

Condom Use with Female Sex Workers among Male Clients in Sichuan Province, China: The Role of Interpersonal and Venue-Level Factors

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ABSTRACT *Commercial sex work has re-emerged as a widespread industry since China started economic reforms in the 1980s. This study examined the role of interpersonal and venue-level factors in commercial sex male clients' (CSMCs) condom use with female sex workers (FSWs) in China. Given the heterogeneity of commercial sex industry in China, this study also aimed to explore how these factors function differently by social ranks of commercial sex work frequented by CSMCs. A cross-sectional survey was conducted with 601 CSMCs in Sichuan province, China. Human immunodeficiency virus (HIV) prevalence in this sample was 1.7%. In addition to the individual characteristics, interpersonal factor was measured by the frequency of FSWs taking the initiative in condom use and providing condoms. Venue-level factor was assessed by the frequency of the managers of commercial sex venues communicating condom use policies and the frequency of condom availability in commercial sex venues. The primary behavioral outcome was consistent condom use with FSWs. Multivariate logistic regression models revealed that consistent condom use with FSWs was significantly associated with interpersonal (adjusted odds ratio (AOR), 1.62; 95% confidence interval (CI), 1.38, 1.90) and venue-level factors (AOR, 1.98; 95% CI, 1.40, 2.80). Moreover, the associations between interpersonal and venue-level factors and consistent condom use were moderated by social ranks of commercial sex work frequented by the male clients. The present study findings underscore the need for comprehensive HIV prevention approaches that integrate individual, interpersonal, and venue-level factors to reduce HIV risk behaviors among CSMCs in China.*

KEYWORDS *Commercial sex male clients, Interpersonal factors, Venue-level factors, Condom use, HIV, China*

INTRODUCTION

By 2007, there were an estimated 700,000 persons living with human immunodeficiency virus (HIV) in China, and the overall HIV prevalence was 0.05%. Heterosexual transmission accounted for 37.9% of new infections, a rapid increase from 10.7% in 2005.¹ The rising heterosexual transmission of HIV may be in part due to the flourishing commercial sex industry in China. Commercial sex work has re-emerged as a widespread industry since China started economic reform in the 1980s. In addition, after almost 30 years of constrained mobility, an estimated 120 million migrants have relocated to rapidly changing cities.² Lack of employment

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opportunities that provide adequate salaries in cities may compel many women into the commercial sex industry. Previous studies indicated that female sex workers (FSWs) in China tend to be young, unmarried, and primarily migratory with limited education.³⁻⁵

While the majority of commercial sex in China is venue-based, the hierarchy of the commercial sex industry in China displays a multi-layer spectrum, ranging from the high social rank of hotel courtesans, the middle rank of massage girls, to the low rank of streetwalkers.⁶ It has been suggested that the heterogeneity of commercial sex industry may define the considerable variation of sexual practices and HIV risks.⁶⁻⁸ In a sample of FSWs in Yunnan province, China, FSWs working in a low rank of the commercial sex industry were at significantly higher risk of HIV with a prevalence of 17.9% as compared to those working at a higher rank of the commercial sex industry, with 5.7% HIV positive.⁹ However, a study in the Dominican Republic revealed that male clients' perception that sex workers working in a more expensive and exclusive commercial sex establishments were healthier was negatively associated with consistent condom use with FSWs.¹⁰

Of the few studies that have interviewed commercial sex male clients (CSMCs) in China, all have documented a low rate of condom use and an alarmingly high prevalence of HIV.¹¹⁻¹⁴ According to a population-based study in China,¹⁵ only 5.7% of men who had purchased sex reported consistent condom use with FSWs, and men who reported recent unprotected sex with an FSW were more than eight times more likely to be infected with Chlamydia than those who did not. CSMCs are also at risk of infecting their regular or casual sex partners, given the low condom use in the non-commercial sexual relationship.^{16,17} Although CSMCs have been believed to play an important role in facilitating the spread of HIV in China, most existing studies and prevention efforts have only targeted FSWs.^{6,18} Prevention interventions limited to FSWs place the burden for behavioral change upon the women, who are situated at the most powerless status in the commercial sex industry.¹⁶

There has been increasing awareness of the need to shift the focus of HIV prevention intervention by involving multiple sectors and creating environments conducive to population-level behavior change. The most well-known and successful HIV intervention targeting to multiple sectors is the Thai "100% Condom Program." The main principle of this program is to promote a high rate of condom use through the collaboration between local authorities, commercial sex managers, and FSWs.¹⁹ Implementation of the 100% condom use program includes activities, such as organizing meetings of local authorities to raise awareness of the HIV/acquired immunodeficiency syndrome (AIDS) epidemic, holding meetings between the HIV/AIDS committee and the owners of sex establishments to obtain cooperation in implementing the program, educating FSWs about the program, and sanctioning establishments that do not comply.²⁰ Since the program was first implemented in Thailand, the use of condoms in sex work has dramatically increased from 14% in early 1989 to over 90% in 1993.²⁰ The successful story in Thailand inspired similar interventions in other countries. Evaluation data from the pilot "100% Condom Program" in Wuhan, China, demonstrated the feasibility and promising effect of this effort in increasing condom use among FSWs.²¹

One important component of "100% Condom Program" is a focus on the structural factors that facilitate individual protective behaviors by providing condoms and implementing a mandatory condom policy.^{20,22,23} Venue-level factors, such as condom availability and managerial and social support of HIV prevention in commercial sex venues, have been found to be associated with FSWs' consistent

condom use in different settings.^{21,22,24-29} A significant increase in condom use was observed among FSWs in establishments where a condom use policy exists compared with FSWs in establishments without such a policy in the Philippines.²⁹ Environmental support, which was measured by FSWs' perception of condom availability and managerial and social support of condom use in commercial sex establishments, has been found as a significant predictor of HIV prevention behaviors among establishment-based FSWs in China.²⁴ Yet, there remains a dearth of evidence that venue-level factors can influence CSMCs' HIV-related behaviors, particularly given the heterogeneity of commercial sex industry as is found in China.

Given the critical role that CSMCs can play in China's HIV epidemic, intervention efforts among this population could potentially have considerable impact. Understanding the characteristics of CSMCs and their HIV-related sexual behaviors could inform future intervention strategies aimed to prevent or control HIV in China. The goal of this study was to explore the role of interpersonal and venue-level factors in CSMCs' consistent condom use with FSWs, and to evaluate how social ranks of commercial sex industry moderate the associations.

METHODS

Study Site

This study was conducted in Sichuan province, China. By 2008, there were 19,375 HIV infections reported in Sichuan province, which ranked sixth among all provinces/autonomous regions in China.¹ Injection drug use was the primary route of HIV transmission in Sichuan (75.6%), and yet, there has been increasing transmission through sexual contact in recent years. The social hierarchy of commercial sex in Sichuan ranges from high rank (e.g., hotels and VIP club), to middle rank (e.g., karaoke bars, clubs, and massage parlors), to low rank (e.g., hairdressing rooms and streetwalkers).³⁰

Participants and Procedure

From October to November 2008, a cross-sectional study was conducted in three cities in Sichuan province: Xichang, Zigong, and Leshan. The study eligibility requirements included (1) male, (2) at least 18 years of age, and (3) have given money or valuable gifts in exchange for sexual intercourse at least once in the last 12 months. Given the stigma and illegal status of paying for commercial sex in China, participants were recruited by the local department of health through snowball sampling.³¹ Local health workers identified an initial group of eligible participants from the populations who had sought voluntary HIV testing and by outreach to the venues or locations where commercial sex was negotiated or operated. Potential participants were screened to determine the eligibility. Men who met the selection criteria were asked if they would be interested in participating in a research study, including a finger blood drawn for HIV testing and a 30-min face-to-face survey about their sexual behaviors and other related information. Confidentiality and anonymity of this study were emphasized. If the man expressed interest, a study appointment was made. In addition, the initially identified participants were asked to serve as seeds to recruit and bring their male friends who may be eligible to participate in this study.

In each study site, the research team rented a tea house or karaoke club as the study facility. After each participant's eligibility was determined, oral informed

consent was administered. Finger-stick blood samples were obtained for HIV antibody and confirmatory tests, which was followed by a 30-min face-to-face interview with a trained interviewer. All participants were paid 50 yuan (approximately 7 USD) for the participation. The research protocols were reviewed and approved by the Institutional Review Boards at Johns Hopkins Bloomberg School of Public Health and Sichuan University.

Measures

Consistent Condom Use with FSWs Based on extensive formative research with participants, we used an overall rate of consistent condom use with FSWs as a global measure of male clients' sexual risk behavior. The outcome variable was assessed by asking participants the overall frequency of condom use when having sex with FSWs on a five-point response option from "every time," "most of the time," "half of the time," "rarely," and "never." This response was dichotomized so that "consistent condom use with FSWs" indicated using condoms every time when having sex with FSWs.

Social Ranks of Commercial Sex Industry The participants were asked about social ranks of commercial sex work they most often patronized. Options included FSWs who worked in high rank (e.g., hotels and VIP club), middle rank (e.g., karaoke bars, clubs, and massage parlors), and lower rank (e.g., hairdressing rooms and on the street) of commercial sex industry.

Venue-Level Factor Venue-level factor was measured by two questions, "how often do commercial sex managers tell you that there is a mandatory condom use policy" and "how often are condoms available in commercial sex establishments?" Each response was measured on a five-item response category from "1: never" to "5: most or all of the time." The responses of the two items were highly correlated (spearman correlation, 0.40, $p < 0.001$). The responses were summed up, and then dichotomized at the median with a higher value indicating a higher level of venue-level factor.

Interpersonal Factor Interpersonal factor was assessed by two questions "how often do FSWs take initiative in condom use?" and "how often do FSWs provide condoms?" Each response was assessed on a five-item response option from "1: never" to "5: most or all of the time." The responses of the items were highly correlated (spearman correlation, 0.65, $p < 0.001$). The responses were summed up, and then dichotomized at the median with a higher value indicating a higher level of interpersonal factor.

Risk Perception HIV risk perception was assessed by participants' response on the likelihood of getting infected with HIV if not using condom with FSWs on a five-point response option ranging from "not likely at all" to "very likely." This response was dichotomized at the median with a higher value indicating a higher HIV risk perception.

Individual Sociodemographic Characteristics and Other Sexual Risk Behaviors Data on age, ethnicity, education level (i.e., illiterate, primary school, junior high school, senior high/professional school, college, or above), having local household registra-

tion, employment, monthly income, and current marital status were collected. The participants were asked about their current non-commercial regular and casual sex partners and the frequency of condom use with those partners. Information on age and condom use at sexual debut was also gathered.

Biomarker Serum specimens were screened for HIV antibodies by enzyme-linked immunosorbent assay (Modern Gaoda, China), and positive tests were confirmed by HIV-1 Western blot assay (GS HIV-1 Western Blot, BioRad Laboratories).

Data Analysis

Exploratory data analyses were conducted to examine the distribution of the variables and to generate a profile of this sample of male clients. The outcome of interest was consistent condom use with FSWs, which was dichotomized as yes or no. Bivariate logistic regression was used to assess the relationship between independent variables and the outcome variable. Independent variables significant at $p < 0.10$ in the unadjusted analysis were chosen for inclusion in the multivariate logistic regression models. Interpersonal and venue-level factors were evaluated for their interaction with social ranks of commercial sex work frequented by CSMCs ($p < 0.05$) to test if associations with consistent condom use differed in male clients who visited different social ranks of commercial sex work. The final model was run separately for social ranks of commercial sex work frequented by CSMCs. Since the sample was recruited by the local department of health in each study site, general estimating equation was employed to account for variance within and between study sites.³² Data were analyzed using Stata version 10.0 (StataCorp, College Station, TX, USA).

RESULTS

HIV, Sociodemographic Characteristics, and Commercial Sex Behaviors

A total of 601 eligible participants provided finger-stick blood samples and completed the survey questions, 200 from Xichang, 201 from Leshan, and 200 from Xichang. Western blot confirmatory test results indicated the HIV prevalence in the sample was 1.7% ($n=10$). Table 1 presents the sociodemographic and commercial sex-related characteristics of the study participants. The median age of this sample was 38 years, with a range from 18 to 75. The sample reported a high rate of full-time or part-time employment (82.6%), and over half of the participants (59.7%) had a monthly income more than 1,000 yuan (approximately 143 USD). Less than one quarter (20.8%) had at least a senior high school education, and more than half (58.4%) were married. The median age of sexual debut was 19 with range from 12 to 35. The rate of condom use at sexual debut was low (5.7%). The majority of the sample (82.2%) had non-commercial regular sex partners, and approximately half of the sample (45.1%) had non-commercial casual sex partners. The overall prevalence of consistent condom use with non-commercial regular and casual partners was 3.5% and 18.1%, respectively.

The overall prevalence of consistent condom use with FSWs was 30.5%. About two thirds the sample (60.6%) usually patronized FSWs who worked in the middle rank of the commercial sex industry. Over half of the sample (56.6%) reported FSWs took the initiative in condom use at least most of the time, and 72.7% indicated FSWs

TABLE 1 Characteristics of commercial sex male client participants (*n*=601)

	<i>N</i> (%)
Age: median (range)	38 (18–75)
Ethnicity	
Han	579 (96.3)
Others	22 (3.7)
Household registration	
Local	550 (91.5)
Other	51 (8.5)
Employment	
Full/part-time employed	474 (82.6)
Unemployed	100 (17.4)
Monthly income	
≥1,000 yuan	359 (59.7)
<1,000 yuan	242 (40.3)
Education	
At least senior high school	125 (20.8)
Less than senior high school	476 (79.2)
Marital status	
Married	351 (58.4)
Others	250 (41.6)
Age of sexual debut: median (range)	19 (12–35)
Condom use at sexual debut	
Yes	34 (5.7)
No	565 (94.3)
Consistent condom use with regular partners ^a	
Yes	17 (3.5)
No	475 (96.5)
Consistent condom use with casual partners ^a	
Yes	50 (18.1)
No	226 (81.9)
Consistent condom use with FSWs	
Yes	183 (30.5)
No	418 (69.6)
Social ranks of commercial sex industry	
Low	172 (28.7)
Mid	364 (60.6)
High	65 (10.7)
Interpersonal factor	
FSWs took the initiative in condom use	
Never	59 (9.8)
Some or a little of time	61 (10.2)
Occasionally	80 (13.3)
A moderate amount of time	61 (10.2)
Most or all of the time	339 (56.5)
FSWs prepared condoms	
Never	63 (10.6)
Some or a little of time	32 (5.4)
Occasionally	47 (7.9)
A moderate amount of time	21 (3.5)
Most or all of the time	434 (72.7)

TABLE 1 (continued)

	N (%)
Venue-level factor	
Managers communicated a condom use policy	
Never	393 (67.5)
Some or a little of time	41 (7.0)
Occasionally	33 (5.7)
A moderate amount of time	29 (5.0)
Most or all of the time	86 (14.8)
Condoms were available in the commercial sex venues	
Never	281 (48.7)
Some or a little of time	25 (4.3)
Occasionally	26 (4.5)
A moderate amount of time	34 (5.9)
Most or all of the time	211 (36.6)

^aAmong those who had regular or casual sex partners

prepared condoms at least most of the time. Only 14.8% experienced managers communicating condom use policies most or all of the time, and 36.6% reported that condoms were available in the venues most or all of the time.

Role of Interpersonal and Venue-Level Factors in Consistent Condom Use with FSWs

Table 2 presents the results of bivariate and multivariate analyses of associations between overall consistent condom use with FSWs and sociodemographic, individual cognitive, interpersonal, and venue-level factors. Results of bivariate logistic regression models showed that male clients were more likely to report consistent condom use with FSWs if they reported a high level of interpersonal and venue-level factors (odds ratio (OR), 2.07; 95% confidence interval (CI), 1.49, 2.87; OR, 1.98; 95% CI, 1.40, 2.80). Compared to those who visited FSWs working in a low rank of the commercial sex industry, male clients who usually patronized FSWs working in a middle or high rank of commercial sex industry were more likely to use condoms consistently with FSWs (OR, 1.71; 95% CI, 0.94, 3.11; OR, 2.41; 95% CI, 1.01, 5.77).

After adjusting a set of sociodemographic factors and HIV risk perception, male clients who reported high level of interpersonal factor were 1.62 times more likely to report consistent condom use with FSWs (adjusted odds ratio (AOR), 1.62; 95% CI, 1.38, 1.90). The association between the venue-level factor and consistent condom use was also significant (AOR, 1.75; 95% CI, 1.11, 2.75).

Interpersonal and Venue-Level Factors Across Different Social Ranks of Commercial Sex Industry

To further examine the effect of multiple factors on CSMCs' consistent condom use with FSWs, Table 2 presents the associations of interpersonal and venue-level factors with consistent condom use stratified by social ranks of commercial sex industry most often visited by male clients. The interpersonal factor was independently associated with consistent condom use among the participants who usually visited

TABLE 2 Associations between interpersonal and venue-level factors and consistent condom use with female sex workers (FSWs): bivariate and multivariate analyses

	Social ranks of commercial sex industry frequented by CSMS				
	Adjusted OR (95% CI)		Adjusted OR (95% CI)		
	Unadjusted OR (95% CI)	(n = 568)	Low (n = 159)	Middle (n = 347)	High (n = 62)
Age (>38 years old)	0.31 (0.20, 0.48)***	0.31 (0.20, 0.49)***	0.45 (0.28, 0.74)**	0.26 (0.16, 0.42)***	0.19 (0.07, 0.49)**
Monthly income (>1,000 yuan)	1.36 (1.05, 1.76)*	0.93 (0.70, 1.25)	0.87 (0.53, 1.41)	1.03 (0.73, 1.44)	0.36 (0.06, 2.13)
Married	1.22 (1.00, 1.48)*	1.68 (1.16, 2.43)**	1.32 (0.76, 2.27)	1.84 (1.20, 2.83)**	1.36 (0.56, 3.33)
Used condom at sexual debut	3.12 (1.17, 8.38)*	2.78 (0.52, 14.79)	5.84 (1.35, 25.31)*	2.99 (0.60, 14.87)	1.44 (0.20, 10.48)
HIV risk perception: high	2.71 (1.59, 4.65)***	2.83 (1.70, 4.71)***	1.69 (0.74, 3.85)	2.75 (1.15, 6.59)*	7.37 (2.30 23.60)**
Interpersonal factor ^a : high	2.07 (1.49, 2.87)***	1.62 (1.38, 1.90)***	3.57 (1.09, 11.73)*	1.52 (0.90, 2.57)	0.52 (0.09, 3.17)
Venue-level factor ^b : high	1.98 (1.40, 2.80)***	1.75 (1.11, 2.75)*	1.25 (0.44, 3.55)	1.45 (1.02, 2.07)*	10.76 (7.33, 15.79)***
Social ranks of commercial sex industry					
Middle	1.71 (0.94, 3.11)****	1.22 (0.50, 3.02)	—	—	—
High	2.41 (1.01, 5.77)*	1.11 (0.46, 2.68)	—	—	—

^aInterpersonal factor was assessed by two questions “how often do FSWS take initiative on condom use?” and “how often do FSWS provide condoms?” Each response was assessed on a five-item response option from “1: never” to “5: most or all of the time.” A binary variable dichotomized at the median of the composite score was used

^bVenue-level factor was measured by two questions “how often do commercial sex managers tell you that there is a mandatory condom use policy” and “how often is the condom available in commercial sex establishments?” Each response was measured on a five-item response category from “1: never” to “5: most or all of the time.” A binary variable dichotomized at the median of the composite score was used

**p*<0.05

***p*<0.01

****p*<0.001

*****p*<0.10

FSWs in low rank of commercial sex industry (AOR, 3.57; 95% CI, 1.09, 11.73), but no associations were observed among male clients who visited FSWs working in a middle or high rank of the commercial sex industry. Moreover, the venue-level factor was significant among male clients who visited FSWs working in the middle and high ranks of the commercial sex industry (AOR, 1.45; 95% CI, 1.02, 2.07; AOR, 10.76; 95% CI, 7.33, 15.79), but not among male clients who visited FSWs working in a low rank of the commercial sex industry.

DISCUSSION

The current study represents one of the first empirical studies to examine interpersonal and venue-level factors of HIV-related sexual behaviors among CSMCs in China. The findings confirm the influence of factors beyond the individual level in condom use among CSMCs. Specifically, significant factors of consistent condom use with FSWs among CSMCs were found at the interpersonal (FSWs taking the initiative in condom use and providing condoms) and venue levels (pro-condom policy and condom availability in commercial sex venues).

HIV prevalence in this sample of male clients was 1.7%. This result was similar to the prevalence of 1.8% documented in a prior study of male mine workers who had commercial sex experiences in China.¹¹ In addition, we found that the overall prevalence of consistent condom use with FSWs was 30.5%, and the rate of consistent condom use with non-commercial regular and casual partners was alarmingly low, 3.5% and 18.1%, respectively. The results reaffirm the likelihood of CSMCs as a bridging population to infect their non-commercial sex partners.¹⁶

In the multivariate analysis, being married was positively associated with consistent use of condoms with FSWs. Marriage has long been cited as a protective factor for individuals, and health advantages of marriage appear to be greater for men than for women. Due to fewer economic resources, less social support, less social regulation of health behaviors, and less frequent and lower satisfaction in sexual activity, single men are more likely to have higher levels of risk-taking behaviors.³³ After 30 years of the one-child policy and cultural preference for sons in China, the sex ratio imbalance at birth has risen to historically unprecedented levels. As many single men are unable to find female partners for marriage, there may be an expanded demand for FSWs.³⁴ Furthermore, because those “surplus men” constitute a substantial proportion of China's 120 million migrants, their migration patterns, coupled with high-risk behaviors, could contribute significantly to the spread of HIV/AIDS in China.³⁴ Within the context of this demographic shift, our data highlight the urgency to target the evolving sexual risk of China's unmarried males who patronize commercial sex workers.

In examining the association between multiple factors and consistent condom use with FSWs, we found that both interpersonal and venue-level factors were significantly associated with consistent condom use, and that these two factors functioned differently among male clients who visited FSWs in various social ranks of the commercial sex industry. Specifically, FSWs taking initiative in condom use and providing condoms was positively associated with consistent condom use among male clients who visited FSWs working in a low rank of the commercial sex industry. Prior research has suggested a lack of solidarity and mutual support provided by a stable social network was one of the barriers to use condoms among FSWs working in low rank of commercial sex industry.³⁵ Future HIV prevention interventions should facilitate the formation of empowerment groups among FSWs

in a low rank of the commercial sex industry, to reduce social isolation and vulnerability and to improve their collective power to negotiate safer sex.³⁵

We found a significant positive association between venue-level factors and overall consistent condom use with FSWs. While interpersonal factor was not significant, venue-level factor remained significantly associated with consistent condom use among male clients who patronized FSWs working in middle or high rank of commercial sex industry. Two factors at the venue level have contributed to the enabling environment for the condom use among CSMCs. The first important factor at the venue level in this study was managers communicating a condom use policy. Frequent communication about condom use policy may promote condom use by providing positive social norms on condom use and HIV prevention.²⁴ Since commercial sex managers are usually the first point of contact for male clients,⁸ future intervention efforts should reach out to the managers regarding the importance of condom use communication to the male clients.

The second important venue-level factor was easy access to condoms in the commercial sex venues. A prior qualitative study in Sichuan province³⁶ revealed that, despite the availability of condoms in pharmacies and sex shops in China, many male clients were still inhibited by the social embarrassment of being caught with a condom. Consequently, many male clients relied on condoms available in the commercial sex venues. Future interventions should fully utilize the physical capacity of commercial sex venues to increase male clients' access to quality condoms.

There are several limitations in the current study. The primary limitation of this study is the use of a cross-sectional study design, which limits our ability to make a causal inference regarding the relationship between independent variables and consistent condom use. Second, we used the snowball sampling to recruit the male clients, which may include more participants with larger personal networks.³¹ Therefore, the current study may have limited generalizability. A major limitation of research targeting hidden populations, such as CSMCs, is that no sampling frame exists.¹⁶ While standard probability sampling methods may not be feasible to recruit CSMCs, future studies should consider alternative sampling strategies, such as respondent-driven sampling, which has been shown to have greater external validity among hidden populations.³⁷⁻³⁹ Finally, similar to previous studies measuring venue-level factors in commercial sex establishments,²⁴ the assessment of venue-level factor in this study was based on the participants' self-reported data, rather than observed data, such as the actual supply of condom use.

In summary, the current study underscores the importance of HIV prevention interventions that incorporate factors at multiple levels to reduce HIV risks among CSMCs in China. Results of the current study highlight the heterogeneity of commercial sex industry in China and the importance of a paradigm shift in public health away from biomedical and individual-level behavioral approaches to ecological approach incorporating female sex workers, commercial sex managers, and male clients.

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