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HIV-related risk among female migrants working in entertainment venues in China

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Abstract

China has experienced a surge in internal migration during the past decade and migrant populations have been identified as a high-risk group for HIV and other sexually transmitted infections (STIs). Young female migrants often find employment in entertainment venues (bars, karaoke parlors, massage parlors) located in metropolitan cities, and sex work transactions frequently occur in these venues. We examined factors associated with risk for HIV, other STIs, and reproductive health challenges in a cross-sectional study of 358 young female migrants, ages 18-29, working in entertainment venues in a rapidly growing urban city in China. Results indicate high levels of behavioral risk for HIV and other STIs, low rates of HIV testing, and high prevalence of problem drinking and mental health problems, including recent depression symptoms and suicidal ideation. Factors associated with increased STIs and genitourinary tract infections included commercial sex work, early sexual debut, abortion history, illicit drug use, and anxiety. Factors associated with increased HIV testing included employment in an affluent entertainment venue, education level, knowledge about where to obtain free HIV tests, condom use, and general HIV/AIDS knowledge. Findings of this study highlight the insufficient coverage of current public health services to female migrants working in entertainment venues, and call for more assertive prevention interventions to mitigate risk for sexual, reproductive, behavioral and mental health problems in this mobile population.

Keywords

Migrants; women; China; HIV/STI; reproductive health; sex work

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During the past decade, the HIV epidemic in China has shifted from one attributed primarily to injection drug use and contaminated blood collection to an epidemic increasingly characterized by sexual transmission (Wu, Sullivan, Yu, Rotheram-Borus, & Detels, 2007). According to the Chinese Ministry of Health, the proportion of newly diagnosed HIV cases attributable to heterosexual transmission increased from 42% in 2009 to 52% in 2011 (Ministry of Health of the People's Republic of China, 2011). By the end of 2011, heterosexual transmission accounted for 47% of the estimated 780,000 cumulative HIV cases in China. Unprotected and high-risk sexual activities have been identified as significant contributors to the HIV/AIDS epidemic among the general population in China (Ye et al., 2012).

The surge in internal migration in China may have important consequences for further growth of the national HIV epidemic. During the past three decades, China has experienced a dramatic increase in internal migration, from 6.75 million migrants in 1982 to 147 million migrants in 2005 (Liu, Hu, Deng, & Wang, 2011). In 2010, the size of migrant population rose to 221 million; over one-third (36%) of this population were females between 18 to 49 years old (National Population and Family Planning Commission of the People's Republic of China, 2011). Most migrants in China relocate from rural to urban settings and return to their native towns and villages for seasonal holidays. Some migrants may regularly relocate between cities to obtain better forms of employment, giving rise to a “floating population” of migrants in cities throughout China (Liang & Ma, 2004).

Migrants are recognized as a high risk population for HIV and other STIs in China, and studies have shown that migrants are more likely to engage in health risk behaviors compared with non-migrants in urban China (Anderson, Qingsi, Hua, & Jianfeng, 2003; Chen, Peeling, Yin, & Mabey, 2011; He et al., 2012; Yang, Derlega, & Luo, 2007). Of the 5,635 HIV/AIDS cases reported in Beijing in 2008, 75% were internal migrants, 21% were city residents, and 4% were foreigners (Kaiser Health News, 2008). Migration can influence HIV risk due to the dislocation from social and community networks and disruption of traditional values in one's place of origin. Living in urban settings creates more permissive sexual norms and less constrained environments for migrants which may allow greater access to casual or commercial sex partnerships (Hong et al., 2006; Yang et al., 2007). For example, a study comparing temporary to permanent residents in south-western China found that migrants had higher prevalence of HIV-related sexual risk behavior, were more likely to have multiple casual partners, and were more likely to use drugs and alcohol during sex (Yang et al., 2007). There is also a gendered dimension by which migration influences HIV risk (Webber, 2007). Due to economic pressures and limited employment opportunities, many migrant women rely on commercial sex as a means for income. Indeed, studies in China have reported high prevalence of both commercial sex work and casual sex behaviors in migrant women (Mantell et al., 2011; Wei et al., 2004; Yang & Xia, 2006). Migrant commercial sex workers are an important “bridge population” who may transmit HIV and STIs between high-risk groups and the general population through unprotected sex (Hesketh, Zhang, & Qiang, 2005; Huang et al., 2011). Once infected, they may return to rural villages and unknowingly transmit HIV and STIs to their husbands or other sexual partners, or through vertical transmission to their children.

"Entertainment venues" in China are commercial places for entertainment or socialization (e.g., night clubs, bars, karaoke parlors, massage parlors, dance halls) where female migrants frequently find employment, and where exchange of sex tends to occur. Entertainment venues have a great amount of heterogeneity in terms of the types of physical space and services provided. Typically, in entertainment venues such as night clubs, bars or karaoke parlors, women are selected by patrons as companions for drinking, singing, dancing or eating. In addition, some of these women may offer sexual services to patrons at some point during the evening. In establishments such as massage parlors, bathhouses, and beauty salons, women usually provide head, foot or body massage services to customers. While many of these services are non-sexual in nature, some women in certain establishments offer additional sexual services to customers after or in lieu of beauty services. Commercial sex has been illegal in China since the 1950s following a national campaign against prostitution and STIs (Cohen, Henderson, Aiello, & Zheng, 1996; Shao, Xu, & Ye, 1996). However, in the 1980s, entertainment venues emerged as locations where informal and clandestine prostitution occur (Gil, Wang, Anderson, Lin, & Wu, 1996). Studies suggest that a substantial number of female workers in entertainment venues are rural-to-urban migrants (Hong & Li, 2008; Pirkle, Soundardjee, & Stella, 2007). Although not all women working in entertainment venues engage in commercial sex activities, some studies have reported that more than 50% of entertainment workers have been involved in commercial sex (Wei et al., 2004; Yang & Xia, 2006). In addition to sexual risk behaviors, entertainment workers – those who do and do not engage in commercial sex work – may experience risk for mental health problems due to isolation from their families as well as alcohol and substance use problems. Few studies have examined different patterns of health risks among women working in entertainment workers, and no known studies have compared subgroups of entertainment workers.

Entertainment venues can serve as intervention sites for the delivery of public health programs aiming to reduce HIV risk, for example, by offering confidential HIV testing, safer sex education, and referrals to general health care to employees. Frequent HIV testing allows individuals to know their HIV status and is a vital first step in the cascade of HIV prevention, treatment, care and support services (Valdiserri, 2007). Understanding of HIV risk factors and HIV testing behaviors among female migrants working in entertainment venues is essential to the design of strategies to reduce HIV transmission in this population.

The aims of this paper are to: (i) examine the HIV-related health risks among young migrant women working in entertainment venues; (ii) explore differences between entertainment workers who engage in sex work and versus their peers who do not; (iii) identify characteristics associated with history of STIs and genitourinary tract infections (GTIs) and HIV testing in this population. Findings from this analysis can provide a step forward in designing interventions to promote the health and reduce risk for HIV and other STIs in young migrant women.

Method

Participants

From March to July 2012, we conducted a cross-sectional survey of young migrant women working in entertainment venues in the capital city of Hefei, Anhui Province, China. To maximize diversity, we focused recruitment activities in two districts in order to capture a lower socioeconomic area (Baohe district) and a higher socioeconomic area (Luyang district). Prior to recruitment, we obtained a list of all 157 registered entertainment venues in both districts from the two local districts' Center for Disease Control and Prevention (CDC), which included 32 affluent venues and 125 average/marginal venues. Both CDCs categorized entertainment venues as “affluent” or “average/marginal” based on descriptions of their physical premises, staff size, and client profiles (information provided by the local CDC which conducts regular outreach at these locations). We randomly selected 18 affluent venues (11 from Luyang, 7 from Baohe) and 36 average/marginal venues (11 from Luyang, 25 from Baohe) from this list and contacted managers of each establishment to inform them about the research study and to ask their permission to recruit female staff members from the establishment. Six average/marginal venues declined our request to recruit (3 in Baohe and 3 Luyang). Overall, we obtained permission to recruit from 18 affluent venues and 30 average/marginal venues.

We distributed informational fliers in employee lounges several weeks prior to recruitment to publicize the study. To minimize any disruption of business activities, we conducted recruitment prior to the beginning of the evening shift and scheduled interviews outside of working hours. Eligibility criteria for participants included being female, 18 to 29 years old, a migrant to Hefei (i.e. born outside of the city and immigrated as an adult), employed at one of the included entertainment venues, and Mandarin speaking.

Procedure

Eligible participants were screened in person and scheduled for a confidential interview based on their availability outside of work hours. Interviews took place in a private room in the workplace setting. While screening, we also inquired whether participants experienced any coercion by their managers or co-workers to participate in the study; no participants reported coercion.

Structured questionnaire interviews were conducted in Mandarin by a trained research assistant. Interviews lasted 30 to 45 minutes. Participants did not receive individual feedback about their health risks, but did receive information about local public health clinics where they can receive services related to general health, HIV testing and prevention, psychological health, and substance use. Participants received a gift packet containing safer sex materials, valued at 50 RMB (approx. $7.8 USD), after completing the survey. All study procedures were approved by Institutional Review Boards at Anhui Medical University and Brown University.

Measures

Surveys included measures of demographic characteristics (age, education, work, income); employment/job characteristics (including sex with paying clients); sexual behavior (history of sex; unprotected sexual behavior; sex with non-paying and paying partners); alcohol use (measured using the Alcohol Use Disorders Identification Test [AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001]); other drug use; HIV testing history; self-reported HIV and STI status. HIV and STI general knowledge was measured using a 19-item measure (sample item, “Can HIV/AIDS be cured?” with response options “Yes”, “No” and “I don't know; Chen et al., 2009). Condom use knowledge was measured using a validated 10-item measure (sample item, “It is OK to put on a condom right before ejaculation” with response options “Yes”, “No” and “I don't know”; Center for Disease Control, 2000; Hesketh et al., 2005). Condom use self-efficacy was assessed using a 5-item measure (sample item, “Are you confident that you are able to use condoms each time you have sexual intercourse?” with response options ranging from 0 = “not confident” to 4 = “absolutely confident”; Chen et al., 2010). The survey included standardized self-report measures of depression (CES-D; validated in China by Liu, Tang, Chen, Hu & Wang, 1995) and anxiety (SAS; validated in China by Liu et al., 1997). Using validated cut-offs, we created dichotomous variables for problem alcohol use (score ≥ 8 on the AUDIT), depression (based on a score ≥ 20 on the CES-D, validated previously in China by Liu et al., 1995), and anxiety (score ≥ 60 on the SAS). All psychosocial measures had been previously validated with similar populations in China (Chen et al., 2009; Wang et al., 2007; Xu et al., 2012).

Sexual behavior in this study was defined as vaginal sex and did not include oral or anal sex. Sexual behavior measures included the history of the first sexual episode (age, voluntary or not, and contraceptive measures), sexual partner types in the past 6 months (husband, male clients, boyfriend or lovers and casual partners), and condom use with each partner type (past 6 months, last 3 sexual episodes and the last sexual episode). Participants were defined as commercial sex workers (CSW) if they reported having received money or other financial benefits in exchange for sexual services during the past 6 months. Unprotected sexual behavior as presented in the present study is a summary variable based on participants' self-report as to whether they had inconsistent condom use with any partner type in the previous 6 months.

Data Analysis

We conducted descriptive analyses for all measures, and used Pearson Chi-square statistics to explore differences according to self-reported sex work with paying clients during the last 6 months (i.e., categorization of participants as either CSW vs. non-CSW). We conducted multivariable regressions to identify independent correlates of our two primary dependent variables: (i) history of HIV testing and (ii) any diagnosed STI or GTI. In order to identify variables for inclusion in the regression models, we used bivariate analyses to identify correlates of both dependent variables and included any co-factor that was associated with each dependent variable at $p < 0.10$. Regression models also included controls for sociodemographic variables expected to be associated with both dependent variables

(Hosmer & Lemeshow, 2000). Data were entered using EpiData 3.0 software and analyses were conducted using SPSS 10.01.

Results Participant Characteristics

A total of 358 participants met study inclusion criteria and completed the cross-sectional survey. Socio-demographic characteristics are presented in Table 1. Equal proportions (50%) of participants were recruited from Baohe and Luyang districts. Nearly two-thirds (64%) of participants were recruited from affluent entertainment venues and 36% were recruited from average or marginal entertainment venues. The average age was 23 years (SD = 3.0), with an age range of 18 to 29 years. More than half (56%) had a junior high school education or less, and 45% were married or living with a boyfriend. Most participants (90%) had grown up in an intact family of both parents married and living together. Over half (52%) had earned more than 4,000 Yuan (roughly 640 USD) monthly, and 54% had been working as a migrant for more than 3 years. Participants who reported engaging in CSW were more likely than non-CSW to have a monthly income greater than 4,000 Yuan. Apart from monthly income, no statistically significant differences in CSW status were observed for socio-demographic characteristics.

HIV-related behaviors, HIV testing and social-cognitive factors

Overall prevalence and group differences in HIV-related risk behaviors are presented in Table 2. The majority (98%) of the sample had ever had sex with a male partner and 82% were 18 years or older at their first sexual experience. Among participants who had ever had sex, 91% had sex voluntarily and 19% used a condom during their first sex episode. Group differences were observed for initial sexual behavior, such that CSW were more likely than non-CSW to be younger than 18 years old at their first sexual experiences (22% vs. 11%), and more likely to have experienced coercion during their initial sex episode (14% vs. 5%) (Table 2).

During the past 6 months, 22% of sexually active participants had sex with their husband, 63% had sex with a boyfriend or lover, 11% had sex with causal partners, and 44% had commercial sex. Among all sexually active participants, 22% reported consistent condom use with their husband, 48% reported consistent condom use with their boyfriend or lover, 58% reported consistent condom use with causal partners, and 87% reported consistent condom use during commercial sex. No significant group differences were observed for these variables.

About one fifth (20%) of participants reported experiencing GTI symptoms in the last year and one third (33%) reported being diagnosed with either an STI or GTI in the last year. CSW were more likely than non-CSW to have GTI symptoms (28% vs. 14%) and more likely to have been diagnosed with any STI or GTI (42% vs. 26%). Overall, 23% of participants had ever received an HIV test; no group differences in HIV test history were observed between CSW and non-CSW. Among participants who had received an HIV test, 28% did not know the result of the HIV test. CSW were more likely than non-CSW to know the result of their HIV test (83% vs. 62%). CSW reported significantly higher knowledge

about condom use compared with non-CSW (M=6.36 vs. M=5.22), and higher condom self-efficacy (M=14.52 vs. M=11.75).

Alcohol consumption, illicit drug use and mental health

Table 3 presents prevalence and group differences in alcohol consumption and illicit drug use and mental health. Overall, 57% of participants scored positive for problem drinking according to the AUDIT and 8% had ever used illicit drugs. Additionally, 19% met thresholds for moderate depression symptoms and 5% met thresholds for anxiety symptoms during the past week. During the past year, 9% of participants reported suicidal ideation, 4% had made a suicide plan, and 3.4% had suicide behavior. No significant group differences between CSW and non-CSW were observed for these variables.

Independent correlates of HIV testing and STI/GTI diagnosis

Multivariable logistic regression models examining correlates of HIV testing are reported in Table 4. Greater likelihood of HIV testing was associated with working in affluent entertainment venues compared with average or marginal entertainment venues (OR = 4.66, CI = 1.89, 11.50), junior high school or less education (OR = 2.22, CI = 1.01, 4.88), consistent condom use with a boyfriend or lover in the past 6 months (OR = 2.75, CI = 1.29, 5.84), knowing where to get a free HIV test (OR = 3.00, CI = 1.42, 6.34), and higher levels STI and HIV/AIDS-related knowledge (OR = 1.36, CI = 1.02, 1.81).

Multivariable logistic regression models examining correlates of STI or GTI diagnoses in the last year are reported in Table 4. Greater likelihood of any STI or GTI diagnosis during the past year was associated with being younger than be 18 years at first sexual experience (OR = 2.03, CI = 1.01, 4.07), ever having had commercial sex in the last 6 months (OR = 1.98, CI = 1.21, 3.22), ever having had an abortion (OR = 1.84, CI = 1.09, 3.11), use of any illicit drugs (OR = 3.26, CI = 1.32, 8.08), and anxiety symptoms during the past week (OR = 6.69, CI = 2.14, 20.96).

Discussion

Given the rapid demographic and economic changes in China that promote relocation and geographic mobility among young people, there is a growing need to examine the potential health challenges that migrants might experience. The current study brings attention to the behavioral risk for HIV and other STIs/GTIs and low rates of HIV testing among female migrants working in entertainment venues in China. Although employment in entertainment venues can bring financial benefits to young women, especially in comparison with other potential forms of employment such as factory or restaurant work (Huang et al., 2013), this analysis reveals substantial health challenges among these young female migrants. In addition to sexual risk factors, we observed other health problems such as high prevalence of problem drinking (57%) and mental health problems including recent depression symptoms (19%) and suicidal ideation (9%). The findings of this study highlight the insufficient coverage of current public health services to female migrants, and call for more assertive prevention interventions to mitigate risk for sexual, reproductive, behavioral and mental health problems in this population.

The data in the current study identify few demographic factors that distinguish entertainment venue workers who engage in commercial sex versus those who do not. Income was the single factor that differentiated these two subgroups, such that CSWs were more likely than their peers to earn 4,000 Yuan monthly. The poverty threshold in China is set at roughly 2,000 Yuan, and monthly income greater than 4,000 suggests an adequate economic status. Higher income among CSWs in this sample corresponds with previous research reporting that poverty and limited employment opportunities are the major motivating factors for commercial sex among young women in China (Fang et al., 2007). However, these two groups reported different behavioral risk profiles. Compared to non-CSWs, CSWs in this sample were more likely to experience earlier sexual debut and were more likely to have experienced force or coercion during their initial sexual episode. As previous research has demonstrated, individuals who initiate sexual activity early are also more likely to engage in more risky behaviors that lead to elevated risks for unwanted pregnancies and STIs or HIV infection (Greenberg, Magder, & Aral, 1992; Ma et al., 2009).

Previous studies have found that the simultaneous presence of both private partners and paying partners among sex workers is a risk factor for HIV/STI transmission (Fang et al., 2007). However, in the current study, we found that both sex worker and non-sex worker subgroups faced significant risks for HIV/STI transmission. Females who did not engage in commercial sex also reported having at least two types of sexual partners in the past 6 months, such as primary and casual partners; there was no significant difference in having multiple sexual partner types or condom use between CSW and non-CSW. Overall, consistent condom use with sexual partners was low in this population; 61% of study participants reported having unprotected sex during past 6 months. However, it is important to note that women in our study did report higher rates of consistent condom use with casual or commercial sex partners compared with husbands or boyfriends.

Entertainment venues are contexts that offer access to both sexual contact and alcohol use, as these establishments usually rely on sales of alcohol for profit (De Graaf, Vanwesenbeeck, Van Zessen, Straver, & Visser, 1995; Wang, Li, Stanton, Zhang, & Fang, 2010). Consequently, individuals who work at these establishments may be influenced by the continuous presence of alcohol. Some employees – especially sex workers – might find personal alcohol use necessary for socializing and engaging with clients (Chen et al., 2012). Indeed, problem drinking was prevalent among the study population, with more than half of the sample meeting the AUDIT threshold for problem drinking. Apart from alcohol consumption, the sample in the current study showed risk for depression symptoms, suicide ideation, and suicide attempts. Data from the current study did not indicate distinction between CSW and non-CSW in mental health, problem drinking, and illicit drugs, indicating that workplace-targeted health prevention and mental health interventions might be warranted regardless of whether employees engage in sex work.

Commercial sex has long been considered to be a vector for transmission of STIs including HIV (Huang et al., 2011; Pirkle et al., 2007). Our study reveals that females who engage in commercial sex had a two-fold increased liklihood for any STI or GTI during the past year. Notably, over a quarter of the participants who did not engage in commercial sex also were also diagnosed with an STI or GTI during the past year, indicating that commercial sex

activity was not the sole risk factor for STI/GTIs. Multiple logistic regression analysis also indicated that early age of initial sex (less than 18 years old) and abortion history were also independently associated with an increased risk for having an STI or GTI infection in the last year, which indicates the importance of enhancing safer sex behaviors in young women by improving skills to negotiate sexual choices with both paying and non-paying partners. In the current data, although only a small proportion of female migrants used illicit drugs and had anxiety symptoms, these variables were statistically significantly associated with STI or GTI, calling for further study into the specific nature of these associations and causal pathways.

Our findings also indicateinadqeuate rates of HIV testing overall (23% of the total sample) and that migrants working in affluent venues were more likely to have been tested. These findings suggest a potential disparity in public health services reaching affluent entertainment venues more than non-affluent venues. Although we cannot determine the causal pathway, it is likely that HIV testing temporally precedes and accounts for greater condom use and HIV/AIDS knowledge. In the current study, only one-third of participants reported they could obtain a free confidential HIV test in local CDC, suggesting a need for more education outreach about HIV testing. Provision of HIV test services directly at entertainment venues might be a particularly useful public health strategy. Testing services must be provided at both affluent and non-affluent venues. In order to be implemented successfully, venue-based interventions must be designed with the input from venue managers, owners, and employees, and they must be implemented in ways that complement and do not distract from regular business operations.

Several limitations of the study need to be considered. First, because sexual behaviors and commercial sex work remain stigmatized in China, some participants may have under-reported such behaviors as a result of a social desirability bias. Care was taken by the research team to ensure a private interview environment and to engage participants such that they felt comfortable talking with the interviewers, but social desirability bias might have persisted. Second, results are also subject to recall bias, as participants were asked to recall their initial sexual behaviors, as well as consistent condom use with different type of partners and reproductive health in the past one year. Third, this study was conducted in two districts of Hefei, China. Hefei is a rapidly developing city but is not comparable with the mega-metropolitan coastal cities (e.g. Beijing or Shanghai), so these results may not be generalized to other female migrant populations elsewhere in China. Fourth, the cross-sectional design does not permit inferences about causal or temporal pathways between variables. Importantly, one implication of this limitation may manifest itself in the transient nature of migrant work. For example, CSW status among participants in our study may fluctuate such that participants who reported not engaging in commercial sex work during our study may do so at some point in the future. Fifth, related to this issue, we used a crude classification of CSW status, which might not capture the complexities within the population of entertainment workers who exchange sex for money or goods. Sixth, due to space and time limitations, we did not collect comprehensive information about sexual episodes with paying and non-paying partners, contexts of alcohol and other substance use, characteristics of primary and casual partners, family and social network characteristics, structural factors such as workplace characteristics, and other social-cognitive and psychological factors that

might be related to HIV and other STIs. Design of interventions may particularly be informed by improved understanding of the protective factors that promote resilience and guard against health risks for these women.

Despite these limitations, the study provides a better understanding of young female migrants in entertainment venues, including their sexual risk, reproductive health, and other health risk behaviors. A number of health promotion strategies and prevention interventions might be suggested based on these data. One potential strategy is to provide public health interventions, such as HIV testing, directly in entertainment venues, especially in non-affluent venues. Given the relatively low education, young age, low knowledge levels about condom use, and HIV/STI risks among this population, workplace-targeted public efforts that provide safer sex education and referrals to mental and reproductive health services should be an important part of intervention efforts. Similarly, prevention interventions are needed to promote the psychosocial well-being in this population in order to increase adaptive coping strategies. Based on our study and existing literature, interventions that acknowledge challenges associated with the migrant experience, such as family dislocation, separation from communities of origin, employment options, work skills, and financial stress, might be well-received by this population. One potential intervention approach may focus on facilitating improved access among migrant workers to urban facilities such as housing, medical care and work skills training once they migrant to urban areas. In addition, structural interventions that encourage and incentivize workplace managers to place stronger emphasis on employee health, safety, and well-being might be especially useful in improving the health of young migrants working in entertainment venues.

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Table 1

Sociodemographic characteristics of female migrants working in entertainment venues in China: comparison of CSW and non-CSW

Variables	N (%)	CSW (N=154)	Non-CSW (N=204)	χ^2	*p*-value
		n (%)	n (%)		
Age (years)				0.99	0.607
18-20	66 (18.4)	25 (16.2)	41 (20.1)		
21-25	196 (54.7)	88 (57.1)	108 (52.9)		
26-29	96 (26.8)	41 (26.7)	55 (27.0)		
Education Level				0.09	0.746
Junior high school or less	199 (55.6)	87 (56.5)	112 (54.9)		
High school or higher	159 (44.4)	67 (43.5)	92 (45.1)		
Marital status				0.06	0.801
Single/divorced or widowed	198 (55.3)	84 (54.5)	114 (55.9)		
Married or living with boyfriend	160 (44.7)	70 (45.5)	90 (44.1)		
Grow up in a nuclear family				3.18	0.075
Yes	321 (89.7)	133 (86.4)	188 (92.2)		
No	37 (11.3)	21 (13.6)	16 (7.8)		
Monthly income (RMB)				29.49	<0.001
≤ 4000	173 (48.3)	49 (31.8)	124 (60.8)		
> 4000	185 (51.7)	105 (68.2)	80 (39.2)		
Migrant work time (years)				0.27	0.606
≤ 3	166 (46.4)	69 (44.8)	97 (47.5)		
> 3	192 (53.6)	85 (55.2)	107 (52.5)		
Venue Location				0.11	0.738
Baohe district	178 (49.7)	75 (48.7)	103 (50.5)		
Luyang district	180 (50.3)	79 (51.3)	101 (49.5)		
Types of venues				0.77	0.380
Affluent	230 (64.2)	95 (61.7)	135 (66.2)		
Average/Marginal	128 (35.8)	59 (38.3)	69 (33.8)		

Table 2

HIV-related behaviors and reproductive health in female migrants working in entertainment venues in China: comparison of CSW and non-CSW

Variables	N (%)	CSW (N=154)	Non-CSW (N=204)	χ^2/t	*p*-value
		n (%)	n (%)		
The age of initial sex				8.29	0.004
< 18	55 (15.4)	34 (22.1)	21 (10.8)		
≥ 18	294 (82.1)	120 (77.9)	174 (89.2)		
Never have sex with male	9 (2.5)				
Voluntary first sex [a]				9.94	0.002
Yes	318 (91.1)	132 (85.7)	186 (95.4)		
No	31 (8.9)	22 (14.3)	9 (4.6)		
Condom use during the first sex [a]				0.74	0.390
Yes	66 (18.9)	26 (16.9)	40 (20.5)		
No	283 (81.1)	128 (83.1)	155 (79.5)		
Had sex with husband in the past 6 months [a]	77 (22.1)	35 (22.7)	42 (21.5)	0.07	0.790
Had sex with boyfriend or lover in the past 6 months [a]	220 (63.0)	100 (64.9)	120 (61.5)	0.43	0.514
Had sex with casual partners in the past 6 months [a]	38 (10.9)	21 (13.6)	17 (8.7)	2.15	0.143
Consistent condom use with husband in the past 6 months				0.49	0.480
Yes	17 (22.1)	9 (25.7)	8 (19.0)		
No	60 (77.9)	26 (74.3)	34 (81.0)		
Consistent condom use with boyfriend or lover in the past 6months				0.38	0.538
Yes	105 (47.7)	50 (50.0)	55 (45.8)		
No	115 (52.3)	50 (50.0)	65 (54.2)		
Consistent condom use with casual partners in the past 6 months				0.59	0.444
Yes	22 (57.9)	11 (52.4)	11 (64.7)		
No	16 (42.1)	10 (47.6)	6 (35.3)		
Any unprotected sexual behavior in the past 6 months [b]				0.23	0.629
Yes	219 (61.2)	92 (59.7)	127 (62.3)		
No	139 (38.8)	62 (40.3)	77 (37.7)		

Variables	N (%)	CSW (N=154)	Non-CSW (N=204)	χ^2/t	*p*-value
		n (%)	n (%)		
Genitourinary tract infection symptoms in the past 12 months				11.14	0.001
Yes	73 (20.4)	44 (28.6)	29 (14.2)		
No	285 (79.6)	110 (71.4)	175 (85.8)		
Diagnosed STI or genitourinary tract infection in the past 12 months				10.46	0.001
Yes	118 (33.0)	65 (42.2)	53 (26.0)		
No	240 (67.0)	89 (57.8)	151 (74.0)		
Ever had HIV test				1.44	0.230
Yes	82 (22.9)	40 (26.0)	42 (20.6)		
No	276 (77.1)	114 (74.0)	162 (79.4)		
Know the result of HIV test				4.31	0.038
Yes	59 (72.0)	33 (82.5)	26 (61.9)		
No	23 (28.0)	7 (17.5)	16 (38.1)		
STI and HIV/AIDS-related knowledge (M ± s) [c]	6.12 ± 1.43	6.20 ± 1.43	6.05 ± 1.43	0.93	0.335
Condom use-related knowledge (M ± s) [d]	5.71 ± 2.19	6.36 ± 1.79	5.22 ± 2.33	25.83	<0.001
Self-efficacy of condom use (M ± s) [e]	12.94 ± 4.67	14.52 ± 4.11	11.75 ± 4.71	33.88	<0.001

[a] Includes those who reported ever having sex

[b] Unprotected sexual behavior defined as any non-consistent condom use with any one of the four types of sexual partner (husband, boyfriend or lover, commercial sex partner, casual partner).

[c] Continuous measure with highest score = 8; higher scores indicate greater knowledge.

[d] Continuous measure with highest score = 11; higher scores indicate greater knowledge.

[e] Continuous measure with highest score = 20; higher scores indicate greater self-efficacy.

Table 3

Alcohol consumption, illicit drug use and mental health in female migrants working in entertainment venues in China: comparison of CSW and non-CSW

Variables	N (%)	CSW (N=154)	Non-CSW (N=204)	χ^2	*p*-value
		n (%)	n (%)		
Problem drinking [a]				0.01	0.944
Yes	203 (56.7)	87 (56.5)	116 (56.9)		
No	155 (43.3)	67 (43.5)	88 (43.1)		
Ever used illicit drugs				0.93	0.335
Yes	27 (7.5)	14 (9.1)	13 (6.4)		
No	331 (92.5)	140 (90.9)	191 (93.6)		
Depression symptoms in the past week [b]				1.37	0.243
Yes	69 (19.3)	34 (22.1)	35 (17.2)		
No	289 (80.7)	120 (77.9)	169 (82.8)		
Anxiety symptoms in the past week [c]				0.73	0.395
Yes	18 (5.1)	6 (3.9)	12 (5.9)		
No	340 (94.9)	148 (96.1)	192 (94.1)		
Suicide ideation in the past year				0.09	0.767
Yes	33 (9.2)	15 (9.7)	18 (8.8)		
No	325 (90.8)	139 (90.3)	186 (91.2)		
Suicide attempt in the past year				1.84	0.175
Yes	15 (4.2)	9 (5.8)	6 (2.9)		
No	343 (95.8)	145 (94.2)	198 (97.1)		
Suicide behavior in the past year				2.83	0.092
Yes	12 (3.4)	8 (5.2)	4 (2.0)		
No	346 (96.6)	146 (94.8)	200 (98.0)		

[a] Problem drinking classified as having an AUDIT score ≥ 8.

[b] Depression symptoms classified as having a CES-D score ≥20.

[c] Anxiety symptoms classified as having a SAS score ≥60.

Table 4

Multivariable logistic regressions: correlates of HIV testing and STI or genital tract infection during the past year in female migrants working in entertainment venues in China

Variables	HIV testing		STI or genital tract infection, past year	
	Univariate regression OR (95% CI)	Multivariable regression OR (95% CI)	Univariate regression OR (95% CI)	Multivariable regression OR (95% CI)
Types of venues				
Average/Marginal	1.0	1.0	1.0	1.0
Affluent	1.58 (0.92, 2.70)	4.66 (1.89, 11.50)	1.26 (0.79, 2.01)	1.36 (0.75, 2.13)
Commercial sex in the last 6 months				
No	1.0	1.0	1.0	1.0
Yes	1.32 (0.80, 2.17)	1.53 (0.75, 3.13)	1.96 (1.25, 3.07)	1.98 (1.21, 3.22)
Age (years)				
18-20	1.0	1.0	1.0	1.0
21-25	1.15 (0.56, 2.36)	0.70 (0.28, 1.78)	0.68 (0.39, 1.22)	0.76 (0.37, 1.59)
26-29	2.04 (0.96, 4.37)	1.67 (0.50, 5.51)	0.59 (0.31, 1.15)	0.73 (0.31, 1.77)
Education Level				
High school or higher	1.0	1.0	1.0	1.0
Junior high school or less	1.03 (0.63, 1.69)	2.22 (1.01, 4.88)	1.39 (0.89, 2.18)	1.28 (0.77, 2.12)
Marital status				
Single/divorced or widowed	1.0	1.0	1.0	1.0
Married or living with boyfriend	1.50 (0.92, 2.46)	1.73 (0.84, 3.57)	1.12 (0.72, 1.75)	0.93 (0.57, 1.53)
Migrant work time (years)				
> 3	1.0	1.0	1.0	1.0
≤ 3	0.93 (0.57, 1.54)	1.41 (0.64, 3.12)	0.75 (0.48, 1.17)	0.91 (0.53, 1.56)
Know where to get free HIV testing			*	
No	1.0	1.0		
Yes	2.29 (1.38, 3.80)	3.00 (1.42, 6.34)		
STI and HIV/AIDS-related knowledge(M±s)	1.33 (1.09, 1.61)	1.36 (1.02, 1.81)	*	
Condom use-related knowledge (M ± s)	1.26 (1.11, 1.43)		*	
Self-efficacy of condom use (M ± s)	1.07 (1.01, 1.13)		*	
Condom use during the first sex				
No	1.0		2.16 (1.14, 4.08)	
Yes	1.73 (0.96, 3.13)		1.0	
Consistent condom use with boyfriend or lover in the past 6months				
No	1.0	1.0	1.81 (0.95, 3.42)	
Yes	2.58 (1.36, 4.86)	2.75 (1.29, 5.84)	1.0	
Depression symptoms in the past week				
No	1.96 (0.95, 4.03)		1.0	
Yes	1.0		2.20 (1.29, 3.76)	

Variables	HIV testing		STI or genital tract infection, past year	
	Univariate regression OR (95% CI)	Multivariable regression OR (95% CI)	Univariate regression OR (95% CI)	Multivariable regression OR (95% CI)
The age of initial sex	*			
≥ 18			1.0	1.0
< 18			2.81 (1.56, 5.05)	2.03 (1.01, 4.07)
Grown up in a nuclear family	*			
Yes			1.0	
No			2.37 (1.19, 4.70)	
Ever had an abortion	*			
No			1.0	1.0
Yes			1.95 (1.21, 3.14)	1.84 (1.09, 3.11)
Ever used illicit drugs	*			
No			1.0	1.0
Yes			4.62 (2.01, 10.64)	3.26 (1.32, 8.08)
Anxiety symptoms in the past week	*			
No			1.0	1.0
Yes			5.82 (2.02, 16.74)	6.69 (2.14, 20.96)

*Variable did not have a bivariate association with dependent variable at $p < 0.10$ and was not entered into the regression models.