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## Differences in risk behaviours and HIV/STI prevalence between low-fee and medium-fee female sex workers in three provinces in China

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### Abstract

**Objectives**—To better understand risk behaviours and factors associated with low-fee female sex workers (FSW) and support HIV/sexually transmitted infections (STI) epidemic control among this key population in China.

**Methods**—A cross-sectional study using convenience sampling to recruit 1487 eligible low-fee and medium-fee FSW was conducted in 2012 in three provinces. The participants were interviewed using a structured questionnaire and tested for HIV-1, herpes simplex virus (HSV)-2 and syphilis antibody. Log-binomial modelling was used to estimate prevalence ratios (PR) and examine factors associated with low-fee sex work.

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**Results**—Prevalence of HIV-1, syphilis and HSV-2 antibody positive were 0.5%, 4.8% and 27.8%, respectively. Low-fee FSW were more likely to have HSV-2 infection (adjusted prevalence ratio (APR)=1.3, 95% CI 1.1 to 1.7), but not more likely to have HIV-1 and syphilis infection compared with medium-fee FSW. Compared with medium-fee FSW, low-fee FSW were more likely to be < 35 years of age (APR=2.1, 95% CI 1.3 to 3.6), engage in sex work < 6 days/per week (APR=1.7, 95% CI 1.2 to 2.6), have < 3 clients per day (APR=2.2, 95% CI 1.5 to 3.3), have clients decide condom use (APR=1.6, 95% CI 1.1 to 2.3), fail to persuade clients to use condoms (APR=1.6, 95% CI 1.1 to 2.6), express willingness to have unprotected sex in return for receipt of a higher fee (APR=1.8, 95% CI 1.2 to 2.8), have had genital symptoms in the past year (APR=1.4, 95% CI 1.1 to 1.8) and have migrated from another city.

**Conclusions**—Low-fee FSW in China have unique risks for acquiring HIV/STI, in part due to greater economic pressures. Tailored interventions targeting low-fee FSW and incorporating their prevailing perception of HIV/STI risks and condom use negotiation challenges that they face are urgently needed.

## Introduction

Heterosexual transmission has become the predominant source of HIV infection in China, and was estimated to have accounted for over half of all new infections in recent years.<sup>1</sup> The resurgence of sex work in China since the reforms of the 1980s as well as a growing surplus of unmarried and disproportionately poor and migrant men have prompted concerns about implications for the spread of HIV and other sexually transmitted infections (STI).<sup>2,3</sup> It is currently estimated that there are 1.8–3.8 million female sex workers (FSW) in China.<sup>4</sup> The national sentinel surveillance data indicate the prevalence of HIV among FSW at approximately 0.3%, although the prevalence may be as high as 10.3% in some areas.<sup>5,6</sup> Aspects of sex work in China that can increase the risk of exposure to HIV include multiple sex partners, inconsistent condom use, injecting drug use, migration and STI, particularly ulcerative STI such as syphilis and genital herpes, which enhance the risk of both HIV transmission and acquisition.<sup>3,7,8</sup>

Low-fee FSW (defined in 2004–2008 as charging approximately US\$8 or less for each sex act) who may be street-based or work in smaller venues may be at even greater risk for STI.<sup>9–11</sup> HIV and syphilis seroprevalence surveys generally report higher HIV and syphilis rates among low-fee FSW in China compared with higher-fee FSW, with low-fee FSW reporting less consistent condom use than their higher fee counterparts.<sup>9,12–15</sup> Published survey data suggests that low-fee FSW have very limited perception and understanding of their risk for HIV/STI.<sup>11,12,16–18</sup> Systematic surveys have shown that up to 87% of FSWs use condoms with their clients ‘inconsistently’, with variation in patterns of use depending upon the type of client or partner.<sup>10,14,16,17,19</sup>

Most studies among FSW recruit large establishment-based FSW who are easier to reach. Much less information is available on the unique risks and behaviours of low-fee FSW who are at the margins of the sex industry and the most difficult to reach with interventions. To better understand the risk perceptions, HIV/STI prevalence, and risk behaviours with various types of clients and partners, we conducted a cross-sectional study of low-fee and medium-

fee FSW in three provinces in China. Findings from this study are expected to inform intervention strategies targeting various segments of this hard-to-reach-population.

## Methods

### Study design and population

FSW in Zhanjiang City of Guangdong Province (Southern China), Guiyang City and Guanling County of Guizhou Province (Southwestern China), and Jinan City and Dezhou City of Shandong Province (Eastern China) were recruited from April to November 2012 using convenience sampling for this cross-sectional study. The survey areas were selected based upon the estimated size of these areas' perceived unmet need for FSW STI prevention interventions. These areas, which were deemed to have limited ongoing prevention efforts, were identified through discussion with provincial and local health department staff with whom Centers for Disease Control and Prevention (CDC)–Global AIDS Programme-China has had ongoing collaborations. Prior to the recruitment of individual survey respondents, key informants in communities were used to identify the potential venues and local health department staff reached out and mapped local 'hotspots' for commercial sex work. The venues were identified as study sites if the average amount of money FSW charged per sexual transaction was not more than ¥200 (\$32), and were willing to participate. Designated enclosed private sites that were nearby and accessible (eg, hotel rooms or within-venue rooms) were used for the recruiting FSW, administering questionnaires, and conducting blood draws. All FSW identified in study venues were asked to participate in the study. Those who expressed a willingness to consent were screened for eligibility, and if eligible, signed the consent form. Eligibility criteria were: (1) 16 years of age or older (those reporting 16–17 years of age were treated as emancipated minors); (2) having exchanged money for sex within the last 6 months; (3) earning no more than ¥300 (US \$48.4) per sex act; and (4) willing and able to provide written informed consent. The study protocol was reviewed and approved by the US Centers for Disease Control and Prevention (CDC) Institutional Review Board (IRB) (approval number: 6109.0) and the National Center for AIDS/STD Control and Prevention, China CDC IRB (approval number:X101204192).

Eligible FSW were administered a structured questionnaire in private by trained local Chinese CDC staff to collect information on social demographics, sexual and condom use behaviours with various partners, HIV/STI risk perceptions and drug use history. Illicit drug use was defined as recreational use of a prohibited or controlled drug. Once interviewing was completed, a 5 mL blood sample was collected by qualified nurses for testing HIV, syphilis and herpes simplex virus (HSV)-2. An interview lasted approximately 45–60 min. When participants completed the entire study, ¥30 (\$4.8) was offered for time compensation. FSW who exchanged less than ¥100 (~\$16) per sex act were defined as low-fee FSW and FSW who exchanged between 100 and ¥300 (~\$16–48) per act were defined as medium-fee FSW based on prior study<sup>11</sup> and information regarding amounts FSW charged per sexual transaction gathered from mapping exercises.

## Laboratory methods

Blood specimens were tested for antibodies against HIV, syphilis and HSV-2. HIV antibody testing was performed according to standardised operating procedures based on the manufacturer's instructions. Any specimen that screened positive by ELISA (Gibai Biotechnical Co., Beijing, China and Wantai Biological Pharmaceutical Co., Beijing, China) was confirmed by HIV-1/2 western blot (WB) assay (HIV Blot 2.2 WB; Genelabs Diagnostic, Singapore). For syphilis, rapid plasma reagin (RPR) (Rongsheng Biotechnical Company, Shanghai, China) was used as a screening test, and positive samples were confirmed by *Treponema pallidum* particle agglutination (TPPA, Serodia; Fujirebio, Fuji, Japan). Subjects with positive results for both RPR and TPPA were considered to have a current syphilis infection. HSV-2 antibody testing was done using an IgG-based ELISA (Trinity Biotech, Bray, Co Wicklow, Ireland).

## Statistical analysis

Questionnaire data and laboratory testing results were double entered into EpiData V.3.1 (EpiData Association, Denmark). SAS V.9.3 (SAS Institute, Cary, North Carolina, USA) was used for statistical analysis. Prevalence of risk behaviours and potential correlates were described by measuring the frequency distribution.  $\chi^2$  or Fisher's exact tests were used to compare covariates between low-fee and medium-fee FSW. Univariate log-binomial modelling was used to estimate prevalence ratios (PR) and examine factors associated with being low-fee sex workers. Variables were selected into the multivariate model based on prior knowledge of the relationship with low fee sex work and factors found to be significant in the univariate analysis to assess the association between variables and low-fee sex work as well as to estimate adjusted PR.

## Results

A total of 1778 FSW were reached at 131 venues, of which, 1499 consented to participate in the study (84.3%). Among these 1499 participants, 12 (0.8%) earned more than ¥300 per sex act, and were thus excluded. The final sample thus included 1487 participants. Nearly half or 43.9% of participants were recruited from karaoke halls, and 22.3% of participants came from small roadside venues. Of these 1487 FSW, 72.0% were medium-fee FSW, and the remainder were low-fee. The distribution of FSW by province where they participated in the survey was: 583 (39.2%) Shandong; 571 (38.4%) Guangdong; and 333 (22.4%) Guizhou. The proportion of low-fee FSW was highest in Shandong (48.5%), 16.1% in Guangdong and 12.6% in Guizhou ( $p < 0.001$ ).

## Demographic characteristics

The median age of FSW was 25 years (range 16–60), 88.2% were Han Chinese, and 84% had a middle school or above educational level. Over half of the participants (59%) were never married, 28.2% were married/cohabiting and 12.8% were separated/divorced/widowed. Over half of the participants (54.3%) came from rural areas or villages.

Compared with medium-fee FSW, low-fee FSW were more likely to be older than 35 years (APR=2.1, 95% CI 1.3 to 3.6,  $p=0.005$ ). Among all FSW, 47.9% reported having a non-

paying regular sexual partner in the past year, with no differences between the two FSW subgroups (table 1).

Few FSW in this study reported having ever used illicit drugs or injecting heroin (6.6% and 2.3%, respectively) (table 1). There were no statistically significant differences between low-fee and medium-fee FSW in the prevalence of having ever used illicit drugs or injecting heroin.

### **Commercial sex behaviours**

Among all FSW, the median age at first commercial sex was 22 years, duration of engaging in commercial sex was 24 months, average number of clients per day was 2, and number of working days per week was 5. About 63.3% of participants started sex work when they were age 20–29 and as many as 21% of participants had first sold sex before 20 years of age.

Low-fee FSW had a higher prevalence of previously engaging in sex work in another city, engaging in sex work 6 or 7 days per week (APR=1.7, 95% CI 1.2 to 2.6,  $p=0.008$ ) and having two or more clients per day (APR=2.28, 95% CI 1.5 to 3.2,  $p<0.001$ ) compared with medium-fee FSW. These characteristics were associated with being a low-fee FSW (table 2).

### **Condom use behaviours**

The extent to which condoms were used varied by type of client and partner. FSW were more likely to report having consistently used condoms with one-time clients than with regular clients or with regular partners in the past year (38.2% vs 26.0% vs 10.1%) and during their three most recent sex act (52.0% vs 45.9% vs 18.2%). Inconsistent condom use with regular non-paying partners was reported commonly by both types of FSW. Among all FSW, 89.9% reported inconsistent condom use in the past year and 81.8% during the last three sexual encounters; there were no significant differences between low-fee and medium-fee FSW (table 3).

Compared with medium-fee FSW, more low-fee FSW reported inconsistent condom use with one-time clients in the previous year (73.1% vs 57.5%) and during the last three sexual encounters (57.4% vs 44.5%). Similarly, more low-fee FSW reported inconsistent condom use with regular clients in the previous year (82.1% vs 69.8%) and during the last three sexual encounters (62.5% vs 49.7%) (table 3).

Among all FSW, only 38.1% of participants reported success in persuading their one-time clients to use condoms and the majority of participants (63.3%) agreed or sometimes agreed to have unprotected sex when there was a greater financial incentive. Compared with medium-fee FSW, low-fee FSW had a higher PR of having clients decide whether to use condoms (APR=1.6, 95% CI 1.1 to 2.3,  $p=0.012$ ), failing to persuade clients to use condoms (APR=1.6, 95% CI 1.1 to 2.6,  $p=0.040$ ) and agreeing not to use a condom when clients offered more money (APR=1.8, 95% CI 1.2 to 2.8,  $p=0.001$ ) (table 3).

### **Perception, personal history of STD infections and prevalence of HIV/STI**

There were no significant differences in low-fee and medium-fee FSW's perception of their degree of risk for HIV and STI (table 4); Many FSW in this study did not perceive any

personal risk for STI (39.4%) or for HIV/AIDS (55.1%) specifically. Only 24.4% of participants among all FSW reported having been tested for HIV in the past year. Compared with medium-fee FSW, a higher proportion of low-fee FSW experienced genital symptoms such as having genital ulcers/sores, warts, unusual genital discharge, or burning pain on urination in the past year (APR=3.2, 95% CI 2.8 to 3.8,  $p<0.001$ ) (table 4).

Overall prevalence rate of HIV-1, syphilis and HSV-2 antibody positivity in this study were 0.5%, 4.8% and 27.8%, respectively. There were no differences in HIV and syphilis prevalence between low-fee and medium-fee FSW (table 4). There was also no difference in syphilis prevalence by province (6% in Shandong, 4.9% in Guangdong and 2.7% in Guizhou). However, there were differences in HIV seropositivity (0% in Shandong, 0.35% in Guangdong and 1.5% in Guizhou,  $p=0.005$ ) and HSV-2 seropositivity (18.5% in Shandong, 29.6% in Guangdong and 41.4% in Guizhou,  $p<0.001$ ) among these three provinces. Having HSV-2 infection was associated with being a low-fee FSW (APR=1.2, 95% CI 1.3 to 1.7;  $p=0.041$ ).

## Discussion

Low-fee FSW in China report behaviours that put them at especially high risk for STI, including HIV. Consistent with previously-published findings from studies conducted among FSW in China, our study found that this subgroup is more likely than medium-fee FSW to report more intensive working conditions, including more working hours and greater numbers of clients per amount of time on the job. Condom-use behaviours reported by low-fee FSW suggest that their perceived or real ability to negotiate for safer sex practices is more limited than that of higher fee FSW,<sup>61011121415</sup> and is perhaps driven by economic pressures to accept greater risk for STI exposure in return for higher income per sex act.<sup>13</sup> Large establishment-based FSW who earn a higher income may have a lower risk for HIV/STI compared with low-fee FSW given the greater possibility that establishments have policy or procedures in place to protect sex workers, such as condoms made readily available and managerial support when negotiations with clients over condom use go unfavourably.<sup>14161720</sup> Together, these features of low-fee sex work increase the likelihood of exposure to HIV/STI,<sup>6</sup> and likely account for the increased likelihood of reporting genital symptoms and large number of HSV-2 infections identified in this low-fee FSW subpopulation.

Our study found a majority (54%) of the overall study population had migrated from rural areas to cities, including 65% of low-fee FSW. Several studies in China have underscored the vulnerability of migrants to risky behaviours, especially female migrants,<sup>21</sup> in whom there is a disproportionately higher prevalence of commercial sex.<sup>22</sup> Contrary to other studies of low-fee FSW,<sup>15</sup> our study also found that low-fee FSW were more mobile, with a higher likelihood of having previously engaged in sex work in another city. Mobility, especially among FSW, has been assumed to contribute to the spread of HIV.<sup>7</sup>

Nearly half of all FSW in our study had a recent non-paying regular partner, with the majority reporting inconsistent condom use with these partners. Similar to findings in other studies,<sup>6141823</sup> FSW had the greatest tendency to use condoms with new clients, but this rate

progressively decreased with regular clients and non-paying partners. The level of control over condom use decisions according to partner type followed a similar trend. Thus, unprotected sexual contact with a regular male partner may increase FSW's risk to acquire HIV,<sup>24</sup> and clients, especially regular clients and non-paying partners, may serve as bridging populations for transmission of HIV/STI into the general populations. Overall rates of risk perception were also low, which may contribute to high rates of inconsistent condom use. Condom use behaviour and associated factors need to be further explored among low-fee FSW. Low risk perception for HIV may also drive the low HIV testing rate we observed in our study population. Low-fee FSW appeared to have a greater HIV risk perception than the medium-fee FSW, exemplified by having a higher HIV testing rate.

Although low-fee FSW were more likely to be infected with HSV-2 and report genital symptoms, we did not find an association of HIV or syphilis with low-fee sex work. The overall HIV prevalence of 0.5% and syphilis prevalence of 4.8% are on par with or slightly higher than rates reported for China by others.<sup>25,26</sup> Our rates of HIV and syphilis in Guangdong Province were relatively equivalent to those of Yang *et al*,<sup>26</sup> with the exception of much lower syphilis prevalence in Guizhou (2.7% vs 10.9%) and much higher syphilis prevalence in Shandong (6.0% vs 1.8%). Previous studies reported an HIV prevalence of 12%–49% among FSW who inject drugs.<sup>8,15,25</sup> We found, however, that only 2.3% of our study population reported ever injecting heroin. The relative lack of overlap with injecting drug use behaviour and the overall lower regional prevalence of HIV and syphilis may have partially accounted for the lower rates of HIV in this study. Other features of our study population that may account for lower rates of HIV are the fact that more than one-third of all FSW in our study were working in the relatively low HIV prevalence area of Shandong Province.

This study has several limitations. First, because most study sites used convenience sampling, the results presented here may not be generalisable to the entire province or country. Second, the cross-sectional nature of this relationship did not allow causal relationships to be established between low-fee FSW and risk behaviours. Third, the proportion of low-fee FSW was smaller than medium-fee FSW, which may compromise the statistical power to find the difference of various covariates. Lastly, the lack of information about regular sex partners made it impossible to identify HIV risk from regular partners.

Structural interventions, policy change or empowerment of sex workers appears effective in reducing the prevalence of STIs and HIV in FSW.<sup>27</sup> Integrated and implemented multicomponent interventions services, especially combined behavioural and structural intervention are urgently needed, given the higher prevalence among low-fee FSW of STI and symptoms as well as greater opportunity for exposure through inconsistent condom use and larger numbers of sexual encounters and few existing interventions in China specifically target low-fee FSW. Such interventions may include addressing the added challenges of lack of institutional support for low-fee FSW, many of whom are street-based or have less power to negotiate condom use. Such interventions may focus on structurally supporting a norm of non-negotiable condom use through collective bargaining while also developing interventions to improve behavioural negotiation skills. The effect of these interventions needs to be evaluated in the future. Analysing the effects of interventions across varying

FSW subgroup strata would offer a greater understanding of successful intervention elements.<sup>28</sup> Especially, since knowledge alone may not translate necessarily into safe sex, particularly in the context of low literacy levels,<sup>29</sup> strategies to increase HIV/STI risk perception and condom negotiation self-efficacy are urgently needed.<sup>30</sup> The socio-economic vulnerability, mobility of low-fee FSW, and reduced ability for structural interventions given the working environment, however, need to be considered in these interventions.

Interventions should enhance negotiation skills for consistent condom use with various types of sex partners, with special attention to the unique challenges surrounding condom use with regular partners.<sup>18</sup> Given the level of control over condom use exhibited by male clients of low-fee FSW and the large proportions of male clients who are married, these messages and interventions should also be directed towards male clients to increase their willingness to use condoms.

In conclusion, low-fee FSW exhibited higher-risk behaviours and higher STI prevalence compared with medium-fee FSW. The nature of low-fee sex work, with greater economic pressure as a potential driving force, may pose increased risks of STI exposure and transmission. Perceptions and understanding of HIV/STI risk as well as self-efficacy for negotiating condom use was low and needs to be improved. Developing tailored interventions targeting low-fee FSW has implications for the control of heterosexual HIV transmission in China and needs to be prioritised.

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**Key messages**

- Low-fee female sex workers (FSW) in China have unique risks for acquiring HIV/sexually transmitted infections, in part, due to greater economic pressures.
- There is a need for strengthened and integrated prevention services targeting low-fee FSW in China.
- Interventions should enhance negotiation skills for consistent condom use with various types of sex partners.

**Table 1**  
**PRs and 95% CIs for demographic characteristics comparing low-fee and medium-fee FSW in three provinces in China, 2012**

	Total (N=1487) No. (%)	Low-fee FSW (N=417) No. (%)	Medium-fee FSW (N=1070) No. (%)	PR (95% CI)	p Value*	APR (95% CI)	p Value
Age (years)							
16–20	239 (16.1)	33 (7.9)	206 (19.3)	1.0 (Ref)			
21–25	568 (38.2)	126 (30.2)	442 (41.3)	1.6 (1.8 to 2.3)		0.8 (0.5 to 1.4)	0.505
26–35	495 (33.3)	160 (38.5)	335 (31.4)	2.3 (1.7 to 3.3)		1.2 (0.7 to 2.0)	0.469
>35	185 (12.4)	98 (23.5)	87 (8.1)	3.8 (2.7 to 5.4)	<0.001	2.1 (1.3 to 3.6)	0.005
Ethnicity							
Han	1312 (88.2)	359 (86.1)	953 (89.1)	1.0 (Ref)			
Other	175 (11.8)	58 (13.9)	117 (10.9)	1.2 (0.9 to 1.5)	0.110		
Education							
High school and above	420 (28.3)	91 (21.8)	329 (30.8)	1.0 (Ref)			
Middle school	827 (55.7)	212 (50.8)	615 (57.7)	1.2 (0.95 to 1.5)			
Primary school and below	237 (16.0)	114 (27.3)	123 (11.5)	2.2 (1.8 to 2.8)	<0.001		
Marital status							
Never married	872 (59.0)	176 (42.7)	696 (65.3)	1.0 (Ref)			
Married/cohabiting	416 (28.2)	134 (32.5)	282 (26.5)	1.6 (1.3 to 1.9)			
Separated/divorced/widowed	190 (12.8)	102 (24.8)	88 (8.3)	2.7 (2.2 to 3.2)	<0.001		
Family origin							
Township/city	674 (45.7)	147 (35.4)	527 (49.7)	1.0 (Ref)			
Rural area/village	802 (54.3)	268 (64.6)	534 (50.3)	1.5 (1.3 to 1.8)	<0.001		
Had regular partner in the past year							
No	747 (52.1)	197 (49.6)	550 (53.1)	1.0 (Ref)			
Yes	686 (47.9)	200 (50.4)	486 (46.9)	1.1 (0.9 to 1.3)	0.24		
Ever used illicit drugs							
No	1386 (93.4)	382 (91.6)	1004 (94.1)	1.0 (Ref)			
Yes	98 (6.6)	35 (8.4)	63 (5.9)	1.3 (1.0 to 1.7)	0.083		
Ever injected heroin							
No	1449 (97.7)	396 (95.2)	1053 (98.7)	1.0 (Ref)			
Yes	34 (2.3)	20 (4.8)	14 (1.3)	2.2 (1.6 to 2.9)	<0.001		

\*  $\chi^2$  test.

FSW, female sex workers; PR, prevalence ratio.

**Table 2**  
**PRs and 95% CIs for commercial sex characteristics comparing low-fee and medium-fee FSW in three provinces in China, 2012**

	Total (N=1487) No. (%)	Low-fee FSW (N=417) No. (%)	Medium-fee FSW (N=1070) No. (%)	PR (95% CI)	p Value*	APR (95% CI)	p Value
Age at first commercial sex (years)							
14–19	324 (21.9)	63 (15.3)	261 (24.4)	1.0 (Ref)			
20–21	338 (22.8)	78 (18.9)	260 (24.3)	1.2 (0.9 to 1.6)			
22–24	378 (25.5)	119 (28.9)	259 (24.2)	1.6 (1.2 to 2.1)			
25–29	266 (18.0)	74 (18.0)	192 (18.0)	1.4 (1.1 to 1.9)			
30–51	174 (11.8)	78 (18.9)	96 (9.0)	2.3 (1.7 to 3.0)	<0.001		
Duration of time in commercial sex (months)							
<12	266 (18.0)	28 (6.7)	238 (22.4)	1.0 (Ref)			
12–23	407 (27.5)	94 (22.5)	313 (29.4)	2.2 (1.5 to 3.2)			
24–47	503 (34.0)	162 (38.8)	341 (32.1)	3.1 (2.1 to 4.4)			
48	304 (20.5)	133 (31.9)	171 (16.1)	4.2 (2.9 to 6.0)	<0.001		
Last working location							
This city	395 (27.8)	91 (23.1)	304 (29.5)	1.0 (Ref)			
Other city in this province	326 (26.4)	126 (32.0)	250 (24.3)	1.6 (1.3 to 2.0)		1.1 (1.01 to 1.2)	0.022
Other province	305 (21.4)	114 (29.0)	191 (18.6)	1.5 (1.2 to 1.8)		1.1 (0.9 to 1.3)	0.062
First time in this business	347 (24.4)	63 (16.0)	284 (27.6)	0.8 (0.6 to 1.1)	<0.001	1.0 (0.9 to 1.2)	0.629
Days per week in sex work							
1–4	241 (16.2)	31 (7.4)	210 (19.6)	1.0 (Ref)			
5	581 (39.1)	93 (22.3)	488 (45.6)	1.2 (0.9 to 1.8)		1.2 (0.8 to 1.8)	0.415
6–7	665 (44.7)	293 (70.3)	372 (34.8)	3.4 (2.4 to 4.8)	<0.001	1.7 (1.2 to 2.6)	0.008
Clients per day							
1	314 (21.1)	31 (7.4)	283 (26.5)	1.0 (Ref)			
2	555 (37.3)	156 (37.4)	399 (37.3)	2.8 (2.0 to 4.1)		2.1 (1.4 to 3.1)	<0.001
3	618 (41.6)	230 (55.2)	388 (36.3)	3.8 (2.7 to 5.3)	<0.001	2.2 (1.5 to 3.3)	<0.001
Had regular clients in the past year							
No	689 (47.8)	144 (36.0)	578 (52.3)	1.0 (Ref)			
Yes	753 (52.2)	256 (64.0)	625 (47.7)	1.6 (1.4 to 1.9)	<0.001		

\*  $\chi^2$  test.

FSW, female sex workers; PR, prevalence ratio.

Table 3

**PRs and 95% CIs comparing condom use behaviours with one-time clients, and comparison of condom use with regular partners and clients between low-fee and medium-fee FSW in three provinces in China, 2012**

	Regular non-paying partner			One-time client			Regular client					
	Low-fee FSW	Medium-fee FSW	p Value*	Low-fee FSW	Medium-fee FSW	PR (95% CI)	p Value*	APR (95% CI)	p Value	Low-fee FSW	Medium-fee FSW	p Value*
Condom use in past year												
Every time	15 (7.6)	54 (11.1)		107 (26.9)	439 (42.5)	1.0 (Ref.)				46 (17.9)	150 (30.2)	
Sometimes	114 (57.6)	297 (61.0)		256 (64.5)	577 (55.9)	1.6 (1.3 to 1.9)				183 (71.2)	335 (67.4)	
Never	69 (34.9)	136 (27.9)	0.119	34 (8.6)	16 (1.6)	3.5 (2.7 to 4.5)	<0.001			28 (10.9)	12 (2.4)	<0.001
Condom use during last three episodes												
Always	37 (18.9)	87 (13.0)		169 (42.3)	574 (55.5)	1.0 (Ref.)				96 (37.5)	250 (50.3)	
Occasionally	87 (43.4)	217 (44.7)		182 (46.0)	415 (40.1)	1.3 (1.1 to 1.6)				125 (48.8)	222 (44.7)	
None	72 (36.7)	181 (37.3)	0.958	45 (11.4)	45 (4.4)	2.2 (1.7 to 2.8)	<0.001			35 (13.7)	25 (5.0)	<0.001
Condom use decision-maker												
Myself	32 (16.3)	183 (37.7)	<0.001	170 (42.7)	712 (69.1)	1.0 (Ref.)				81 (31.5)	296 (59.6)	
Mutual decision	92 (46.9)	156 (32.2)		137 (34.4)	215 (20.9)	2.0 (1.7 to 2.4)		1.2 (0.9 to 1.6)	0.188	129 (50.2)	145 (29.2)	
My partner	30 (15.3)	38 (7.8)		63 (15.8)	82 (8.0)	2.0 (1.8 to 2.8)		1.6 (1.1 to 2.3)	0.012	26 (10.1)	47 (9.5)	
Condoms not used	42 (21.4)	108 (22.3)		28 (7.1)	21 (2.0)	3.0 (2.2 to 3.9)	<0.001	1.5 (0.9 to 2.5)	0.149	21 (8.2)	9 (1.8)	<0.001
Persuasion of partners/clients to use condoms												
Succeeded every time	25 (12.7)	82 (17.0)	0.122	117 (29.5)	426 (41.5)	1.0 (Ref.)				71 (28.8)	170 (34.5)	
Succeeded sometimes	92 (46.7)	202 (42.2)		192 (48.3)	511 (49.8)	1.3 (1.0 to 1.5)		1.0 (0.7 to 1.6)	0.831	138 (54.1)	272 (55.2)	
Never tried/succeeded	80 (40.6)	195 (40.8)		88 (22.2)	90 (8.7)	2.2 (1.8 to 2.9)	<0.001	1.6 (1.1 to 2.6)	0.040	46 (18.1)	51 (10.3)	0.015
Pays more for unsafe sex												
Insist on using condoms				91 (22.5)	436 (42.3)	1.0 (Ref.)				43 (16.3)	146 (29.5)	
Sometimes agree to no condoms				117 (29.0)	472 (45.8)	1.2 (0.9 to 1.5)		1.0 (0.7 to 1.6)	0.831	93 (36.2)	287 (58.0)	
Agree to no condoms				196 (48.5)	123 (11.9)	3.5 (2.9 to 4.4)	<0.001	1.8 (1.2 to 2.8)	0.005	121 (47.1)	62 (12.5)	<0.001

\*  $\chi^2$  test.

FSW, female sex workers; PR, prevalence ratio.

**Table 4**  
**PRs and 95% CIs comparing perceptions, personal history of STD infections and HIV/STI prevalence between low-fee and medium-fee FSW in three provinces in China, 2012**

	Total (N=1487) No. (%)	Low-fee FSW (N=417) No. (%)	Medium-fee FSW (N=1070) No. (%)	PR (95% CI)	p Value*	APR (95% CI)	p Value
Believe at risk for STI							
No	537 (39.4)	131 (35.7)	406 (40.7)	1.0 (Ref)	0.092		
Yes	827 (60.6)	236 (64.3)	591 (59.3)	1.2 (1.0 to 1.4)			
Diagnosed with STI							
No	1304 (90.8)	345 (84.8)	959 (93.2)	1.0 (Ref)	<0.001		
Yes	132 (9.2)	62 (15.2)	70 (6.8)	2.8 (1.4 to 2.2)			
Genital symptoms in past year							
No	1076 (76.4)	201 (49.8)	875 (87.0)	1.0 (Ref)	<0.001		
Yes	333 (23.6)	202 (50.1)	131 (13.0)	3.2 (2.8 to 3.8)		1.4 (1.1 to 1.8)	0.009
Believe at risk for HIV/AIDS							
No	796 (55.1)	206 (51.2)	590 (56.3)	1.0 (Ref)	0.133		
Yes	649 (44.9)	191 (48.2)	458 (43.7)	1.1 (1.0 to 1.3)			
Had HIV test in the past year							
No	1109 (75.6)	287 (70.0)	822 (77.8)	1.0 (Ref)	0.002		
Yes	358 (24.4)	123 (30.0)	235 (22.2)	1.3 (1.1 to 1.6)			
HIV infection							
No	1480 (99.5)	414 (99.3)	1066 (99.6)	1.0 (Ref)	0.390		
Yes	7 (0.5)	3 (0.7)	4 (0.3)	1.5 (0.6 to 3.6)			
Active syphilis infection							
No	1415 (95.2)	382 (91.6)	1033 (96.5)	1.0 (Ref)	<0.001		
Yes	72 (4.8)	35 (8.4)	37 (3.5)	1.8 (1.4 to 2.3)			
HSV-2 infection							
No	1073 (72.2)	285 (68.4)	788 (73.6)	1.0 (Ref)	0.041		
Yes	414 (27.8)	132 (31.6)	282 (26.4)	1.2 (1.01 to 1.4)		1.3 (1.1 to 1.7)	0.041

\*  $\chi^2$  tests.

FSW, female sex workers; HSV, herpes simplex virus; PRs, prevalence ratios; STD, sexually transmitted diseases; STI, sexually transmitted infections.