Assessing Human Immunodeficiency Virus (HIV) Prevention Through Knowledge and Condom Use Among Female Sex Workers at the Border of Haiti and Dominican Republic

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Abstract

Geographic border studies are relatively scarce, but have the potential to inform bilateral health policies that affect the well-being of female sex workers (FSWs) who work at these borders as well as those individuals who solicit their services, both groups being at high risk for human immunodeficiency virus (HIV). We applied bivariate and multivariate techniques to examine FSWs' HIV knowledge and condom use across three partner types, at the Haiti Dominican Republic border, using data from the Study on Sex Workers ($n=241$, 2014). Condom use was significantly lower among FSWs on the Haitian side of the border compared to the Dominican side, yet levels of HIV knowledge were similar; specifically, 81% of respondents on the Dominican side reported using condoms every time they had sex with a client, compared to 38% of peers in Haiti ($p<0.001$). After introducing controls, FSWs in Haiti continued to have lower odds of using condoms with clients ($p<0.001$), noncommercial partners ($p<0.001$), and regular partners ($p<0.05$) compared to peers in the Dominican Republic. This unique border study highlights disparities in FSWs' condom use regardless of HIV knowledge. The lack of consistent condom use by FSWs in Haiti has the potential to exacerbate the HIV epidemic at the border and impact both nations' HIV incidence rates.

Keywords: sex work, Haiti, Dominican Republic, condom use, HIV prevention

Introduction

GLOBALLY, FEMALE SEX WORKERS (FSWs) are one of the highest risk groups for human immunodeficiency virus (HIV) and sexually transmitted infection (STI) acquisition.¹ FSWs, particularly those who work in resource-constrained settings, may lack access to comprehensive health care and legal protections, increasing the likelihood that they will encounter stigma, partner violence, and sexual coercion.¹ According to the Joint United Nations Programme on HIV/AIDS' (UNAIDS) most recent estimates, there are ~70,302 sex workers in Haiti.² Among these Haitian sex workers, the HIV prevalence rate was estimated at 8.4%, compared to Haiti's overall adult HIV prevalence rate of 2.1%.² Prior studies found that almost 90% of sex workers in Haiti reported using condoms during sexual encounters; however, it is unlikely that the significant rate of HIV is attributable to a mere 10% of sexual encounters plus other modes of HIV

transmission.^{2,3} The Dominican Republic shares both a border and an island (Hispaniola) with Haiti. There are an estimated 50,000–100,000 sex workers in the Dominican Republic, and the HIV prevalence rate among these sex workers is 3.7%, compared to 1% among all adults in the Dominican Republic.^{3–6} Approximately 85% of Dominican Republic-based sex workers reported using condoms; however, condom use varied by partner type and type of encounter (e.g., paying vs. nonpaying clients and consensual sex vs. rape).^{2,4–8} Considering that studies conducted at geographic borders have the potential to inform public health interventions and bilateral policies that address the health and well-being of underserved, potentially stigmatized populations, we conducted this primary data collection study to ascertain levels of HIV knowledge and condom use across three sexual partner types (paying clients, noncommercial partners, and regular or intimate partners) among FSWs who live and work on both sides of the Haiti and Dominican Republic border.

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Sex work in the Dominican Republic and Haiti

The Dominican Republic has become an increasingly popular tourist destination over the past two decades, and sex tourism—the pursuit of commercial sexual encounters by men and women from wealthier countries—has flourished.⁹ Sex work is not explicitly prohibited in the Dominican Republic, but the lack of criminalization does not protect sex workers from experiencing stigma and discrimination; prior studies have found that the stigma experienced by sex workers is associated with condom nonuse.^{10–12} Further, because sex work is not explicitly mentioned in Dominican Republic laws, government bodies may opt to ignore human rights' violations targeting sex workers and to ignore sex workers' social, legal, and health care needs.^{12–14} In contrast, sex work is legal in Haiti, but sex workers face similar experiences with stigma and discrimination as their peers in the Dominican Republic; similarly the Haitian legal systems can turn a blind eye to human rights' violations faced by sex workers such as violence, rape, and denial of health care services, which have been associated with lack of condom use—a behavior that puts sex workers at significant risk for contracting and transmitting HIV.^{10,11,15–17} Because Haiti has suffered a multitude of economic setbacks, including several natural disasters, some Haitian women have been driven into sex work to supplement their incomes out of necessity.¹⁶ This is all to say, the personal situations of sex workers across Hispaniola are dire, and these women often have little to no legal recourse when harmed. Globally, sex workers have reported lower socioeconomic status and living in a constant cycle of poverty, which reinforces their need to engage in sex work, which then puts them at higher risk for contracting HIV and STIs.^{18–21}

Condom use in sex work in Haiti and the Dominican Republic

Condom use is one of these most effective methods to prevent the transmission and acquisition of HIV and STIs.^{1,18,19,21} Both Haiti and Dominican Republic have implemented countrywide condom distribution programs that reach key populations, including FSWs across clinical and community settings, but a limitation of these programs across the entire Latin America and Caribbean region is that only a third of condoms and lubricants are purchased with local funds, while two-thirds are distributed by external agencies such as Global Fund to Fight AIDS, Tuberculosis, and Malaria; in recent years, as international funding has become more scarce, so has the reach and availability of these distribution programs.²² According to a comprehensive literature review, sex workers in Haiti were aware of the HIV and STI risks associated with their profession and a majority reported consistent condom use with clients.¹⁶ Haitian FSWs and their male clients typically view condoms as easily available, and studies have found that condom use was often initiated by the sex workers; however, a large portion of male clients of Haitian FSWs reported that they do not use condoms with FSWs whom they purchase sex from regularly and those who they trust.^{3,7,15} In fact, nearly 40% of Haitian FSWs reported that they would have condomless sex with a client if he were a regular (repeat) client, if he paid a higher amount, or if the client explicitly requested sex without a condom.¹⁶ Because of the low socioeconomic status of FSWs in Haiti, the

promise of higher monetary gain from sex work without a condom can be appealing and may outweigh sex workers' perception of the risk of sexual activity without a condom.^{7,15,16} Complementary studies conducted in the Dominican Republic, found that FSWs were less likely to use condoms with nonpaying sexual partners, and they were also less likely to use condoms with regular paying clients compared to new clients, because there was an established level of trust.^{4,5,8,13,23} Generally speaking, FSWs may feel social pressure to have sex without a condom in an effort to address clients' culturally reinforced negative attitudes toward the use of them.^{7,15,24} Paying clients can use economic coercion by threatening to withhold payment to force FSWs to engage in sexual activity without condoms.^{7,15,24} A recent study on transgender FSWs in the Dominican Republic found notable variability in condom use across partner type, necessitating further research that segments condom use by paying client, noncommercial partners, and regular partners (e.g., frequent client and boyfriend).¹⁰ Understanding condom use outcomes at the partner-type level could inform intervention work to be more targeted and therefore more effective.

Summary of scientific premise

Knowledge of HIV prevention, including knowledge about the importance of condom use, has long been a cornerstone of public health HIV prevention interventions. The Caribbean holds the second highest regional rates of HIV and Haiti has one of the highest number of people living with HIV in the region. Due to the high rate of poverty in Haiti (even though there continues to be significant financial investments by international agencies to promote HIV prevention through condom use), we hypothesize that FSWs in Haiti will utilize condoms at lower odds across all partner types compared to their peers who work in the Dominican Republic. Few studies examine condom use across multiple partner types and those that have done so, have smaller sample sizes, limiting generalizability and extensibility, hence the unique importance of this cross-border study.

Methods

Study design and respondents

We analyzed data from the 2014 Hispaniola Sex Workers Study collected by the Caribbean Vulnerable Communities Coalition (CVC). Associated STI screening and treatment were provided by El Centro de Promocion y Solidaridad Humana (CEPROSH), a local nongovernmental organization that provides sexual and reproductive health services along the Dominican Republic and Haiti border. Participant inclusion criteria were as follows: (1) having exchanged sexual acts for money, goods, or other benefits in the past year, (2) being at least 18 years old, and (3) identifying as biologically female. The study period ran from February 2014 to June 2014. Recruitment used venue-based sampling that identified days and times that FSWs gathered at high-traffic venues on both sides of the Haitian-Dominican Republic border; this constructed a sampling frame of venue, day, time units (VDTs). Recruiters then randomly selected and visited these VDTs (primary sampling unit) and systematically collected survey responses from eligible participants. Surveys were available in Haitian Creole and Spanish, and administered in

the language of preference of the Haitian women surveyed. Participants received an incentive in the form of a travel stipend to cover transportation costs, as well as a referral card for STI screening and treatment.

Ethics approvals and informed consent

El Consejo Nacional de Bioética en Salud (CONABIOS), in the Dominican Republic, provided the ethics approval for all aspects of this. Informed consent was obtained verbally instead of in writing; verbal consent process for this study was approved by CONABIOS. Participatory action research often uses verbal consent when working with populations with low literacy or to reflect cultural appropriateness. The verbal consent process involved three steps: (1) provision of a comprehensive verbal description about the study and participant's rights in layman's terms, (2) an explanation of what was being asked of the potential participant, and (3) requesting and obtaining potential participants verbal consent that she was freely participating. Ethics approval for secondary analysis of these de-identified data was obtained from University of Alabama at Birmingham's (UAB) Institutional Review Board (#IRB-300001560). All protocols and methods were performed in accordance with country-specific guidelines and regulations.

Measures

The primary outcomes for the study were consistent condom use across three types of partners: paying clients, noncommercial partners, and regular, intimate partners. Respondents were asked the following: "How often did you use condoms with your [(type) partner] in the last 12 months?" for noncommercial partners and regular/intimate partners, and "How often did you use condoms with your [(type) partner] in the last 30 days?" for clients. Answer choices included always/every time, almost always, sometimes, never, and do not know. Responses of always/every time were coded as yes = 1 and all other responses were coded as no = 0. Respondents were provided with explanations of each partner type. Regular, intimate partners were "a husband or boyfriend." Noncommercial partners were defined as "casual partners as pimps, police, or any partner with whom you have had sex without exchanging money or goods." Clients were "any partner with whom you had sex in exchange for money or goods."

To measure HIV knowledge, we constructed a scale based on a series of 10 dichotomous measures that asked about HIV transmission routes and effective means of protecting against HIV acquisition. Respondents were asked if HIV can be transmitted through (1) sexual relationships without a condom just once, (2) anal sex, (3) mosquito bites, (4) sharing of food, (5) needle injection, (6) pregnancy to unborn child, (7) breastfeeding, and (8) public toilet. The 9th and 10th question, measuring general HIV knowledge, asked if the respondent believed that a person can protect themselves from HIV acquisition through proper condom use and if they think a person who looks healthy can have HIV. The 10 measures were all binary coded with answer choices of yes and no (1 = yes and 0 = no), and summed to create a 0–10 scale.

Two demographic variables were included: age and education. Age was measured as a continuous variable in years. Education was measured as a dichotomous variable consist-

ing of primary school or less and secondary school [referent]. We included four dichotomous variables representing sexual history: (1) send money earned in sex work to family, (2) first penetration before age 16, (3) first engagement in sex work before age 16, and (4) difficulty negotiating condom use. Yes responses were coded with a 1 and no responses with a 0.

Analytic strategy

We report univariate statistics to describe sample characteristics. Multivariable logistic regression analysis examined differences in HIV knowledge and condom use among Haitian FSWs ($n=241$) across three partner types—client, noncommercial, and regular or intimate. All models were estimated with Stata 15.0.

Results

Over half of our study population (62.2%) engaged in sex work on the Dominican Republic side of the border, while 37.8% engaged in sex on the Haitian side of the border. We present the sample characteristics in Table 1. Average age of FSWs on the Dominican Republic side was 27.1 and 28.8 years for those on the Haitian side ($t=4.34$, $p<0.001$).

There were some distinct differences in sexual histories between the FSWs working in the Dominican Republic and Haiti. Over two-thirds of FSW respondents on the Haitian side of the border send money from sex work to their families (85.7%), compared to about half of their peers on the Dominican side (51.3%, $\chi^2=29.17$, $p<0.001$). Over 90% of the FSW respondents on the Dominican side of the border had their first sexual experience with penetration before age 16 (91.3%), compared to 39.6% of peers on the Haitian side ($\chi^2=74.95$, $p<0.001$). Likewise, two-thirds of FSW respondents working on the Dominican side of the border first engaged in sex work before age 16 (68.7%), whereas only 18.7% of peers on the Haitian side first engaged in sex work before age 16 ($\chi^2=56.61$, $p<0.001$).

Condom use with clients was higher among FSW respondents on the Dominican side of the border. Approximately 81% of FSW respondents on the Dominican side reported always using a condom with a client (80.7%), compared to 38.5% of peers on the Haitian side ($\chi^2=44.19$, $p<0.001$). Similar percentages (substantively different, but statistically insignificant) of FSW respondents on both sides of the border reported always using a condom with a noncommercial partner and a regular or intimate partner. On average, HIV knowledge scores were similar for FSW respondents on both sides of the border.

We present the results from the multivariate logistic regressions in Table 2. HIV knowledge score was significantly associated with higher odds of condom use: 2.2% higher odds of always using a condom with clients, 2.7% higher odds of always using a condom with a noncommercial partner, and 1.4% higher odds of always using a condom with a regular or intimate partner (OR 2.21, $p<0.01$; OR 2.74, $p<0.01$; and OR 1.41, $p<0.05$, respectively). Greater HIV knowledge was consistently associated with higher odds of condom use across all partner types.

Sex work on the Haitian side of the border was associated with lower odds of always using a condom with all three partner types, relative to sex work on the Dominican Republic side of the border. Relative to FSW respondents on the

TABLE 1. RESPONDENT CHARACTERISTICS ON BOTH SIDES OF THE HAITI AND DOMINICAN REPUBLIC BORDER (N=241)

	Haitian (N=91), n (%)	Dominican (N=150), n (%)	χ^2/t
Demographics			
Mean age (standard deviation)	28.80 (3.08)	27.13 (2.79)	$t = 4.34$ $p < 0.001$
Education	83 (91.21)	142 (94.67)	$\chi^2 = 1.09$ $p = 0.30$
Primary school or less	8 (8.79)	8 (5.33)	
Some secondary school or more			
Sexual history			
Send money from sex work to family	78 (85.71)	77 (51.33)	$\chi^2 = 29.17$ $p < 0.001$
First sexual experience with penetration before 16	36 (39.56)	137 (91.33)	$\chi^2 = 74.95$ $p < 0.001$
First engagement in sex work before 16	17 (18.68)	103 (68.67)	$\chi^2 = 56.61$ $p < 0.001$
Difficulty negotiating condom use	51 (56.04)	78 (52.00)	$\chi^2 = 0.37$ $p = 0.54$
Condom use			
Always use a condom with a client	35 (38.46)	121 (80.67)	$\chi^2 = 44.19$ $p < 0.001$
Always use a condom with a noncommercial partner	38 (41.76)	81 (54.00)	$\chi^2 = 3.40$ $p = 0.07$
Always use a condom with a regular partner	29 (31.87)	59 (39.33)	$\chi^2 = 1.36$ $p = 0.24$
HIV knowledge			
HIV Knowledge Score	7.66 (1.39)	7.58 (1.64)	$t = 0.34$ $p = 0.73$
Mean (standard deviation)			

HIV, human immunodeficiency virus.

The bold values are significant, $p < 0.05$. The corresponding p values are listed below the chi-square values and t -values.

Dominican side of the border, FSW respondents on the Haitian side of the border are associated with 99.5% lower odds of always using a condom with a client, 89.6% lower odds of always using a condom with a noncommercial partner, and 62.5% lower odds of always using a condom with a

regular or intimate partner (OR 0.005, $p < 0.01$; OR 0.104, $p < 0.001$; and OR 0.375, $p < 0.05$, respectively).

In assessing the effects of demographic controls, we found that relative to FSW respondents with some secondary school education or higher, FSW respondents with primary level

TABLE 2. MULTIVARIATE RESULTS OF ALWAYS USING CONDOMS ACROSS PARTNER TYPES (N=241)

	Client, odds ratio (95% CI)	Noncommercial, odds ratio (95% CI)	Regular, odds ratio (95% CI)
Demographics	—	—	—
Side of the border			
Dominican Republic (referent)	0.005 (0.001–0.041)***	0.104 (0.030–0.360)***	0.375 (0.145–0.967)*
Haiti			
Age	0.879 (0.756–1.024)	0.962 (0.854–1.084)	1.042 (0.932–1.165)
Education	—	—	—
Some secondary school or more (referent)	0.043 (0.003–0.645)*	0.790 (0.139–4.504)	0.211 (0.053–0.843)*
Primary school or less			
Sexual history			
Send money from sex work to family	0.945 (0.275–3.246)	2.029 (0.796–5.174)	1.520 (0.670–3.450)
First sexual experience with penetration before age 16	3.489 (0.851–14.298)	1.529 (0.507–4.606)	3.152 (1.219–8.152)*
First engagement in sex work before age 16	0.167 (0.410–0.683)*	0.305 (0.113–0.821)*	0.357 (0.154–0.826)*
Difficulty negotiating condom use	0.023 (0.004–0.119)***	0.204 (0.089–0.470)***	0.747 (0.379–1.475)
HIV knowledge			
HIV knowledge score	2.212 (1.423–3.438)**	2.739 (2.004–3.744)***	1.409 (1.108–1.793)**

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

CI, confidence interval; HIV, human immunodeficiency virus.

education or less had lower odds of always using condoms with clients and regular/intimate partners (OR 0.04, $p < 0.05$ and OR 0.21, $p < 0.05$, respectively). FSW respondents who engaged in sex work before age 16 had lower odds of always using a condom with all three client types, compared with peers who first engaged in sex work at age 16 or older (OR 0.017, $p < 0.05$). Compared to FSW respondents who first engaged in sex work at age 16 or older, those who first engaged in sex work before age 16 had 83.3% lower odds of always using a condom with a client, 69.5% lower odds of always using a condom with a noncommercial client, and 64.3% lower odds of always using a condom with a regular or intimate partner (OR 0.167, $p < 0.05$; OR 0.305, $p < 0.05$; and OR 0.357, $p < 0.05$, respectively). Likewise, relative to FSW respondents who did not report trouble negotiating condom use, FSW respondents who reported trouble negotiating condom use had 98% lower odds of always using a condom with clients and 80% lower odds of always using a condom with a noncommercial partner (OR 0.023, $p < 0.001$ and OR 0.204, $p < 0.001$, respectively).

Discussion

FSWs are at high risk for contracting HIV and STIs; the findings of our study further substantiate this vulnerability. Our study highlights the need to examine condom use across different geographies, by partner type, and considering level of HIV knowledge. We find that FSWs do not use condoms at the same rates with all partner types—regular or intimate, noncommercial, and client. Also, despite similar HIV knowledge levels, condom use was lower among FSWs in Haiti compared to FSWs in the Dominican Republic. About 81% of FSWs working on the Dominican side of the border used a condom every time they had sex with a client, compared to 38% of FSWs on the Haitian side of the border. Once controls were introduced, FSWs on the Haitian side continued to have lower odds of using condoms with clients, non-commercial partners, and regular partners compared to FSWs on the Dominican side of the border.

These disparities may be partially explained by indicators that were not measured within this study, such as social vulnerability, stigma, cultural preferences related to condom use, and even early exposure to comprehensive sexual health education in schools, which is available in Dominican Republic, but not in Haiti.²⁵ In addition, Haitian FSWs in Dominican Republic are often undocumented, lacking legal status to work, which could increase general vulnerability and HIV risk—this link between immigration status and HIV risk was previously substantiated in a study of migratory Haitian farm workers in the Dominican Republic—but since Dominican Republic is a wealthier nation with a lower overall prevalence of HIV and higher community-wide levels of educational attainment, Haitians who engaged in sex work on the Dominican side of the border may benefit from the national demographic profile of the Dominican Republic.²⁶ Regardless of which side of the border FSWs were located, HIV knowledge was highly predicative/associated with condom use.

We also found that FSWs on the Haitian side of the border engaged in sex earlier (higher rate at younger age and earlier sexual debut) than FSWs on Dominican side of the border. This could be related to financial deprivation, coercion, or

other externalities. FSWs in the Dominican Republic may have had different personal characteristics than those in Haiti, which could have influenced our findings. For example, we found that FSWs in Haiti sent money home to support their families at a much higher rate than their Dominican peers. This need to provide financial support may have encouraged these women to engage in riskier sexual behaviors (condomless sex), which could produce a higher dollar payment. Not only acknowledging these differences but also accepting that due to shared experiences of being an FSW on an island with a single border, prior research has indicated that it may be possible to develop interventions to reduce HIV acquisition and transmission risk among FSWs on both sides of the border.²⁷

While condom use has been the gold standard for HIV and STI risk reduction for decades, the approval of pre-exposure prophylaxis (PrEP) for prevention has been a game changer. A recent study of United States street-based FSWs found that although PrEP awareness among this population was low, when FSWs were aware of PrEP and its benefits, FSWs expressed notable interest in PrEP.²⁸ Key issues related to PrEP accessibility and uptake in Haiti and Dominican Republic are structural; specifically, as of 2018, PrEP was only available through private providers in Dominican Republic making accessing PrEP cost-prohibitive for most FSWs, and PrEP was not yet publically available in Haiti.^{25,29}

If health is truly a human right, as the World Health Organization suggests, then practitioners and scholars must actively collaborate to fortify vulnerable populations against injurious structural and sociocultural forces that moderate the potential positive effects of improved prevention efforts (e.g., high HIV knowledge) through the implementation of tailored policies, innovative prevention strategies, and evidence-based interventions that include universal protections.

Limitations

Limitations should be considered when applying the findings of our study. Because sex work is stigmatized, and the topics discussed (e.g., number of partners and condom use) in our questionnaire, self-report bias is likely. Certain terms were not defined in the questionnaire. For example, what constitutes a “client” was not specified in detail, and therefore, the responses to related questions may have varied slightly from respondent to respondent. Although our data were collected across the border, it is not representative of all FSWs on the border and excludes FSWs who seek seasonal work and may fly into the Dominican Republic and Haiti from other Caribbean nations (e.g., Guyana and Dominica). We did not explicitly assess cultural preferences that could influence HIV risk, such as the acceptability of different routes of penetration. Our data are cross-sectional. As such findings are not generalizable, and we cannot infer causal relationships between measures. Even with these limitations, our dataset is one of the few repositories that contains self-reported information from FSWs on a geographic border.

Implication for public health

Our study lays the foundation for future research and improved care delivery for FSWs on geographic borders and more broadly speaking—in resource-constrained settings. These improvements could include tailored health policy

addressing HIV risk reduction in stigmatized, vulnerable, and hard-to-reach populations. We highlight differences in condom use across partner types and bring to light the exacerbated HIV vulnerability of FSWs in the Caribbean and specifically on the border of Haiti and the Dominican Republic. In doing so, we illustrate the need for thoughtful policies that address the lack of power experienced by FSWs in negotiating condom use even when HIV knowledge and knowledge of the importance of condom use as a protective measure are well-known among FSWs.

Authors' Contributions

H.B. was the lead author and conceptualized this study. J.W. was the senior author, and with J.H. and S.R. conducted the original data collection and study formulation. K.R. was the lead methodologist and contributed to the writing. S.F., B.V., N.C., and D.C. contributed to the writing and editing of this article. All authors contributed substantially.

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Availability of Data and Materials

Data and materials may be made available through contact with the senior author (J.W.).

Author Disclosure Statement

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