The epidemiology of HPV and HIV among high-risk women and steady couples in Kigali, Rwanda
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Anal intercourse among female sex workers in East Africa is associated with other high-risk behaviours for HIV

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ABSTRACT

Introduction
Epidemiological and HIV prevention studies in sub-Saharan Africa have almost exclusively focused on vaginal transmission of HIV, the primary mode of transmission in the region. Little is known about the prevalence of heterosexual anal intercourse (AI), its correlates and its role in the spread of HIV. Prevention messaging seldom, if ever, includes AI.

Methods
Sexual and other risk behaviours (including frequency of AI) were assessed in two cross-sectional surveys of female sex workers (FSW) in Kigali, Rwanda (n = 800) and Mombasa, Kenya (n = 820). In addition, a subset of FSW surveyed in Kigali attended seven focus group discussions and four in-depth interviews.

Results
AI was reported by 5.5% and 4.3% of FSW in the cross-sectional surveys, in Kigali and Mombasa, respectively. FSW practising AI reported multiple risk factors for HIV transmission: inconsistent condom use (odds ratio (OR) Kigali 5.9 (95% CI 1.4–24.7); OR Mombasa 2.1 (1.1–4.2)); more than five sexual partners in the past week (OR Kigali 4.3 (1.5–12.4); OR Mombasa 2.2 (1.1–4.3)); alcohol use before sex (OR Kigali 2.8 (1.4–5.8)); more than 5 years of female sex work (OR Mombasa 2.4 (1.2–4.9)); and history of genital symptoms in the past year (OR Mombasa 3.6 (1.7–7.9)). AI was, however, not associated with HIV prevalence (OR Kigali 0.9 (0.5–1.9); OR Mombasa 0.5 (0.2–1.2)). Negative connotations and stigma associated with AI were expressed during qualitative interviews.

Conclusions
AI was associated with several indicators of sexual risk behaviour. Prevalence of AI was probably underreported due to social desirability bias. Stigma associated with AI poses methodological challenges in obtaining valid data.
INTRODUCTION

The contribution of heterosexual anal intercourse (AI) to the spread of HIV in sub-Saharan Africa is largely unknown. Without specific reference to AI, heterosexual transmission is often considered synonymous with transmission through vaginal intercourse. It is well established that penile-AI carries a much higher HIV transmission risk than vaginal intercourse.\textsuperscript{1-3} Epidemiological and HIV prevention studies in Africa have almost exclusively addressed factors associated with transmission of HIV through vaginal intercourse. Consequently, information about prevalence and correlates of AI in the region is limited. Prevalence estimates in the few studies that have investigated AI among sub-Saharan African heterosexual populations range from 5.5% to 41%, depending on study population and recall time.\textsuperscript{4-7} Accurate measurement of sexual behaviour is challenging.\textsuperscript{8} AI is a stigmatised behaviour in many cultures, adding to the complexities of measuring this aspect of sexual behaviour.\textsuperscript{9} Population-based surveys including HIV-related topics, such as Demographic and Health Surveys or Behavioural Surveillance Surveys, currently do not include questions about heterosexual AI.\textsuperscript{10,11} Here, we report results of secondary analyses on AI prevalence among female sex workers (FSW) participating in surveys and qualitative readiness studies for phase III microbicide trials in Kigali, Rwanda, and Mombasa, Kenya.

METHODS

HIV prevalence surveys were conducted among FSW in Kigali (n = 800) and Mombasa (n = 820). In Kigali, FSW were recruited via community meetings in three districts (Gasabo, Kicukiro and Nyarugenge), after approval from local authorities. Meetings were led by study staff with assistance from community mobilisers – prominent community members, some of whom were sex workers. FSW were defined as having exchanged sex for money or gifts in the past month. In Mombasa (Kisauni and Changamwe districts), FSW were recruited from the community with the assistance of peer educators – FSW who were willing to be peer leaders, had a substantial network of peers, were likely to remain in the area for an extended period and had knowledge of HIV/AIDS-related topics. Key informants (barmaids and patrons) identified potential peer educators from FSW hotspots. Eligible participants were defined as having exchanged sex for money or gifts in the past year and currently sexually active. During the surveys, women were tested for HIV. Sexual behaviour questionnaires were administered via face-to-face structured interviews, which were conducted in private soundproof rooms, and confidentiality was emphasised. The wording used to explain AI included sentences like, ‘when a man introduces his penis in the anus of his partner’. Recall time for AI was 3 months. Crude prevalence rates of AI were calculated. Unadjusted odds ratios were calculated for demographic and sexual behavioural indicators. Data were analysed using STATA 9.2 (StataCorp, College Station, TX, USA). About 2 years after the surveys, a subset of FSW in Kigali was re-contacted and invited to participate in focus group discussions (FGD) and in-depth interviews (IDI) on sexual and reproductive behaviour (including AI), motivation for engaging in sex work, experiences with sex work and geographic mobility. A random selection was made among HIV-negative women who previously reported symptoms of sexually transmissible infections (STI), use of contraceptives and/or practice of AI in the survey. Seven FGD with 8–12 women and four IDI were conducted by trained research staff. A discussion guide was used to conduct the FGD.
Discussions were held in the local language (Kinyarwanda), audio taped, transcribed verbatim and translated into English for analysis. Written informed consent was obtained from all participants in the surveys, FGD and IDI. Both studies were approved by in-country and international ethical review boards.

**RESULTS**

Baseline surveys The median age of women was 25 years (interquartile range (IQR) 22–30) in Kigali and 28 years (IQR 24–36) in Mombasa. The majority of women in Kigali had never married (73.0%). Approximately half of women in Mombasa were divorced or widowed (54.9). In Kigali and Mombasa, most women had at least some primary education (66.8% and 90% respectively). AI in the past 3 months was reported by 5.5% of women in Kigali and 4.3% in Mombasa. There were no differences in socio-demographic characteristics between women who did or did not report AI. In both sites, AI was associated with various indicators of sexual risk behaviour, including inconsistent condom use, higher number of sexual partners, alcohol use before sex, years of female sex work and history of genital symptoms (Table 1). HIV prevalence was 24.0% (95% CI 21.0–27.0) in Kigali and 35.2% (95% CI 31.9–38.5) in Mombasa. Prevalent HIV infection was not associated with AI in either group (Table 1).

Qualitative research (Kigali only) All participants in FGD and IDI held a strong negative association with AI.

One woman said when referring to a client requesting AI:

‘I hate him, I consider him as unfaithful man.’

Another woman mentioned:

‘...accepting to practise [AI] with them means the loss of mind and self-esteem.’

Urinary and faecal incontinence and complications during delivery were considered potential consequences of AI by many women. As one woman described:

‘There are many bad consequences of anal intercourse. Those who practise this kind of sexual intercourse cannot laugh out loud and have no control over defecation.’

Participants did acknowledge the existence of AI, although it was considered rare:

‘People are afraid of anal sex, especially women. We fear from complications we may experience while delivering. However, this does not imply that anal sex is not practised in Rwanda.’

‘It is not done often, and even if a woman accepts, she is stigmatised by her friends.’
According to participants, clients who request AI are mostly non-Rwandese, as one woman mentioned:

‘I live in [area of Kigali] where one can meet many foreigners who enjoy this kind of sexual intercourse. I personally know three girls who do it.’

AI was associated with alcohol use and financial incentives. For example:

‘In my opinion, they do it when they are drunk. A person cannot think of doing this without having drunk.’

‘There are some who do it, not because they are drunk, but because they get paid a lot of money.’

According to the majority of women, condoms are not used during AI: ‘Even though none can tell you the whole truth about the use of condoms, clients use condoms only in vaginal sex and they do not use it during anal sex.’

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Table 1: Correlates of anal intercourse (AI) among female sex workers participating in cross-sectional surveys in Kigali, Rwanda and Mombasa, Kenya

<table>
<thead>
<tr>
<th>Variable</th>
<th>Kigali No</th>
<th>Kigali AI</th>
<th>OR (95% CI)</th>
<th>P-value</th>
<th>Mombasa No</th>
<th>Mombasa AI</th>
<th>OR (95% CI)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, median (IQR)</td>
<td>630</td>
<td>29 (19-30)</td>
<td>25 (20-30)</td>
<td>0.397</td>
<td>817</td>
<td>21 (12-32)</td>
<td>28 (24-30)</td>
<td>0.009</td>
</tr>
<tr>
<td>Weekly income (US$)</td>
<td>798</td>
<td>29 (19-39)</td>
<td>27 (14-38)</td>
<td>0.037</td>
<td>830</td>
<td>18 (12-27)</td>
<td>14 (9-27)</td>
<td>0.29</td>
</tr>
<tr>
<td>Middle income (US$)</td>
<td>222</td>
<td>29 (19-30)</td>
<td>30 (20-30)</td>
<td>0.99</td>
<td>225</td>
<td>29 (20-30)</td>
<td>30 (20-30)</td>
<td>1.00</td>
</tr>
<tr>
<td>Highest income (US$)</td>
<td>225</td>
<td>29 (19-30)</td>
<td>30 (20-30)</td>
<td>0.99</td>
<td>225</td>
<td>29 (20-30)</td>
<td>30 (20-30)</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Abbreviations: AI=anal intercourse; OR=odds ratio; IQR=interquartile range; CI=confidence interval; NA=not applicable


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*Note:* For categorical variables, and median (IQR) for continuous variables; sample sizes for different variables may vary slightly based on missing results or excluded non-applicable women; **OR** and 95% CI for categorical variables; **P-value** for continuous variables. **Consistent condom use** defined as women using male condoms always or every time (no time period defined). **Suggests** sexual intercourse with any sex partner in Kigali (husband, steady or casual); suggests sexual intercourse with casual partner or clients only in Mombasa. **Kigali, last month:** Mombasa, last year. Defined as genital itching; genital burning; genital rash; genital pain; abnormal vaginal discharge; abnormal vaginal odour; abnormal vaginal bleeding (non-menstrual); pain or difficulty urinating; genital ulcers, sores or blisters; pain during sex; acute lower abdominal pain; or other genital/urinary symptoms.
DISCUSSION

In these two studies, approximately 1 in 20 FSW reported recent AI. Among FSW in Kigali, AI reporting was associated with different indicators of vulnerability to STI (lower frequency of condom use during vaginal intercourse, higher numbers of sexual partners and alcohol use during sex). In Mombasa, 5 years of female sex work, lower frequency of condom use, higher number of sexual partners and a history of genital symptoms were associated with AI reporting. Quantitative and qualitative results in Kigali were consistent regarding reported frequency of AI (‘rare’) and the influence of alcohol use on FSW accepting to engage in AI. In the qualitative study, financial incentives were cited as strong motivations for AI, and this was supported by the finding in structured interviews that women reporting AI had a significantly higher median weekly income compared with women not reporting AI. Rates of AI in our studies were lower than those previously reported among FSW in East Africa. Another study in Mombasa, Kenya, by Grijsen et al. found an AI prevalence rate of 17.7% in the past 3 months among high-risk women (of whom 84% self-identified as FSW). In a study among FSW in Meru, Kenya, by Schwandt et al., as many as 40.8% of the women reported ever practise AI. These wide ranges in reported prevalence rates may be explained by differences in recall periods, study inclusion criteria, recruitment strategies or actual population variability in sexual behaviour. For example, the higher prevalence found by Grijsen et al. in Mombasa, Kenya, can be explained by differences in recruitment strategy, in which they specifically aimed to enrol women reporting AI. Further, the degree of reporting bias may be influenced by variations in the underlying level of stigma attached to AI, while recruitment of FSW through peer education and outreach programs, as in the study by Schwandt et al., might enhance women’s ability to talk openly about sensitive topics, such as sexual behaviour. The negative perceptions about AI expressed in the qualitative study in Kigali suggest that AI is a sensitive and stigmatised behaviour in our surveys, and as such is likely to have been underreported, limiting our ability to detect an association between AI practice and HIV, for example. This association may further have been masked by other high-risk behaviours. In conclusion, AI reporting among FSW in our study was associated with other high-risk sexual behaviour. Because of the increased HIV transmission probability during AI, there is a need to better understand the prevalence and conditions under which AI is practised (e.g. associated risk factors and condom use) – especially in high-risk populations such as FSW, who in turn have contact with the general population. The negative connotations and stigma associated with AI poses methodological challenges to obtaining valid data.

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REFERENCES