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Prevalence of HIV, syphilis, and HCV infection and associated risk factors among male clients of low-paying female sex workers in a rural county of Guangxi, China: a cross-sectional study

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Abstract

Background: Despite the perceived crucial role of male clients of female sex workers (FSW), especially the clients of low-paying FSW, in the HIV epidemic in China, limited data are available regarding the characteristics and HIV risk of male clients. The purpose of this study was to describe sexual behaviors as well as HIV risk among a group of male clients of low-paying FSW in a rural county of China.

Method: Men (n=102) who had paid to have sex with low-paying FSW were recruited through FSW's referral. The participants completed a self-administered confidential survey on their demographics, HIV risk and sexual behaviors and provided blood samples to test for HIV, hepatitis C virus (HCV) and syphilis.

Results: The participants had a mean age of 61.8 years (ranged 27 to 90). Majority of them lived in rural areas and worked as farmers with limited disposal cash incomes. The sample reported a high rate of unprotected sex with both commercial and non-commercial sex partners. The overall prevalence of HIV, HCV and syphilis was 1.9%, 1.0% and 18.4%, respectively.

Conclusion: The findings suggest that male clients who visit low-paying FSW are at a high risk of HIV infection given prevalent unprotected sex and high prevalence of syphilis. Culturally-appropriate, age-specific interventions are urgently needed to curb the HIV/STI epidemic among this at-risk population in China.

Keywords

Male clients; HIV risk; Low-paying FSW; Unprotected sex

Introduction

Although China remains as a low-prevalence country in the HIV epidemic, the number of new infections has increased gradually each year (Ministry of Health [MOH], 2012). Heterosexual transmission becomes a dominant route of transmission accounting for 62.6% of the 48,000 new infections in 2011 in China (MOH, 2012). Female sex workers (FSW) constitute one of the most-at-risk populations for HIV infection and transmission (Scambler & Paoli, 2008). An estimated four to ten million FSW work hierarchically in China (Hong, Fang, Li, Liu, & Li, 2008; Huang, Henderson, Pan, & Cohen, 2004; Pan, Parish, & Huang, 2011; Schafer, 2003). Numerous studies have documented the high risk of HIV infection among FSW and also repeatedly call for attention to the potential role of their male clients (Hong & Li, 2008; Pirkle, Soundardjee, & Stella, 2007).

In the HIV epidemic in China, male clients of FSW may play an important role in the escalating heterosexual transmission (Huang, Maman, & Pan, 2012; Jin et al., 2010; Yang, Latkin, Luan, & Nelson, 2010). Limited literature has documented a high prevalence of HIV and other sexually transmitted infections (STI) as well as sexual risk behaviors (e.g., unprotected sex) among male clients (Huang et al., 2004; Yang, Latkin, Liu, et al., 2010; Yang, Latkin, Luan, & Nelson, 2010; Yang, Latkin, Luan, Wang, & Nelson, 2010). In addition, existing studies among male clients in China have suggested different patterns of demographic characteristics, risk behaviors (e.g., unprotected sex), and HIV/AIDS knowledge among male clients who visit FSW working at different segments of the commercial sex hierarchy (Lau et al. 2009; Yang, Latkin, Luan, et al. 2010; Yang, Latkin, Liu, et al. 2010). For men who visited high-paying FSW, they usually had a high socio-economic status (e.g., business men or government officers). They might be more concerned about their health and were more likely to practice protected sex (Huang et al., 2012; Uretsky, 2008). On the other hand, men who patronized low-paying FSW might be at a higher risk of HIV infection as low-paying FSW were usually less protected comparing to their peers who worked at high-paying venues (Huang et al., 2012; Zhang et al., 2012; Zhou et al., 2013). Lau et al. (2009) reported that the rate of inconsistent condom use was as high as 77.0% among a group of male clients who patronized low-paying FSW in the last six months.

In addition to their unprotected sex with FSW, many male clients also practice unprotected sex with their non-commercial sexual partners including wives, girlfriends, and non-paying causal sexual partners (Lowndes et al., 2000; Xu et al., 2008). For instance, in a study of mine workers in China, 61.2% and 84.1% of the participants reported never using a condom with FSW and their regular partners, respectively (Xu et al., 2008). The multiple, often concurrent, partnerships, coupled with high rates of unprotected sex, posit male clients a potentially bridging role of transmitting HIV/STI between “high-risk” groups and the general population.

Despite perceived or anticipated significant role of male clients in HIV/STI epidemic, few studies have focused on this population in China as well as other developing countries (Wariki et al., 2012; Xu et al., 2008; Yang, Latkin, Luan, & Nelson, 2010); studies among male clients of low-paying FSW are even scarcer (Li et al., 2007; Wang et al., 2007; Zhang

et al., 2012). In the current study, we aim to explore demographic characteristics, sexual behaviors, HIV risk and knowledge among a group of men who visit low-paying FSW in a rural county in southwest China.

Method

Study setting

Data in the current study were collected in 2011 from a rural county ("County A") in Guangxi Zhuang Autonomous Region (Guangxi). Guangxi has experienced a rapid increase of HIV prevalence since the first case of HIV infection was diagnosed in 1996. A total of 69,548 HIV/AIDS cases were reported as of June of 2011, which placed Guangxi second in terms of cumulative HIV seropositive cases among all provinces in China (GuangxiCDC, 2011). County A is located in the northeast of Guangxi with a population of 430,000. As County A is primarily an agriculture county, the average monthly disposal cash income for each rural household is about 230 yuan (approximately 6.5 yuan=1 USD at the time of this study) (PingleGovernment, 2012).

Participants and recruitment

Prior to data collection, our research team worked closely with local public health workers to identify low-paying commercial sex venues in the County. After establishing rapport with venue owners, we explained the purpose of the study and asked for their permission to conduct survey in their premises. Once we received the permission, trained health workers from the local Center for Disease Control and Prevention (CDC) approached eligible FSW working in these venues and asked for their help to recruit their male clients for the study. Once these clients were identified and referred by the FSW, local health workers met these male clients at the venue and asked them to participate in this research study.

An estimate of 10% of the male clients who were approached refused to participate. One hundred and three men provided written informed consents, and 102 (99%) of them completed a self-administered anonymous short survey and provided their blood samples for HIV, syphilis and HCV testing. The survey was conducted in separate rooms or private spaces at venues where the participants were recruited. No one was allowed to stay with participants during the survey except the interviewer who provided participants with assistance when necessary. The survey took about 15 minutes to complete. Participant was provided with a small gift as a token of appreciation for their participation. In addition, treatments and referral services were provided for participants who tested positive. The study protocol was approved by the Institutional Review Board at Guangxi CDC.

Measures

Demographic information—Participants were asked to provide information on their age, ethnicity, occupation (e.g., factory workers, farmers, service staff, government officers, self-employed, unemployed, or others), educational attainment (e.g., illiterate, elementary school, middle school, high school, college or above), marital status (e.g., never married, married, cohabit, divorced or widowed), and monthly disposal cash income in Chinese currency yuan (e.g., less than 200 yuan, 201-500 yuan, 501-1000 yuan, or more than 1,000

yuan). For the purpose of data analysis in the current study, we categorized ethnicity into Han and non-Han, educational attainment into no more than middle school versus at least middle school, marital status into currently married (including cohabited) versus currently not married (including divorced or widowed), occupation into farmers versus non-farmers, and monthly disposal cash income into less than 200 yuan versus at least 200 yuan. In addition, we divided clients into three groups based upon their age distribution: younger than 50 years old, 50-70 years old, and older than 70 years old.

Sexual behaviors and HIV risk—Participants were asked if they also had sex with non-commercial partners such as stable partners or casual non-paying partners (yes/no). We further asked them if they used a condom in their last sex act (yes/no) and the frequency of using condoms in the past six months (never, sometimes, and always). Respondents who didn't answer "always" to the second question were considered using condoms inconsistently. In addition, we asked participants to identify reasons why they did not want to use a condom with FSW during their sexual episodes. The reasons, in a form of checklist, included "affecting sex pleasures", "believing both persons are healthy", "no need for contraception", "affecting intimacy with partners", "saving money" and "just did not want to use". Participants were also asked whether they had a history of STI (yes/no), ever used any illegal drugs (yes/no), ever had any sexual partners who had a STI (yes/no), ever sold blood (e.g., whole blood, blood components) prior to 1998 (the year Chinese government banned commercial blood donation) (yes/no), and ever had tested for HIV (yes/no).

HIV/AIDS knowledge—Knowledge of HIV/AIDS was assessed with eight questions regarding possible transmission routes (e.g., blood transfusion, needle sharing, and vertical transmission during delivery), non-transmission routes (e.g., having meals together, mosquito's bites), and preventive measures (e.g., consistent condom use, maintaining only one sexual partner). For each question, the response was coded as 1=correct answer or 0=incorrect answer. The composite score of the HIV/AIDS knowledge was calculated by summing correct answers to all eight questions with a higher score indicating a higher level of HIV/AIDS knowledge. The Cronbach alpha for the eight items was 0.92 in the current sample.

HIV, Syphilis, and HCV Testing—Following the standard protocol and laboratory methods established by the China National Center for AIDS/STD Control and Prevention (NCAIDS, 2010), participants were tested confidentially for HIV, syphilis, and HCV antibody. All participants agreed to provide blood specimen for this purpose. For both HIV and HCV, initial screening was conducted using enzyme-linked immuno sorbent assay (ELISA) method (ELISA-1) (Yingke Xinchuang, Xiamen, China; Wantai Pharmaceutical Company, Beijing, China) and confirmation tests were done on positive cases using a different ELISA method (ELISA-2) (Abbott Laboratories, US). A result was considered positive only if the confirmation test was also positive. Syphilis was tested by syphilis TP-ELISA kits (Jinhao Pharmaceutical Company, Beijing, China; Fuji Industrial CO. LTD, Japan), which were used to detect *Treponema Pallidum* (TP) viruses in human serum or plasma specimen. All the initial screening and confirmation tests were conducted at the local CDC.

Data analysis

First of all, participants' demographic characteristics were tabulated by age groups. Second, Chi-square tests were employed to detect participants' sexual behaviors and reasons of not using a condom, HIV knowledge, HIV risk, and results of HIV/STI testing by age groups, marital status, educational attainment, and levels of monthly disposal cash income. All statistical analyses were performed using SPSS 17.0 for Windows.

Results

Sample characteristics of the male clients

As shown in table 1, participants had a mean age of 61.8 years (SD=15.6) with a range of 27-90. Majority of them (84.3%) were of Han ethnicity. Almost half (42.2%) of participants were currently married or cohabited, only 24.5% had middle school education or above, 93.1% working as a farmer and nearly half of them had a monthly disposal cash income less than 200 yuan. Male clients between 50-70 years of age had the lowest monthly disposal cash income among all participants in the three age groups ($p<0.05$).

Sexual behaviors and reasons of not using a condom

One-third of the male clients had sex with non-commercial partners. Among participants who had sex with non-commercial sex partners, 97.1% did not use a condom in the last sex act and 97.1% reported inconsistent condom use in the past six months. Table 2 revealed the pattern of sexual behaviors with their commercial sex partners: 83.7% of male clients reported not using a condom in the last sex act and 95.9% reported inconsistent condom use in the past six months. The top three reasons of not using a condom were "believing both persons are healthy" (67.3%), "affecting sex pleasure" (36.7%) and "no need for contraception" (17.3%).

HIV knowledge, HIV risk and HIV/STI testing

The composite score of HIV knowledge is 3.24 (SD =3.06) among the 102 male clients. About 40% of male clients knew the three transmission routes of HIV. Participants were less knowledgeable of the non-transmission routes and the rates of correct answers were ranged from 21.4% to 29.1%. Less than half of male clients knew the preventative methods of HIV. Participants who were older than 50 years old, had less educational attainment with less monthly disposal cash income had poorer HIV knowledge comparing to their peers ($p<0.05$). Among all 102 participants, 8.7% of them reported a history of STI, 1.0% reported ever using illegal drugs, 1.0% ever sold blood before the year of 1998, and 2.9% ever had HIV testing. The prevalence of HIV, HCV and syphilis was 1.9%, 1.0% and 18.4%, respectively (Table 3).

Discussion

To the best of our knowledge, this study was one of the first efforts to examine sexual behaviors, HIV knowledge and HIV risk among clients of low-paying FSW in China. Findings from the current study suggest clients of low-paying FSW featured as old (average age is older than 60 years old), pursuing labor-intensive work (e.g., farmers) with low

monthly disposal cash income, and are particularly vulnerable for HIV risk given their high-risk behaviors (e.g., unprotected sex), and the high prevalence of syphilis. The unique characteristics of male clients of low-paying FSW raise a concern for the increasing the HIV/STI epidemic among the elderly in China (Pearline et al. 2010; MOH 2012). With the low-cost of visiting low-paying FSW (Chen et al., 2012; Liu et al., 2012; Zhang et al., 2012), availability of medications for sexual dysfunction (Liu et al., 2012), and peer influence (Liu et al., 2012; Yang, Latkin, Luan, & Nelson, 2010), older males are more likely to patronize low-paying FSW for sex services.

In our study, the overall HIV prevalence among male clients is 1.9%, which is comparable with studies conducted among male mine workers in Yunnan (1.8%) (Xu et al., 2008) and clients recruited from different tiers of sex venues in Sichuan (1.5%) (Yang, Latkin, Luan, & Nelson, 2010), but it is much higher than that in general populations of China (0.058% at the end of 2011) (MOH, 2012). The syphilis prevalence of the current sample (18.4%) is about three times higher than a study conducted among clients from different tiers of sex venues (5.3%)(Yang, Latkin, Luan, Wang, et al., 2010). However, the prevalence of HCV in the current sample (1.0%) is much lower comparing to their peers in Sichuan (8.7%) (Yang, Latkin, Luan, Wang, et al., 2010). The discrepancies among different studies may be due to the different sampling strategies and lab testing techniques. More research is needed to explore reasons of the discrepancies among different samples of male clients. In addition, one-third of the male clients in our study had sex with their non-commercial partners, and majority of the male clients had unprotected sex with both their commercial and non-commercial partners. Thus, high rates of unprotected sex and concurrent sexual partnerships, coupled with high rates of syphilis and HIV infection, suggest that male clients could play a significant role in transmitting and spreading HIV/STI from high-risk to low-risk populations.

In the current study, we found that majority of male clients had low perceived risk and poor HIV knowledge, which is consistent with previous studies (Huang et al., 2012). The prevalent unprotected sex combining with low awareness of HIV risk indicated the urgency of implementing HIV/STI prevention programs among this at-risk population. By further examining our data, we found that male clients above 50 years of age had even poorer HIV knowledge and lower risk perception but a higher rate of unprotected sex. Perhaps older adults in China are usually less-educated and traditionally perceive condom as a device for contraceptives rather than a method protecting them from HIV/STI (Chen et al., 2012). Therefore, age-specific intervention prevention programs are urgently required.

This study explored characteristics of male clients of low-paying FSW. However, our findings should be interpreted with cautions because of several limitations. First, we may not be able to generalize the findings to other male client populations in China as the participants in the current study were recruited in a rural county in a multi-ethnic region of China. Second, due to the illegality of commercial sex in China, our data were subject to socially desirable reporting. Third, the recruitment strategy in the current study may have resulted in sampling bias as FSW might only be able to identify or refer clients who they were familiar with (e.g., repeated clients).

In summary, findings in our study provide preliminary data for health practitioners and suggest some future directions to curb the HIV/STI epidemic in China. First, considering the characteristics of men who visit low-paying FSW, HIV educational campaign should be expanded to cover both younger and older populations (Chen et al., 2012), especially the older male adults who were the typical clientele of low-paying FSW and often performed unprotected sex. In addition, tailored HIV/STI prevention messaging (e.g., pro-condom use norms) should be delivered and disseminated among male clients with different levels of health literacy and various socioeconomic backgrounds via feasible channels (e.g., community-based outreach programs, booklets, hospital-based seminars, VCT clinics, or text-message). Second, considering the high prevalence of HIV and syphilis, culturally-appropriate, age-specific, and nonjudgmental counseling, screening and treatment services should be developed and provided to this growing and at-risk population. Third, because of the illegality of commercial sex, peer-led risk reduction interventions may be more receptive and effective among the male clients (Fisher & Misovich, 1990; Latkin, Forman, Knowlton, & Sherman, 2003). Culturally and socially acceptable network-based interventions may be promising targeting this at-risk group. Fourth, considering a large proportion of male clients also having sex with their non-commercial partners, interventions should consider engaging male clients' regular or non-paying casual partners. Therefore, preventive education concerning condom use and HIV/STI prevention programs should be provided to not only the low-paying FSW, but also other women, especially women in rural areas.

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Table 1:

Demographics and HIV risks among MCFSW

	Age groups			
	Overall (n=102)	<50 years (n=29)	50-70years (n=38)	>70 years (n=35)
Age (mean, SD, range)	61.75(15.57, 27-90)	--	--	--
Marriage Status				
Never	59 (57.8%)	15 (51.7%)	22 (57.9%)	22 (62.9%)
Ever	43 (42.2%)	14 (48.3%)	16 (42.1%)	13 (37.1%)
Education				
Less than middle school	77 (75.5%)	21(72.4%)	27 (71.1%)	29 (82.9%)
Middle school or more	25 (24.5%)	8 (27.6%)	11 (28.9%)	6 (17.1%)
Ethnicity				
Non-Han	16 (15.7%)	6 (20.7%)	5 (13.2%)	5 (14.3%)
Han	86 (84.3%)	23 (79.3%)	33 (86.8%)	30 (85.7%)
Occupation				
Non-farmer	7 (6.9%)	2 (6.9%)	2 (5.3%)	3 (8.6%)
Farmer	95 (93.1%)	27 (93.1%)	36 (94.7%)	32 (91.4%)
Household disposal income				
No more than 200 yuan ^I	43 (42.2%)	9 (31.0%)	22 (57.9%)	12 (34.3%)
More than 200yuan ^I	59 (57.8%)	20 (69.0%)	16 (42.1%)	23 (65.7%)

Notes:

^I. at the time of survey, 1RMB=0.14USD;

Table 2:

Sexual Behaviors and reasons of not using condoms with FSW among clients by age, education, cohabiting status and household disposal incomes

	Overall rate rate (N=98)	Age groups		Marital status		Education		Household disposable incomes		
		Younger than 50yrs (N=26)	50-70yrs (N=38)	Older than 70yrs (N=34)	Currently not married (N=58)	Currently married (N=40)	Less than middle school (N=75)	Middle school or more (N=23)	More than 200yuan (N=55)	200 yuan or less (N=43)
Sexual Behaviors										
No condom use in the last sex episode (%)	83.7%	73.1%	92.1%	82.4%	87.9%	77.5%	84.0%	82.6%	78.2%	90.7%
Inconsistent condom use with sexual partners (%)	95.9%	96.2%	100.0%	91.2%	96.6%	95.0%	96.0%	95.7%	94.5%	97.7%
Reasons of not using a condom during sex episodes (%)										
1. Affecting sex pleasure	36.7%	38.5%	52.6%	17.6%**	41.4%	30.0%	38.7%	30.4%	38.2%	34.9%
2. Believing both persons are healthy	67.3%	65.4%	65.8%	70.6%	67.2%	67.5%	69.3%	60.9%	67.3%	67.4%
3. No need for contraception	17.3%	7.7%	31.6%	8.8%*	19.0%	15.0%	18.7%	13.0%	20.0%	14.0%
4. Afraid of being doubted by partners	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5. Saving money	1.0%	0.0%	0.0%	2.9%	1.7%	0.0%	0.0%	4.3%	1.8%	0.0%
6. Just did not want to use	5.1%	0.0%	10.5%	2.9%	3.4%	7.5%	2.7%	13.0%	3.6%	7.0%

Note:

* p<0.05

** p<0.01

*** p<0.005

**** p<0.0001

Table3: HIV Knowledge and HIV risks among MCFSW by age, education, cohabiting status and household disposal incomes (N=102)

	Overall rate (N=102)	Age groups			Marital status		Education		Household disposable incomes	
		Younger than 50yrs (N=29)	50-70yrs (N=38)	Older than 70yrs(N=35)	Currently not married (N=59)	Currently married (N=43)	Less than middle school(N=77)	Middle school or more (N=25)	More than 200yuan (N=59)	200 yuan or less(N=43)
HIV knowledge mean (sd)	3.24 (3.06)	4.93(2.79)	2.79(3.03)	2.34 (2.81) ***	3.02 (3.03)	3.56 (3.10)	2.77 (2.93)	4.65(3.03)	3.75(3.21)	2.53 (2.71) **
Possible transmission route										
<i>Blood transfusion</i>	40.8%	69.0%	30.8%	28.6% ***	36.7%	46.5%	33.8%	61.5% *	51.7%	25.6% **
<i>Needle sharing</i>	41.7%	72.4%	30.8%	28.6% ***	38.3%	46.5%	32.5%	69.2% ***	53.3%	25.6% **
<i>Delivery</i>	40.8%	62.1%	33.3%	31.4% *	36.7%	46.5%	32.5%	65.4% **	50.0%	27.9% *
Non-transmission route										
<i>Having meals together</i>	29.1%	41.4%	33.3%	14.3% *	25.0%	34.9%	26.0%	38.5%	28.3%	30.2%
<i>Mosquito 's bite</i>	21.4%	37.9%	17.9%	11.4% *	20.0%	23.3%	18.2%	30.8	21.7%	20.9%
Preventative methods										
<i>Consistent condom use</i>	48.5%	75.9%	38.5%	37.1% ***	45.0%	53.5%	41.6%	69.2% *	56.7%	37.2%
<i>Maintaining only one sexual partner</i>	47.6%	69.0%	41.0%	37.1% *	46.7%	48.8%	42.9%	61.5%	55.0%	37.2%
Others										
<i>Identify an infected person from his/her appearance</i>	54.4%	65.5%	53.8%	45.7%	53.3%	55.8%	49.4%	69.2%	58.3%	48.8%
HIV risks										
<i>Concurrent partnership</i>	33.0%	37.9%	30.8%	31.4%	8.3%	67.4% ****	64.7%	35.3%	43.3%	18.6% *
<i>Self-reported STI history</i>	8.7%	13.8%	10.3%	2.9%	8.3%	9.3%	9.1%	7.7%	6.7%	11.6%
<i>Sexual partners had STI</i>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<i>Ever used illegal drugs</i>	1.0%	3.4%	0.0%	0.0%	1.7%	0.0%	1.3%	0.0%	0.0%	2.3%
<i>Ever sold blood before the year of 1998</i>	1.0%	0.0%	0.0%	2.9%	1.7%	0.0%	1.3%	0.0%	0.0%	2.3%

	Overall rate (N=102)	Age groups			Marital status		Education			Household disposable incomes	
		Younger than 50yrs (N=29)	50-70yrs (N=38)	Older than 70yrs(N=35)	Currently not married (N=59)	Currently married (N=43)	Less than middle school(N=77)	Middle school or more (N=25)	More than 200yuan (N=59)	200 yuan or less(N=43)	
<i>Ever had HIV testing</i>	2.9%	6.9%	2.6%	0.0%	3.3%	2.3%	2.6%	3.8%	1.7%	4.7%	
HIV/STD testing results (%)											
<i>HIV</i>	1.9%	3.4%	2.6%	0.0%	1.7%	2.3%	1.3%	3.8%	1.7%	2.3%	
<i>HCV</i>	1.0%	0.0%	0.0%	2.9%	1.7%	0.0%	0.0%	3.8%	1.7%	0.0%	
<i>Syphilis</i>	18.4%	13.8%	15.4%	25.7%	25.0%	9.3%	18.2%	19.2%	20.0%	16.3%	

Note:

*
p<0.05

**

p<0.01

p<0.005

p>0.0001