 56 (14%) | 43 (13%) | 13 (19%) | |
| Any HIV transmission risk behavior | | | | |
| Yes | 221 (58%) | 191 (61%) | 30 (47%) | 0.042 |
| No | 158 (42%) | 124 (39%) | 34 (53%) | |

^aDenominators may vary due to nonresponse.

odds of HIV transmission risk behaviors (odds ratio = 1.21, 95% CI 1.02, 1.44, $p = 0.03$).

Discussion

In this cross-sectional study among motorcyclists in a mixed urban and peri-urban municipality in Western Uganda, data show that prevalence of HIV-related stigma is very high. HIV transmission risk behaviors are very common in this population and are associated with HIV-related stigma. Motorcycle taxi riders are considered a key population and could play an important role in driving the HIV epidemic in this setting. Few studies have been done to explore HIV-related stigma in the general population of people presumed to be HIV negative but at high risk for acquisition/secondary transmission such as motorcycle taxi riders, yet prior research suggests that any persons, regardless of their HIV serostatus, can express HIV stigmatizing beliefs.³⁵

Our primary finding was that HIV-related stigma is associated with HIV transmission risk behaviors even after adjusting for potential confounders. This finding is consistent with another study conducted in sub-Saharan Africa.³⁶ In this multicountry study, data consistently showed a positive relationship between stigma and HIV transmission risk behaviors across several countries. The authors explain that the association between stigma and

HIV transmission risk behaviors may be explained by the fact that HIV-negative persons identify themselves as belonging to a certain group that is perceived to be safer, leading to complacency in sexual behavior practices. A similar explanation may apply to the findings in our study.

The frequency of HIV transmission behaviors in this population is very high. These data are consistent with a survey among the same population in Kampala, the capital city of Uganda, where also at least one-third of motorcycle taxi riders reported recent sexual intercourse with a commercial sex worker and at least two-thirds had both primary and non-primary sexual partners.³⁷ Studies elsewhere in sub-Saharan Africa similarly show not only a high prevalence of HIV transmission risk behavior but also a high prevalence of sexually transmitted infections (STIs). These findings confirm the position of motorcycle taxi riders as a key population that should be targeted for HIV and STI prevention interventions.

Our study provides novel findings that HIV-related stigma is prevalent among a population of young men who are not known to be HIV positive but who are at high risk for HIV infection. Our data shed more light on the lens through which this population views HIV infection and the persons that are infected. HIV-related stigma was associated with higher odds for HIV transmission risk behavior among this key population. Although similar studies have been

Table 3. Correlates of HIV transmission risk behavior among *boda boda* motorcyclists in Mbarara Municipality (n = 401).

| Variable | Any HIV transmission risk behavior | | cOR (95% CI) | aOR (95% CI) | |
|-------------------------------|------------------------------------|------------|--------------|------------------------------|------------------------------|
| | Yes (n %) | No (n %) | | | |
| Any HIV stigma | Yes | 191 (60.6) | 124 (39.4) | 1.7 (1.01–2.99) ^a | 1.8 (1.06–3.34) ^a |
| | No | 30 (46.8) | 34 (53.1) | Ref | |
| Ever smoked | Yes | 41 (68.3) | 19 (31.7) | 1.7 (0.94–3.03) | Ref |
| | No | 182 (56.2) | 142 (43.8) | Ref | |
| Religion | Catholic | 83 (58.0) | 60 (42.0) | Ref | Ref |
| | Protestants | 102 (61.5) | 64 (38.5) | 1.2 (0.73–1.82) | |
| | Other | 38 (50.7) | 37 (49.3) | 0.7 (0.42–1.30) | |
| Marital status | Never married | 45 (46.4) | 52 (53.6) | Ref | 1.3 (0.62–2.88) |
| | Currently married | 169 (63.3) | 98 (36.7) | 2.0 (1.25–3.19)** | |
| | Separated | 9 (45.0) | 11 (55.0) | 0.9 (0.58–1.29) | |
| Location (division) | Kakoba | 75 (58.6) | 53 (41.4) | Ref | Ref |
| | Nyamitanga | 59 (59.0) | 41 (41.0) | 1.0 (0.60–1.73) | |
| | Kamukuzi | 72 (60.0) | 48 (40.0) | 1.1 (0.64–1.76) | |
| | Biharwe | 17 (47.2) | 19 (52.8) | 0.6 (0.30–1.33) | |
| Alcohol use | No alcohol use | 99 (48.3) | 106 (51.7) | Ref | 1.7 (1.03–2.95) ^a |
| | Minimal alcohol use | 59 (62.8) | 35 (37.2) | 1.8 (1.09–2.98)*** | |
| | Harmful alcohol use | 65 (76.5) | 20 (23.5) | 3.5 (1.98–6.16) | |
| Education level | No formal education | 11 (55.0) | 9 (45.0) | Ref | Ref |
| | Primary | 130 (58.4) | 92 (41.6) | 1.1 (0.46–2.88) | |
| | Secondary | 69 (56.6) | 53 (43.4) | 1.1 (0.41–2.76) | |
| | Tertiary | 13 (65.0) | 7 (35.0) | 1.5 (0.43–5.43) | |
| Age | 18–29 years | 121 (59.6) | 82 (40.4) | Ref | Ref |
| | ≥30 years | 102 (56.4) | 79 (43.6) | 0.9 (0.58–1.31) | |
| End of workday | Afternoon | 34 (75.6) | 11 (24.4) | Ref | 0.4 (0.18–0.83) ^a |
| | Early evening | 152 (54.7) | 126 (45.3) | 0.4 (0.19–0.80) ^a | |
| | Late evening | 33 (58.9) | 23 (41.1) | 0.5 (0.20–1.10) | |
| Number of children | 0 | 41 (45.1) | 50 (54.9) | Ref | 1.9 (0.87–4.35) |
| | 1–2 | 98 (62.0) | 60 (38.0) | 2.0 (1.18–3.36) ^a | |
| | ≥3 | 84 (61.9) | 51 (38.1) | 2.0 (1.6–3.41) | |
| Number of people in household | Less than 3 | 58 (26.1) | 58 (36.3) | Ref | 1.01 (0.53–1.92) |
| | 3–5 | 119 (53.6) | 76 (47.5) | 1.5 (0.98–2.49) | |
| | More than 5 | 45 (20.3) | 26 (16.2) | 1.7 (0.94–3.17) | |

Note: cORs: crude odds ratios; aORs: adjusted odds ratios.

^ap < 0.05. **p < 0.01. ***p < 0.001.

done before, our study was conducted in an understudied population that carries a high risk for HIV, and therefore, our findings provide an important basis for interventions.

Our study has some weaknesses. First, we conducted the study in a mixed urban and peri-urban municipality; hence, the findings more likely represent motorcyclists in similar settings. Second, we sampled the larger *boda boda* stage locations and left out the smaller ones, which may potentially narrow the representativeness of our data which also limits generalization of our data. Third, we excluded the riders who work at night, and although they represent a minority, their patterns of HIV-related stigma and HIV transmission risk behaviors may differ from those included in our study. In addition, although only about 5% of the riders approached to participate declined, we were not able

to obtain their demographic features and compare them to those who agreed to participate. Fourth, we did not collect data on male-to-male sexual behavior and recommend that future studies should collect these data. Last, we did not carry out HIV testing for the participants to examine how their HIV status might influence their sexual behavior.

Conclusions

Our study has shown that the levels of HIV-related stigma are very high among *boda boda* motorcyclists in Mbarara Municipality, and there is an association between stigma and HIV transmission risk behavior. HIV-related stigma may be a driver of this behavior, and these data provide some preliminary evidence to target and design interventions

against HIV-related stigma and examine their effectiveness in reducing the incidence of HIV transmission risk behavior in this key population.

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Authors' contributions

Francis Bajunirwe and Alexander C Tsai conceived the idea; Stella Cheryl Nabifo, Alexander C Tsai, and Francis Bajunirwe were involved in the design of the study; Stella Cheryl Nabifo and Francis Bajunirwe were involved in the implementation, data analysis, and making the first draft. All authors were involved in the interpretation of findings and review of the final article.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Data Availability Statement

The data used to support the findings of this study are available from the corresponding author upon request and with approval from the Research Ethics Committee at Mbarara University of Science and Technology.

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