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# evidence review

## Interventions for the Prevention of the Sexual Transmission of HIV among Female Sex Workers and their Clients and Non-Paying Partners in Canada

### Introduction

Female sex workers (FSW) form a heterogeneous group who exchange sex for money, goods, or services (1). Estimates for the number of FSW and clients in Canada are not available (2), but it has been suggested that there may be tens of millions of FSW worldwide, with their male clients numbering in the hundreds of millions (3).

*This evidence review is part of a series on HIV prevention and control produced by the National Collaborating Centre for Infectious Diseases. It is intended to inform public health practitioners and community-based workers and guide their practice.*

Individuals who perform sex work come from a variety of marginalized backgrounds and range from street-based sex workers to brothel and escort workers. In Canada, although up to 80% of FSW work in indoor environments such as massage parlours, escort agencies, and private in-call or out-call brothels, virtually all research is based on the more visible street-based sex workers (4). Furthermore, while sex work necessarily involves two people, most HIV prevention efforts have focused on FSW, and not on their paying clients or non-paying partners.

### Highlights

- Rigorous evaluation of HIV/STI prevention interventions in sex workers is challenging.
- Addressing the determinants of health through enhanced “higher-level” structural interventions may help FSW break the cycle of inequality, poverty, and preventable bad health outcomes.
- Interventions that decrease risky sexual behaviours, promote consistent use of condoms, and improve access to STI treatment may reduce or prevent HIV and STI acquisition in sex workers.
- There is only limited evidence suggesting that regular STI screening and periodic treatment of STIs in developed countries can effectively protect against HIV.
- Structural interventions, policy changes, and empowerment of sex workers may enhance existing prevention programs, thereby further reducing the prevalence of HIV/STIs.
- Interventions promoting 100% condom use have been successfully implemented in countries from Southeast Asia to the Caribbean with desirable health outcomes.
- HIV/STI prevention programs should encourage the use of condoms with FSW and their non-paying partners.

This evidence review describes the prevalence and risks of HIV among FSW in Canada and outlines several interventions that may reduce the sexual transmission of HIV among FSW and their clients and non-paying partners. Many of these interventions have been studied in resource-limited countries and their applicability in Canada remains to be determined.

### **What is the HIV Prevalence among FSW?**

Globally, HIV prevalence among FSW varies from less than 2% in Europe (5), China, Australia, Bolivia, and Mexico (3), to as high as 68% in Zambia and 73% in Ethiopia (6). In the middle of the scale is the Netherlands with an HIV prevalence of 7% among FSW (7).

In Canada, the proportion of female individuals reported with newly identified HIV infections increased from 11% in 1997 to 28% in 2006 (8). From 2001 to 2006, 62% of new infections among females were acquired through sexual contact and 32% were related to injection drug use (9). The proportion of these infections attributable to sex work is unknown.

**FSW most at risk for HIV infection either inject drugs or have a history of injecting drugs, or have high-risk non-paying sex partners.**

It is difficult to obtain representative samples of FSW for the purpose of estimating the prevalence of HIV (10, 11). However, HIV prevalence has been estimated among some subpopulations of FSW. FSW most at risk for HIV infection either inject drugs or have a history of injecting drugs (12, 13), or have high-risk non-paying sex partners (14). Among samples of street-based FSW attending women's drop-in centres in Vancouver's downtown Eastside, approximately 25% tested positive for HIV, with 57% reporting injection drug use and 13% sharing injection drugs with clients (15, 16). Among samples of street-involved women who inject drugs in Vancouver and Montreal, 29% were infected with HIV, whether or not they were involved in sex work (17). Results from a surveillance study conducted by the Public Health Agency of Canada indicated that, among female injection drug users (IDUs), nearly one-third (N = 266/799) reported having male client sex partners in the previous 6 months; 80% had always used condoms among those who had male clients. On the other hand, among male IDUs, 8% (N = 124/1544) reported

having paid for sex in the previous 6 months, of whom 65% always used condoms (18).

### **What is the Risk of HIV Transmission for FSW and their Male Clients?**

Male clients are the intermediary for HIV transmission from FSW to low-risk women in the general population (19). These male clients are often referred to as the bridge population. In 1998, HIV prevalence was 41% among FSW, 8% among clients, and 16% among non-paying partners compared to the respective HIV prevalence of 3.3% and 3.4% among men and women in the general population of Cotonou, Benin. A survey suggests that 30% of men may visit a FSW in any given year, and estimates from modelling studies show that 1% of non-sex worker women would have been exposed to HIV in the last year through unprotected sex with male clients of FSW (20). Following this model, HIV transmission from male clients could account for most new HIV infections among non-sex worker women in Cotonou, Benin. FSW are not universally at high risk of HIV. While it is important not to overstate the role of FSW in the global epidemic, it is equally important not to overlook the high infection rates among distinct groups and their male clients/partners (1).

### **Are Non-Client Partners of FSW at Risk of HIV Transmission?**

FSW are less likely to use condoms in their intimate relationships than with their paying clients (5, 21–24). In a qualitative study of 69 FSW in Halifax, Nova Scotia, most women said they did not use condoms with their non-client partners (22). Condom use was considered to be impersonal and therefore appropriate with clients, but not appropriate when they desired emotional closeness with intimate partners (21–24).

### **Are the Social Determinants of Health Associated with HIV Risk?**

The social determinants of health are the social, economic, and structural conditions that influence the health of individuals and communities by determining the resources individuals can access to cope with the environment and satisfy their needs (25). FSW, particularly those who are street-based, face a range of challenges which affect their health including violence, discrimination, social isolation, poverty, unstable housing and homelessness, and addiction (12, 16, 27–29). The barriers to accessing health and social services include restrictive office hours at health facilities, lack of women-specific services, concerns of privacy and disclosure, and limited means of transportation to service locations (15, 30). Barriers to uptake of antiretroviral therapy (ART) services include fear of side-effects, a lack of knowledge regarding ART, inability to take medications every day, and fear of suspicion from others that they are HIV positive (15).

Women of Aboriginal ancestry, who are more likely to have been sexually abused, are overrepresented in new HIV infections in Canada and experience considerable discrimination and

barriers to accessing services (31). The stigmatization of FSW limits their economic and social opportunities as well as their personal agency and increases their risk of abuse and sexually transmitted infections (STIs).

Studies have found that 90% of street-based FSW in Vancouver's downtown Eastside had been assaulted and 78% raped by a client (14, 32). Street-based settings, particularly those that are poorly-lit, increase the potential for violence compared to indoor sex work settings (22). Previous research among FSW has identified violence as a significant structural barrier to HIV prevention efforts (33–37).

### **Do Structural and Environmental Barriers Decrease Condom Use?**

Evidence has shown that laws regulating street-level sex work increase police presence and crackdowns, displacing sex worker markets to outlying areas. The extraneous pressure indirectly decreases condom use among FSW (37–39). For example, the study by Shannon et al. found that among 205 Vancouver-based drug-using FSW, those who moved away from main streets because of local policing and zoning restrictions (due to previous solicitation or drug charges) experienced a 3-fold increase in the likelihood of being pressured into sexual intercourse without a condom, and those who serviced clients in cars or public spaces experienced a 2-fold increase (37). The factors that doubled the probability of FSW being pressured by a client into unprotected sexual intercourse were the FSW's being high on crack while providing sexual services and the FSW's being threatened with client-perpetuated violence (37). This study provides evidence that as a result of increased policing, solicitation of street-level sex in displaced and public venues increases the risk of unprotected sexual intercourse.

An ethnographic study of the dismantling of Baina, Goa's red light district, suggested that the concentrated and homogeneous indoor, brothel-based sex work environment in India rapidly evolved into heterogeneous, clandestine and displaced sex worker markets (40). The social context of sex work that emerged from the demolition of Baina was one of higher risk of unprotected sex. The well-established HIV services were dismantled and the FSW clients who had moved to outlying areas were lost to follow-up. The continuing police harassment of sex workers following the demolition decreased the agency and empowerment of FSW and compounded their marginalization and exclusion. A subsequent study by the same authors compared incidence of HIV and STIs among indoor sex workers who had been based in Baina's red-light district with sex workers who had never worked in Baina (41). They found that sex workers who had been based in Baina's red-light district were less likely to have curable STIs (adjusted odds ratio of 0.27), were more likely to have been exposed to HIV prevention, and report more consistent condom use with clients than sex workers who had never worked in Baina (41). The study on the dismantling of the Goa's red light district highlighted fear, insecurity, and economic needs as the primary

factors for de-prioritizing sexual health for sex workers in the short term (40). In Vancouver, it was found that violence and policing displaced street-based FSW to industrial settings and side streets, away from health and social supports (36, 37).

### **What Interventions Reduce Harm?**

Numerous reviews and meta-analyses on harm reduction interventions to prevent HIV have proven that needle exchange programs (NEP), supervised injection facilities (SIF), and methadone treatment are effective at reducing needle sharing and increasing access to health, drug treatment, and support resources (42–46). Among injection drug-using FSW in a Vancouver study (N = 116), 60% of participants had accessed syringes at a mobile NEP van, 56% had accessed syringes from a fixed NEP, 47% had accessed a SIF, and 11% had obtained syringes from outreach workers (36). A mobile program that focused on addiction treatment for FSW in New York City (N = 144) detoxified 35% and treated 43% of the 78 heroin users with methadone (14). Another mobile van program in Vancouver found that over 90% of clients (N = 90) reported that the van made them feel safer on the street; 16% recalled a specific incident in which the van's presence protected them from a physical assault while 10% recalled an incident when its presence had prevented a sexual assault (47). Since many FSW work at night and sleep during the day, mobile services enable access to health and ancillary services.

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FSW cannot rely on the police to protect them from violence and rape (36, 37, 48, 49). In Canada, section 213(1) of the *Criminal Code* indicates that it is an offense to communicate for the purpose of engaging in prostitution in public, making it impossible to practice sex work without breaking the law, and the operation of "bawdy houses" is illegal. It is argued that decriminalization of sex work may reduce violence by clients, police, and third parties and increase access to health and support services (15, 37). Countries such as New Zealand, the Netherlands, Sweden, and Australia have decriminalized some aspects of sex work (15, 19). Decriminalization and consistent application of legislation has reduced harm through mandated



HIV testing of FSW in Nevada's brothels (50). Sweden is experimenting with the criminalization of clients who purchase sex rather than sex workers who provide it, but this may drive sex workers underground (15). Four jurisdictions in Australia (Victoria, the Northern Territory, the Australian Capital Territory, and Western Australia) have decriminalized sex work but regulated the industry through a licensing system, requiring sex workers to undergo testing for HIV, syphilis, chlamydia, and gonorrhoea every 12 weeks (51). Mandatory testing combined with nearly universal condom use has resulted in Australian FSW having low incidence of HIV/STI. Nevertheless, projections from mathematical modelling studies suggest that the current mandatory testing scheme in Victoria, Australia, is not cost-effective. For example, the screening costs are estimated at AU\$4,000,000 for every HIV infection averted. The authors recommend HIV testing be conducted approximately once every 40 weeks and chlamydia testing approximately once per year at an assumed cost of AU\$50,000 per quality-adjusted life year gained (51). Furthermore, in the four aforementioned Australian jurisdictions, there is a total ban on street-based prostitution. In Queensland and Victoria, for example, the owners of brothels are licensed (52). A 2004 report indicated that conditions for street-based FSW may have deteriorated after legalization of sex work in licensed brothels was passed in the mid-1980s due to increased police enforcement of the anti-street sex trade (53). The contrast between a legalised indoor environment (where women can access appropriate occupational health services and are safer from violence) and the illegal street-based environment (where women experience constant violence and have high rates of illicit drug use and health problems) is highlighted in this report.

**Comparisons between male versus female condom promotion to encourage consistent use show little evidence that the female condom performs better.**

## **What Behavioural Interventions are Effective?**

### ***Individual Condom Promotion***

Most behavioural interventions are targeted at FSW as individuals and promote male condom use consistently with clients. Studies suggest that these programs are effective (14,

15, 19, 21, 54, 55), and inconsistent condom use with clients has been shown to be predictive of having an STI (5). One population-level study concluded that well-designed condom promotion programs targeting groups with high rates of partner exchange are effective at reducing HIV transmission (56).

The Thai and Cambodian "100% Condom Use" programs have been successfully implemented in countries from South-East Asia to the Caribbean (57, 58). The program targeted the owners of sex establishments, who were responsible for ensuring 100% condom use by their clients. Consistent condom use increased in sex work from 14% in early 1989 to over 90% in 1992, and STI rates declined by 80% among clients in both Thailand and Cambodia (57, 58).

Comparisons between male versus female condom promotion to encourage consistent use show little evidence that the female condom performs better. However, the female condom is a female-controlled method for the prevention of HIV/STIs and pregnancy, and therefore it should be offered in tandem with the male condom. In a Zimbabwean study examining whether access to the male and female condom could increase protected sex episodes, FSW were randomized into two intervention groups (59). Subjects in Group A (N = 99) had the liberty to choose between the male or female condom, whereas Group B only received the male condom (N = 50). Consistent male condom use increased from 0% to 52% in Group A, and from 0% to 82% in Group B; however, this difference was not statistically significant. Only 3%–9% of FSW used the female condom consistently with clients; unfamiliarity and distrust of the prevention method were reported as the primary reasons for limited uptake (59).

One Madagascar randomized controlled trial (RCT) examined the effect of two alternative male and female promotion intervention strategies (peer education only versus peer education supplemented with individual clinic-based counselling) on the prevalence of STI among FSW. Participating FSW were randomly allocated between the two strategies and were offered sample male and female condoms but were advised to purchase additional condoms made available to them at the lowest price in the city at the study sites. This study found little gain in reported behaviours and STI outcomes from the more thorough clinical counselling on male and female condom use (60).

Another RCT randomized sex establishments in four Thai cities into groups: one group using the male condom (male condom arm, N = 255), and one group using the female condom if clients either refused or were unable to use male condoms (male/female condom arm, N = 249) (61). It is apparent from the analysis of the proportion of male condoms used in the two study arms (88% in the male/female versus 97% in the male condom group) that women in the male/female condom group were less insistent on male condom use than women in the male condom group. However, it is notable that the reduction in male condom use was counterbalanced by the use of female

condoms in 12% of all sexual acts, contributing to a statistically significant reduction in the proportion of unprotected sexual acts in the male/female condom group by 17% (61).

In a Chinese RCT of young FSW (mean age = 22 years), participants were randomized to a female condom (N = 165) arm or a male condom arm (N = 165) for a two month period (62). Female condom users were provided with information and education on the female condom by a clinician. Questionnaires were used to determine the acceptability, recommendation of, and desire to use the female condom. No comparison with the male condom users was reported by the authors. After follow-up, FSW reported that client acceptance of the female condom increased from 27% to 92%, and the rate of FSW who were willing to recommend female condoms to others increased from 19% to 70%. A Zimbabwean study, which conducted structured interviews, cited high acceptability of the female condom but an inconsistently low level of actual female condom use (59). Focus group discussion (N = 37) revealed that FSW were fearful of losing clients by introducing an unfamiliar method.

### **Targeting Male Clients/Partners**

Interventions targeting male clients/partners are gaining the attention of policy-makers, but evidence is still lacking in the literature (3). An intervention for FSW in the Dominican Republic modelled after the Thai and Cambodian interventions was successful in increasing condom use (24). The intervention included: regular workshops with role-playing to increase solidarity and to practise negotiation for condom use; posting of educational materials about condom use in sex trade venues; provision of clinical services and counselling around condom use; monitoring of condom use, condom stocks, attendance of sex workers at monthly STI check-ups, and lack of positive STI diagnoses among the establishment's FSW; and promotion of compliance with government policy requiring sex establishment owners to ensure condom use between FSW and their clients. The Dominican Republic study revealed significant increases in condom use with non-paying partners (13% to 29%) and reductions in STI prevalence (29% to 16%) (24). Another intervention for males who solicited FSW was the John School Diversion program, first set up in 1996 in Toronto (63, 64). The day-long program was offered as an alternative to arrest for first-time offenders and involved lectures on sex work and health. However, these programs were criticized for portraying men who buy sex as "immoral villains in need of rehabilitation" and were later discontinued on the grounds that choosing diversion over court was an automatic admission of guilt (64).

Based on findings of a recent ethnographical study of UK indoor FSW, it was proposed that FSW may provide an important gateway to access male clients for the purpose of health education, information transfer, and behaviour change (65).

### **Peer Empowerment**

Potential empowerment that FSW may experience by working as peer educators could reduce their risk of HIV infection (3, 55,

66–69). For instance, the knowledge and self-esteem that FSW gain during the training process for becoming a peer educator may increase their sense of personal agency for negotiating condom use with clients (22). In fact, studies from Zimbabwe, Kenya, and India show that FSW involved in peer education have increased knowledge of HIV/STI and condom use and reduced HIV seroprevalence rates (66–68). Kenyan FSW who received peer interventions used condoms with clients nearly 90% of the time compared to FSW who were not exposed to peer interventions and used condoms with clients 64% of the time (68). The Sonagachi project showed significant increases in condom use among FSW in a 16 month empowerment intervention (N = 110) compared to control (N = 106) who received only the standard care of STI clinic, condom promotion, and peer education (67, 69). The empowerment strategies had the following significant results: (a) improved knowledge of STIs and protective condom use; (b) reinforced the view of sex work as valid work, increasing disclosure of profession and demand for more training; (c) improved skills for negotiations of safer sex; (d) increased participation in social support and peer helping; and (e) increased savings and alternative income (69). Other programs engaged law enforcement in dialogue to reduce police violence and interference, and to report cases of violence against FSW (70). In India, organizing FSW into collectives promoted solidarity and developed "bad-date" warning systems to inform FSW of potentially violent clients (66).

**HIV screening and counselling among FSW are important to diagnose new infections as early as possible.**

### **HIV/STI Screening and Counselling**

HIV screening and counselling among FSW are important to diagnose new infections as early as possible and to ensure that FSW are informed about the importance of condom use to prevent HIV/STI transmission, particularly early in the infection when transmission to other individuals is most efficient. Open sores caused by STIs increase the likelihood of becoming infected with HIV upon exposure; therefore, treatment of existing STIs may impact prevention or delay HIV infection (71). Screening is also important for detecting HIV so that antiretroviral treatment can be promptly initiated to delay morbidity and reduce the chances of transmission to partners (72). Furthermore, the diagnosis and treatment of STIs can prevent complications such as pelvic inflammatory disease and infertility (71). In a

randomized HIV prevention trial in Kenya, 172 HIV-negative FSWs were provided community- and clinic-based counselling and STI management (73). After trial completion 1.2 years later, condom use had significantly increased from baseline; only 5.2% of study subjects had an STI, and the incidence of HIV decreased from 3.7 per 100 person-years at baseline to 1.6 per 100 person-years.

One Nicaraguan study distributed vouchers to FSW for free-of-charge access to clinics for care and prevention services for STI and HIV infection (74). Among approximately 1,150 FSW, over 40% redeemed their vouchers between 1995 and 2002. Over 15,000 vouchers were distributed and over 6,000 medical consultations were provided (75). The incidence of sexually transmitted diseases fell by 65% among users of vouchers since the commencement of the program (55). An intervention targeting Tanzanian bar-based FSW involved regular appointments for 600 FSW for HIV/STI screening, management, and counselling (4 times per year). It was shown to be effective in reducing the prevalence of *Neisseria gonorrhoea* (from 22% to 7%) and rates of all other STIs, except for genital herpes and bacterial vaginosis (76). HIV incidence declined from 14 per 100 person-years to 5 per 100 person-years over three separate 9-month periods (76).

## Safer sex environments for FSW, including indoor venues, would decrease HIV risk and increase access to health services.

The results of a Quebec study indicate that effective sexual health promotion among FSW should incorporate services related to physical and psychological needs and drug addiction in addition to the prevention and treatment of STIs (77). In a study conducted in Rome, immigrant transsexual FSW, who attended counselling sessions to address persistent health and emotional problems and to improve life and problem-solving skills, showed a significant increase in consistent condom use with clients from 43% in 1993 to 79% in 2003 (78).

Although many studies found regular HIV/STI screening among FSW to be beneficial in decreasing the prevalence of STIs, results of the only systematic review on HIV/STI prevention interventions for FSW in resource-poor countries question the effectiveness of combining condom promotion and regular

access to STI management in reducing STI burden (55). The authors of this systematic review found little evidence that regular STI screening or periodic treatment of STIs confers additional protection against HIV. Conversely, structural interventions, policy change, or interventions involving the empowerment of sex workers were effective at reducing HIV/STI prevalence.

### Knowledge Gaps

Due to the illegal nature of sex trade in most countries, the majority of sample populations used in studies to date are unlikely to be representative. There is a lack of research on Canadian FSW who work indoor and on those who are street-based but do not use injection drugs. Furthermore, there is also a paucity of information on the most effective HIV prevention intervention involving Canadian FSW and their clients and non-paying partners. The effects of decriminalization of activities related to sex work and HIV transmission in Canada would be worth exploring. Lastly, knowing the proportion of FSW who access HIV prevention, outreach, and health care services in Canada and the types of barriers they face would be pivotal for the success of the planning and implementation of HIV prevention programs targeting this vulnerable population.

### What Recommendations Can Be Made?

There is a need to move beyond interventions that focus on the individual and to implement structural and environmental interventions such as legal reforms that facilitate safer environments for sex work and HIV prevention (37). The authors of a systematic review on macro-level structural facilitators and barriers to HIV prevention suggest that economic policy, migration, gender inequality, and sex work legislation need reform (79). Addressing barriers to HIV prevention services and social determinants of health that can improve health outcomes is crucial in harm-reduction interventions and policies targeting FSW.

Safer sex environments for FSW, including indoor venues, would decrease HIV risk and increase access to health services. Shannon and colleagues state that their findings in Vancouver's downtown Eastside "document increased harms, including violence, exploitation, and drug-related HIV risk, in street-level sex work as a result of enforcement of prohibitive sex-work legislation" (15, 37).

Peer-based prevention (67, 69), outreach, and mobile services (36, 47) have reduced HIV and STI transmission. Important elements of a model program may include: job training; stable housing opportunities; self-defence training; legal assistance; anonymous methods for reporting bad dates and violence to the police; childcare; health, addiction and mental health services available at convenient locations and times for FSW; round-the-clock drop-in crisis centres; hotlines staffed by peers; and police cooperation (16). Clinics that include regular testing and counselling increase condom use and reduce HIV/STI. Finally, programs that target male clients and partners for 100% condom use and gender sensitivity can reduce HIV transmission (5, 24).



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