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ORIGINAL PAPER

HIV/AIDS-related Knowledge and Behaviors Among Rural Married Migrant Women in Shandong Province, China: A Comparison Study

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Abstract Migrant women in China are disproportionately affected by HIV/AIDS. This study described HIV/AIDS-related knowledge and behaviors among married migrant women in Shandong province in comparison to non-migrant local women and identified factors associated with HIV testing history and extramarital sex among married migrant women. A probability-based sample of 1,076 migrant and 1,195 local women were included in the analyses. Compared to local women, married migrant women had lower levels of HIV/AIDS knowledge and were more likely to have had premarital sex, extramarital sex, history of sexually transmitted diseases, and drug use. Less than a quarter of migrant women used condoms consistently in extramarital sex. Only 31.0 % of married migrant women had ever tested for HIV, and the rate of premarital HIV testing was very low. Multivariable analysis showed that married migrant women with a history of extramarital sex were more likely to be from Yunnan province, be living in Yantai city, be in their first marriage, have lower family income, have poor relationship with spouses, use drug, have a history of sexually transmitted diseases, and have lower social support. Our findings provide further evidence that married migrant women are at higher risk for HIV infection and that targeted interventions need to be developed for this population.

Keywords HIV/AIDS · Knowledge · Sexual behavior · Migrant women · China

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Introduction

It was estimated that approximately 780,000 people were living with HIV/AIDS in China in 2011. Characteristics of the HIV epidemic in China include: low prevalence among the general population (0.058 %), with a slow increase; sexual transmission is now the main transmission mode; geographic distribution is highly varied; certain sub-populations are disproportionately affected (MOHC, UNAIDS, & WHO, 2012). One of such sub-populations is China's increasing number of migrant women. For example, of the 2,660 HIV/AIDS cases reported in Shandong province in 2009, 20 % of them were among migrant women (Lv et al., 2011).

In Shandong province, due to a high male-to-female sex ratio and growing gap in poverty, some poor rural men who could not find local women to marry sought to marry women from poorer regions in China. In pursuit of a better life, these women usually come from poverty-stricken rural ethnic areas in Southwest China (e.g., Yunnan province, Guizhou province, and Sichuan province) and bordering countries (e.g., Burma and Vietnam)

where HIV prevalence is higher and concentrated among drug users (Fu, Zhang, Lv, Liu, & Zhang, 2006; Su et al., 2011). Reports showed that HIV prevalence among these rural married migrant women in Shandong province was 0.65 % in 2008 (Su et al., 2011), which was much higher than that among the general population in the province (range 0.01–0.09 %) (Chen & Liu, 2007; Yan, 2011). Risk factors for HIV infection among these women included drug use, extramarital sex, and low rates of condom use with spouses and sexual partners. Among HIV-positive married migrant women in Shandong, 20.4 % have an HIV-infected spouse. In addition, the rate of mother-to-child transmission was high (13.7 %) among HIV-positive married migrant women, which indicates that HIV testing was not routinely conducted with pregnant migrant women; and hence a significant proportion may not be aware of their HIV infection. Lack of awareness of HIV infection may further place these women's spouses and sexual partners at risk for HIV (Lv et al., 2011).

Despite the fact that these women in Shandong province are disproportionately affected by HIV/AIDS, few studies have documented the HIV risk profiles of this population. As the number of rural married migrant women is likely to increase (Fu et al., 2006; Lv et al., 2011; Wang, 2006), it is critical to examine HIV-related risk and protective behaviors and their associated risk factors among this population so that appropriate intervention measures can be implemented to control and prevent the transmission of HIV/AIDS among these women and their spouses and sexual partners. This paper describes HIV/AIDS-related knowledge and behaviors among these married migrant women in Shandong province in comparison to non-migrant local women. The study also identifies factors associated with HIV testing history and extramarital sex among these women.

Method

Participants

To increase diversity of participants (i.e., geographic distribution), three cities (Yantai, Weifang, and Linyi) were selected as the study sites. Yantai is located in the east of Shandong province, Weifang is located in the center of the province, whereas Linyi is located in the south. Two counties in each city and two towns in each selected county were then randomly selected as study sites. Migrant and local non-migrant women were then recruited using cluster sampling. Migrant women were scattered in different villages. The township government in Shandong province provides free checkup for women of childbearing age at least once a year. Hence for sampling convenience, all rural married migrant women in the selected towns were invited to participate when they attended the medical checkup. A total of 1,300 married migrant women met the inclusion criteria and 1,164 of them completed the interview (response rate of 89.5 %). At the same time, 1,200 local non-migrant women in the selected towns completed the interview. Inclusion criteria for married migrant women included: (1) originally from a province or a foreign country with higher HIV prevalence such as Yunnan province, Guangxi province, Guizhou province, Sichuan province (MOHC et al., 2012), Burma and Vietnam; (2) migrated to Shandong province after 1990, and was married to or cohabited with rural men in Shandong province, (3) between the ages of 18–50. Inclusion criteria for local non-migrant women included: (1) originally from Shandong province, (2) living in the selected towns and married, (3) between the ages of 18–50.

Measures

Direct face-to-face interviews were conducted with participants between September 2012 and January 2013 by trained female interviewers. The survey collected data on sociodemographic characteristics, HIV-related behaviors, and psychosocial variables related to HIV infection. So as to decrease social desirability bias, participants were allowed to answer questions about sexual behaviors and drug use on separate answer sheets, which were then put in envelopes. The answer sheet and questionnaire were matched correctly using participants' ID numbers to ensure they belonged to the same participant.

Sociodemographic information collected included: native place, age, ethnicity, marriage history, educational level, annual income per capita in the household, age when married, total number of children with current spouse, time of migration to Shandong province, and living arrangement in the past year. In terms of HIV-related transmission and acquisition behaviors, participants were asked about their lifetime history of blood transfusion, blood donation, drug use, premarital sex, sexually transmitted diseases, and HIV testing, as well as history of extramarital sex (including casual sex and commercial sex (defined as selling sex) outside of their marriage) in the past year and the frequency of condom use with spouses and sexual partners.

Psychosocial measures included relationship quality with spouse, social support, HIV/AIDS-related knowledge, and willingness to learn about HIV. Relationship quality was measured by a single question asking participants to self-report their relationship with their spouse by choosing one of three response categories: poor, average, or good. Social support was measured by adapting an existing social support scale that has demonstrated good reliability among Chinese populations (Lu et al., 2011; Xiao, 1994). The 10-item scale measured objective support, subjective support, and utilization of social support. The highest possible score of SSS is 66 points. A higher score corresponds to greater social support. A binary variable was created by making 42 the cut-off score (which was the median of social support scores). HIV/AIDS knowledge was assessed with 8 items adapted from the scale used in China's National HIV Surveillance Surveys (Zhuang et al., 2012). These items included, for example, Can people contract HIV if they inject blood or blood products contaminated by HIV? Can a baby be born with HIV if

its mother is HIV positive? Can people reduce their risk of HIV infection if they remain faithful to one sexual partner? A summary score, ranging from 0 to 8, was created, with 1 point being assigned for each correct answer and 0 point for each incorrect or unknown answer. Finally, participants were asked if they were willing to learn more about HIV, if not, what some of the reasons were.

Data Analysis

The analysis included valid responses from 1,076 married migrant women and 1,195 local non-migrant women (the proportion of missing data was ≤25 %). Data were double entered using Epidata 3.1 and analyzed using SAS 9.1. HIV/AIDS knowledge between local non-migrant women and married migrant women was compared using student *t* test. Comparisons of sociodemographic characteristics, knowledge, and HIV-related behaviors between local non-migrant women and married migrant women, as well as the relationship between HIV testing behaviors and history of marriage were analyzed using chi square tests. Bivariate analysis and multivariable logistic regression were performed to identify significant correlates of extramarital sex. Variables in the bivariate analysis included demographic variables, score of HIV/AIDS knowledge, score of social support, and variables about HIV-related behaviors. Variables with a p value ≤0.10 level of significance from the bivariate analysis were included in the multivariable logistic regression. Odds ratio and 95 % confidence intervals were calculated.

Results

Characteristic of Participants

The majority of married migrant women originated from Southwest China including Yunnan province (67.5 %) and Sichuan province (9.4 %). The mean age of these married migrant women was 35.0 years old (SD = 6.7; range: 18–49). Except for age, relationship quality with spouses, and total number of children, these migrant women differed significantly in other characteristics compared to local non-migrant women (Table 1). For example, married migrant women were more likely to have lower socio-economic status (i.e., educational level and annual income per capita in the household), to be ethnic minorities, to have remarried and married at younger ages, to not currently live with their families, and to have less social support.

HIV/AIDS Knowledge

Overall, married migrant women had lower HIV/AIDS knowledge scores than local non-migrant women (5.51 vs. 6.46, $p <$ .001). Furthermore, compared to local non-migrant women,

Table 1 Characteristic of local non-migrant women ($N = 1,195$) and married Migrant women ($N = 1,076$) in Shandong province, China

	Local women		Migrant women		χ^2	p
	n[a]	%	n[a]	%		
Native place						
Henan province	–	–	97	9.0	–	–
Yuannan province	–	–	726	67.5	–	–
Sichuan province	–	–	101	9.4	–	–
Guizhou province	–	–	63	5.9	–	–
Guangxi province	–	–	29	2.7	–	–
Other places[b]	–	–	60	5.6	–	–
Current address						
Yantai city	379	31.7	350	32.5	3.304	.192
Linyi city	397	33.2	386	35.9		
Weifang city	419	35.1	340	31.6		
Age (year)						
<30	251	21.6	245	23.0	0.671	.715
30–39	556	47.8	499	46.9		
≥40	355	30.6	319	30.2		
Educational level						
Illiterate	23	2.0	198	19.0	434.648	<.001
Elementary school	238	20.5	464	44.5		
Junior middle school	713	61.5	343	32.9		
Senior middle school or above	185	16.0	37	3.6		
Ethnicity						
Han Chinese	1130	99.2	533	52.0	675.834	<.001
Ethnic minorities	9	0.8	492	48.0		
Marriage history						
First marriage	1085	97.3	833	84.3	110.302	<.001
Remarried	30	2.7	155	15.7		
Age when married (year)						
<20	14	1.2	88	8.5	117.553	<.001
20–24	741	63.1	637	61.2		
25–29	398	33.9	245	23.5		
≥30	21	1.8	71	6.8		
Years of marriage (year)						
0–4	215	18.9	190	18.6	10.562	.014
5–9	220	19.3	245	23.9		
10–14	320	28.1	237	23.1		
≥15	384	33.7	352	34.4		
Annual income per capita in the household (CNY[c])						
<5,000	236	20.1	340	32.9	71.052	<.001
5,000–9,999	338	28.7	328	31.7		
10000–14,9999	245	20.8	170	16.4		
15000–19,999	97	8.2	50	4.8		
≥20000	261	22.2	146	14.1		
Relationship quality with spouse						
Poor	62	5.2	42	3.9	2.410	.300
Average	566	47.6	528	49.3		

Table 1 continued

	Local women		Migrant women		χ^2	p
	n[a]	%	n[a]	%		
Good	562	47.2	501	46.8		
Living situation						
Not living with family	31	2.6	115	10.7	61.804	<.001
Living with family	1160	97.4	956	89.3		
Total number of children						
0	25	2.1	37	3.6	5.669	.059
1	698	59.7	631	61.3		
≥2	446	38.2	362	35.1		
Number of children with current husband						
0	26	2.2	56	5.5	34.453	<.001
1	704	60.5	684	66.9		
≥2	434	37.3	282	27.6		
Social support						
≤42	578	48.4	639	59.4	27.638	<.001
>42	617	51.6	437	40.6		

[a] Missing exists if the sum of n is less than N

[b] Other places include Guangdong province, Xinjiang province, Hunan province, Burma, and Vietnam

[c] CNY: Chinese Yuan; 6.1 CNY = 1 USD

they reported significantly lower correct responses to almost all individual items. For example, about 72 % local non-migrant women knew HIV-positive individuals can appear healthy and people could not contract HIV from sharing meal with an HIV-positive person, while less than 65 % of married migrant women answered correctly to these items ($p < .001$). In addition, local non-migrant women were more aware of modes of HIV transmission and strategies to prevent HIV infection than married migrant women (Table 2). Compared to local non-migrant women, a lower proportion of married migrant women reported that they would want to learn more about HIV (78.0 vs. 84.9 %, $p < .001$). Among married migrant women, the most cited reasons for not wanting to learn more about HIV included: lack of interests in the topic (39.3 %); low infection rates in the rural areas (31.9 %); and display of non-high risk behaviors (28.8 %).

HIV-related Behaviors

Compared to local non-migrant women, married migrant women were significantly more likely to have had a history of blood transfusion, premarital sex, extramarital sex (i.e., casual sex and commercial sex outside of marriage), history of sexually transmitted diseases, and a history of drug use ($p < .05$) (Table 3). Consistent condom use with all type of partners was low among both married migrant women and local non-migrant women. Of

Table 2 Comparison of HIV/AIDS-related knowledge between local non-migrant women ($N = 1{,}195$) and married migrant women ($N = 1{,}076$)

Items[a]	Correct response (n (%))/ Mean ± SD		χ^2/t	p
	Local women	Migrant women		
HIV-positive individuals can appear healthy	860 (72.3)	671 (62.9)	22.707	<.001
Mosquito bite	685 (57.4)	578 (53.9)	2.887	.089
Share a meal with HIV-positive individuals	860 (72.5)	685 (64.2)	17.750	<.001
Blood/blood products transmission	1093 (92.1)	820 (76.6)	103.918	<.001
Sharing syringes transmission	1076 (90.8)	835 (77.9)	72.269	<.001
Mother-to-child transmission	1040 (87.8)	788 (73.9)	70.101	<.001
Condom protection	1020 (85.8)	762 (71.2)	72.847	<.001
Faithful to one sexual partner could reduce the risk of HIV infection	981 (83.6)	729 (68.7)	68.400	<.001
Total scores	6.46 ± 1.96	5.51 ± 2.63	9.452	<.001

[a] Each knowledge item was described using correct response (n (%)), and compared using χ^2 test. Total scores were described using Mean ± SD, and were compared using student t test

the 11.0 % of married migrant women who reported casual sex in the past year, only 24.1 % used condoms consistently with their casual partners.

HIV Testing Behavior

Overall, HIV testing rate among married migrant women was low (31.0 %) (Table 3). Among those who have had an HIV test, 42.7 % were tested through prenatal tests, 29.4 % through gynecologic checkup, and 22.7 % received it as a part of premarital tests. Local non-migrant women were more likely to have had premarital HIV tests than married migrant women (35.1 vs. 22.7 %, $p < .001$). Table 4 presents the association between HIV testing behavior and marriage history among married migrant women. The rate of HIV testing decreased when years of marriage increased ($p < .001$). Married migrant women with less than 5 years of marriage and those who were married for 5–9 years mainly had their HIV testing through prenatal tests (60.4 and 50.0 %), while those with more than 15 years of marriage mainly had their HIV testing through general gynecologic checkup (56.4 %).

Correlates of Extramarital Sex

Table 5 presents bivariate and multivariable correlates of extramarital sex among married migrant women. Results of multivariable

Table 3 Comparison of HIV-related behaviors between local non-migrant women ($N = 1,195$) and married migrant women ($N = 1,076$)

Behaviors	Local women (n (%))	Migrant women (n (%))	χ^2	p
Transfusion history				
Yes	25 (2.1)	38 (3.6)	4.388	.036
No	1157 (97.9)	1024 (96.4)		
Blood donation history				
Yes	45 (3.8)	33 (3.2)	0.662	.416
No	1135 (96.2)	1006 (96.8)		
HIV testing history				
Yes	335 (28.2)	326 (31.0)	2.057	.152
No	851 (71.8)	725 (69.0)		
Time when they had HIV testing				
Premarital test	124 (35.1)	78 (22.7)	36.214	<.001
Prenatal test	174 (49.3)	147 (42.7)		
General gynecologic checkup	46 (13.0)	101 (29.4)		
Others[a]	9 (2.5)	18 (5.2)		
First sexual partner				
Husband	966 (82.8)	612 (58.2)	164.731	<.001
Boyfriend	185 (15.9)	397 (37.7)		
Others[b]	15 (1.3)	43 (4.1)		
Premarital sex				
Yes	436 (37.4)	557 (52.6)	52.158	<.001
No	731 (62.6)	502 (47.4)		
Frequency of condom use with spouse in the past year				
Never	532 (45.6)	442 (41.9)	8.094	.044
Sometimes	438 (37.5)	408 (38.6)		
Every time	77 (6.6)	101 (9.6)		
Refuse to answer	120 (10.3)	105 (9.9)		
Casual sex in the past year				
Yes	75 (6.4)	116 (11.0)	14.719	<.001
No	1092 (93.6)	939 (89.0)		
Frequency of condom use during casual sex				
Never	28 (38.9)	41 (35.3)	0.632	.729
Sometimes	25 (34.7)	47 (40.5)		
Every time	19 (26.4)	28 (24.1)		
Commercial sex in the past year				
Yes	42 (3.6)	67 (6.3)	8.987	.003
No	1127 (96.4)	990 (93.7)		
Frequency of condom use during commercial sex				
Never	23 (54.8)	36 (53.7)	0.054	.973
Sometimes	14 (33.3)	22 (32.8)		
Every time	5 (11.9)	9 (13.4)		
Sexually transmitted disease history				
Yes	35 (3.0)	53 (5.0)	5.941	.015
No	1135 (97.0)	1006 (95.0)		
Drug use history				
Yes	9 (0.8)	30 (2.9)	14.089	<.001
No	1163 (99.2)	1017 (97.1)		
Current drug use				
Yes	6 (0.5)	21 (2.0)	10.04	.002
No	1164 (99.5)	1038 (98.0)		

[a] Others included taking the initiative for HIV testing, having had HIV testing through blood donation, etc

[b] Others included commercial sexual partner, casual sexual partner, etc

analysis showed that married migrant women with extra-marital sex were more likely to come from Yunnan province, to live in Yantai city, to be in their first marriage, to have lower annual income per capita in the household (less than 10,000 CNY per capita), to have poor relationship with spouses, to use drug, to have a history of sexually transmitted diseases, and to have lower social support.

Discussion

This paper examined the HIV/AIDS-related knowledge and behaviors among a probability-based sample of married migrant women and local non-migrant women in Shandong province, China. We found that compared to local non-migrant women, married migrant women reported lower levels of HIV/AIDS-related knowledge. This finding may not be surprising given that well over half of married women were illiterate or had a low educational level ending with elementary school. This observation is consistent with results from another study in Shandong, which found that rural residents with low levels of education had limited abilities to understand HIV/AIDS-related information (Liu, Bi, Dong, Zhang, & Gao, 2005; Pan et al., 2013). Limited knowledge of HIV/AIDS among migrant women may also be compounded by their ethnic status (48 % were ethnic minorities in our sample) in that HIV educational activities and campaigns implemented so far might not be culturally tailored to and linguistically appropriate for the needs of ethnic minorities.

In terms of HIV-related behaviors, we found that migrant women were more likely to have premarital sex, to use drugs, and to have casual and commercial sex outside of marriage than local non-migrant women. Differences in premarital sex and drug use levels could be explained by migrant women's ethnic background and origin. Most ethnic minorities in Southwest China have more open attitudes toward sex and sexual practices before marriage (Jiang, Liao, & Yan, 2002). A study conducted in Dehong city of Yunnan province showed that 56.9 % of female participants have had premarital sex (Gong et al., 2012), which is similar to the prevalence of premarital sex (52.6 %)

Table 4 Relationship between HIV testing behavior and years of marriage among married migrant women ($N = 1,076$)

	HIV testing history		The time when had HIV testing			
	Yes	No	Premarital test	Prenatal test	General gynecologic checkup	Other
Years of marriage						
0-	101 (54.0 %)	86 (46.0 %)	30 (29.7 %)	61 (60.4 %)	5 (5.0 %)	5 (5.0 %)
5-	80 (33.5 %)	159 (66.5 %)	17 (21.2 %)	40 (50.0 %)	21 (26.2 %)	2 (2.5 %)
10-	57 (24.3 %)	178 (75.7 %)	16 (28.1 %)	21 (36.8 %)	15 (26.3 %)	5 (8.8 %)
15-	79 (23.3 %)	260 (76.7 %)	9 (11.5 %)	21 (26.9 %)	44 (56.4 %)	4 (5.1 %)
χ^2	60.392		65.384			
p	<.001		<.001			

among married migrant women in our study. It was reported that most of the HIV-positive married migrant women contracted HIV through sexual transmission before they migrated to Shandong province (Zhang et al., 2008). The majority of migrant women in our study (67.5 %) came from Yunnan province, which is a major entry point of drug trafficking at the "Golden Triangle" (Xiao, Kristensen, Sun, Lu, & Vermund, 2007). It was reported that injection drug use was a risk factor for multiple sexual partners and HIV infection (Yao et al., 2009; Zhou et al., 2012). Despite these risk factors for HIV transmission from migrant women to their spouses or sexual partners, a majority of them (69.0 %) had never been tested for HIV/AIDS. And among those who were tested, it was usually during prenatal visits instead of premarital screening. Premarital tests occur much earlier in a relationship than prenatal tests. Given married migrant women's higher rate of HIV, it would be desirable for them to receive a premarital test. However, compulsory premarital checkups were canceled in Chinese law in 2003. Further exploration needs to be done to determine ways to increase premarital test in the absence of a law mandating test.

Although 72.1 % (101/140) of the married migrant women who have had extramarital sex knew that using condom during sex can reduce the risk of HIV infection, they reported a low rate of consistent condom use with casual partners or commercial partners (24.1 % and 13.4 %, respectively). Therefore, increasing condom use requires more than HIV/AIDS knowledge. A study on commercial sex workers in a Chinese township showed that the reason for not using condoms mainly included: clients refused to use (37.8 %), clients seemed to be healthy (32.4 %), never thought about using condoms (31.1 %), already took other means of contraception (25.7 %), and condoms were not available (23.0 %) (Zhou et al., 2007). The reason for low rate of consistent condom use during extramarital sex among rural married migrant women has not been reported in China and our study did not explore the reason. To develop effective interventions to increase condom use, further study needs to be done to explore the reason why migrant women do not use condoms during extramarital sex.

As found in the multivariable analysis, higher prevalence of casual and commercial sex outside of marriage (i.e., extramarital sex) among married migrant women can be attributed to several factors: financial hardship, poorer relationship quality with spouses, and lack of social support. Married migrant women migrate, most often alone, to pursue a better life. However, they usually end up married to poor rural men in Shandong, who may not be able to provide or support the kind of life-style envisioned by these women. This difference between expectation and reality might have (1) led more migrant women to engage in commercial sex in exchange of economic well-being and (2) caused conflicts in their relationships with spouses and hence sought support through other channels such as casual sex, because their families and friends were not immediately available.

This study has several limitations. First, this was a cross-sectional study, limiting our ability to drawing causal inferences. Second, because sex and drug use are sensitive topics especially among married women, some participants might have underreported their risk behaviors. Third, there might be recall biases among participants regarding questions related to sexual and drug histories.

Despite these limitations, findings of this study provide further evidence that married migrant women are at higher risk for HIV infection and that targeted interventions need to be developed for this population. First, to decrease the spread of HIV from migrant women to their spouses, it may be useful to encourage villagers to take premarital HIV tests, rather than having them wait until they are pregnant to receive an HIV test. Second, the results showed that financial hardship and lack of social support were risk factors for extramarital sex among migrant women. Further research should examine ways to provide social support and better job opportunities for migrant women. Third, the reason for low rate of consistent condom use during extramarital sex among migrant women should be explored.

Table 5 Factors associated with extramarital sex among married migrant women ($N = 1,076$)

Factors[a]	N[b]	Having had extramarital sex (n (%))	OR (95 % CI)[c]	A OR (95 % CI)[d]	p
Native place					
Henan province	96	4 (4.2)	1	1	
Yuannan province	708	113 (16.0)	4.368 (1.573–12.126)	4.918 (1.196–20.227)	.027
Sichuan province	101	11 (10.9)	2.811 (0.863–9.155)	3.628 (0.781–16.867)	.100
Guizhou province	62	3 (4.8)	1.169 (0.253–5.413)	0.691 (0.062–7.741)	.764
Guangxi province	28	2 (7.1)	1.769 (0.307–10.205)	4.571 (0.620–33.694)	.136
Other	59	8 (13.6)	3.608 (1.036–12.568)	5.287 (1.054–26.526)	.043
Current address					
Weifang city	337	26 (7.7)	1	1	
Yantai city	340	42 (12.4)	1.686 (1.008–2.819)	2.338 (1.121–4.874)	.023
Linyi city	377	73 (19.4)	2.872 (1.787–4.617)	1.705 (0.939–3.096)	.079
Educational level					
Senior middle school or above	37	2 (5.4)	1	1	
Illiterate	191	22 (11.5)	2.278 (0.512–10.134)	1.319 (0.237–7.337)	.752
Elementary school	457	75 (16.4)	3.436 (0.809–14.593)	2.457 (0.478–12.638)	.282
Junior middle school	338	35 (10.4)	2.021 (0.466–8.768)	1.457 (0.282–7.512)	.653
Marriage history					
Remarried	152	7 (4.6)	1	1	
First marriage	819	109 (13.3)	3.180 (1.451–6.971)	3.839 (1.494–9.865)	.005
Annual income per capita in the household (CNY)					
≥20,000	142	9 (6.3)	1	1	
<5,000	332	69 (20.8)	3.877 (1.877–8.007)	4.744 (1.595–14.111)	.005
5,000–9,999	322	41 (12.7)	2.156 (1.018–4.566)	3.460 (1.184–10.110)	.023
10,000–14,999	168	18 (10.7)	1.773 (0.771–4.081)	2.623 (0.871–7.902)	.086
15,000–19,999	50	1 (2.0)	0.302 (0.037–2.443)	0.572 (0.062–5.284)	.622
Relationship quality with spouse					
Good	496	68 (13.7)	1	1	
Poor	40	15 (37.5)	3.776 (1.895–7.524)	3.676 (1.187–11.386)	.024
Average	513	57 (11.1)	0.787 (0.540–1.146)	0.755 (0.457–1.247)	.272
Living situation					
Not living with family	113	23 (20.4)	1		
Living with family	936	114 (12.2)	0.543 (0.330–0.893)	0.733 (0.292–1.842)	.509
Know that faithful to one sexual partner could reduce risk of HIV infection					
No	325	56 (17.2)	1	1	
Yes	716	83 (11.6)	0.630 (0.436–0.910)	1.103 (0.641–1.899)	.722
Blood donation history					
No	986	126 (12.8)	1	1	
Yes	33	9 (27.3)	2.560 (1.163–5.632)	3.952 (1.202–12.991)	.024
HIV testing history					
No	710	99 (13.9)	1	1	
Yes	132	33 (10.2)	0.705 (0.464–1.071)	0.868 (0.508–1.485)	.606
Premarital sex					
No	492	76 (15.4)	1	1	
Yes	554	62 (11.2)	0.690 (0.481–0.989)	1.247 (0.747–2.081)	.399
Current drug use					
No	1027	120 (11.7)	1	1	
Yes	21	17 (81.0)	32.123 (10.632–97.055)	21.820 (5.406–88.082)	<.001

Table 5 continued

Factors[a]	*N*[b]	Having had extramarital sex (*n* (%))	OR (95 % CI)[c]	A OR (95 % CI)[d]	*p*
Sexually transmitted disease history					
No	997	123 (12.3)	1	1	
Yes	53	16 (30.2)	3.073(1.659–5.690)	4.128 (1.806–9.434)	.001
Social support					
≤42	626	100 (16.0)			
>42	428	41 (9.6)	0.557 (0.379–0.820)	0.585 (0.342–0.999)	.050

[a] Only variables of *p* value ≤0.1 in the bivariate analysis were included in this table

[b] *N* in this table may be different from *n* in Table 1 because of missing data

[c] Odds ratio was derived from the bivariate analysis without controlling for potential confounders

[d] Odds ratio was adjusted for other variables listed in this table by multiple logistic regression analysis; *p* values ≤0.05 were considered statistically significant finally by multiple logistic regression analysis

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