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## Depressive symptoms and condom use with clients among female sex workers in China

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### Abstract

This study examines the association between depressive symptoms and condom use with clients among 278 female sex workers (FSW) in Guangxi, China. About 62% of these FSW had a high level of depressive symptoms (CES-D total score  $\geq 16$ ). Multiple logistic regression analyses indicated that FSW with high level of depressive symptoms were less likely to use condoms consistently (aOR = 0.50, 95% CI: 0.28–0.89) or use condoms properly (aOR = 0.44, 95% CI: 0.20–0.99). The findings suggested that HIV prevention programs targeted at FSW should take into consideration the level of depression they experience.

### Additional keywords

HIV prevention programs; rural county

### Introduction

Published reports have documented an association between elevated levels of mental health symptoms and increased HIV risks behaviours among various populations vulnerable to HIV infection, including high-risk women,<sup>1</sup> adolescents,<sup>2, 3</sup> young adults,<sup>4</sup> drug users,<sup>5, 6</sup> homosexuals<sup>7</sup> and sexually transmissible infection (STI) patients.<sup>8</sup> A previous meta-analysis, however, found an inconsistent relationship between HIV sexual risk behaviours and negative affective states including depressive symptoms. Some researchers have called for more studies on this issue.<sup>9, 10</sup> Limited research has been conducted to examine such association among female sex workers (FSW), a population being recognised at high risk of HIV infection and transmission. The study by Alegria and colleagues in Puerto Rico found that FSW with a high level of depressive symptoms were more likely to report HIV sexual risks, such as inconsistent condom use, than their counterparts with a low level of depressive symptoms.<sup>11</sup>

Data on the relationship between depressive symptoms and HIV risk behaviours are limited among FSW in China. China has been identified as being the next frontier of HIV/AIDS epidemic. FSW and their clients are playing an increasingly important role in heterosexual transmission of HIV.<sup>12</sup> There has been a resurgence of commercial sex in China in the past two decades, 'thriving' from metropolitan to rural areas, and from eastern coast to the inner

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Conflicts of interest

None exist.

land. It is estimated that there are more than four million FSW currently working in the country.<sup>13</sup> The majority of these FSW work in entertainment establishments (e.g. karaoke, night club, dancing hall, disco or bar) or personal service sectors (e.g. barbershop, hair-washing room, massage parlour, sauna, restaurant or hotel).<sup>14</sup> These FSW face strong discrimination and stigmatisation from Chinese society. According to current Chinese law, commercial sex is illegal and is often considered as one of the 'social evils'.<sup>15</sup> Law enforcement agencies organise periodic clampdowns on the industry and FSWs and their clients are subject to fines and incarceration if arrested.<sup>16</sup>

Although previous studies in other nations have suggested a relationship between depressive symptoms and unprotected sex among various populations, including FSW, few studies have assessed the unique contribution of depressive symptoms to condom use behaviours, over and beyond the many demographic and individual characteristics and cognitive factors which have been shown to be associated with condom use. Therefore, this study was designed to study the depressive symptoms and condom use with clients (both consistent use and proper use) among a group of FSW in a rural county in China. The main research questions in this study are: whether there is a relationship between depressive symptoms and condom use with clients; whether the relationship persists after controlling for other potential confounders or predictors of condom use, such as demographic characteristics, sex work experience, other HIV-related risks (including STI history, alcohol intoxication and sexual coercion); and condom use related perceptions and attitudes (e.g. knowledge of correct use of condom, self-efficacy of condom use, perceived positive expectancy of unprotected sex, and perceived barriers to condom use).

## Methods

The data in the current study were drawn from a voluntary counselling and testing (VCT) intervention trial which was conducted in 2004 in a rural county (i.e. 'H County') of Guangxi Zhuang Autonomous Region ('Guangxi').<sup>17</sup> The sample included 278 FSW, from both the intervention and control groups, who were surveyed 6 months post-intervention. The follow-up data were used because depressive symptoms were not measured at the baseline assessment due to time constraints.

### Study site

Guangxi, one of China's five autonomous and multi-ethnic regions, is located in south-west China, bordering Vietnam. According to the statistics from the public security agency, there were estimated 500 000 FSW in Guangxi in 2004. H County, ~90 km north-east from Nanning, the capital city of Guangxi, is the most populous county in the Nanning suburban area. There were an estimated 200 entertainment establishments with more than 2000 women providing commercial sex service in the county.

### Participants

Participants in this study were recruited in restaurants, barbershops and hair-washing rooms in H County. The research team and local health workers identified entertainment establishments in the country through ethnographic targeted sampling strategies.<sup>18</sup> The owners/managers of these establishments were contacted to obtain permission to conduct research in their premises. Trained outreach health workers from the county's Anti-Epidemic Station and local hospitals approached women working in the establishments to ask for their participation. Four-hundred women were recruited and randomly assigned to either the intervention ( $n = 200$ ) or control ( $n = 200$ ) group. Of the baseline cohort, 70% (278/400) were available for the 6-month post-intervention follow-up. These FSW comprised the sample for the current study. The social-demographic characteristics and key behavioural outcome measures (e.g. condom use) did not differ between the intervention and control groups at

baseline, nor between the women who were available at follow-up ( $n = 278$ ) and those who were lost to the follow-up ( $n = 122$ ).<sup>17</sup>

### Survey procedure

Women who agreed to participate in this study and provided written informed consent completed a self-administered questionnaire. The survey was conducted in separate rooms or private spaces in the establishments where they were recruited. The questionnaire took about 1 h to complete. The study protocol was approved by the Institutional Review Boards at Wayne State University in the USA, Beijing Normal University and Guangxi Center for Disease Control and Prevention in China.

### Measurement

**Depressive symptoms**—Women's depressive symptoms were measured by the Center for Epidemiologic Studies Depression Scale (CES-D),<sup>19</sup> an instrument that has been used and validated previously in Chinese populations.<sup>20,21</sup> In this study, the Cronbach  $\alpha$  of the CES-D scale is 0.86. A total score of 16 on CES-D has been accepted as cut-off point for identifying individuals with an elevated level of depressive symptoms.<sup>22,23</sup> Women with CES-D score lower than 16 were considered to have low depressive symptoms and women with CES-D score equal to or higher than 16 were considered to have high depressive symptoms.

**Demographic characteristics**—Demographic characteristics collected in this study included the participants' age, ethnicity (Han, Zhuang and others), years of formal schooling, migratory status (permanent residents of H County *v.* migrants), marital status and monthly income.

**Sex work experiences and other HIV-related risks**—Questions on women's sex work experiences included their length of being a FSW, current work place (restaurant *v.* hair salon), number of clients per week, whether or not having a stable sex partner. Questions regarding other HIV-related risks included alcohol intoxication (i.e. got drunk at least once a month in the past 6 months), and experience of sexual coercion (i.e. had been forced to have sex in the past 6 months), and history of STI infection. Their perceived risks of STI or HIV infection were assessed by asking questions of 'How likely you think you will be infected with STI (HIV)?' Those who answered 'likely' or 'very likely' to either of questions were considered to have perceived risks of STI or HIV infection.

**Consistent condom use with clients**—Consistent condom use with clients was measured with question 'How often do you use condoms with your clients?' (never, occasionally, sometimes, often and always). For the purpose of data analysis, participants were grouped into two groups: consistent use of condom (those who answered 'always use') and inconsistent use of condom ('never use' or any use other than always use).

**Proper use of condom with clients**—Proper use of condom with clients was measured by asking the question 'When having sex with your clients, how often you put on a condom before penetration?' (answers provided were: never, occasionally, sometimes, often and always). Those who answered 'always' to this question were considered 'proper use'. Those who had response other than 'always' to this question were considered 'improper use'. Missing data on 'proper use' were assigned to those women (6%) who never used a condom with their clients.

**Knowledge of correct use of condom**—Participants were asked to sort six pictorial cards depicting the major steps of condom use. The total number of correct steps identified by the participants was employed as a measure of the knowledge of correct use.

**Self-efficacy of condom use**—Self-efficacy of condom use was measured using five items (i.e. ‘If your client/partner was unwilling to use a condom, you could persuade him to use it’; ‘If your client/partner was unwilling to use a condom, you would refuse to have sex with him’). The Cronbach  $\alpha$  for the five items was 0.59. A composite score was created by summing responses to five items, with a higher score indicating a higher level of self-efficacy.

**Positive expectancy of unprotected sex**—Positive expectancy of unprotected sex was assessed by asking participants to indicate their agreement or disagreement with the five possible (positive) outcomes of non-condom use with clients: ‘make the sex with clients finish faster’, ‘save my money and time’, ‘make clients pay me more money’, ‘make clients happier’, and ‘bring me more returning clients’. The Cronbach  $\alpha$  for the five items was 0.76. A composite score was created by summing responses to five items, with a higher score indicating a higher level of perceived positive expectancy of unprotected sex.

**Perceived barriers of condom use**—The participants were asked about their agreement or disagreement with six reasons for not using a condom. The six reasons included: ‘If the police found you carrying a condom, you might be in trouble’, ‘Few men liked to use condoms’ and ‘If you insisted on using a condom, your partner might be suspicious that you had an STI’, ‘If you insisted on using a condom, your clients might get angry at you’, ‘If you insisted on using a condom, your clients might not come to you any more’, and ‘If you insisted on using a condom, you might make less money’. The Cronbach  $\alpha$  for the six items was 0.65. A composite score was created by summing ‘agree’ responses with a higher score indicating a higher level of perceived barriers of condom use.

## Analysis

First, the association of depressive symptoms with demographic characteristics and sex work experiences were tested using  $\chi^2$ -test (for categorical variables) or ANOVA (for continuous variables). Second, the associations of depressive symptoms with condom use with clients (consistent use and proper use), knowledge of correct condom use, self-efficacy of condom use, positive expectancy of unprotected sex, and perceived barriers of condom use were tested using  $\chi^2$ -test and ANOVA. Third, the bivariate association between two variables of condom use with clients (consistent use and proper use) and the potential correlates were assessed using odds ratios (OR) and 95% confidence interval (95% CI). Finally, to assess the independent association between condom use behaviours and level of depressive symptoms, multivariate logistic regression models were established that include the predictor variables of  $P < 0.10$  significance in the bivariate analyses. Because the data were drawn from a post-intervention survey, intervention group assignment (intervention *v.* control) was also controlled in the multivariate logistic regressions. OR and 95% CI were calculated as primary measures of associations between outcome variables and independent variables. All statistical analyses were performed using the Stata 8.0 (College Station, TX, USA) statistical software package.

## Results

### Demographic characteristics, sex work experiences and their associations with depressive symptoms

Among 278 FSW in the present study, the mean age was 23.5 years (s.d. = 5.1), and had 5.8 years (s.d. = 3.2) of formal schooling. Nearly 60% of the women received no more than primary school education. Approximately two-thirds of the women were of Han ethnicity (the ethnic majority in China), while Zhuang ethnicity constituted ~28% of the sample. Most of the women (90%) had migrated from outside H County. About 35% of the women were married, 22% were single with a boyfriend, and 35% were single without a boyfriend. Their average monthly income was ~552 yuan (s.d. = 457, 8 yuan is approximately equal to US\$1 dollar).

The women's length of working in commercial sex ranged from less than 1 month to 64 months, with an average of 13.4 months (s.d. = 12.2). The majority (83%) worked in restaurants during the time of the study and the others worked in hair salons (barbershops and hair-washing rooms). Approximately one-quarter of the women reported that they had a history of STI and the same proportion of women perceived that they were at risk of STI or HIV infection. In the past 6 months, about one-third had got drunk at least once a month, and 7.3% of had experienced sexual coercion.

Among these women, the average CES-D scale score was 20, with 61.7% having a CES-D scale score  $\geq 16$ . As shown in Table 1, the level of depressive symptom was significantly associated with age, education and experience of sexual coercion. Specifically, women of younger age, lower education level and had experienced sexual coercion were more likely to have a higher level of depressive symptoms.

### **Condom use behaviours, perceptions and their associations with depressive symptoms**

As shown in Table 2, among 278 participants, 27.5% had used condoms consistently. Among those women who had ever used a condom with their clients, 77% reported using the condom properly. Participants' condom use behaviours and knowledge were associated with their depressive symptoms. Compared to women who had low depressive symptoms, women who had high depressive symptoms were much less likely to report consistent condom use (20% v. 40%,  $P < 0.0001$ ), less likely to report proper use of condom (72% v. 85%,  $P = 0.015$ ), and less knowledgeable of correct use of condoms (47% v. 64%,  $P = 0.004$ ). Of three measures of condom related perceptions, self-efficacy of condom use was significantly associated with depressive level, i.e. women of high depressive symptoms had lower level of self-efficacy (3.71 v. 4.29,  $P < 0.0001$ ). Positive expectancy of unprotected sex and perceived barriers of condom use were not significantly associated with depressive level.

### **Predictors of condom use behaviours with clients**

Table 3 presents the bivariate relationships between condom use behaviours and potential predictors of condom use, including demographic characteristics, sex work experiences, and condom related knowledge and perceptions. Consistent use of a condom was significantly associated with depressive symptoms, perceived HIV/STD risks, self-efficacy of condom use, and intervention group assignment. Proper use of condom was significantly associated with depressive symptoms, work place, self-efficacy of condom use, and intervention group assignment. In addition, alcohol intoxication was correlated with proper use of condom at  $P < 0.10$ .

The significant relationship between condom use behaviours and depressive symptoms remained after simultaneously entering all the significant independent variables into multivariate models. As shown in Table 4, compared to women with low level of depressive symptoms, women with high level of depressive symptoms were much less likely to use condoms consistently (aOR = 0.50, 95% CI: 0.28–0.89) and much less likely to use condoms properly (aOR = 0.43, 95% CI: 0.19–0.96). Self-efficacy of condom use also remained a strong predictor for both consistent use and proper use of condom.

## **Discussion**

The current study found that a large proportion of FSW had a high level of depressive symptoms. Of these women, 62% had a total CES-D score  $\geq 16$ , and a mean score of 20. This rate is comparable to other studies of FSW. Alegria and colleagues reported 70% of high level of depressive symptoms among a sample of FSW in Puerto Rico.<sup>12</sup> However, the rate of high depressive symptoms among our participants was higher than that of the general population

and even other populations at risk of depression in China. For instance, Lin reported a mean CES-D score of 10.30 in a study among urban residents in China.<sup>21</sup> Cheung and Bagley reported a 25% of high level of depressive symptom among the general population in Hong Kong.<sup>20</sup> High level of depressive symptoms observed in our study participants appears to be a serious health issue among these FSW.

From our data, it was evident that FSWs' high level of depressive symptoms was associated with inconsistent use and improper use of condom with their clients, even after controlling for potential confounders including self-efficacy of condom use. Such findings were consistent with previous studies on association between depression and unprotected sex behaviours.<sup>1-3, 5, 6</sup>

The findings in this study have at least two implications. The first implication is drawn from the perspective of identifying a high-risk population. Given the close link between depressive level and unsafe sexual behaviours, depression assessment may help identify the higher risk groups within the FSW population and therefore target these groups for necessary prevention intervention efforts. Second, from the perspective of disease prevention, intervention programs that aim to reduce HIV risks among FSW should not only address knowledge and skills, but also reduce their psychological stress and depressive level. As observed by Kalichman and Weinhardt,<sup>10</sup> the role of psychological wellbeing in the sexual risk behaviour, although intuitively obvious, is not well understood and has been largely ignored by HIV prevention researchers. Previous HIV prevention efforts suggested that HIV intervention programs with components of reducing psychological distress have resulted more risk reductions among high-risk populations.<sup>24</sup> Our findings on the close association between depression and unprotected sex among FSW in China underscore the importance of incorporating effective mental health promotion components in HIV prevention intervention efforts among this population.

There are several potential limitations in the current study. First, the data in the current study were drawn from follow-up assessment of a longitudinal VCT prevention trial because depressive symptoms had not been measured in the baseline. The VCT intervention, primarily targeting condom use among FSW and their clients, might also have some short-term effect on depressive symptoms, as well as condom use related perceptions and attitudes. However, multivariate data analysis, simultaneously controlling for intervention group assignment and other potential confounders, suggested a robust relationship between depressive symptoms and consistent condom use. In addition, the level of depressive symptoms did not differ between the intervention and control groups. Second, the cross-sectional nature of the data in the current study made it difficult to determine the causality between depressive symptoms and consistent condom use. Although previous studies based on longitudinal design suggested a causal effect of depressive symptoms on sexual risk behaviours,<sup>2, 3, 6</sup> it might be possible that unprotected sexual behaviours caused the depressive symptoms. Finally, our participants were recruited from entertainment establishments in a rural county in a multi-ethnic region. Given the heterogeneity of FSW populations in China, generalisation of findings from this study to FSW elsewhere in China is limited.

Despite these limitations, however, this study makes an important step towards understanding the psychological wellbeing and its relationship with HIV sexual risks among FSW in China. Given the prevalence of depressive symptoms and their strong association with unsafe sexual behaviours, HIV/STD intervention prevention efforts targeting sexual risk reduction among FSW in China should take into consideration the level of depression these women experience. For these FSW, the stress from social isolation and marginalisation as sex workers, absence of legal protection and community support may contribute to their elevated depressive symptoms. Structural interventions that address these issues are needed to reduce depression and hence HIV risk behaviours among this vulnerable population.



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### References

1. Orr ST, Celentano DD, Santelli J, Burwell L. Depressive symptoms and risk factors for HIV acquisition among black women attending urban health centers in Baltimore. *AIDS Educ Prev* 1994;6:230–6. [PubMed: 8080707]
2. DiClemente RJ, Wingood GM, Crosby RA, Sionean C, Brown LK, Rothbaum B, et al. A prospective study of psychological distress and sexual risk behavior among black adolescent females. *Pediatrics* 2001;108:E85.10.1542/peds.108.5.e85 [PubMed: 11694669]
3. Shrier LA, Harris SK, Sternberg M, Beardslee WR. Associations of depression, self-esteem, and substance use with sexual risk among adolescents. *Prev Med* 2001;33:179–89.10.1006/pmed.2001.0869 [PubMed: 11522159]
4. Stiffman AR, Dore P, Earls F, Cunningham R. The influence of mental health problems on AIDS-related risk behaviors in young adults. *J Nerv Ment Dis* 1992;180:314–20.10.1097/00005053-199205000-00005 [PubMed: 1583474]
5. Grella CE, Anglin D, Annon JJ. HIV risk behaviors among women in methadone maintenance treatment. *Subst Use Misuse* 1996;31:277–301. [PubMed: 8834263]
6. Williams CT, Latkin CA. The role of depressive symptoms in predicting sex with multiple and high-risk partners. *J Acquir Immune Defic Syndr* 2005;38:69–73.10.1097/00126334-200501010-00013 [PubMed: 15608528]
7. de Vroome EMM, de Wit JBF, Stroebe W, Sandfort TGM, van Griensven GJP. Sexual behavior and depression among HIV-positive gay men. *AIDS Behav* 1998;2:137–49.10.1023/A:1022146913861
8. Hutton HE, Lyketsos CG, Zenilman JM, Thompson RE, Erbedding EJ. Depression and HIV risk behaviors among patients in a sexually transmitted disease clinic. *Am J Psychiatry* 2004;161:912–4.10.1176/appi.ajp.161.5.912 [PubMed: 15121659]
9. Crepaz N, Marks G. Are negative affective states associated with HIV sexual risk behaviors? A meta-analytic review. *Health Psychol* 2001;20:291–9.10.1037/0278-6133.20.4.291 [PubMed: 11515741]
10. Kalichman SC, Weinhardt L. Negative affect and sexual risk behavior: comment on Crepaz and Marks (2001). *Health Psychol* 2001;20:300–1.10.1037/0278-6133.20.4.300 [PubMed: 11515742]
11. Alegria M, Vera M, Freeman DH Jr, Robles R, Santos MC, Rivera CL. HIV infection, risk behaviors, and depressive symptoms among Puerto Rican sex workers. *Am J Public Health* 1994;84:2000–2. [PubMed: 7998647]
12. Yang H, Li X, Stanton B, Liu H, Liu H, Wang N, et al. Heterosexual transmission of HIV in China: a systematic review of behavioral studies in the past two decades. *Sex Transm Dis* 2005;32:270–80.10.1097/01.olq.0000162360.11910.5a [PubMed: 15849527]
13. Cohen, MS. HIV and STD: highlights of data on epidemiology, prevention strategies, and China's growing challenge with AIDS. 2003 July 27–30; Paper presented at: International Society for Sexually Transmitted Disease Research; Ottawa, Canada.
14. Huang Y, Henderson GE, Pan S, Cohen MS. HIV/AIDS risk among brothel-based female sex workers in China: assessing the terms, content, and knowledge of sex work. *Sex Transm Dis* 2004;31:695–700.10.1097/01.olq.0000143107.06988.ea [PubMed: 15502679]
15. Gil VE, Wang MS, Anderson AF, Lin GM, Wu ZO. Prostitutes, prostitution and STD/HIV transmission in mainland China. *Soc Sci Med* 1996;42:141–52.10.1016/0277-9536(95)00064-X [PubMed: 8745115]
16. World Health Organization (WHO). Sex work in Asia. WHO: Geneva; 2001. Available online at: <http://www.wpro.who.int/themes/focuses/theme1/focus4/pubdoc.asp> [verified 5 September 2005]
17. Li, X.; Wang, B.; Fang, X.; Zhao, R.; Stanton, B.; Hong, Y., et al. AIDS Educ Prev. 18. 2006. Short-term effect of a cultural adaptation of voluntary counseling and testing among female sex workers in China: a quasi-experimental trial; p. 406-19.

18. Carlson RG, Wang J, Siegal HA, Falck RS, Guo J. An ethnographic approach to targeted sampling: Problems and solutions in AIDS prevention research among injection drug and crack-cocaine users. *Hum Organ* 1994;53:279–86.
19. Radloff LS. The CES-D Scale: a self-report depression scale for research in the general population. *Appl Psychol Meas* 1977;1:385–401.
20. Cheung CK, Bagley C. Validating an American scale in Hong Kong: the Center for Epidemiological Studies Depression Scale (CES-D). *J Psychol* 1998;132:169–86. [PubMed: 9529665]
21. Lin N. Measuring depressive symptomatology in China. *J Nerv Ment Dis* 1989;177:121–31.10.1097/00005053-198903000-00001 [PubMed: 2918295]
22. Comstock GW, Helsing KJ. Symptoms of depression in two communities. *Psychol Med* 1976;6:551–63. [PubMed: 1005571]
23. Roberts RE, Vernon SW. The Center for Epidemiologic Studies Depression Scale: its use in a community sample. *Am J Psychiatry* 1983;140:41–6. [PubMed: 6847983]
24. Sterk CE, Theall KP, Elifson KW. The impact of emotional distress on HIV risk reduction among women. *Subst Use Misuse* 2006;41:157–73.10.1080/10826080500391639 [PubMed: 16393740]



**Table 1**  
**Demographic characteristics, sex work experiences and their associations with depressive symptoms<sup>A</sup>**  
**among Chinese female sex workers (*n* = 278)**

	Total %	Low depressive %	High depressive %	<i>P</i> -value
<i>n</i> (%)	278 (100%)	104 (37.41%)	174 (62.59%)	
Age (mean)	23.50 ± 5.09	24.67 ± 5.38	23.29 ± 5.06	0.034
Years of schooling mean (s.d.)	5.84 ± 3.24	6.92 ± 2.96	5.17 ± 3.22	0.000
Ethnicity				
Han	61.48	68.93	56.89	0.098
Zhuang	27.78	24.27	29.94	
Other	10.74	6.80	13.17	
Migratory status				
Local (H. Co.)	9.85	7.69	11.18	0.348
Migrants	90.15	92.31	88.82	
Marital status				
Single without boyfriend	35.53	33.98	36.47	0.793
Single with boyfriend	22.34	20.39	23.53	
Married	35.16	38.83	32.94	
Divorced	6.96	6.80	7.06	
Monthly income (100 yuan) Mean (s.d.)	5.50 (4.54)	6.05 (5.64)	5.17 (3.71)	0.120
Months of being a FSW Mean (s.d.)	13.36 (12.22)	14.99 (13.08)	12.35 (11.59)	0.093
Workplace				
Restaurant	83.58	79.81	85.88	0.188
Hair salon	16.42	20.19	14.22	
Average no. of clients per week	1.73 ± 0.9	1.64 ± 0.92	1.78 ± 0.96	0.260
Having a stable partner	68.98	72.12	67.06	0.380
STD history	24.82	21.15	27.06	0.272
Alcohol intoxication	31.75	25.00	35.88	0.060
Rape experience	7.30	2.88	10.00	0.028
Perceived STD/HIV risk	24.82	23.08	25.88	0.602
Intervention assignment				
Control group	48.54	42.31	52.35	0.106
Intervention group	51.46	57.69	47.65	

<sup>A</sup> Depressive symptoms were measured by CES-D. Total CES-D score of 16 was used as a cut-off; ≥16: high depressive symptoms, <16: low depressive symptoms.

**Table 2**  
**Associations of depressive symptoms with condom use with clients among Chinese female sex workers (n =278)**

	Total %	Low depressive %	High depressive %	P-value
Consistent condom use with clients	27.51	40.20	19.76	0.000
Proper use of condom with clients (n = 261)	76.62	84.62	71.84	0.015
Knowledge of correct use of condoms mean (s.d.)	4.97 (1.47)	5.21 (1.32)	4.80 (1.55)	0.032
Self-efficacy of condom use mean (s.d.)	3.93 (1.24)	4.29 (1.01)	3.71 (1.31)	0.000
Positive expectancy of unprotected sex mean (s.d.)	1.67 (1.66)	1.65 (1.64)	1.68 (1.68)	0.872
Perceived barriers to condom use mean (s.d.)	2.72 (1.77)	2.51 (1.75)	2.85 (1.78)	0.129

**Table 3**  
**Association of condom use with clients and potential predictors**

Independent variables	Condom use behaviours	
	Consistent use ( <i>n</i> = 278) OR (95% CI)	Proper use ( <i>n</i> = 261) OR (95% CI)
Depressive status (high v. low)	0.39 (0.23, 0.66)***	0.32 (0.15, 0.69)***
Age	1.01 (0.96, 1.07)	1.00 (0.94, 1.06)
Ethnic (Han v. non-Han)	0.98 (0.57, 1.69)	0.70 (0.36, 1.35)
Years of schooling	1.08 (0.99, 1.17)	1.00 (0.91, 1.10)
Migratory status (local v. migrant)	0.88 (0.37, 2.11)	0.50 (0.14, 1.72)
Monthly income	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
Length of being a FSW	0.99 (0.97, 1.01)	1.00 (0.97, 1.03)
Workplace (hair salon v. restaurant)	2.26 (1.16, 4.38)*	3.89 (1.16, 13.12)*
Number of clients per week	1.08 (0.82, 1.42)	1.01 (0.73, 1.40)
Having a stable partner	1.04 (0.59, 1.85)	1.01 (0.52, 1.96)
STI history	0.90 (0.48, 1.66)	1.09 (0.53, 2.24)
Alcohol intoxication	0.60 (0.33, 1.09)	0.57 (0.30, 1.08) <sup>†</sup>
Experience of sexual coercion	0.65 (0.21, 1.10)	0.64 (0.22, 1.87)
Perceived STD/HIV risks	0.60 (0.31, 1.16)	0.61 (0.31, 1.20)
Knowledge of correct use of condom	0.95 (0.80, 1.15)****	1.02 (0.81, 1.28)****
Self-efficacy of condom use	1.71 (1.29, 2.27)****	1.58 (1.25, 2.00)****
Positive expectancy of unprotected sex	0.92 (0.78, 1.08)	0.97 (0.80, 1.16)
Perceived barriers of condom use	0.89 (0.77, 1.04)****	0.89 (0.75, 1.06)*
Intervention assignment (intervention v. control)	2.99 (1.70, 5.24)****	1.99 (1.06, 3.71)*

<sup>†</sup>*P* < 0.1;

\* *P* < 0.05;

\*\*\* *P* < 0.005; and

\*\*\*\* *P* < 0.001.

**Table 4**  
**Multivariate logistic regressions on the associations between depressive symptoms and condom use with clients among Chinese female sex workers**

Independent variables <sup>A</sup>	Condom use behaviours	
	Consistent use ( <i>n</i> = 278) aOR (95% CI)	Proper use ( <i>n</i> = 261) aOR (95% CI)
Depressive status (high v. low)	0.50 (0.28, 0.89)*	0.44 (0.20, 0.99)*
Work place (hair salon v. restaurant)		3.45 (0.91, 13.02)
Alcohol intoxication	–	0.59 (0.30, 1.17)
Perceived HIV/STD risk	0.56 (0.28, 1.13)	–
Self-efficacy of condom use	1.50 (1.12, 2.01)**	1.50 (1.17, 1.92)***
Intervention assignment (intervention v. control)	2.65 (1.47, 4.79)***	1.12 (0.55, 2.27)

<sup>A</sup> Independent variables were selected from variables in Table 3 with *P*-value < 0.10.

\* *P* < 0.05;

\*\* *P* < 0.01;

\*\*\* *P* < 0.001.