AIDS Behav
DOI 10.1007/s10461-017-1922-3

ORIGINAL PAPER

Intentional and Unintentional Condom Breakage and Slippage in the Sexual Interactions of Female and Male Sex Workers and Clients in Mombasa, Kenya

Tsitsi B. Masvawure[1] · Joanne E. Mantell[2] · Jack Ume Tocco[2] · Peter Gichangi[3,5,6] · Arjee Restar[4] · Sophie Vusha Chabeda[3] · Yves Lafort[5] · Theo G. M. Sandfort[2]

Abstract We examined why male condoms broke or slipped off during commercial sex and the actions taken in response among 75 female and male sex workers and male clients recruited from 18 bars/nightclubs in Mombasa, Kenya. Most participants (61/75, 81%) had experienced at least one breakage or slippage during commercial sex. Many breakages were attributed to the direct actions of clients. Breakages and slippages fell into two main groups: those that were intentionally caused by clients and unintentional ones caused by inebriation, forceful thrusting during sex and incorrect or non-lubricant use. Participant responses included: stopping sex and replacing the damaged condoms, doing nothing, getting tested for HIV, using post-exposure prophylaxis and washing. Some sex workers also employed strategies to prevent the occurrence of condom breakages. Innovative client-oriented HIV prevention and risk-reduction interventions are therefore urgently needed. Additionally, sex workers should be equipped with skills to recognize and manage breakages.

Resumen Examinamos por qué hubo rotura o deslizamiento de condones durante encuentros sexuales comerciales y las acciones de respuesta tomadas por 75 trabajadores sexuales—tanto hombres como mujeres—y sus clientes masculinos, reclutados de 18 bares/clubes nocturnos en Mombasa, Kenya. Las mayoría de los participantes (61/75, 81%) habían experimentado por lo menos una ocasión de rotura o deslizamiento durante sexo comercial. Muchas roturas fueron atribuídas a las acciones directas de clientes. Hubo dos temas en las ocasiones de roturas y deslizamientos: aquellos causados por clientes y aquellos no intencionales causados por intoxicación, empujes enérgicos durante sexo y uso incorrecto (o no uso) de lubricantes. Entre las respuestas se incluían: interrupir el sexo y reemplazar los condones dañados; no hacer nada; obtener una prueba para el VIH; usar la profilaxis de post-exposición; y "lavado". Algunos trabajadores sexuales utilizaron una variedad de estrategias para evitar que los condones se rompieran. Se necesita urgentemente intervenciones innovadoras y centrados en el cliente para la prevención del VIH y la reducción del riesgo. Asismismo, los trabajadores de sexo deberían adquirir las habilidades para reconocer y manejar las roturas.

Keywords Male condom breakage and slippage · Sex workers · Clients · Kenya · Africa

Introduction

Globally, HIV infection rates remain extremely high among sex workers. Recent surveillance data from South Africa found a 71.8% HIV prevalence among female sex workers

✉ Tsitsi B. Masvawure
tmasvawu@holycross.edu

1 Department of Sociology and Anthropology, College of the Holy Cross, Worcester, MA, USA

2 HIV Center for Clinical and Behavioral Studies, New York State Psychiatric Institute and Columbia University, New York, NY, USA

3 International Centre for Reproductive Health, Mombasa, Kenya

4 Brown School of Public Health, Brown University, Providence, RI, USA

5 International Centre for Reproductive Health-Ghent University, Ghent, Belgium

6 Department of Anatomy, University of Nairobi, Nairobi, Kenya

Published online: 03 October 2017

(FSW) in Johannesburg [1], while a meta-analysis found a 30.7% HIV prevalence among FSW in 26 low-and-middle income countries [2]. Among men who have sex with men (MSM) who engage in transactional sex and/or sex work in sub-Saharan Africa, pooled HIV prevalence was 31.5% [3]. Another study reported a median HIV prevalence of 12.5% among male sex workers (MSW) from five African countries [4]. These high rates have been attributed, in large part, to the difficulties that FSW and MSW face in negotiating condom use with clients [5]. Studies show that clients sometimes unequivocally refuse to use condoms [6], offer to pay more for condomless sex [7], or believe that they have established a relationship of trust with a sex worker that makes condom use unnecessary [8]. However, there is limited research on the dynamics of actual condom use once their use has been successfully negotiated with clients. Some studies suggest that condom failures, mainly due to breakages and slippages, lead to a situation where "condoms are used but sex is not well protected" [9]. Thus, exposure to HIV and other STIs still may occur despite the use of condoms.

Condom breakages and slippages have been shown to occur frequently during commercial sex [10–13]. These can potentially expose sex workers and their clients to HIV/STI infection and decrease the efficacy of condoms for disease prevention [9]. Many studies show that most condom breakages and slippages are caused by improper use, rather than by the poor quality of condoms [14, 15]. A study conducted in Benin found that only 11% of 314 FSW and 208 clients could successfully perform a correct male condom use demonstration when asked [16]. Furthermore, the prevalence of condom breakages during commercial sex varies substantially. A study conducted in south India found that 11% of 1924 FSW interviewed had experienced at least one male condom breakage in the preceding month [14]. In another study, over 50% of 195 FSW in Shenzhen, China, had experienced at least one condom failure, which included breakages and slippages, in the past 6 months [9]. Another study reported equally high rates, of at least one condom breakage (34%) or slippage (36%) over a three-month period among 200 FSW in southwest China [11]. These studies highlight gaps in correct condom use and help explain the high rates of HIV infection among FSW.

We are not aware of any studies that have examined condom breakages and slippages among MSW in Africa or elsewhere. A small number of quantitative studies involving MSW in Africa have focused primarily on the prevalence of condom use, but not breakages [17, 18]. One study found low rates of condom use among 510 MSW surveyed in Mombasa, with 42% reporting non-use of condoms during anal sex with their last male client and as many as 62% reporting inconsistent condom use with all male clients in the last 30 days [17]. A study in Nairobi found that only 30% of 501 MSW reported 100% condom use during commercial sex [19]. However, there is some literature on condom breakages and slippages among MSM more generally, rather than among MSW specifically [20–24]. Condom breakages among MSM in the US have been associated with lower educational status, being drunk or high, having sex with a non-main partner, sub-optimal fit/feel, and use of oil-based lubricants [22, 24].

Studies conducted with FSW have identified a number of individual and situational factors that are associated with condom breakages and slippages during sex work. These factors include being a young sex worker or client [14, 24], being drunk or high on drugs during commercial sex [11], wearing poor fitting condoms [14], poor knowledge of correct condom use [16], and having violent or rough sex [12]. One of the few qualitative studies on the topic found that most of the breakages and slippages that brothel-based FSW in Singapore had experienced were deliberately caused by clients [25]. Sex workers reported that clients who were initially reluctant to use condoms surreptitiously pricked condoms with their fingernails prior to sex, while some clients took too long to withdraw after ejaculation, which led to slippages.

In this qualitative study, we examined four issues: (a) why condoms broke or slipped during commercial sex encounters; (b) actions that were taken following breakages and slippages; (c) strategies employed by sex workers to prevent breakages and slippages from occurring in the first place and; (d) the implications of condom breakages and slippages for HIV risk and vulnerability. We explored these issues from the perspectives of three distinct populations: FSW, MSW and male clients (CL) in Mombasa, Kenya.

Methods

Study Design

We conducted semi-structured, in-depth interviews with 75 female and male sex workers and clients (i.e., 25 participants in each group). Participants were recruited from 18 "hotspots", that is, bars and nightclubs that are popular with sex workers and clients in the tourist coastal town of Mombasa. Sex worker peer educators working with the International Centre for Reproductive Health-Kenya (ICRHK) helped to identify and recruit sex workers and clients into the study. Interviews were conducted between December 2014 and March 2015. The purpose of the interviews was to inform the development of a multilevel risk-reduction intervention that included peer-delivered education, distribution of condoms and lubricants, and a venue-based sexual health service offering contraceptive services, HIV/STI testing, counseling and care.

Participants

Individuals were eligible to participate in the study based on the following criteria: [a] ≥ 18 years of age; [b] regular patrons of the venue; [c] solicited vaginal/anal intercourse with a client or sex worker at that venue in the last 3 months; [d] willing to be audio-recorded; [e] visibly sober at the time of the interview; and [f] capacity for consent. Interviewers were instructed during training to watch for verbal and non-verbal cues of inebriation during an interview (e.g., slurred speech, difficulty focusing or incomprehensive statements) and to terminate the interview if they suspected that a participant might in fact be drunk, despite their initial screening.

Procedures

Semi-structured in-depth interviews were conducted by trained researchers fluent in Swahili and English, the most commonly spoken languages in Mombasa. Interviews were conducted in a private space in the bars and nightclubs between 3 PM and midnight and lasted between 60 and 90 min.

Measures

The interviews examined a variety of topics, such as sex work debut (e.g., "Can you tell me about your first paid sex experience?); condom use (e.g., "How do you think your clients feel about using condoms?" "How do you feel about using condoms?" "Can you tell me about a time when you did not use a condom with a client?" "Can you tell me about a time when condoms broke or slipped during sex?" "How easy or hard would it be for you to ask your partner to use condoms?"); price negotiation with clients/sex workers (e.g., "When you are working in a bar/street how do you get clients?" "How do you negotiate the price with a client?" "What determines how much you charge a client?"); HIV testing experiences (e.g., "What do you think about HIV testing?" "What do you like/don't like about HIV testing?"); experiences of sexual and physical violence during commercial sex (e.g., "Have there been times when you felt a client forced you to do something that you did not want to do?"; "Sometimes clients abuse sex workers verbally, physically or sexually. Has that ever happened to you?"); relationships among sex workers (e.g., "How much time do you spend with other sex workers at work/outside work?" "Would you say that there is unity among sex workers or not?" "What happens if sex workers want the same client?"); interactions with bar managers and the police (e.g., "How do you think the police treat sex workers in Mombasa?" "Can you tell me about how the managers and bouncers at the bars that you frequent treat sex workers?"); sexual venues (e.g., "Once you find a client, where do you usually go to have sex?" "Who decides where you go to have sex?" "Are those places safe?"); healthcare access and utilization; and participant views on the focus and components of HIV interventions for sex workers and clients.

Data Analysis

All interviews were audio-recorded, translated from Swahili into English when necessary, and transcribed. Translations and transcripts were reviewed for completeness and accuracy. Data were then uploaded into Dedoose (a web-based data management software) to facilitate coding by a team of two doctoral-level anthropologists and two masters-level social scientists.

Codebook Development

A comprehensive codebook was developed based on questions from the interview guide and on thematic analysis of 10 randomly selected transcripts. The first author initially read three transcripts (one from each population group) and developed a draft codebook based on the main themes that emerged from the data. Some interview questions were also adopted as codes. For instance, participants were asked, "How do you find clients or sex workers?" and "How do you negotiate prices and payment with clients/sex workers?" These questions were incorporated into the codebook as the following codes: "Strategies for finding clients/sex workers" and "Negotiating prices with clients/sex workers", respectively. The draft codebook was discussed with the other three researchers who had each also read one transcript from each population group. Codes were dropped, refined and new ones added based on the feedback from the other researchers. The researchers also reviewed the codebook for completeness and comprehensiveness by coding a few transcripts in Dedoose. The final codebook had thirteen parent codes and sixty-five child codes. Examples of parent codes were: participant socio-demographics, sexual practices, social life and peer networks, sex work characteristics, sexual negotiation, violence, HIV testing, HIV/STI knowledge, attitudes and prevention. Examples of the child codes for the "sex work characteristics" parent code, for example, were: induction into sex work; sexual venues; safe and unsafe spaces; strategies for finding clients/sex workers; and competition among sex workers.

Coding

Data coding occurred over a period of one year (May 2015–April 2016). The majority (n = 55/75) of transcripts were double-coded by two researchers, who worked independently and then met weekly to compare, discuss and resolve code applications. Consensus was typically reached by referring back to code definitions and coding rules as

outlined in the codebook. Agreed upon changes were immediately incorporated into the transcript in Dedoose by one of the researchers. Weekly team meetings involving all four researchers were also used to discuss and resolve coding challenges. To further ensure consistency and high-quality coding, we also rotated the coding team pairs. Finally, single coding of transcripts only commenced after all double-coded transcripts had been reconciled in Dedoose. By this point, all the researchers were very familiar with the codes and were applying codes consistently to the text.

Data Analysis

This paper is based on thematic content analysis of the following child codes: condom use with clients/sex workers; condom breakages and slippages; lubricant use; and substance use/sex while drunk or high. The first author generated code reports in Dedoose for each child code and then read these reports and identified the following five themes: [a] has experienced breakages/slippages; [b] has not experienced breakages/slippages; [c] how and why breakages/slippages occurred; [d] actions taken after breakages/slippages; and [e] strategies used to prevent breakages/slippages. Based on these themes, the first author then created a five-column table in Microsoft Word for each study population (i.e., FSW, MSW, CL), recorded each participant's responses in the appropriate column and wrote summaries for each theme. Team members reviewed the tables, summaries and multiple drafts of this manuscript.

Rigor and Data Analysis Quality

We ensured high-quality data analysis in the following ways: using highly skilled qualitative researchers, double-coding the majority (55/75) of the transcripts, and convening weekly team meetings to discuss coding experiences and reach consensus on code applications. Additionally, double-coding preceded single-coding as a way to ensure coding consistency.

Ethics

This study was approved by the Institutional Review Board (IRB) at the New York State Psychiatric Institute-Columbia University Department of Psychiatry and by the Kenyatta Hospital-University of Nairobi Ethics Research Committee in Kenya. Written informed consent was obtained from all study participants; they were informed of their rights to privacy and confidentiality, that they could withdraw from the study at any point during the interview, and could refuse to answer questions they did not want to answer. Additionally, we did not collect personal potential identifiers and used pseudonyms for all excerpts.

Results

Socio-demographic Characteristics of Participants

As Table 1 shows, there were marked differences in the socio-demographic characteristics of the three study populations. MSW tended to be younger, with the majority in their twenties (average age of 26 years; range 20–39). In contrast, FSW were older, with more than half in their thirties (average age of 31 years; range 18–37). Clients, in turn, were more diverse, with fairly equal proportions between the ages of 20-29 and 30-39. The average age of clients was 33 years (range 21–55), with five clients aged 40 and older.

Table 1 Socio-demographics of FSW, MSW and CL

Variable	Participant group		
	Male clients n = 25	Male sex workers n = 25	Female sex workers n = 25
Age			
18–29 years old	10	21	11
30–39 years old	9	4	13
40 years and older	5	0	0
Missing/unknown	1	–	1
Age range	21–55	20–39	18–37
Educational level			
College	8	3	1
High school	9	16	6
Less than standard 8	8	6	16
Missing/unknown	–	–	2
Marital status			
Married	8	2	1
Not married	17	23	23
Missing/unknown	–	–	1
Gender of sexual partners			
Men only	8	17	24
Women only	14	0	0
Both men and women	3	7	1
Missing/unknown	–	1	–
Engages in anal sex			
Yes	17	25	3
No	8	0	21
Missing/unknown	–	–	1
Sexual positioning			
Receptive anal sex, only	1	9	3
Insertive anal sex, only	12	1	n.a
Both receptive and insertive anal sex	3	15	n.a
Missing/unknown	9	–	–

With regard to educational status, more clients reported university-level education than either MSW or FSW (32% vs. 12%. vs. 4%, respectively). MSW were more likely to report high school as their highest educational level, whereas FSW were more likely to report primary school as their highest educational level. Nearly all (90%) MSW and MSW were not married; however, half reported that they currently had regular or main partners. In contrast, one-third of clients were married. Below we use the abbreviations C-FSWE and C-MSWE to refer to clients who reported *exclusively* engaging the services of FSW or MSW, respectively, and C-Both to refer to clients who reported engaging the services of *both* FSW and MSW.

Extent and Context of Condom Breakages and Slippages

Participants were asked the following question: "Tell me about a time when a condom burst or slipped off when you were having sex with a client". In response, the majority (61/75) reported that they had experienced condom breakages at least once during commercial sex. Slightly more MSW (21/25) and CL (21/25) reported experiencing condom breakages with commercial partners than FSW (19/25). Among the small number of participants (10/75) who provided information on the *frequency* of condom breakages during commercial sex, most reported that this had happened "only once or twice". A few, however, reported experiencing condom breakages multiple times, and they used terms like "a lot" and "on several occasions". One FSW reported that it had happened to her "about six times". Fewer participants (6/75), half of whom were FSW, reported experiencing condom slippages:

> There was a time I was having sex then the condom got lost. I wondered where the condom could have gone. I stayed for nearly one hour thinking about it. I bathed and was about to leave when I was suddenly pressed [felt the urge to urinate]. I decided to go to the toilet. When I went to the toilet, the condom got out. The condom had been lodged inside me. (FSW, age unknown)

> It [condom] comes out and remains inside [the vagina]. It happened to me. [When that happens], I go to the toilet, bend and use my fingers to search for it. (FSW, 37 years old)

Participants reported inconsistent condom use with commercial sex partners and gave the following as reasons: client refusal to use condoms ("No client wants to use a condom"—FSW, 38 years old), being offered a higher price by a client to forego condom use, inebriation, trusting the other person ("If you see a beautiful girl…you cannot use a condom with her"—C-FSWE, 43 years old) and fear that condoms would interfere with sexual enjoyment. One MSW also suggested that some clients who were "new to gay sex" believed that they could not get HIV or an STI through anal sex, hence their refusal to use condoms.

Why Breakages and Slippages Occurred

Participants' explanations about why they experienced condom breakages and slippages fell into two overarching themes: those that were intentionally-caused and those that occurred "by accident", that is, were unintentional. We report on each one below.

Intentional Condom Breakages

A common theme among sex workers, and MSW, in particular, was that condom breakages were usually not accidental, but were caused by clients who intentionally tampered with condoms before or during sex. The most common form of tampering reported involved clients who surreptitiously tore the tips of condoms just before they penetrated the vagina or anus:

> Condom bursts do not happen accidentally or unawares. Clients tell you that they do not like condoms. You tell them you can't do without so he tells you to wear one. He pretends to help you insert, then he tears it with his finger [nails]. So he is aware [of the breakage] and you are not. (MSW, 26 years old)

Some sex workers were convinced that clients noticed breakages first and deliberately did not notify sex workers until after sex had occurred, *and* only after being confronted about it:

> It burst and he just went on fucking me and he released semen in me, I didn't know [that it had burst] but he knew it and didn't tell me. Later, when I asked him if he had released his semen in me, he told me that, "The condom burst". I asked him, "Why didn't you tell me?" He said, "How could I say it when I wanted to release my semen inside?" (MSW, 26 years old)

> Yes, there is a time when I was having anal sex. The client was performing anal sex on me and the condom broke. It was very scary. The client didn't tell me until we finished. So the client came inside me. When I saw the condom had burst, I freaked out. (MSW, 27 years old)

Some clients admitted to personally tampering with condoms during commercial sex. One client explained that he had done so because he wanted to ejaculate inside the vagina

of the sex worker. It appears that this client had done so despite the fact that the FSW had insisted on using condoms:

> C-FSWE (21 years old): You could meet a girl [sex worker] who begs you to wear Trust [i.e., a local brand of condoms] or she wants to help you wear the condom. You convince her otherwise [because] you know that this girl is safe. Or sometimes you find out she is getting too clever [so] you wear your condom and make hole at the tip.
>
> Interviewer: So you make a hole at the tip?
> C-FSWE: Mmmm
> Interviewer: Why?
> C-FSWE: I want my sperms to get inside her.
> Interviewer: Why?
> C-FSWE: One could just want to ejaculate inside her. I mean, just do what you feel like doing.

Other clients, however, expressed an alternative view that sex workers were the ones who intentionally damaged condoms. They explained that some sex workers complained of discomfort when using condoms and so preferred not to use them altogether or they would tamper with the condoms and cause them to break:

> Many [sex workers] don't like condoms. They say they are burning with condoms and they don't feel the pleasure. So if you are not very careful, you can put on a condom and the other person will remove it. Some cause the condom to burst intentionally, then you release the sperms in him. (C-MSWE, 20 years old)

Unintentional Condom Breakages

Unintentional or "accidental" breakages were mostly due to three factors: inebriation, non-use of lubricants and excessive friction generated during sex. These factors were often inter-related; hence we discuss them together, rather than separately, below.

Participants noted that inebriation led to incorrect condom use, such as failure to remove the air bubble in the condom prior to use or wearing a condom inside out.

> When you drink alcohol, your consciousness is not as alert so you are probably not as strict on your protection [i.e., using condoms]. So something might happen, but you may not even take notice. You may not wear the CD [condom] properly, or in my case, it might burst and you continue with it. (C-MSWE, 26 years old)

In some cases, inebriation led to delayed ejaculation, which, in turn, prolonged sexual encounters and subsequently weakened condoms, causing them to break:

> Sometimes I am drunk and in that state [of sexual arousal], I don't easily ejaculate. So, in the process of pumping, the condom tears. When that happens, I continue because I like it that way [without condom]. By the time she realizes, I ejaculate (laughs). If she realizes [the condom has burst], she will push me away very quickly. [Interviewer: Therefore, when it tears off, you continue?]. I continue like that. (C-FSWE, 43 years old)

Unintentional breakages also occurred because of insufficient lubrication and non-use of lubricants:

> Yes, there are times when I am having sex with a client and I am dry. That causes the condom to burst. (FSW, 24 years old)
> It has happened a lot. I have had a lot of bursts. At the time I wasn't using this oil [lubricant] (MSW, 28 years old)
>
> We were drunk and had gone to have sex and we had a condom, but we didn't have a lubricant. And there are people who squeeze so hard. They squeeze the penis in their anus and so when you are entering, you know there will be high friction. And so you think it has entered well, yet it has burst. (C-MSWE, 21 years old)

Although most sex workers, particularly MSW, stated that they used condom-compatible lubricants like water-based KY gel and could get them easily from some health facilities, a number of participants reported using condom-incompatible lubricants, such as petroleum jelly, saliva, lotion and soap. The latter could have contributed to breakages:

> I was completely dry and I used soap from the hotel. I [also] use saliva unless there is Vaseline jelly [petroleum jelly] or cooking oil. Mostly I use soap if I'm in the hotel, and if I'm in my room or hers, I tell her to give me lotion that is smooth. (C-FSWE, 36 years old)
>
> I have met many different girls who apply some kind of oil [and] when you are using Trust [a brand of condoms], it breaks. (C-FSWE, 21 years old)

Lastly, unintentional breakages were also due to forceful thrusting and/or excessive friction generated during sex because of large penis sizes or use of sexual stimulants:

> He [the client] was doing it a lot [thrusting] and there and then, I heard it burst and I pushed him aside, and then he washed himself immediately. (FSW, 29 years old)
>
> He can also be endowed so when he enters [penetrates], it [the condom] has to tear. (MSW, 28 years old)

> Maybe, if you have overdosed, you have eaten your things [traditional herbs] and you cannot control that feeling…it [condom] breaks. (C-FSWE, 25 years old)

Actions Taken After Condom Breakages

We also examined the actions that participants took after experiencing condom breakages. Participants reported one of two responses: more than half (n = 35/61, 58%) of those who had experienced breakages stated that they immediately stopped sex and changed the condom, while a quarter (n = 16/61, 26%) "did nothing", that is, they carried on with sex despite the breakage. The remaining participants (n = 10/61, 16%) did not say what actions they took. We report on each response below.

Stopped Sex and Replaced the Condom Following Breakages

The majority of participants who stopped sex and replaced the damaged condoms attributed this to their becoming aware of the breakages during sex. There were fairly equal numbers of FSW (12/19), MSW (13/21) and clients (10/21) who gave this as a response. Most sex workers in this group reported that they had noticed the breakages first before clients did. They then asked the client to stop sex and replace the condom:

> I told him, "Do you know this thing has burst?" and he asked me, "Really?" I then quickly washed myself and told him, "Remove that one". He too went and washed himself and then I told him, "Put another one on". (FSW, 29 years old)

> The good thing is that when it burst, I noticed and I told him to put on another one. [After sex], I just took a shower, then he paid me and I left. (MSW, 24 years old)

Sex workers in this group also reported that one could always tell when a condom broke and that it was necessary for a sex worker to always be prepared and have an ample supply of condoms when attending to a client:

> You feel it rupture [and] you are the one who tells him [the client] to stop and wear another one since you have carried many [condoms]. You remove and make him put on another one. You can't carry [only] one [condom]. (FSW, 36 years old)

> Actually, a ruptured condom is usually painful. You can feel a certain friction which you can tell is not normal. So you remove it and put on another one. (MSW, 28 years old)

FSW appeared quite assertive in the face of breakages, with many demanding—rather than simply requesting—the client to stop and change damaged condoms. Many clients seemed to comply with these requests. It was not unusual, however, for clients to notice the breakages first, as the excerpts below illustrate:

> After it burst I removed it and informed her and then she asked if I had already cum [ejaculated]. I just found out that I had unknowingly cum. But I put another one [on] properly and I continued. (C-FSWE, 36 years old)

> It burst when I was in action having sex with a sex worker and I realized immediately and removed it and put on another. (C-MSWE, 26 years old)

Although it was common for the sexual encounter to continue after replacing a damaged condom, a few participants indicated that they did not continue. Instead, clients either ejaculated outside the vagina or anus, or they demanded their money back if they had not yet ejaculated:

> When I was still inside [the vagina] and I felt I am about to ejaculate and it had broken, I removed it [the penis] and ejaculated outside. I didn't ejaculate inside her. (C-FSWE, 55 years old)

> You claim your money because you have not ejaculated. (C-FSWE, 28 years old)

Only one FSW reported that she refused to continue with sex after a breakage. It was not clear if the client had then paid a reduced price as a result, or if the FSW had refused to continue with sex because the client was only paying a small price to begin with:

> He told me to put on another one, but I told him, "No". Then he was only paying four hundred shillings. (FSW, 34 years old)

Another FSW reported that she charged a client more if a condom broke because of the risk of infection that breakages posed:

> In the event [of breakage], you charge him and you tell him that he has risked your life. He will add more money. (FSW, 29 years old)

It was not clear, however, if this FSW was reporting on something that she had actually successfully done or if she was just speaking hypothetically.

Did Not Stop Sex Because Noticed Condom Breakages/ Slippages too Late

Sixteen participants, the majority of whom were clients and MSW, reported that they did not stop sex or replace

the damaged condom because they noticed the breakages too late, after sex had occurred.

> I just finished my business only to realize that the condom had come off at the front. (C- FSWE, 33 years old)

> I started feeling different [during sex], but I thought it was due to lubrication. After the act, I removed the condom and found it had burst. There was nothing I could do. (MSW, 30 years old)

Only two sex workers confronted their clients about breakages:

> Yes, sometimes you could be having sex with him then a condom bursts, maybe he is aware that the condom burst and you are also aware. If you tell him to come out, he refuses. You tell him, "Get out, the condom has burst"; he refuses until you get into a scuffle. And when you look at it, indeed it had burst. (MSW, 28 years old)

The majority of sex workers did not confront clients about the breakages. Some blamed this on "naivety" and on fear:

> The condom burst and he turned on me. He wouldn't use a condom. As I told you, we are alone in a room and he is a man. When the condom burst he told me, "There is no need to use a condom now because I'm already inside you, so if it's AIDS you already have it." [Interviewer: So you continued like that?]. We continued. (FSW, 18 years old)

Another FSW explained that she did not stop sex after becoming aware of the breakage because the client had not yet ejaculated:

> I will have to continue like that because it has already burst and the client still has the desire. He will have to finish. (FSW, 25 years old)

FSW who had experienced slippages, in turn, reported that they extracted the dislodged condoms from their vaginas after sex had occurred. They had done this by urinating or inserting a finger into the vagina and pulling out the condom.

Other Actions Taken After Breakages: Washing, HIV Testing, and PEP Use

Washing: Five FSW reported that they "washed" themselves after a breakage. It appears that washing was used as a specific strategy to mitigate infection (and possibly pregnancy) rather than simply as part of standard post-coital practice:

> A friend gave me that oil and told me to use it on a day the condom bursts. She told me to shower first, then apply the oil, which would get rid of the man's germs. Even if he had a disease, you would not contract it. Another one told me that when a condom breaks and you are done with a client, you go buy some lime and apply it there [in/on the vagina]; then you wash. (FSW, 36 years old)
> I tell him to move. I go and wash and he puts on another [condom]. (FSW, 20 years old)

HIV testing: Regardless of whether or not they stopped sex following breakages or slippages, a number (16/36) of participants reported that they also went for HIV testing. More sex workers (8 FSW and 5 MSW vs 3 CL) reported going for an HIV test. Some participants sought HIV testing the same day they experienced breakages or slippages, while others did so weeks or months later:

> We had a condom burst and I was not sure about him [the sex worker] so I told him that if he is not okay, he should let me know so that I can go and get PEP. Then he told me, "Let us go and have a test." We went for the test and both our results were negative. (C-Both, 22 years old)

> I usually wait for two weeks [after experiencing a breakage], then I go for a test just to make sure…just to check whether I am still okay or not. (MSW, 23 years old)

Other participants waited at least a month or more before testing:

> I stayed for a month, then went for the test and I found that I am negative. I was happy. (MSW, 26 years old)

> After three months I go get tested so I can make sure the person whose condom broke wasn't sick. (FSW, 20 years old)

Post-exposure prophylaxis (PEP): Seven participants, mostly sex workers, reported that they had used PEP following breakages. In contrast, only one client reported taking PEP following a breakage.

> When the condom came out at first, I was afraid. But later, after some hours, we went to the hospital. We were given the medicine. I don't know the name of the drugs, the one is given when a condom bursts because you can't know whether that person is sick or not. (FSW, 32 years old)

> A friend of mine took me to the hospital. They tested me and gave me medicine. I think it was called PEP or something like that. (MSW, 32 years old)

A few FSW had also obtained emergency contraceptive pills to prevent pregnancy:

Afterwards, I went to see a doctor and explained to him what had happened. He told me that he couldn't tell if I had gotten pregnant. He said he would give me the 72-hour pill. I took it, after that nothing happened so I decided to go for the injection. (FSW, 20 years old)

Strategies to Prevent Condom Breakages and Slippages

The final major theme that emerged from the data pertained to the strategies that some sex workers employed to try and prevent condom breakages from occurring in the first place. One strategy entailed sex workers supplying their own condoms rather than relying on the client to do so. This way, sex workers ensured that they were using condoms that had not expired and that were in good condition:

These days I carry my own condoms because the condom that burst belonged to the client and so I asked myself several questions, like what if he didn't put it on well or maybe it had expired. So these days I make sure that I have my own condoms and that they are OK before I use them. (MSW, 21 years old)

Supplying their own condoms also ensured that sex workers had replacements on hand when breakages or slippages occurred. Another strategy that sex workers reported entailed putting the condom on the client's penis themselves in order to prevent incorrect condom use or tampering by the client. Sex workers also reported paying careful attention when a client was putting on a condom himself so that they could intervene if he put it on incorrectly:

I will put it on him if he doesn't do it properly. I usually watch him. I know [that] when it [condom] swells at the front, that it will tear, so I tell him to put on another [condom]. They do it properly or I do it myself. (FSW, 36 years old)

In fact, a number of sex workers who reported that they had never experienced condom breakages with clients attributed this to their vigilance:

It has never burst. I am always very keen watching it when it is about to come off. (Interviewer: You watch it in the process of having sex?). I tell you to pull it out. I want to look at it. It is not a hard thing to tell someone to pull it out. You want to look at it. (FSW, 29 years old)

Another FSW stated that she made an effort to be sexually attracted to her clients as this helped her become sexually aroused and hence lubricate:

FSW (31 years old): I make sure I am very wet every time so that I cannot have friction.

Interviewer: Okay, how is that?
FSW: It is more of your mind than anything. You meet this guy you have to get sexually attracted to him no matter what.

Discussion

Our study shows that most sex workers and clients had experienced condom breakages at least once during commercial sex, while a few also experienced breakages on multiple occasions. Condom slippages, in contrast, were reported by a minority of participants. In our study, intent emerged as a particularly salient theme. We therefore grouped breakages into two overarching themes: those that were believed to have been intentionally caused and those that were seen as "accidental", hence unintentional. Understanding why and how condom breakages occur during commercial sex is important for designing more effective HIV-risk reduction interventions for sex workers and clients.

Most breakages in our study—intentional and unintentional—were attributed to the actions of clients. Inebriation, forceful thrusting during sex and deliberate tampering of condoms emerged as key client-related factors that led to breakages and slippages. Condom tampering by clients has been reported in other studies and shown to be done by clients who prioritize sexual pleasure over safety [10], harbor negative attitudes toward condoms [25], or who want to control sex workers and commercial sex encounters [10]. Non-client related factors, in turn, included insufficient lubrication (e.g., vaginal dryness) and non-use or incorrect use of condom-compatible lubricants. Many unintentional breakages were detected *during* sex—rather than after—which enabled sex workers to take corrective action immediately, such as replacing the damaged condom, discontinuing sex altogether or letting clients ejaculate outside the vagina or anus. The fact that most clients acquiesced to requests to stop sex after being notified of breakages seems to confirm that these breakages might indeed have been unintentional. However, there were some reported instances of clients who refused to stop sex even after being notified of breakages. Intentional breakages, in contrast, were often noticed *after* sex had occurred. Sex workers felt there was limited remedial action they could take in such instances and most reported having "done nothing".

The distinction between intentional and unintentional breakages was not always clear-cut however. For instance, some sex workers in our study suspected clients of using condoms that had expired, but it was not clear if clients had done so deliberately. Similarly, some clients reported being physically incapable of stopping sex even after becoming aware of condom breakages because they were "so close" to achieving orgasm. These findings illustrate how easily

unintentional breakages can become intentional, especially in those cases where clients noticed the breakages and nevertheless chose to continue with sex. Although *all* condom breakages are of major public health concern because they expose sex workers and clients to STIs/HIV and possible pregnancy in the absence of other contraceptive method use [9], we argue that intentionally caused breakages, in particular, interfere directly with sex workers' best efforts to protect themselves from infections and magnifies their vulnerability.

It is perhaps not surprising that sex workers attributed most of their breakages to the intentional and unintentional actions of clients, rather than to their own actions. Many sex workers in our study had been exposed to sexual health and HIV prevention interventions run by sex worker-and-MSM-friendly organizations, such as the Kenya Medical Research Institute (KEMRI) and ICRHK. While social desirability bias cannot be ruled out completely, the strategies that sex workers in our study recalled to prevent breakages from occurring in the first place illustrate their resourcefulness and self-efficacy. For instance, sex workers reported supplying their own condoms (rather than using a client's), putting condoms on clients' penises themselves (rather than letting a client do it himself), and generally being vigilant during sex. We also point out that those sex workers who experienced breakages in our study had, in fact, successfully negotiated condom use with a client. This is no small feat considering that clients have consistently been shown in numerous studies to harbor negative attitudes toward condom use [6–8]. Many sex workers in our study also displayed considerable agency in managing their HIV risk after experiencing condom breakages, by getting tested for HIV and/or obtaining PEP from healthcare providers. Many sex workers also reported getting tested for HIV regularly. This high level of agency could indicate that HIV prevention interventions in Kenya have succeeded in equipping sex workers with skills in condom use negotiation and risk-reduction techniques, such as regular HIV testing and PEP use following high-risk sex.

The agency displayed by sex workers in our study should, however, be interpreted within the broader context of power imbalances that characterize most commercial sex encounters in Africa. Our study highlights the limitations of exclusively targeting sex workers for sexual health and HIV education as such an approach ignores the relational aspect of commercial sex and places the responsibility of enforcing risk-reduction strategies solely on sex workers. And yet, as many studies have shown, clients often wield considerable power during commercial sex interactions [26–29]. In our study, intentional condom breakages by clients are one such instantiation of this power. The vulnerability and relative powerlessness of sex workers in our study were further compounded by the fact that both sex work and same-sex practices are illegal in Kenya [1]. This illegality limits sex workers' ability to seek legal redress for any abuse experienced at the hands of clients. Therefore, there is an urgent need for client-specific interventions. In particular, condom promotion for clients should emphasize that correct condom use is a process—not a once-off event—and that condom failure can occur at any point during a sexual encounter, including *during* the actual sex act. Also, our study showed that sexual stimulants and alcohol use contributed to condom breakages in two ways: first, they delayed ejaculation, which, in turn, led to prolonged sexual encounters; second, they led to forceful thrusting by clients. Prolonged sexual encounters and forceful thrusting both ultimately weakened condoms and caused them to break. Similar findings have been reported in other studies [27, 30] and must be incorporated into client-specific HIV risk-reduction interventions. Some studies have called for venue-based structural interventions, particularly in alcohol serving establishments, as a way to reach clients more effectively [31–33].

Interventions should address some of the glaring misconceptions that both clients and sex workers displayed regarding HIV risk-reduction strategies. FSW in our study, for instance, believed that douching or washing their vaginas with "lime" or an unspecified "oil" following condom breakages would protect them from STIs/HIV. Some FSW mentioned these as the *only* actions that they had taken after experiencing condom breakages. Some clients, in turn, reported using body lotion, petroleum jelly and saliva as lubricants for anal and vaginal sex and seemed unaware that these substances were condom-incompatible [34] and could damage condoms. Finally, although some sex workers and clients went for HIV testing after experiencing breakages, most did not seek prophylactic care within the recommended two hours and no later than 72 hours post-potential exposure [35]. Only a minority in our study obtained PEP from health providers following breakages or slippages. One recent study reported low levels of awareness of PEP and pre-exposure prophylaxis in this population [36]. Health literacy programs are urgently needed for sex workers, while health providers should be trained to routinely probe why individuals are seeking HIV testing so that they can offer PEP and emergency contraception, as needed.

Our study has various limitations and strengths. We asked participants if they had *ever* experienced breakages during commercial sex, but did not, however, assess frequency or how recently these breakages had occurred. It is possible therefore that some reported breakages might have occurred years ago or when some sex workers were still new to sex work and hence inexperienced. Our qualitative methodology also does not allow us to quantify or provide baseline data on issues such as perceptions of condom use, overall knowledge of HIV/STI risk-reduction practices or knowledge of HIV testing, among others. We cannot rule out social desirability bias entirely: sex workers might

have thought it more socially acceptable to attribute most breakages to the actions of clients rather than to their own actions. We tried to minimize this particular bias by framing the question on condom breakages in an open-ended and non-judgmental way. For instance, rather than asking participants if they had ever experienced condom breakages, we asked them to describe an instance when a condom broke when they were with a client (Example: "Can you tell me about a time when a condom burst or slipped when you were with a client"?). Finally, we only asked about their experiences with male condoms and did not explore their female condom use experiences. Despite these limitations, our study has some distinct advantages. We interviewed clients and thus directly captured their voices and experiences. Few studies of sex work in Africa do this because male clients are often hard to identity and access [8]. We also interviewed male sex workers, another difficult-to-access population in Africa, and are thus able to contribute to the growing, though still limited, scholarship on male sex work on the continent. Finally, our study highlights both the agency and vulnerability of sex workers and thus offers valuable insights to inform the design of more nuanced sexual health and HIV risk-reduction interventions.

Conclusion

Condom promotion programs must go beyond condom use negotiation and equip sex workers with skills to anticipate, recognize and manage condom breakages. Sex workers must be sensitized on the importance of inspecting condoms for tears and other forms of tampering immediately before vaginal or anal penetration occurs. HIV risk-reduction interventions must also target and reach clients directly—rather than try to reach them via sex workers, as is typically the case. This could be achieved by enlisting the support of managers of the various bars that clients and sex workers patronize and by training *male* peer educators to reach out to clients at bars and other venues where sex is sold. Such an approach has been implemented successfully in some African countries [37]. Third, HIV prevention interventions must actively incorporate a rights-based approach that addresses the multiple forms of marginalization that sex workers face as women and as MSM, respectively. This would make it easier for these groups to seek legal and other forms of redress when they experience physical and sexual violence from commercial sex partners. We argue that intentional condom breakages constitute a pernicious form of sexual violence and sex workers should be able to enjoy legal protection from this and other forms of abuse. Finally, health providers should be trained to probe why individuals want an HIV test so that they can offer PEP and emergency contraceptives in a timely manner.

Acknowledgements This research was supported by a NIMH Grant (R01-MH103034; PI, Joanne E. Mantell, MS, MSPH, Ph.D.) and a NIMH center Grant (P30-MH43520; PI: Robert H. Remien, Ph.D.). Dr. Tocco was supported by a NIMH training Grant (T32-MH19139 Behavioral Sciences Research in HIV Infection; PI: Theodorus G.M. Sandfort, Ph.D.). We would also like to acknowledge all the sex workers and clients who participated in this study, including the sex worker peer educators from the ICRH-Kenya.

Compliance with Ethical Standards

Conflict of interest All authors declare that they have no conflict of interest.

Research Involving Human Participants and/or Animals All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Ethical Approval This article does not contain any studies with animals performed by any of the authors.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

1. South African Health Monitoring Survey (SAHMS): An integrated biological and behavioural survey among female sex workers, South Africa 2013–2014. Final Report. Retrieved November 17, 2016. https://www.health-e.org.za/wp-content/uploads/2016/03/South-African-Health-Monitoring-Survey-An-Integrated-Biological-and-Behavioral-Survey-among-Female-Sex-Workers-South-Africa-2013-2014.pdf.
2. Baral S, Beyrer C, Muessig K, et al. Burden of HIV among female sex workers in low-income and middle-income countries: a systematic review and meta-analysis. Lancet Infect Dis. 2012;12(7):538–49. doi:10.1016/s1473-3099(12)70066-x.
3. Oldenburg CE, Perez-Blumer AM, Reisner SL, et al. Global burden of HIV among men who engage in transactional sex: a systematic review and meta-analysis. PLoS ONE. 2014;9(7):e103549. doi:10.1371/journal.pone.0103549.
4. Baral SD, Friedman MR, Geibel S, et al. Male sex workers: practices, contexts, and vulnerabilities for HIV acquisition and transmission. Lancet. 2015;385(9964):260–73. doi:10.1016/s0140-6736(14)60801-1.
5. Schwitters A, Swaminathan M, Serwadda D, et al. Prevalence of rape and client-initiated gender-based violence among female sex workers: Kampala, Uganda, 2012. AIDS Behav. 2014;19(S1):68–76. doi:10.1007/s10461-014-0957-y.
6. Parcesepe AM, L'Engle KL, Martin SL, Green S, Suchindran C, Mwarogo P. Early sex work initiation and condom use among alcohol-using female sex workers in Mombasa, Kenya: a cross-sectional analysis. Sex Transm Infect. 2016;92(8):593–8. doi:10.1136/sextrans-2016-052549.
7. Decker MR, Lyons C, Billong SC, et al. Gender-based violence against female sex workers in Cameroon: prevalence and associations with sexual HIV risk and access to health services and justice. Sex Transm Infect. 2016;92(8):599–604. doi:10.1136/sextrans-2015-052463.

8. Voeten HACM, Egesah OB, Varkevisser CM, Habbema JDF. Female sex workers and unsafe sex in urban and rural Nyanza, Kenya: regular partners may contribute more to HIV transmission than clients. Trop Med Int Health. 2006;. doi:10.1111/j.1365-3156.2006.01776.x.
9. Lau JTF, Zhou H, Su XY, et al. Condoms used but sex not well protected. AIDS Behav. 2014;18(10):1934–44. doi:10.1007/s10461-013-0690-y.
10. Bradley J, Rajaram SP, Moses S, et al. Why do condoms break? a study of female sex workers in Bangalore, south India. Sex Transm Infect. 2012;88(3):163–70. doi:10.1136/sextrans-2011-050283.
11. Choi SYP, Chen KL, Jiang ZQ. Client-perpetuated violence and condom failure among female sex workers in southwestern China. Sex Transm Dis. 2008;35(2):141–6. doi:10.1097/olq.0b013e31815407c3.
12. Tounkara FK, Diabaté S, Guédou FA, et al. Violence, condom breakage, and HIV infection among female sex workers in Benin, west Africa. Sex Transm Dis. 2014;41(5):312–8. doi:10.1097/olq.0000000000000114.
13. Trussell J, Warner DL, Hatcher RA. Condom slippage and breakage rates. Fam Plan Perspect. 1992;24(1):20. doi:10.2307/2135721.
14. Bradley J, Rajaram S, Moses S, et al. Female sex worker client behaviors lead to condom breakage: a prospective telephone-based survey in Bangalore, south India. AIDS Behav. 2012;17(2):559–67. doi:10.1007/s10461-012-0192-3.
15. Sanders EJ, Graham SM, Okuku HS, et al. HIV-1 infection in high risk men who have sex with men in Mombasa, Kenya. AIDS. 2007;21(18):2513–20. doi:10.1097/qad.0b013e3282f2704a.
16. Mukenge-Tshibaka L, Alary M, Geraldo N, Lowndes CM. Incorrect condom use and frequent breakage among female sex workers and their clients. Int J STDs AIDS. 2005;16(5):345–7.
17. Geibel S, Luchters S, King'ola N, Esu-Williams E, Rinyiru A, Tun W. Factors associated with self-reported unprotected anal sex among male sex workers in Mombasa, Kenya. Sex Transm Dis. 2008;35(8):746–52. doi:10.1097/olq.0b013e318170589d.
18. Okal J, Luchters S, Geibel S, Chersich MF, Lango D, Temmerman M. Social context, sexual risk perceptions and stigma: HIV vulnerability among male sex workers in Mombasa, Kenya. Cult Health Sex. 2009;11(8):811–26. doi:10.1080/13691050902906488.
19. McKinnon LR, Gakii G, Juno JA, et al. High HIV risk in a cohort of male sex workers from Nairobi, Kenya. Sex Transm Infect. 2013;90(3):237–42. doi:10.1136/sextrans-2013-051310.
20. Crosby RA, Mena L. Condom breakage among young Black men who have sex with men. Sex Transm Dis. 2016;43(2):84–6. doi:10.1097/olq.0000000000000401.
21. D'Anna LH, Margolis AD, Warner L, et al. Condom use problems during anal sex among men who have sex with men (MSM): findings from the safe in the city study. AIDS Care. 2012;24(8):1028–38. doi:10.1080/09540121.2012.668285.
22. Hernández-Romieu AC, Siegler AJ, Sullivan PS, Crosby R, Rosenberg ES. How often do condoms fail? a cross-sectional study exploring incomplete use of condoms, condom failures and other condom problems among black and white MSM in southern USA. Sex Transm Infect. 2014;90(8):602–7. doi:10.1136/sextrans-2014-051581.
23. Stone E, Heagerty P, Vittinghoff E, et al. Correlates of condom failure in a sexually active cohort of men who have sex with men. J Acquir Immune Defic Syndr Hum Retrovirol. 1999;20(5):495–501. doi:10.1097/00042560-199904150-00013.
24. Rugpao S, Pruithithada N, Yutabootr Y, Prasertwitayakij W, Tovanabutra S. Condom breakage during commercial sex in Chiang Mai, Thailand. Contraception. 1993;48(6):537–47. doi:10.1016/0010-7824(93)90116-o.
25. Wong M-L, Chan RKW, Koh D, Wee S. A prospective study on condom slippage and breakage among female brothel-based sex workers in Singapore. Sex Transm Dis. 2000;27(4):208–14. doi:10.1097/00007435-200004000-00005.
26. Alemayehu M, Yohannes G, Damte A, et al. Prevalence and predictors of sexual violence among commercial sex workers in northern Ethiopia. Reprod Health. 2015;12(1):47. doi:10.1186/s12978-015-0036-5.
27. Gurav K, Bradley J, Chandrashekhar Gowda G, Alary M. Perspectives on condom breakage: a qualitative study of female sex workers in Bangalore, India. Cult Health Sex. 2014;16(5):575–86. doi:10.1080/13691058.2014.883642.
28. Fawole O, Dagunduro A. Prevalence and correlates of violence against female sex workers in Abuja, Nigeria. Afr Health Sci. 2014;14(2):299. doi:10.4314/ahs.v14i2.4.
29. Micheni M, Rogers S, Wahome E, et al. Risk of sexual, physical and verbal assaults on men who have sex with men and female sex workers in coastal Kenya. AIDS. 2015;29:S231–6. doi:10.1097/qad.0000000000000912.
30. Fritz K, Morojele N, Kalichman S. Alcohol: the forgotten drug in HIV/AIDS. Lancet. 2010;376(9739):398–400. doi:10.1016/S0140-6736(10)60884-7.
31. Rodríguez DC, Krishnan AK, Kumarasamy N, et al. Two sides of the same story: alcohol use and HIV risk taking in south India. AIDS Behav. 2010;14(S1):136–46. doi:10.1007/s10461-010-9722-z.
32. Pitpitan EV, Kalichman CK. Reducing HIV risks in the places where people drink: prevention interventions in alcohol venues. AIDS Behav. 2016;20(01):119–33. doi:10.1007/s10461-015-1116-9.
33. Awungafac G, Delvaux T, Vuylsteke B. Systematic review of sex work interventions in sub-Saharan Africa: examining combination prevention approaches. *Trop Med Int Health*, 2017. doi: 10.1111/tmi.12890. [Epub ahead of print].
34. Collier K, Sandfort TG, Reddy V, Lane T. "This will not enter me.": painful anal intercourse among Black men who have sex with men in South African Townships. Archiv Sex Behav. 2015;44(2):317–28.
35. World Health Organization. Guidelines on post-exposure prophylaxis for HIV and the use of cotrimoxazole prophylaxis for HIV-related infections among adults, adolescents and children: recommendations for a public health approach: December 2014 supplement to the 2013 consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. http://apps.who.int/iris/bitstream/10665/145719/1/9789241508193_eng.pdf.
36. Restar AJ, Tocco JU, Mantell JE, et al. Perspectives on HIV pre-and-post exposure prophylaxes (PREP and PEP) among female and male sex workers in Mombasa, Kenya: implications for integrating biomedical prevention into sexual health services. AIDS Educ Prev. 2017;29(2):141–53. doi:10.1521/aeap.2017.29.2.141.
37. Lowndes CM, Alary M, Labbe A-C, et al. Interventions among male clients of female sex workers in Benin, west Africa: an essential component of targeted HIV preventive interventions. Sex Transm Infect. 2007;83(7):577–81. doi:10.1136/sti.2007.027441.