Factors associated with forced sex among women accessing health services in rural Haiti: implications for the prevention of HIV infection and other sexually transmitted diseases[★]

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Abstract

The goals of the current study were to: (1) estimate the prevalence of forced sex among women accessing services at a women's health clinic in rural Haiti; and (2) examine factors associated with forced sex in this population. Based on data from a case-control study of risk factors for sexually transmitted diseases (STDs), a cross-sectional analysis to examine factors associated with forced sex was performed. A number of factors related to gender inequality/socioeconomic vulnerability placed women in rural Haiti at higher risk of forced sex. The strongest factors associated with forced sex in multivariate analyses were: age, length of time in a relationship, occupation of the woman's partner, STD-related symptoms, and factors demonstrating economic vulnerability. The findings suggest that prevention efforts must go beyond provision of information and education to the pursuit of broader initiatives at both local and national levels. At the community level, policy-makers should consider advancing economic opportunities for women who are vulnerable to forced sex. Improving access to community-based income-generating activities may begin to address this problem. However, the viability of these local projects depends largely upon Haiti's 'macro-economic' situation. In order to ensure the success of local initiatives, external humanitarian and development assistance to Haiti should be supported. By broadening the definition of "prevention" interventions, we may begin to address the systemic problems that contribute to the occurrence of forced sex and the increasing incidence of HIV infection throughout the world, such as gender inequality and economic vulnerability. Taking into account factors influencing risk at the local level as well as the macro-level will potentially improve our capacity to reduce the risk of forced sex and the spread of STDs, including HIV infection, for millions of women living in poverty worldwide.

Keywords

Forced sex; STD transmission; HIV prevention; Haiti; Biosocial research

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Introduction

Rape, sexual coercion, and other forms of sexual violence are serious public health problems and ubiquitous throughout the world. High rates of forced sex and other forms of sexual violence among women have been reported worldwide (Jansen, Watts, Ellsberg, Heise, & Garcia-Moreno, 2002). According to the World Health Organization, up to one-third of adolescent girls reported forced sex during their first sexual intercourse (WHO, 2002). In Peru, 47% of adolescent girls and young women reported a history of sexual coercion (Caceres, Marin, Hudes, Reingold, & Rosasco, 1997). Among women enrolled in an HIV testing and counseling study in the US, lifetime prevalence of rape was 43% (Zierler, Witbeck, & Mayer, 1996). In Rwanda, 33% of women indicated that they had experienced sexual coercion (van der Straten, King, Grinstead, Serufilira, & Allen, 1995). Nearly half of girls attending primary and secondary school in Mwanza, Tanzania reported that they had experienced forced sex in their lifetime (Matasha et al., 1998).

From a public-health perspective, it is important to examine the risk factors of forced sex. A number of studies have reported that political violence and oppression typically lead to an increase in the vulnerability to forced sex and other forms of sexual violence. For example, in Sierra Leone, 8% of women reported war-related sexual assault; the rate of lifetime occurrence of sexual assault was 17% (Amowitz et al., 2002). Similarly, during the Liberian civil war 15% reported the occurrence of rape, being subjected to attempted rape, or sexual coercion (Swiss et al., 1998). Among pregnant women in Mozambique 8.4% reported sexual abuse during the course of war-related displacement (Cossa et al., 1994).

Poor women are more frequently victims of sexual violence. This includes migrants, commercial sex workers, the homeless, injection drug users (IDUs), and partners of IDUs (Miller et al., 2002; Parillo, Freeman, Collier, & Young, 2001; Noell, Rohde, Seeley, & Ochs, 2001). Among homeless female adolescents, 38% reported a history of childhood sexual abuse. Similarly, rape survivors were more likely to be living on the streets or in a shelter/welfare hotel compared with controls who had not experienced rape (Irwin et al., 1995). Women who had exchanged sex for money or drugs were over four times more likely to have experienced rape in their lifetime (Zierler et al., 1996).

The frequent occurrence of forced sex throughout the world carries serious implications for the transmission of HIV infection and other STDs. Previous studies have demonstrated an association between a history of sexual violence and the risk of STD transmission, including HIV infection (Wyatt et al., 2002; Kimerling, Armistead, & Forehand, 1999; Kenney, Reinholtz, & Angelini, 1998; Irwin et al., 1995). Because HIV is a sexually transmitted disease and its epidemiology is closely linked to STD prevalence (Wasserheit, 1992), the implications for the prevention of HIV infection against a backdrop of forced sex are significant. To be successful in vulnerable populations, HIV education and prevention must go beyond messages of "safe sex" and address broader issues surrounding forced sex.

Experience from rural Haiti suggests that complex interventions are needed to stem the increasing tide of HIV infection and other STDs. To date, there are no quantitative studies that document the burden of forced sex on women in rural Haiti. However, considerable qualitative data indicate that women in rural Haiti face the dual challenges of gender inequality and oppressive poverty. In Haiti, situations of economic vulnerability and pervasive gender inequality result in a range of survival strategies including trading sex for money, food, or security, which can result in an increased risk of HIV infection or other STDs (Farmer, 1992; Farmer, Connors, & Simmons, 1996). It is in this context that we document the prevalence of forced sex among women accessing services in rural Haiti and identify factors related to forced sex in this vulnerable population.

Methods

Setting

The setting for this project is the Péligre basin of Haiti's Central Plateau, home to several hundred thousand rural people. Although all parts of Haiti are poor, the Péligre basin is especially so: in 1956, thousands of families fled their fertile land in the Artibonite Valley to the scarcely arable highlands when the valley was flooded by a hydroelectric dam built on the Artibonite River. The displaced persons were all peasant farmers, and most received no compensation for their lost land. In the years following the construction of the dam, rates of morbidity and mortality among the displaced population rose sharply (Farmer, 1992). The sociomedical complex of Zanmi Lasante is located in a squatter settlement just north of the dam (Cange, Haiti) where the population is still characterized by poverty and high levels of preventable disease and death among adults and children. Over the past 20 years, the all-Haitian staff of Zanmi Lasante and its sister organization in Boston, Partners In Health, have served the poor of central Haiti.

Zanmi Lasante has a free-standing women's health clinic, Proje Sante Fanm, that provides free medical services, including the diagnosis and treatment of STDs, to some 12,000–15,000 women annually. Through community health workers, the project serves more than 200,000 women in the area surrounding the clinic. Clinical services include: general pre-natal care; family planning services; screening for and treatment of STDs; and other services directly related to women's health. Since Zanmi Lasante serves primarily the destitute sick, all medications and services are provided for free. Although the clinic's catchment area includes the entire lower central plateau, underserved women have come from as far as Port-au-Prince and towns beyond the central plateau, most often because they cannot afford equivalent women's health care provided elsewhere. In recent years, the collapse of the Haitian public health system—due in part to the withholding of humanitarian and development aid over the past few years—has meant an increasing proportion of women seen are from beyond the area served by community health workers, resulting in a doubling of the number of women seen at Proje Sante Fanm over the past two years.

Study population, design, and data collection

The study population includes women accessing services at Proje Sante Fanm between June 1999 and March 2002. This study was based on data collected at Proje Sante Fanm for a case-control study examining risk factors for chlamydia and gonorrhea. Inclusion criteria involved women who presented as new patients for services at Proje Sante Fanm. Women who fulfilled this criterion were randomly selected for participation in the study. A more detailed description of recruitment for the case-control study is provided elsewhere (Smith Fawzi et al., 2003). The first 749 women enrolled in the case-control study were included in this analysis (women who entered the study before the end of March 2002). Factors associated with forced sex were examined cross-sectionally in this study population. Women who provided written informed consent in accordance with approval from the Institutional Review Board at Harvard Medical School were asked to complete a standardized study questionnaire that included the following sections: sociodemographic and economic characteristics, risk factors for STDs, gynecological history, and access to healthcare. The variable "forced sex" was based on the following question: "Have you ever been forced or pressured into having sex when you did not want to?" Other items for the questionnaire were based on prior knowledge of the situation in rural Haiti (Farmer et al., 1996; Farmer, 1992) and other areas of Haiti as well (Deschamps, Pape, Hafner, & Johnson, 1996; Behets et al., 1995).

Complementary ethnographic research, including open-ended interviews in patients' homes, was also part of this multidisciplinary biosocial study. From the group of women who participated in the case-control study, 76 women were selected based on stratified random sampling to participate in ethnographic interviews and focus group discussions. Women were stratified according to "case" versus "control" status in order to include equal numbers of women with and without STDs in the ethnographic part of the study. For the ethnographic interviews, women were asked about their personal and employment histories, living situations, and any clinical treatment experience. Women also had the opportunity to discuss their experiences with the healthcare system in general. Focus group discussions included topics such as marriage, condoms, and problems related to care-seeking when ill and without ready access to care.

Statistical analysis

Descriptive statistics were calculated and compared for women who had and had not reported a history of forced sex. Frequencies were presented for categorical variables and means with corresponding ranges were reported for continuous variables. In order to examine the univariate associations between forced sex and specific risk factors, odds ratios (ORs) and corresponding 95% confidence intervals (CIs) were estimated. Multiple logistic regression analysis was performed in order to examine factors associated with forced sex while controlling for confounding variables. The modeling strategy was based on results from the univariate analysis (i.e. inclusion of variables that demonstrated strong associations with forced sex) and prior information available on risk factors for forced sex (i.e. from the broader medical and public health literature on forced sex or sexual coercion and from prior studies conducted in Haiti). Statistical analyses were performed using Stata version 7.0 for windows (Stata Corporation, College Station, TX, 2001) and SAS version 8.2 for Windows (The SAS Institute, Cary, NC, 2001).

Results

Fifty-four percent of this population of 749 women accessing services at the women's health clinic had experienced forced sex in their lifetime. Among women who experienced forced sex the percentage of women 30 years of age or younger was 68%; this was comparable with women who had not experienced forced sex (64%). In this impoverished setting, only 51% of the women reporting forced sex had ever attended school compared with 48% who did not report forced sex. The majority of women were farmers (55% and 56%), however, a significant fraction were domestic servants (18% and 19%) (see Table 1). The women's partners generally had a higher level of education (65% overall had ever attended school) and were older (mean age of 33 and 32 years, respectively). A large majority of the spouses/partners were farmers (83% and 79%) in this predominantly peasant population.

The level of poverty in the region was further characterized by the fact that over 30% (32% and 31% for the two groups) of this population spent most or all of their income on food. In addition, over 67% of women who reported forced sex lived in thatched or mud houses compared with 61% who did not report forced sex. Approximately 40% lived in houses with thatched roofs as well (41% and 39% for the two groups). Overall 30% of this population had a latrine (29% and 33% for the two groups) and over 30% had radios at the time of the interview (30% and 35% for the two groups).

Among women experiencing forced sex, the mean age at first sexual intercourse was 18 years (range 10–29); this was comparable to women who did not report forced sex (18 years; range 8–31). The mean number of lifetime sex partners was 1.7, with 57% reporting having had only one lifetime partner among women who experienced forced sex. The mean age at first sexual intercourse and the mean number of lifetime sex partners were comparable for

women who did not experience forced sex. However, among women who reported forced sex, 59% reported that their current partner had other sex partners or that they were not sure whether there were other partners, compared with only 52% among women who did not report forced sex. Only 8–12% of this population reported that they had ever used a condom, in spite of the fact that over 70% of all respondents noted that it was not difficult to procure them. The overall mean number of lifetime pregnancies was four and over 60% were pregnant at the time of the interview. History of having an STD was reported by 9% of the women who had experienced forced sex compared with 6% among those who had not reported forced sex.

A number of these factors were associated with forced sex in univariate analyses (see Table 1). Although marital status was not associated with forced sex, the length of time in a relationship demonstrated a positive association. Women who were in a relationship for more than four years were 1.8 times more likely to have experienced forced sex compared with women who were in relationships for four years or less. In terms of partner's occupation, women who had partners who were construction workers were 1.7 times more likely to report forced sex, although this was of borderline significance (95% confidence interval (CI)=0.93, 3.2). Women who reported that their occupation was sewing were two times more likely to have experienced forced sex. In terms of sexual and gynecological history, women who reported that their partners had ever had an STD were 7.7 times more likely to have experienced forced sex. However, given the limited sample size for this item, this result was of borderline significance (95% CI=0.91, 65.5). Partner having penile discharge or genital ulcers was strongly associated with a history of forced sex (OR=4.6; 95% CI=2.2, 10.2). In addition, if the woman ever had to have sex in order to provide for her children economically she was at a 3.5-fold increase in risk of having a history of forced sex. Women whose current pregnancy was unplanned were 1.7 times more likely to have experienced forced sex and women who reported a lifetime history of an STD were also more likely to report forced sex (OR=1.7; 95% CI=0.92, 3.3). A number of STD-related symptoms were positively associated with a history of forced sex, including chronic pelvic pain, excessive vaginal discharge, discolored vaginal discharge, burning or pain when urinating, and lesions around mouth or vagina.

A number of economic factors and access to care variables were associated with a history of forced sex in univariate analyses. Cooking fuel can be considered a proxy for socioeconomic status in this setting. In particular, not using gas as a cooking fuel was strongly associated with forced sex (OR=3.7; 95% CI=1.1, 15.7). Conversely, using wood as a cooking fuel was positively associated with forced sex (OR=1.9; 95% CI=1.1, 3.3). Other factors reflective of poor socioeconomic status that were associated with forced sex included problems with the following: quality of housing, finding employment, finances/money, transportation, healthcare, accessing medicines, getting clothing, and obtaining an education. There was also a suggestion of an association between income and forced sex with women reporting a monthly income of 500 goud ($20) or less having a 30% increased risk of having a history of forced sex (95% CI=0.97, 1.9). In terms of access to preventive health services, women who reported having problems getting condoms were 1.8 times more likely to report forced sex (95% CI=1.0, 3.3). Women who had difficulties paying for healthcare or medicines were also at an increased risk of forced sex. In addition, women who had difficulties accessing general medical care, treatment for STDs, or pre-natal care, were also more likely to report a history of forced sex.

In order to control for confounding variables, a multiple logistic regression analysis was carried out. Table 2 reports results from this analysis. Models one through six include variables that are conceptually related in order to identify the factors in each domain that demonstrated the strongest associations with forced sex. For the sociodemographic model

(Model 1), younger age (30 years of age or less) and length of time in a relationship were the strongest risk factors for forced sex. After controlling for other sociodemographic risk factors, women who were in a relationship for more than four years were 2.6 times more likely to report forced sex compared with women who were in a relationship for four years or less. The strength of this association increased after controlling for other sociodemographic risk factors. In terms of sexual history, the strongest risk factor associated with forced sex was current partner having other sex partners (OR=1.3; 95% CI=0.94, 1.8) (see Model 2). For gynecological history, lesions on mouth or vagina was the factor that demonstrated the strongest association with forced sex. Women who reported this STD-related symptom were 1.8 times more likely to have experienced forced sex (see Model 3). In terms of occupation, for women, sewing remained the factor most strongly associated with forced sex (OR=2.0; 95% CI=1.1, 3.8). For their partners, construction work still demonstrated the strongest association (OR=1.8; 95% CI=1.0, 3.2) (see Models 4 and 5). The economic factor that demonstrated the strongest association with forced sex was using wood as a cooking fuel (OR=2.0), however, in the multivariate model this was not significant (95% CI=0.88, 4.5) (see Model 6). The combined model examined factors from each of these domains simultaneously. In this model (see Model 7) younger age and length of time in a relationship remained important factors associated with forced sex. There was a suggestion of an association between current partners having other sex partners and forced sex (OR=1.3; 95% CI=0.90, 1.7). Lesions on mouth or vagina were also associated with forced sex (OR=2.3; 95% CI=1.2, 4.1). Sewing as an occupation indicated a 1.5-fold increase in risk, however, after inclusion of the partner's occupation and other socioeconomic factors this variable was no longer significant. Construction work as the partner's occupation remained an important variable (OR=1.9; 95% CI=0.98, 3.5). In addition, reporting problems with transportation, a proxy for socioeconomic status, was also positively associated with forced sex (OR=1.5; 95% CI=1.0, 2.2).

Discussion

The prevalence of forced sex in this population of women in rural Haiti accessing services at Proje Sante Fanm was 54%. This significant prevalence of forced sex is sadly not surprising, given the steep grade of gender inequality that exists in Haiti. This degree of gender inequality, compounded by deep poverty experienced by women in rural Haiti, has been shown to place women at significant risk of HIV infection and other STDs (Farmer, 1992; Farmer et al., 1996) and may have implications for the extent to which women experience forced sex in this context. There are a variety of factors related to gender inequality and socioeconomic vulnerability that may place women in rural Haiti at a higher risk of forced sex compared with some other settings.

A number of factors were associated with forced sex in our population of predominantly poor women from rural Haiti. Younger age was significantly associated with a higher risk of forced sex. Similar findings were observed among women in Sierra Leone, where women who were 29 years of age or younger were 2.1 times more likely to have experienced forced sex compared with women who were older than 29 (Coker & Richter, 1998). Greater length of time in a relationship was also associated with an increased risk of forced sex in our population of women from rural Haiti. This association may be related to the economic dependency that some women may experience in longer-term relationships. Other studies have documented that women who experience rape in marriage tend to be more economically dependent on their husbands (El-Bassel, Gilbert, Rajah, Foleno, & Frye, 2000; Frieze, 1983). Additionally, other authors have documented rape in long-term relationships; one study among women in South Carolina showed the average duration of an abusive relationship was more than five years and as long as 33 years (Coker, Derrick, Lumpkin, Aldrich, & Oldendick, 2000).

Women whose partners were construction workers were two times more likely to have experienced forced sex. Construction work is one of the more stable occupations in the area and may reflect economic dependency among women whose partners engage in this type of work. Economic vulnerability, as reflected by having problems with transportation, also increased the risk of forced sex by 50% (see Table 2, Model 7). A number of studies have linked forced sex or other forms of sexual violence with poor socioeconomic status or with disadvantaged groups. Among high school students in the US, forced sex was more likely to occur among African-American girls, those living in single-parent households, and those who were receiving food stamps (Nagy, Adcock, & Nagy, 1994). Among homeless women in the US, over 43% reported a history of sexual molestation in childhood (Weinreb, Goldberg, Lessard, Perloff, & Bassuk, 1999). Unemployed women in Sierra Leone were nearly two times more likely to have experienced forced sex compared with those who were employed (Coker et al., 1998). Similarly, in South Carolina, women who had less than a high school education or who were in the lowest income category were more likely to have experienced intimate partner violence or forced sex (Coker et al., 2000). Homeless youth in the US were 3.8 times more likely to have experienced forced sex compared with school-based youth (Ensign & Santelli, 1998). In India, members of the "protected class" (i.e. the lowest socioeconomic class, including the "untouchables") were more likely to report higher levels of sexual coercion (Waldner, Vaden-Goad, & Sikka, 1999). Similarly, low educational level was associated with an increased risk of sexual coercion in China (Yimin et al., 2001).

History of forced sex was also associated with STD-related symptoms in this population of women from rural Haiti. A number of studies have demonstrated similar associations between forced sex or other forms of sexual violence and risk for STDs. Among a cohort of young women in the US, aged 18–22, forced sex was strongly associated with the risk of having an STD (Kenney et al., 1998). Similarly, among an ethnically diverse population in Los Angeles, rape was consistently associated with HIV-positive status across all ethnic and racial groups (Wyatt et al., 2002). In inner-city New Orleans, HIV-positive women were 3.4 times more likely to have experienced rape compared with those who were HIV-negative (Kimerling et al., 1999). A similar finding was observed for other STDs in other urban areas of the US, where women who were rape survivors were 2.7 times more likely to have syphilis, 2.1 times more likely to have gonorrhea, 2.6 times more likely to have chlamydia, and 6.6 times more likely to have herpes during the 12 months prior to the interview compared with controls (Irwin et al., 1995). In Lima, youth and young adults who experienced sexual coercion were over three times more likely to have had an STD in their lifetime compared with those who had not experienced sexual coercion (Caceres, Marin, & Hudes, 2000). Women in Rwanda who were HIV-positive were also more likely to report sexual coercion compared with those who were HIV-negative (van der Straten et al., 1995). It is important to note, however, that for many of these studies it is not possible to tease apart the temporal relationship between sexual coercion and STD occurrence. The same is true for the present study, where a key limitation is related to the fact that the associations presented are cross-sectional, given that the original study was a case-control study designed to examine risk factors for STDs. Although it is not possible to make "causal inferences" on the relationship between various risk factors and forced sex in this paper, these results are corroborated by evidence from complementary qualitative data collected for this study.

Case illustration

One such ethnographic encounter was with Josette Jean-Baptiste,[1] a 23-year-old woman with a history of forced sex who tested positive for chlamydia but did not return for her test

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[1]Josette Jean-Baptiste is a pseudonym adopted in order to protect the confidentiality of this study participant.

result and treatment. In order to ensure adequate follow-up and treatment, study staff visited Josette at home. Through this home visit, she was interviewed to determine why she had not returned to the clinic for treatment and what predisposed her exposure to chlamydia. Josette did not return for her follow-up treatment because she had great difficulty reaching the clinic. She would have to walk uphill for three hours to come to the clinic and she was eight months pregnant. Travel by truck (a common form of local transport) was expensive, she explained. Josette was living in a one-room house with her mother and her two young children, a son (age 7) and a daughter (age 2). She explained that after the father of her children left her, she was unable to provide for her two children.

Josette tried various jobs (e.g., domestic servant), but was unable to secure enough funds to support her children. She met another man, and hoped he would help her support her children. Subsequently, she became pregnant after forming a union with a new partner. Although her partner paid for the house that they rented, his support was not adequate, as she could not afford to send her son to school. In addition to support from her partner, she was also receiving support from her mother, but her mother said that her work cleaning houses in Port-au-Prince was not enough money for her, her daughter, and her grandchildren to survive. In this context of severe poverty, where economic opportunities for women are scarce, Josette's decision to find a partner to support herself and her children was based on survival. It was also a decision that may have placed her at risk of forced sex and/or an STD. Josette's experience is similar to the numerous examples of this type of survival strategy employed by women in rural Haiti and is emblematic of that of a majority of our patients with STDs, all of them poor and struggling to survive in an increasingly hostile environment marked by landlessness and a deteriorating economy (Farmer, 1995; Farmer, 1997).

Given this complicated set of relationships, what are the implications for the prevention of HIV infection and other STDs in this context and in similar settings throughout the world? First, the standard format for prevention education for HIV infection and other STDs may have very limited utility in settings where forced sex and severe economic vulnerability are so frequent as to be ordinary. For example, a woman who is trying to practice "safe sex" or abstinence may actually place herself at greater risk of physical and/or sexual violence. This occurrence has been documented in a number of settings. For example, in Bangladesh domestic violence and forced sex were often precipitated by the woman refusing to have sex with her partner (Khan, Townsend, & D'Costa, 2002). Individually initiated efforts to protect oneself may also prove to be fruitless and may precipitate violence and/or forced sex. For example, a woman attempting to use a female condom without prior discussion with her partner precipitated a physically violent response (El-Bassel et al., 2000). These situations reflect the need for prevention efforts to go beyond provision of information and education to the pursuit of broader social initiatives, at the micro- and macro-level.

At the community or micro-level, one can initiate programs that provide opportunities for those women who are vulnerable to forced sex. Improved access to income-generating activities may give women in rural Haiti alternative options to provide for their children economically. Having the capacity to earn income independently of a partner who puts her at risk of forced sex or STD transmission can reduce a woman's level of risk. Local interventions may also include improving access to basic healthcare services, including prenatal care, family planning, and treatment for STDs, given that treatment of STDs can prevent the transmission of HIV infection. Women who are able to maintain their health are better placed to participate in economically productive activities and thus less vulnerable.

However, without inputs from the macro-level, these community-based or local initiatives are doomed to fizzle. This is particularly true for Haiti, the poorest country in the western hemisphere with a Gross National Product (GNP) per capita of only $480/year (World Bank

Group, 2001). In fact, the majority of the women in our study population were much worse off than the national average, with 50–60% of women earning $20 per month or less. Micro-level initiatives, such as income generating projects for women, will have limited impact in this context unless initiatives to increase humanitarian and development aid to Haiti are supported.

By broadening the definition of "prevention interventions", we may begin to address the systemic problems that contribute to the occurrence of forced sex and the increasing incidence of HIV infection throughout the world, such as gender inequality and economic vulnerability. Taking into account factors influencing risk at the local level as well as the macro-level will potentially improve our capacity to reduce the risk of forced sex and the spread of STDs, including HIV infection, for millions of women living in poverty worldwide.

Acknowledgments

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Table 1

Descriptive statistics for women accessing services at Proje Sante Fanm in rural Haiti, stratified by forced sex (*n* = 749)[a]

		Forced or pressured into having sex *n* = 407	Not forced or pressured into having sex *n* = 342	OR (95% CI)
Sociodemographic and economic characteristics				
Age	Age <=30 (*n* = 737)	273 (68%)	213 (64%)	1.2 (0.87–1.6)
Education level	Ever attended school	208 (51%)	164 (48%)	1.1 (0.84–1.5)
Occupation	Farmer	224 (55%)	192 (56%)	1.0 (0.73–1.3)
	Market vendor	183 (45%)	157 (46%)	1.0 (0.75–1.4)
	Domestic servant	73 (18%)	65 (19%)	0.9 (0.65–1.4)
Marital/partner status	Married	260 (64%)	234 (68%)	1.2 (0.89–1.7)
	>4 yrs with spouse or partner (*n* = 718)	265 (68%)	174 (53%)	1.8 (1.4–2.5)
Partner age	Age <=30 (*n* = 630)	227 (66%)	181 (63%)	1.1 (0.83–1.6)
Partner education level	Ever attended school (*n* = 716)	253 (65%)	212 (65%)	1.0 (0.72–1.4)
Partner occupation	Farmer (*n* = 718)	324 (83%)	259 (79%)	1.3 (0.86–1.9)
	Market vendor (*n* = 717)	50 (13%)	47 (14%)	0.9 (0.57–1.3)
	Construction worker (*n* = 718)	37 (9%)	19 (6%)	1.7 (0.93–3.2)
	Professional (*n* = 718)	20 (5%)	16 (5%)	1.0 (0.53–2.1)
	Mechanic (*n* = 718)	9 (2%)	11 (3%)	0.7 (0.28–1.7)
	Driver (*n* = 718)	12 (3%)	12 (4%)	0.8 (0.37–1.9)
	Police or soldier (*n* = 718)	3 (1%)	3 (1%)	0.8 (0.17–4.2)
	Fisherman (*n* = 718)	11 (3%)	7 (2%)	1.3 (0.46–4.1)
Use of household income	Most or all of income spent on food (*n* = 624)	110 (32%)	87 (31%)	1.0 (0.73–1.5)
Household food production and consumption	Household plants crops	366 (90%)	297 (87%)	1.4 (0.86–2.1)
	Household sells some of what it grows (*n* = 667)	331 (90%)	277 (93%)	0.66 (0.38–1.2)
Fuel used for cooking	Wood	383 (94%)	304 (89%)	1.9 (1.1–3.3)
	Charcoal	126 (31%)	116 (34%)	1.1 (0.82–1.6)
Shelter	Thatched or mud house	273 (67%)	210 (61%)	1.3 (0.95–1.7)
	Thatched roof	165 (41%)	134 (39%)	1.1 (0.79–1.4)
Latrine	Owns a latrine	118 (29%)	113 (33%)	1.2 (0.88–1.69)
Radio	Owns a radio (*n* = 748)	122 (30%)	118 (35%)	0.82 (0.60–1.1)
Monthly Income (goud)[b]	500 goud or less (*n* = 610)	201 (60%)	144 (53%)	1.3 (0.97–1.9)
Sexual and gynecological history				
Sexual history	<16 yrs of age at first intercourse (*n* = 669)	74 (20%)	70 (23%)	0.83 (0.57–1.2)
	One lifetime partner (*n* = 744)	230 (57%)	198 (59%)	1.1 (0.80–1.5)
	Current partner has other sex partners (*n* = 546)	103 (35%)	79 (31%)	1.2 (0.84–1.7)
	Does not know whether current partner has other sex partners (*n* = 707)	92 (24%)	69 (21%)	1.2 (0.81–1.7)
	Ever used a condom	49 (12%)	27 (8%)	1.4 (0.84–2.4)
	Not very difficult to procure condom (*n* = 691)	274 (71%)	239 (78%)	0.71 (0.50–1.0)

		Forced or pressured into having sex $n = 407$	Not forced or pressured into having sex $n = 342$	OR (95% CI)
	Somewhat or very difficult to get partner to use a condom ($n = 510$)	93 (32%)	55 (25%)	1.4 (0.98–1.2)
	Partner does not like to use a condom ($n = 141$)	81 (91%)	50 (96%)	0.41 (0.08–2.0)
Pregnancy and childbirth	Ever been pregnant ($n = 748$)	395 (97%)	331 (97%)	1.1 (0.48–2.5)
	Currently pregnant ($n = 748$)	245 (60%)	214 (63%)	0.91 (0.68–1.2)
	Current pregnancy unplanned ($n = 274$)	96 (71%)	81 (59%)	1.7 (1.0–2.8)
Past medical history (self-report)	Ever had chronic pelvic pain	240 (59%)	171 (50%)	1.4 (1.1–1.9)
	History of infertility ($n = 691$)	171 (45%)	131 (42%)	1.1 (0.84–1.6)
	Ever had an STD ($n = 685$)	34 (9%)	18 (6%)	1.7 (0.92–3.3)

[a] $n = 749$ unless otherwise indicated; sample size less than 749 indicates missing values.

[b] 500 goud=$20.00.

Table 2

Multiple logistic regression analysis of factors associated with forced sex

Models	OR	95% CI
Model 1: Sociodemographic factors (n = 617)		
Age (<=30 vs. >30)	1.6	1.1–2.4
Ever attended school (yes vs. no)	0.83	0.58–1.2
Marital status (married vs. not married)	0.9	0.63–1.3
Length of time in a relationship (>4 yr vs. <=4 yrs)	2.6	1.8–3.8
Partner's age (<=30 vs. >30)	1.3	0.91–1.9
Husband or primary partner ever attended school (yes vs. no)	1.0	0.71–1.5
Model 2: Sexual history (n = 632)		
Number of lifetime sex partners (>1 vs. 1)	1.1	0.75–1.5
Age at first intercourse (<16 vs. >=16)	0.82	0.55–1.2
Current partner has other sexual partners (yes/don't know vs. no)	1.3	0.94–1.8
Ever used a condom (no vs. yes)	0.74	0.43–1.3
Suspect that a past partner had an STD (yes/don't know vs. no)	0.77	0.43–1.4
Model 3: Gynecological history (n = 654)		
Number of times pregnant (>3 vs. <=3)	1.5	1.1–2.0
Ever had an STD (yes vs. no)	1.1	0.55–2.1
Lesions on mouth or vagina (yes vs. no)	1.8	0.99–3.3
Chronic pelvic pain	1.5	1.0–2.0
Excessive vaginal discharge	1.3	0.84–2.0
Discolored vaginal discharge	0.97	0.65–1.4
Malodorous vaginal discharge	1.2	0.72–2.0
Vaginal pruritis	1.5	1.0–2.2
Genital ulcers or lesions	0.68	0.25–1.8
Vaginal pain, burning, or irritation	1.2	0.87–1.8
Burning or pain during urination	1.3	0.89–1.9
Model 4: Occupation (n = 749)		
Farming	1.0	0.76–1.4
Market vendor	1.0	0.76–1.4
Sewing	2.0	1.1–3.8
Domestic servant	0.90	0.61–1.3
Professional	1.8	0.53–6.2
Model 5: Partner's occupation (n = 717)		
Farming	1.3	0.87–2.0
Market vendor	0.87	0.56–1.3
Mechanic	0.79	0.29–2.1
Construction worker	1.8	1.0–3.2
Professional	1.2	0.59–2.4
Driver	1.0	0.42–2.6
Police/military	1.0	0.20–5.4

Models	OR	95% CI
Fisherman	1.3	0.51–3.5
Model 6: Economic factors (n = 566)		
Amount of income spent on food (Most/all vs. a little/half)	0.95	0.64–1.4
Family sells food that they grow (no vs. yes)	1.3	0.93–1.8
Cooks using wood as fuel (yes vs. no)	2.0	0.88–4.5
Has problems with quality of housing (yes vs. no)	1.2	0.80–1.7
Has problems with money (yes vs. no)	1.0	0.52–2.0
Has problems with transportation (yes vs. no)	1.2	0.69–1.9
Difficulty paying for healthcare (yes vs. no)	1.4	0.96–2.1
Model 7: Combined model (n = 627)		
Age (<=30 vs. >30)	1.8	1.2–2.6
Length of time in a relationship (>4 yr vs. <=4 yr)	2.3	1.6–3.4
Age at first intercourse (<16 vs. >=16)	0.84	0.56–1.3
Current partner has other sex partners (yes/don't know vs. no)	1.3	0.90–1.7
Lesions on mouth or vagina (yes vs. no)	2.3	1.2–4.1
Sewing as occupation	1.5	0.78–3.1
Construction work as partner's occupation	1.9	0.98–3.5
Cooks using wood as fuel (yes vs. no)	1.7	0.91–3.1
Has problems with transportation (yes vs. no)	1.5	1.0–2.2