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Predictors of non-condom use among female sex workers in Zambia

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Predictors of non-condom use among female sex workers in Zambia

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Abstract

Predictors of non-condom use among female sex workers in Zambia

By Sunni Wenson

This study examined factors that influence female sex workers decision to not use condoms with clients to prevent HIV transmission in Zambia. Specifically, personal and environmental factors were explored for associations with not using condoms with non-repeat partners. In Sub-Saharan Africa, female sex workers are 13.5 times more likely to become infected with HIV than women in the general population as a result of engaging in risk-taking behaviors. Research has identified inconsistent condom use with clients as a primary risk factor for contracting HIV. Lack of condom use can be attributed to barriers in access, low self-efficacy, and most importantly partner influence. The current study analyzed a secondary data set from the Zambia Emory HIV Research Group. A cross-sectional survey questionnaire was used to collect data on socio-demographic information, lifetime sexual history, and condom use influences among 147 female sex workers in Lusaka and Ndola, Zambia. The social cognitive theory was used to select relevant survey items as predictors of non-condom use with non-repeat partners. Results of a multivariate logistic regression revealed that female sex workers were more likely to not use a condom in the past month if the client reports being HIV-negative (AOR=0.111; p=.002; 95% CI=.028 - .438). In addition, women most commonly did not use a condom with their non-repeat partner because of higher payments and client refusal. These findings support existing literature on the powerful influence clients have over female sex workers in deciding to not use condoms. Results such as these demonstrate why female sex worker empowerment and mobilization are needed to provide supportive services and improve their ability to negotiate condom use.

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Introduction

For the past 30 years the HIV virus has remained prevalent in domestic and international communities alike. Despite our growing understanding of the virus and advancements in medicine and technology, the disease continues to spread at unprecedented rates (Deering, Bhattacharjee, et al., 2011; WHO, 2014). Specific regions of the globe are suffering from HIV due to extreme poverty and a lack of adequate health care, which contribute to transmission between sexual partners, shared injection drug equipment, and mother –to-child transmission. The entire continent of Africa has consistently remained at the forefront of leading infections with a prevalence of 4.5% of its entire population living with HIV (WHO, 2014). This is more than four times the prevalence of HIV in the United States. Specifically, Africa has the largest proportion of HIV infected individuals, with 70% of all people living with the disease worldwide residing in sub-Saharan Africa. (amfAR, 2013).

In addition to geographic disparities in HIV infection, significant differences also exist between genders. In sub-Saharan Africa, women contribute to more than half of infections despite males reporting more HIV-related risk behaviors (e.g. multiple, concurrent partners) with a greater number of sexual partners (amfAR, 2013; Lammers, van Wijnbergen, & Willebrands, 2013). Research has identified that this disparity in HIV infections between men and women can partially be attributed to women's socioeconomic status, biological factors, and low perceived self-efficacy in using male condoms and a lack of power in relationships (Jama Shai, Jewkes, Levin, Dunkle, & Nduna, 2010). Women living in sub-Saharan Africa have also been found to have less HIV knowledge in comparison to men. In general, men in southern African countries are more likely to have

heard of HIV and be knowledgeable about transmission and prevention than women (Lammers et al., 2013). Men also reportedly have better access to protective barriers against HIV such as male condoms (Lammers et al., 2013). When used consistently and correctly, condoms significantly reduce a woman's risk of HIV acquisition, with a typical failure rate of 18% (CDC, 2014). Furthermore, consistent condom use among women has been associated with specific determinants such as higher socioeconomic status, active church participation, and having less conflict in relationships (Jama Shai et al., 2010).

Problem justification

Some populations of women within Africa are at particularly high risk of acquiring HIV. Specifically, female sex workers (FSW) frequently engage in sexual risk behaviors, and have a higher vulnerability to HIV due to vast sexual networks with clients (Deering, Boily, et al., 2011). Due to the nature of their work, this population is 13.5 times more likely to contract HIV than women in the general sub-Saharan African population (Chersich et al., 2013). FSWs often serve as carriers of the disease, contracting it from clients and infecting new clients and other sexual partners of their clients (Deering, Boily, et al., 2011). As of 2012, the World Health Organization reported that the largest prevalence of HIV-positive FSW (36.9%) is found in sub-Saharan Africa. Sex work can be defined as, "the use of sexual activity for income or employment or for non-monetary items, such as food, drugs or shelter" (CDC, 2013). This is also referred to as 'survival sex'. A number of factors contribute to sex exchange in Africa, including personal or familial poverty, a lack of poverty options, or to avoid marriage as a sole mean for economic support (Fielding-Miller, Mnisi, Adams, Baral, & Kennedy, 2014).

In addition, in female-headed homes the need for income for child support becomes a main driver for sex work (Fielding-Miller et al., 2014). Women are often introduced into sex work through observing other women in their community, friends, or personal experimentation (Fielding-Miller et al., 2014). Many FSWs are consistently placed at a higher risk for HIV transmission as a result of multiple sexual partners simultaneously, and limited access to infectious disease preventative services and an inability to negotiate condom use with male clients (ZEHRP, 2013). This inconsistent use of condoms with clients contributes to the spread of HIV among not only FSWs but also the individuals they serve (Chersich et al., 2013).

Transmission of HIV between FSW and their partners becomes exacerbated when appropriate health care is not being accessed regularly. Populations that are most vulnerable to contracting HIV often do not access health care services or treatment due to stigma and discrimination (King, Maman, Bowling, Moracco, & Dudina, 2013). Research has identified this mistreatment as a barrier to receiving HIV tests and treatment for FSWs. FSWs report that they have been refused by doctors, and that they do not visit health services out of fear of being mistreated (King et al., 2013). Across African regions, FSWs have been told "there is no time for sex workers" in clinics, ignored and insulted because of their occupation (Scorgie et al., 2013). They often struggle with disclosing their occupation due to confidentiality issues among hospital staff (Scorgie et al., 2013). Consistent sexual risk behaviors coupled with a lack of testing and treatment leads to increases in HIV prevalence among this population.

Theoretical framework

The practice of FSWs using male condoms with their clients is shaped by personal and environmental factors (Deering, Bhattacharjee, et al., 2011). It can best be understood through a theoretical framework that acknowledges the influential nature of FSWs physical and social environment. The Social Cognitive Theory (SCT) highlights the dynamic interaction between the personal and socio-environmental influences and examines how this relationship shapes behavior, as seen in Figure 1 (Glanz, Rimer, & Viswanath, 2008). The theory is constituted by five major constructs including, the psychological determinants of behavior, observational learning, environmental determinants of behavior, self-regulation, and moral disengagement.

The SCT can be readily applied to study the determinants of condom use among FSW in Africa. The SCT has been applied in numerous settings to explore HIV risk and prevention in Africa (Jemmott et al., 2014; Michielsen, Chersich, Temmerman, Dooms, & Van Rossem, 2012). Furthermore, Mbulo, Newman, and Shell (2007) argue that the SCT is an appropriate tool for assessing condom use because it accounts for influences that often go undocumented, such as religion, family, and personal beliefs and values. While not all aspects of the SCT can be applied to condom use, many of them are relevant. The current study will explore the psychological (social outcome expectations, self-efficacy) and environmental (incentive motivation, facilitation) factors associated with condom use among FSWs.

Social Outcome Expectations is a construct that examines the social norms regarding a specific health behavior (e.g. condom use). It explains how individuals factor in the opinion of others on their decision to perform a behavior (Glanz et al., 2008). For

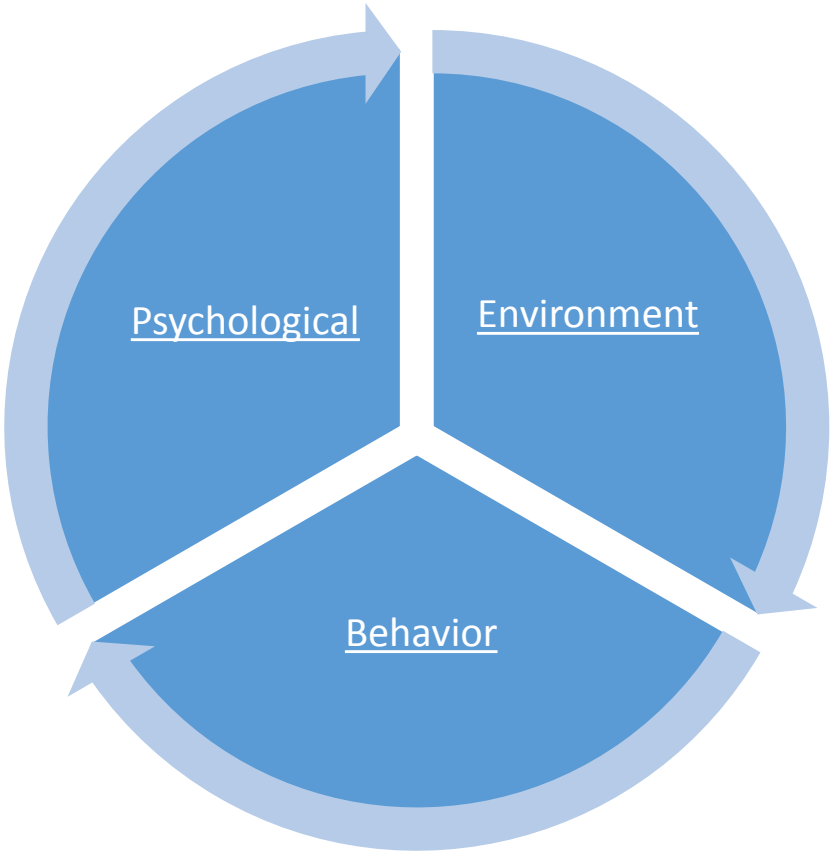
example, FSWs may consult with other women for their opinion on using condoms with clients. The responses they receive may encourage or discourage them from trying to negotiate using condoms with clients.

Self-efficacy is a construct that refers to individual's self-perceived ability to perform a behavior (Glanz et al., 2008). For example, FSWs may base their decision to use condoms with clients on their ability to negotiate with clients, or their ability to use a condom with their partner. This aspect of the decision process becomes increasingly important as the complexity or difficulty of the behavior progresses (Glanz et al., 2008).

Incentive Motivation is a construct that explains the role of rewards or punishments that accompany the behavior of interest (Glanz et al., 2008). The reward or punishment may encourage or prevent an individual from participating in the behavior (Glanz et al., 2008). For example, receiving higher wage may incentivize a FSW to not use condoms with clients.

Facilitation is a construct that refers to environmental resources or structures that support or make a behavior easier to perform. Facilitation typically empowers individuals to engage in the behavior. For example, FSWs who recruit clients from bars that make condoms available may find it easier to use them. This increased access to protection enables them use it.

Figure 1. Social Cognitive Theory



Formal statement of problem

The current study aims to assess determinants of non-condom use among FSWs utilizing SCT as the organizing theoretical framework. It is important to address this specific population because FSWs are at elevated risk of HIV acquisition and because they can serve as transporters of the disease within and across communities (Matovu & Ssebadduka, 2013; Yam et al., 2013). The following study will focus specifically on two cities in Zambia, Ndola and Lusaka. Previous research conducted by the Zambia Emory HIV Research Project has identified that out of 71 FSWs in Lusaka, only 7% report 'always'

using condoms and out of 140 FSWs in Ndola, only 9% report ‘always’’ using condoms (ZEHRP, 2013).

The goal of this study is to examine psychological and socio-environmental factors associated with non-condom use among FSWs working in local “hotspots” in Lusaka an Ndola, including bars, nightclubs, and local solicitation areas, as framed through the SCT Specifically, this study poses the following questions:

1. Does female sex workers’ self-efficacy and social outcome expectations of using condoms influence their decision to not use condoms with clients to prevent HIV?
2. Does the environment facilitate or incentivize female sex workers in not using condoms with clients to prevent HIV?

Literature Review

The following is a review of the vast and constantly growing literature on FSWs influences on condom use. Research conducted in multiple countries was included, with the majority occurring in sub-Saharan Africa and Asia. This literature review was guided by the personal and environmental components of the SCT. Specifically, psychological-level factors focused on HIV knowledge, condom use knowledge and self-efficacy among FSWs. Socio-environmental influences discuss the physical environment and the influence of FSW partners.

HIV knowledge among FSW

Personal attributes of FSWs, including HIV knowledge, can aid in determining if male condoms will be used with clients. Research has identified a lack of HIV knowledge regarding transmission among the FSW population. This gap has led to a direct link between low-risk perceptions of infection leading to inconsistent use of male condoms (Bukenya et al., 2013; Elhadi et al., 2013). Despite the widespread prevalence of HIV, 89.5% of FSWs surveyed in Nigeria have either not heard of it or are not aware of its etiology (Lammers et al., 2013). This can be attributed to limited education, demonstrating that education can potentially be a determinant of condom use (Bukenya et al., 2013; Elhadi et al., 2013; Lammers et al., 2013). FSW with a perception of being at high-risk of HIV acquisition are more likely to use condoms consistently (Bukenya et al., 2013). As a result of not having adequate information on the consequences of intercourse without condoms, FSWs may be exposed unknowingly.

In India, more than 5,400 FSWs were surveyed over 9 months in four Indian cities to assess their HIV risk perception among various partner types (Jain et al., 2011).

Participants were specifically asked, "*What do you think is the risk of your getting HIV?*" with occasional clients, regular clients, and non-paying partners as a result of condom use frequency. Researchers found FSWs were knowledgeable about HIV and demonstrated congruence between risk perception and condom use, with 40% of all FSWs perceiving themselves to be at high risk (Jain et al., 2011). FSWs acknowledged inconsistency of condom use with their partners and therefore felt vulnerable to HIV transmission. Interestingly, many FSWs perceived susceptibility was influenced by their interactions with occasional clients, rather than regular clients or non-paying partners (Jain et al., 2011).

In contrast, an additional study in India found that HIV knowledge was not widespread among newcomer FSWs, or women recently entering into sex work (Januraga, Mooney-Somers, & Ward, 2014). Qualitative methods were used to interview 34 new and senior FSWs from brothels. Participants were questioned on how and why they initiated sex work, HIV knowledge, self-efficacy, and HIV prevention practices among other topics. Researchers found that new FSWs held little knowledge or skills regarding HIV prevention practices (Januraga et al., 2014). In addition, this lack of knowledge coupled with little condom use experience led to a lack of self-efficacy in using condoms and preventing HIV, placing them at an even higher risk of HIV infection (Januraga et al., 2014).

Condom use knowledge/self-efficacy among FSW

Bukenya et al.'s (2013) study on condom use to prevent HIV in FSWs in Uganda introduced additional personal factors that affect condom use. FSW were recruited from red light districts and entertainment facilities such as bars and nightclubs. Those with an

earlier age of sexual debut or who were currently married were more likely to report inconsistent condom use. Alternatively, Adu-Oppong et al. (2007) found that younger FSW in Ghana were more likely to use male condoms to prevent HIV due to higher value placed on their own lives. In addition, if FSW had additional income outside of sex work, used alcohol, or had fewer paying clients, condom use was reported less frequently.

Lastly, research has revealed common, personal beliefs about using condoms with clients. In some instances, FSW believe that the decision to use condoms is that of the clients. Namibian FSWs rely on their clients to make the decision, since they perceived themselves to be economically dependent on their partners' role as a paying client (Fitzgerald-Husek, Martiniuk, Hinchcliff, Aochamus, & Lee, 2011). In Tanzania, FSW reportedly, "are active in sexual decision-making" except when it comes to the topic of condoms (Wamoyi, Fenwick, Urassa, Zaba, & Stones, 2011). FSWs believe that clients' attitudes determine if and when condoms are used (Bukenya et al., 2013; Wamoyi et al., 2011). These beliefs can directly affect FSW self-efficacy in using condoms. Ability to negotiate condom use can also serve as a predictor for the behavior. Self-efficacy plays a critical role in condom use with casual partners, possibly because negotiation is constantly warranted (Reid & Aiken, 2011) If FSWs feel unskilled in using condoms or unable to negotiate their use, then condoms are less likely to be used (Adu-Oppong, Grimes, Ross, Risser, & Kessie, 2007; Bukenya et al., 2013).

FSW sexual partner influence on condom use

Condom negotiation skills are also affected by FSW external environment. The opinions and attitudes of clients towards condoms is a known important factor in the decision making process, especially for FSWs. Condom negotiation can be a complex

skill for FSWs due to their varying partner types. FSWs often have new clients, repeat clients, and regular, non-paying partners, including husbands, boyfriends, males abusing their positions of power such as the police (Deering, Boily, et al., 2011). Each of these partners may have different expectations and therefore may warrant different condom negotiation conversations (Deering, Bhattacharjee, et al., 2011; Deering, Boily, et al., 2011). Deering, Bhattacharjee, and Bradley (2011) found that FSWs in southern India were not using condoms consistently with their repeat clients or partners at home. Women reported that repeat clients offer stable, long-term income, qualifying them for sex without a condom (Deering, Bhattacharjee, et al., 2011). Also, FSWs felt that they could self-assess the HIV status of repeat clients based on familiarity. Deering, Bhattacharjee, and Bradley (2011) also found that FSWs believed that home relationships typically have increased longevity, trust, and intimacy. This leads FSWs to not use condoms with non-paying partners, in an effort to prevent feelings of infidelity and mistrust. A similar study observed a dose-response relationship between longer relationships and condom use (Deering, Boily, et al., 2011). As the length of the relationship increased, the FSWs decision-making and power or control, decreased. In addition, FSWs stated that condoms made the distinction between sex for work, versus for pleasure (Deering, Boily, et al., 2011). Interestingly, Panchanadeswaran, Johnson, and Sivaram (2008) found that FSWs in India allowed their husbands to have the final say on condom use, to ensure trust, but were capable of negotiating condom use with clients. Researchers attributed this difference to FSWs' reliance on husbands for familial support, while clients were not held to the same standard (Panchanadeswaran et al., 2008).

Reid and Aiken (2011) found that the attitude and opinion of the partner was the strongest predictor of condom use among young women. Literature commonly describes clients as agents for motivating FSW toward not using condoms, versus using them to protect other clients and themselves. Many FSW report little resistance to sex without a condom because clients may force them to anyway. In Markosyan, Lang, and DiClemente's (2014) study on inconsistent refusal of unprotected sex among FSWs in Armenia, negative attitude toward condoms among clients was a prominent barrier to using condoms. By not complying with clients wishes, FSWs may face harmful consequences.

Previous literature has identified violence as a major risk factor for HIV transmission among women (Swain, Saggurti, Battala, Verma, & Jain, 2011). FSWs experience violence from police, their pimps or handlers, and other FSWs in the community. In a cross-sectional study in India, Swain et al. (2014) found that one-third of over 5,000 FSWs surveyed has experienced physical or sexual violence in the past year. Among these women, researchers found a correlation between sexual or physical violence and a high perception of HIV risk due to inconsistent condom use in the past two years. Specifically, the correlation was greater among victims of sexual violence, which has a higher prevalence than physical violence in most Asian countries. FSWs in sub-Saharan Africa have had similar experiences with various partners. Tounkara, Diabate, and Guedou (2014) explored the prevalence of physical, sexual, and psychological violence among FSWs in Benin, West Africa. The study found that over one-third of the 981 FSWs had experienced at least one form of violence in the past month. In addition, the study analyses demonstrated that women who had experienced a

form of violence were more likely to have a positive HIV diagnoses (Tounkara et al., 2014).

FSWs are often discriminated against, stigmatized, and physically assaulted as a result of their work (Fawole & Dagunduro, 2014). Fawole and Dagunduro (2014) found that FSWs in Nigeria conceptualized violence as a part of the job. In addition, researchers found that FSWs' clients were the main perpetrators of the violence they experienced (Fawole & Dagunduro, 2014). Mooney, Kidanu, and Bradley (2013) reveals how violence is used to enforce sex without a condom in Ethiopia. FSWs report not insisting on using protection or fighting back due to fear of victimization from their clients. Markosyan, Lang, and DiClemente (2014) found similar results with regard to abuse against FSWs in Armenia. FSWs fear of abuse from clients was associated with engaging in HIV-risk behaviors, including sex without a condom. These studies coincide with previous findings in literature on the relationship between violence and inconsistent condom use, leading to an increased risk of HIV infection. Research has found that coercion and force from partners inhibit FSWs ability to negotiate condom use (Pando et al., 2013; Ramesh, Ganju, Mahapatra, Mishra, & Saggurti, 2012). Furthermore, FSW's fear of violent behavior from clients prevents them from attempting negotiation. Lastly, previous research has found that violent partners are more likely to engage in risky behaviors, and therefore carry a greater HIV transmission risk (Pando et al., 2013; Ramesh et al., 2012).

Client relationships on the opposite end of the spectrum that foster a "protective" relationship of familiarity and intimacy also do not require the use of condoms. FSWs in Zambia and Ethiopia report that loving relationships with clients offer a promise of a

better life that encourages unprotected sex (Abbott, Haberland, Mulenga, & Hewett, 2013; Mooney et al., 2013). A small portion of participants even reported that certain clients could be trusted, so using condoms was not necessary (Adu-Oppong et al., 2007; Bukenya et al., 2013; Fitzgerald-Husek et al., 2011; Mooney et al., 2013)

Physical environmental impact on condom use among FSW

Lack of knowledge of where to access condoms can hinder women's ability to use condoms regardless of their desire or willingness to do so (Lammers et al., 2013). In addition to client opinion, FSWs may also consult their social networks of fellow FSWs in their area. Fellow FSWs can fulfill the position of social support, which has also been found to have an impact on intention to use condoms (Bukenya et al., 2013). Within these relationships FSWs can potentially learn more about sex work in general, including common benefits to not using condoms. FSWs report that not using condoms will have a positive impact on the gifts and/or money received (Wamoyi et al., 2011).

Across several countries, the absence of condoms usually equates to a higher payment or additional forms of support (Abbott et al., 2013; Adu-Oppong et al., 2007; Scorgie et al., 2013). Women are able to increase the value of the transaction by allowing men to engage in unprotected sex. Although FSWs report being aware of the risk this involves, the incentive of higher income or more economic support carries greater weight in their decision. In Matovus and Ssebadduka' (2013) study on knowledge, attitudes and barriers to condom use among FSWs, researchers found that FSWs were knowledgeable on condoms as a method of HIV prevention and the majority were favorable of their use. However, FSWs also admitted that sex without condom pays sometimes as much as 10 times more than protected sex, making it difficult for them to deny (Matovu &

Ssebadduka, 2013). Participants understood the risk taken in having unprotected sex, but their impoverished environment trumped sexual health concerns (Matovu & Ssebadduka, 2013).

All of these aspects would also be influenced by the environmental facilitation of using condoms, which lie in availability and access of condoms to FSWs. In the majority of sub-Saharan African countries sex work is criminalized, creating obstacles for FSWs to access preventative services and resources. Scorgie, Nakato, and Harper's (2013) study on FSWs' access to healthcare in Uganda, Zimbabwe, South Africa, and Kenya highlights the social and political barriers FSWs face in protecting themselves. FSWs working outside of major cities report that rural areas have very little access to male condoms. For days at a time, women must decide to either engage in unprotected sex to maintain steady income or abstain from working until condoms can be delivered (Scorgie et al., 2013). Challenges also exist for FSWs within major cities. FSWs seeking condoms from health facilities are often limited to a pre-determined amount and told to share amongst each other. In addition, health facilities will often change policy and charge a fee for condoms instead of distributing at no charge. Morris (2009) completed a study comparing condom usage between FSWs in Uganda and Kenya. Only 18% of Ugandan FSWs reported always using a condom in comparison to 26% in Kenya. Researchers found this to be associated with lower availability of condoms in Uganda. Similarly, Adu-Oppong (2007) found that only 25% of 456 sampled FSWs in Ghana had access to free condoms, despite a growing desire to use them. Furthermore, institutional policing creates difficulties for FSWs in accessing condoms. In sub-Sahara African countries FSWs can be arrested if found carrying condoms at night (Scorgie et al., 2013). In

addition, police officers commonly burn down distribution sites that would have provided FSWs with male condoms. FSWs in sub-Saharan African countries often experience widespread discrimination, such as government officials openly condemning sex work and setting prohibitive measures in place including making free condom distribution illegal (Scorgie et al., 2013). Literature demonstrates why condoms are used less often among this population, and how FSWs will continue to be at high risk for HIV infection and transmission. Not only do they encounter difficulties in accessing condoms, but they are also condemned for doing so.

The literature presented attempts to explain barriers to consistent condom use among FSWs. Across various countries, FSWs face difficulties in sexual health knowledge, condom use self-efficacy, negotiating condom use with clients, and accessing condoms. Previous research has stated that low levels of HIV knowledge or risk perception, coupled with low condom use self-efficacy, leads to unprotected sex with clients. In addition, FSWs' partners are often the decision-makers on condoms use. This also leads to low condom use if the partner is a regular client or nonpaying husband or boyfriend.

The goal of this study is to examine personal and environmental factors associated with non-condom use among female sex workers working in local "hotspots" in Lusaka and Ndola within Zambia, including bars, nightclubs, and local solicitation areas, as framed through the SCT. In this study, FSWs are defined as women using sexual activity for income or employment. A cross-sectional study design was used to address: the psychological (e.g., self-efficacy, social outcome expectations) and environmental (e.g., incentive motivation, facilitation) determinants of condom use in this population. As

previously stated, the current study seeks to examine the following questions: 1) Does female sex workers' self-efficacy and social outcome expectations of using condoms influence their decision to not use condoms with clients to prevent HIV and 2) Does the environment facilitate or incentivize female sex workers in not using condoms with clients to prevent HIV.

Methods

Participant recruitment and screening visit

In 2012, the Rwanda Zambia HIV Research Group (RZHRG) at Emory University established a prospective cohort study on reproductive health, incidence and risk factors of HIV transmission among HIV-negative FSWs and single, pregnant women in urban areas in Zambia and Rwanda. This study is a secondary analysis of data collected among Zambian FSWs by the Zambia Emory HIV Research Project (ZEHRP) branch of the parent organization RZHRG.

The study sample consists of FSWs recruited in Lusaka and Ndola, Zambia from May-December, 2014. Trained community workers used purposive sampling to recruit FSWs from various known 'hotspots', including bars and clubs. ZEHRP also established a peer recruitment method, using FSWs previously recruited by ZEHRP staff to identify and recruit additional FSWs. Before being invited to serve as a recruiter for ZEHRP, FSWs must have successfully completed three follow-up visits at ZEHRP to ensure they can adequately discuss their participation in the cohort study and the resulting benefits they have received. In addition, they were required to have a working telephone number. To recruit, FSWs are trained on specifically selecting women that are 18 years of age or older, and exchange sex for money. This method was initiated in October 2013 in Ndola and December 2014 in Lusaka. FSWs were invited to ZEHRP sites in Lusaka and Ndola for HIV testing and counseling using written invitations disseminated by either community workers or a trained FSW recruiter.

At the initial screening visit, ZEHRP nurses offered FSWs a gynecologic exam, including pregnancy, sexually transmitted infections and HIV testing in a private clinic room. FSWs were also offered a long-acting reversible contraceptive (LARC) method

(IUD or implant) if not already used. Sexually transmitted infections, including trichomonas, syphilis, gonorrhea, and chlamydia, were treated by ZEHRP clinic staff. Participants received full antibiotic dosages for each STI they tested positive for, at each visit. HIV-positive FSWs received referrals for antiretroviral treatment at government clinics.

FSWs who tested HIV-negative, were between 18-45 years of age, were available for follow-up over 15 months, and who were verified to be FSWs were invited to return one week from the screening visit to enroll in the prospective cohort study. Current engagement in sex work was also verified by nurses during the first visit. Nurses probed women on who they received their invitation from, what they were told at the time of invite, and if they are married or cohabiting. Specific questions vary across visits to avoid rehearsed responses from women who may not be actual FSWs.

Study enrollment visit

At the study enrollment visit, participants were read an informed consent in their preferred language by a nurse. Language options include English, Nyanja, and Bemba. Oral or written consent was obtained from all participants.

Similar to the screening visit, ZEHRP nurses offered FSW a gynecologic exam, STI testing and treatment, pregnancy testing, LARC methods, and repeat HIV testing to assess if women were in the “window” period of sero-conversion. HIV-positive FSWs identified at enrollment visits received referrals for antiretroviral treatment at government clinics and were not followed. Nurses conducted face-to-face, cross-sectional, behavioral risk assessment questionnaire interviews at this visit, which took approximately 45

minutes to one hour to complete. Participants received 30 kwacha ($4.00 USD) to compensate for transportation and time.

Survey measures

The 94-item cross-sectional, behavioral risk assessment survey instrument topics include but are not limited to socio-demographic information, lifetime sexual history, sexual partner types (regular/steady, repeat, non-repeat), condom use influences, and safety and violence. ZEHRP defines regular/steady partners as partners that FSWs have sex with regularly, without pay. Repeat clients are defined as partners FSWs have had sex with more than one time and non-repeat clients are defined as partners FSWs have only had sex with one time. In the current study, a subset of survey instrument items was selected using the SCT. Items that represented psychological and environmental factors that influence condom use among FSWs were included in analyses.

Table 1 presents the theoretically-supported items selected for the current study. Socio-demographic information was assessed through questions on education level, literacy in English and the native Zambia languages Nyanja and Bemba. Lifetime sexual history was assessed through questions such as total number of male sexual partners, age at first sex work activity, and if first intercourse was willing, pressured, or forced. The instrument asked FSWs to report the number of times of vaginal, anal, and oral sex with and without a condom with regular, repeat and non-repeat partners in the past month. Potential barriers and facilitators to condom use were assessed through a series of questions to which participants responded in the affirmative or negative. These included asking if the FSWs knew how to use a condom, wanted to use a condom, and had a condom in their possession when engaging in sex work. In addition, questions asked if

the client knew how to use a condom, if the FSWs were offered more money, or if the FSWs was aware of their partners HIV status. Participants were asked about location of client recruitment and location of sex work, and if they report their HIV status to clients. The instrument also included items drugs and/or alcohol use, and experiences of violence perpetrated by clients.

Outcome of interest

The outcome variable for this study asks, "*In the past month, did you have vaginal, anal, or oral sex without a condom with your non-repeat clients*". Response options included "yes" or "no". This variable was created from collapsing individual survey instrument questions on the number of times of vaginal, anal or oral sex without a condom with non-repeat partners. Responses greater than zero were recoded as "yes", and responses equal to zero were recoded as "no".

Analysis

Data were reviewed and cleaned using Microsoft Excel. IBM SPSS statistics version 22 was used to perform all analyses. Descriptive statistics were used to produce counts and frequencies for categorical data and the mean and standard deviation for continuous data. Bivariate chi-square tests were used to analyze associations between not using a condom with non-repeat clients and all predictor variables. Variables with significant ($p<0.10$) bivariate associations with the outcome of interest were included in the multiple logistic regression model.

Ethics statement

Research conducted by the Zambia Emory HIV Research Project was reviewed and approved by Emory University IRB as well as IRB institutions in Zambia.

Table 1. Survey Items

Social Cognitive Theory Construct	Item	Response options
Individual	What is the highest formal school education you completed?	Primary Secondary Tertiary None of the above
	How old were you the first time you had sexual intercourse of any kind?	Free response
	How old were you the first time you started sex work activity?	Free response
	The first time you had intercourse did you have it willingly or were you pressured or physically forced to do it?	Willingly Pressured verbally Forced physically
	Number of living children	Free response
Social Outcome Expectations	If a client tells you he is HIV-negative, are you less likely to use a condom?	Yes, No
	Have you ever been a victim of violence from your clients?	Yes, No
Environment	Do you know of any programs to help or support FSW?	Yes, No
Incentive Motivation	Do you have sex with clients: 1) where you live 2)where the client lives 3)at a lodge/hotel/rented room 4)car	Yes, No
Behavior	In the past month, have you had vaginal, anal, or oral sex without a condom with your non-repeat partners?	Yes, No

Results

A total of 262 FSWs from Lusaka (n=73, 27.9%) and Ndola (n=189, 72.1%), Zambia completed the baseline questionnaire. However, only 147 responses were collected for the outcome variable, "In the past month, have you had vaginal, anal, or oral sex without a condom with non-repeat clients". This represents the final sample size utilized in subsequent analyses. Table 2 presents descriptive data for key demographics and theoretically informed predictor variables. On average, participants began sex work at age 18 (SD=5.2) and the majority of the sample (n=119, 81%) had at least one living child. A small proportion of the sample did not reach a primary level of education (n=12, 8.2%), while most completed primary level (n=86, 58.5%) or a secondary level (n=48, 32.7%). More than half of the sample stated that their first sex occurred willingly (n=104, 70.7%). One third of the sample reported experiencing any form of violence from their clients (n=46, 31.5%).

Lodges or rented rooms (n=104, 70.7%) were overwhelmingly the most popular location for engaging in sex work. This was also the most popular option for FSWs that had not used a condom. Out of 147 FSWs surveyed, 86.4% (n=127) reported having vaginal, anal, or oral sex without a condom with non-repeat clients in the past month.

Table 2. Predictor variable descriptives

	Total Sample		Had sex with a condom		Had sex without a condom	
	N	%	N	%	N	%
Total	147		20	13.6%	127	86.4%
Individual Characteristics/Determinants						
Age at first sex						
≤15	84	57.1	8	9.5	76	90.5
>15	63	42.9	12	19	51	81
Age at start of sex work						
≤15	51	34.7	2	3.9	49	96.1
>15	96	65.3	18	18.8	78	81.2
Education Level						
Primary	86	58.5	8	9.3	78	90.7
Secondary (high school)	48	32.7	8	16.7	40	83.3
Tertiary (college)	1	0.7	1	100	0	0.0
None of the above	12	8.2	3	25	9	75
Number of living children						
None	28	19.0	3	10.7	25	89.3
>0	119	81.0	17	14.3	102	85.7
Was first sex voluntary or pressured/force?						
Voluntary	104	70.7	16	14.1	88	84.6
Pressured verbally or forced physically	43	29.3	4	9.3	39	90.7

Table 2. Predictor variable descriptives cont.

	Total Sample		Had sex with a condom		Had sex without a condom	
	N	%	N	%	N	%
Total	147		20	13.6%	127	86.4%
Environmental Determinants						
Are you less likely to use a condom if a client reports being HIV-negative?						
Yes	84	57.5	3	3.6	81	96.4
No	62	42.5	17	27.4	45	72.6
Do you know of any programs that help or support FSW?						
Yes	9	6.1	0	0.0	9	100
No	138	93.9	20	14.5	118	85.5
Have you ever been a victim of violence from clients?						
Yes	46	31.5	4.0	8.7	42	91.3
No	100	68.5	16	16.0	84	84
Where do you have sex with your clients?						
At the FSW home						
Yes	55	37.4	8	14.5	47	85.5
No	92	62.6	12	13.0	80	87
At the clients home						
Yes	67	45.6	7	10.4	60	89.6
No	80	54.4	13	16.2	67	83.8
At a lodge/hotel/rented room						
Yes	104	70.7	18	17.3	86	82.7
No	43	29.3	2	4.7	41	37.1
In a car						
Yes	33	22.4	3	9.1	30	90.9
No	114	77.6	17	14.9	97	85.1
Outside						
Yes	39	26.5	2	5.1	37	94.9
No	108	73.5	18	16.7	90	83.3

Bivariate Analyses

Preliminary chi-square tests were used to examine the relationship between each predictor variable and the outcome variable (Table 3). Associations at the p<.10 level were included in the final multivariate model. Bivariate analyses revealed that not using condoms with non-repeat partners in the last month was significantly associated with lower education levels (p<.05), lower ages at first sex (p<.10), lower ages at start of sex work (p<.05), the influence of clients self-reported negative HIV status (p<.001), and sex work occurring at lodges/rented rooms (p<.05) or outside (p<.10).

Table 3. Bivariate Analyses

	X^2	df	p-value
Control Variables			
Education Level	9.413	3	0.024*
Age at first sex	2.778	1	0.096*
Age at start of sex work	6.23	1	0.013*
Independent Variables			
Number of living children	0.246	1	0.766
Was first sex voluntary or pressured/force?	0.957	1	0.328
Have you ever been a victim of violence from clients?	1.422	1	0.233
Self-reported HIV-negative status from clie	17.16	1	<.001*
Do you know of any programs that help or support FSW?	1.51	1	0.61
Where do you have sex with your clients?			
At the FSW home	0.066	1	0.797
At the clients home	1.044	1	0.307
At a lodge/hotel/rented room	4.146	1	0.042*
Car	0.738	1	0.566
Outside	3.245	1	0.072*

*Denotes significance at the p<.10 level

Multivariate Logistic Regression

A multivariate logistic regression analysis was completed controlling for education level, age at first sex, and age at start of sex work, including the following predictor variables: influence of self-reported HIV-negative status from clients, and hotels/lodges/rented rooms and outside as locations of where sex work occurs, and not using a condom with non-repeat clients in the past month as the outcome variable. Education level was dichotomized into no education/primary versus secondary/tertiary levels.

As seen in Table 4, the multivariate logistic regression suggests one significant predictor of non-condom use with non-repeat partners among FSWs in this sample: clients self-reported negative HIV-status.

According to this model, when controlling for education level, age at first sex, and age at start of sex work, FSWs are 89% more likely to not use a condom with a non-repeat partner if the client states being HIV-negative (AOR=0.111; p=.002; 95% CI=.028 - .438). Additionally, age at start of sex work (p<.074) approached significance in the model, suggesting that FSWs in this sample that began sex work at age 15 and below may be more likely to have sex without a condom with non-repeat partners.

Table 4. Multivariate Logistic Regression

	β	Odds Ratio	p-value	95% CI
Education Level				
None/primary	-0.367	0.693	0.51	.232-2.064
Secondary/tertiary	Ref.			
Age at first sex				
≤15	0.323	1.381	0.62	.386-4.942
>15	Ref.			
Age at start of sex work				
≤15	-1.624	0.197	0.074	.033-1.168
>15	Ref.			
Self-reported HIV-negative status from clie	-2.199	0.111	0.002	.028-.438
Where do you have sex with your clients?				
At a lodge/hotel/rented room	0.896	2.449	0.282	.479-12.526
Outside	-0.868	0.42	0.298	.082-2.151

Table 5 identifies specific reasons why condoms were not used with non-repeat partners among the proportion of the sample who reported not using a condom at the time of sex. When asked why condoms were not used with non-repeat partners in the past month, most of the behavioral risk group reported that they did not know the clients HIV-status (93.1%), possessed a condom (90.2%), wanted to use a condom (90.9%) and knew how to use a condom (92.4%) with their non-repeat partners. In addition, most participants stated that the client knew how to use a condom as well (92.2%). The entire behavioral risk group also reported that the client offered more money (100%) and almost all reported client refusal to wear to a condom (99%).

Table 5. Non-condom use risk factors

SCT Construct	Survey Item	Total Sample	Had sex without a condom	
		N	N	%
Outcome expectations	FSW knew clients HIV status			
	Yes	5	5	100
	No	130	121	93.1
Self-efficacy	FSW did not know how to use condom			
	Yes	17	17	100
	No	118	109	92.4
	FSW did not want to use condom			
	Yes	36	36	100
	No	99	90	90.9
Incentive Motivation	The client offered more money			
	Yes	76	76	100
	No	59	50	84.7
Facilitation	FSW did not have a condom			
	Yes	43	43	100
	No	92	83	90.2
	Client refused condom			
	Yes	103	102	99
	No	32	24	75
	Client did not know how to use condom			
	Yes	19	19	100
	No	116	107	92.2

Discussion

The purpose of this study was to examine potential personal and environmental predictors of non-condom use with non-repeat clients among HIV-negative FSWs. Overall, the influence of clients played a major role in the lack of condom use among this sample. Specifically, clients' self-reported HIV-negative status was significantly associated with not using condoms with non-repeat partners in the last month. In addition, the majority of the sample that did not use a condom with their non-repeat client attributed it to being offered more money and clients refusing to wear a condom. This demonstrates that clients were in control over condom use with FSWs. In regards to the SCT, this study demonstrates that the environment can facilitate or hinder and incentivize condom use through client interactions. In addition, the FSWs' outcome expectations about HIV can influence their decision-making process. Substantive literature has been completed on FSWs and HIV/AIDS. This study contributes to the growing body of literature on HIV risk-taking behaviors. FSWs in this sample were more likely to not use a condom if the client reported having an HIV-negative status, exemplifying a consideration for their personal health. SCT posits that individuals weigh the expected outcomes of a behavior in their decision-making. This study's findings validate this concept. By accepting that their client is HIV-negative, FSWs are anticipating that they will not be infected with HIV after having sex without a condom. Alternatively, low self-efficacy of condom use was not an issue among this sample. Most of the sample reported that during interactions with non-repeat partners, they had a condom in their possession, knew how to use condoms, and wanted to use a condom; however less than 15% actually

reported using a condom. If clients had not offered more money, or refused to wear a condom, FSWs in this sample may have attempted condom negotiation.

The findings from this study align with past literature on condom use among FSWs. As previously discussed, client opinion is typically the strongest predictor of condom use among FSWs (Reid & Aiken, 2011). FSWs are traditionally incentivized to not use condoms through gifts or increases in wages. This additional financial support ultimately serves as a barrier to FSWs protecting themselves against HIV transmission.

FSWs may also engage in sex without a condom to appease clients and prevent negative attitudes (Markosyan et al., 2014). In addition, FSWs might submit to clients' preferences in an attempt to prevent violent behavior (Wirtz et al., 2015). More than 30% of the current sample had experienced violence from their clients which may have played a role in their decision-making to not insist on condom use.

The current study specifically examined the relationship between FSWs and their non-repeat clients. Wirtz et al. (2015) study found that FSWs in Togo and Burkina Faso had higher prevalence of lifetime sexual violence from new clients than from any other partner type, including intimate and repeat partners, pimps/bosses, and police officers. Analyses of a socio-behavioral questionnaire revealed a significant association between forced sex and difficulty in negotiating condom use with non-repeat partners. These findings are similar to other research that has found that FSWs commonly don't insist on condom use because clients will force sex without it regardless (Reid & Aiken, 2011). Under the SCT, the environment can have a direct impact on behaviors engaged in (Glanz et al., 2008). The study's results support this concept, demonstrating how non-repeat clients can serve as barriers to FSWs engaging in condom use.

Surprisingly, sex work occurring at lodges was not a significant predictor of not using a condom. Research has shown that locations can have an impact on negotiation and use; however, the location of sex work did not facilitate sex without a condom in this sample. As previously stated the SCT argues that the environment can make a behavior easier to engage in. Research has found that FSWs commonly feel safer if the environment is one of their choosing (Lim et al., 2015). FSWs report feeling more in control if they are in their personal home or a frequented hotel, leading to increased condom use (Lim et al., 2015). However, these findings were not evident in the current sample.

Strengths and Limitations

Lusaka and Ndola were ideal settings within Zambia for this study. Lusaka and the Copperbelt region, wherein which Ndola lies, contains more than 40% of the population as well as the highest HIV prevalence within the country (Kandala, Ji, Cappuccio, & Stones, 2008; *Zambia Country Report* 2014). As of 2011, Zambia's unemployment rate exceeded 50%, with 68% of all Zambians living in severe poverty (Kandala, Brodish, Buckner, Foster, & Madise, 2011). This contributes to the prevalence of sex work in urbanized areas such as Lusaka and Ndola. In addition, copper mining in Ndola contributes to increased truck drivers and migrant workers that engage in risk-taking behaviors with FSWs (Kandala et al., 2011). The second area of strength lies in the use of theory. Survey items adhered to SCT constructs well, although the development of the survey instrument was not originally theory-driven. This provided a framework driving the hypothesized relationships among the variables of interest. Lastly, the survey

collected a vast amount of information on the population. The instrument provided a variety of topics that could be included in the analyses.

This study also contained limitations. Data were collected at a single point in time; therefore causality cannot be determined from the study results. Also, survey instrument items present challenges in recall bias in regard to accurately remembering events from the past month. In addition, FSWs may have responded to sensitive topics in ways that would be perceived favorable by study staff. The instrument assessed the prevalence of violence among the sample; however, this item did ask about specific forms of violence. As previously stated, FSWs often consider violence as an unavoidable aspect of their work (Fawole & Dagunduro, 2014). This could lead to FSWs underreporting sexual or non-sexual force or abuse they experience. The survey may have identified a higher prevalence of violence if the item specifically assessed sexual force, and specific abuse such as punches and kicks and from clients. The current study analyses also contained a limited sample. Due to missing data, the entire sample size was not included in final analyses. This could potentially be attributed to participants not having a non-repeat partner in the past month, which was assessed by the outcome variable. Also, the outcome variable was limited solely to non-repeat partners due to limited variance in condom use among other sexual partner types. Originally, condom use in the past month with regular, repeat, and non-repeat partners were to be included in the outcome variable; however, in the past month the majority of the sample had had sex without a condom with their regular partners (n=42, 93.3%) and repeat clients (n=113, 91.1%). Non-repeat client responses contained the largest sample size and represented the best option for comparing using condoms versus not using condoms among this sample. Lastly, this study

is a secondary analysis of existing data. Research questions and theory were selected based on predetermined survey items.

Implications and Recommendations

As previously stated this study supports claims on the power paying clients often have over condom use with FSWs. Specifically, sex without a condom was attributed to higher wages and partner refusal. In order to increase condom use, FSWs need to feel confident in their ability to negotiate condom use despite partner-induced barriers. Research has begun to explore FSW empowerment and mobilization as a method for reducing undesirable sexual health risk behaviors. FSW empowerment interventions have made improvements in violence experienced and building resilience (Lim et al., 2015). In addition, FSW community mobilization efforts have led to increases in collective group power and individual power (Beattie et al., 2014). After including community mobilization as a component of HIV prevention programming, FSWs have stronger condom negotiation skills, and increased uptake in STI and HIV treatment services. This identifies a practical method for potentially reducing HIV prevalence among FSWs, one of the most critical populations impacted by the AIDS epidemic. This tactic should continue to be explored and adapted in developing countries where sex work is commonplace.

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