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Commercial Sex and Condom Use Among Involuntary Bachelors: An Exploratory Survey in Rural China

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Abstract

In the present context of the Chinese *male marriage squeeze*, commercial sex is becoming an important way for bachelors to meet their sexual needs. Using data from a survey conducted in a rural district of Anhui province, China, this study analyzes commercial sex experiences and condom use among *involuntary bachelors* and compares usage in this population to that observed in married men in the same age groups. Our findings indicate that, for both first and most recent sexual intercourse, the prevalence of commercial sex among unmarried men is significantly higher than that reported among married men; indeed, marital status was the only variable that was consistently related to rates of commercial sex for both first and most recent sexual intercourse. The vast majority of sexual intercourse was still unprotected, and the rate of condom use was not only lower among unmarried men than among married men, but was also significantly related to knowledge of sexually transmitted diseases, as well as age, education, and income. Because of their lower condom use, unmarried men face much higher risks of contracting and spreading sexually transmitted diseases than married men do. This situation poses a severe threat to public health.

Keywords

commercial sex, condom use, sex imbalance, male marriage squeeze

Introduction

Sexual Activity of Involuntary Bachelors and Public Health

Since the 1980s, the traditional preference for sons has combined with new technologies for prenatal sex determination, resulting in an increasing imbalance between the number of boys and girls in China. In 2010, the sex ratio at birth reached 118.1 boys to 100 girls (China National Bureau of Statistics, 2012). As these children grow up, the shortage of females is leading to an increasing *male marriage squeeze*. This *marriage squeeze* (Li & Wei, 1986) refers to the consequence of the current common practice of "marrying up" (namely, *hypergamy* or *gradient marriage pattern*), whereby women usually marry men with higher socioeconomic statuses, which then leads men with lower socioeconomic statuses to have greater difficulty in finding prospective wives. Indeed, in the coming decades, an annual surplus of men of at least 10% is anticipated on the marriage market (Chen & Ullrich, 2001; Das Gupta & Li, 1999; Guo & Deng, 2000; S. Z. Li, Jiang, & Feldman, 2006). These men tend to be over 28 years of age, mostly located in remote rural areas, poorly educated, earning low incomes, and lacking social capital (Yang, Attané, Li, & Zhang, 2012a, 2012b). Although this *male marriage squeeze* is nothing new in China, the growing shortage of women and the increasing cost of marriage for men have made the problem more acute (Attané, Zhang, Li, & Yang, in press; Yang et al., 2012a, 2012b).

In China, heterosexual marriage is almost universal and the idea that "everybody should get married" still prevails (the *universal marriage system*; Xinqin Research Institute, 2008). Heterosexual marriage remains, in most cases, a prerequisite for family formation; in rural society, particularly, it is the only legitimate setting for sexual activity (McMillan, 2006). In Chinese society, men get married as soon as possible, even if they are actually gay: more than 90% of Chinese men with same-sex sexual orientations are married to women to hide their real sexual

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orientation (Y. H. Li, 1998; D. L. Liu & Lu, 2005). Considering this *universal marriage system* in Chinese society, it is assumed that few Chinese men would voluntarily remain unmarried due to their sexual orientation, meaning that most unmarried Chinese men over 28 years of age are *involuntary bachelors*. With the reduced availability of female sexual partners through marriage, *involuntary bachelors* look for alternative ways to satisfy their sexual needs, such as commercial sex; for this reason, it is scientifically important to understand the sexual practices of unmarried men over 28 years of age.

Because of this growing need for commercial sex, lack of condom use in commercial sexual experiences is becoming a major public health concern. Unprotected commercial sex is one of the major mechanisms for HIV/AIDS and sexually transmitted disease (STD) transmission. A study on sub-Saharan African countries suggests that HIV/AIDS-related morbidity was significantly higher among female sex workers who did not use condoms, in contrast to their condom-using peers (Morison et al., 2001). Other studies on Asian countries and other areas where HIV infection rates have risen rapidly indicate similar results (Mills et al., 1998). Therefore, it is reasonable to assume that a high prevalence of unprotected commercial sex among an increasing number of *involuntary bachelors* in China is likely to accelerate HIV/AIDS and STD transmission, with a significant negative impact on public health.

On Commercial Sex, Condom Use, and Associated Factors

The prevalence of commercial sex varies greatly across regions and population groups. Research indicates that it ranges from 2% (e.g., ordinary men in southern Africa) to 46% (e.g., married men separated from their wives) in areas such as the United States, Thailand, Africa, and Latin America (Calazans, Araujo, Venturi, & França, 2005; Carael, Slaymaker, Lyerla, & Sarkar, 2006; Leclerc & Garenne, 2008; Parrado, Flippen, & McQuiston, 2004). In urban China, it ranges from 4% to 32% (Cai, Tan, & Luo, 2006; B. Li et al., 2008; Wang, Stanton, Fang, Lin, & Mao, 2007; Wen, Li, Zhou, Wu, & Zhao, 2012). Factors such as knowledge of HIV/AIDS and STDs, attitudes toward wife-beating, age, marital status, living arrangements (single or cohabitating), income, and educational levels are correlated with the likelihood of engaging in commercial sex (Cai et al., 2006; Carael et al., 2006; Celentano et al., 1993; Leclerc & Garenne, 2008; B. Li et al., 2008; Parrado et al., 2004; Wang et al., 2007; Wen et al., 2012).

The rate of condom use among those participating in commercial sex varies greatly across countries and regions. These variations depend in part on the legal status of prostitution. For example, in Nevada, where *prostitution* is legal, sex workers are required by law to consistently use condoms; in contrast, in Zimbabwe, where prostitution is illegal, only 44% of male clients and 45% of sex workers report using condoms when engaging in commercial sex (Albert, Warner, Hatcher, Trussell, & Bennett, 1995; Wilson, Chiroro, Lavelle, & Mutero, 1989). The rate of condom use in commercial sex appears to be even lower in China, ranging from 7.5% to 36% (B. Li et al., 2008; B. Liu, Lv, Wan, & Ren, 2007; Wen et al., 2012). Condom use for commercial sex in this population has been correlated with factors such as knowledge of HIV/AIDS and STDs, income, and educational level (Ford et al., 1996; Lau, Tang, & Tsui, 2003; B. Liu et al., 2007; Morris, Pramualratana, Podhisita, & Wawer, 1995; Wen et al., 2012; Zuo et al., 2003).

Very little is currently known on the sexual behavior of male bachelors in contemporary China (S. Z. Li, Zhang, Yang, & Attané, 2010; D. L. Liu & Lu, 2005), especially that of marriage-squeezed men who wish to be married (*involuntary bachelors*). The purpose of this article is to better understand commercial sex in this population. In this article, *commercial sex* is defined as a sexual intercourse with a female partner in exchange for money. We will analyze condom use among *involuntary bachelors* who participate in commercial sex and compare their behavior to that of married men. Our objective is to better anticipate the consequences of the *male marriage squeeze* at an individual level and to assess its potential impact on public health.

Method

Survey and Data

The data used in this study are drawn from a survey titled "Reproductive Health and Family Life of *Involuntary Bachelors* in Rural China." This study was conducted in 2008 in a rural district (henceforth "JC district") of "CH city" in Anhui province. This area was selected for two reasons. First, due to the traditional patriarchal system, Confucian culture and son preference are still very prevalent in this area, leading to a very unbalanced sex ratio at birth. This area also offers a representative portrait of rural China's social and demographic makeup (Attané et al., in press).

The age of 28 has been established as a threshold for marriage among rural men; beyond this age, their chance of getting married decreases significantly (Yang et al., 2012a, 2012b). Therefore, only men over 28 years were included in this survey. The survey sample was selected randomly from the family planning administration registers in several villages with administrative attachments to JC district. The study area was divided into three zones (well-, medium-, and underdeveloped) in which six townships were randomly selected, two in each zone. Four

Table 1. Basic Information of all Variables.

Variables	Description	Frequency (ratio)/mean (*SD*)	Min/Max
Commercial sex for first sexual intercourse?	No	366 (95.6%)	0/1
	Yes	17 (4.4%)	
Condom use for first sexual intercourse?	No	557 (89.7%)	0/1
	Yes	64 (10.3%)	
Commercial sex for most recent sexual intercourse?	No	353 (94.6%)	0/1
	Yes	20 (5.4%)	
Condom use for most recent sexual intercourse	No	532 (85.7%)	0/1
	Yes	89 (14.3%)	
Attitudes toward commercial sex	Five-point item ranging from "totally unacceptable" to "totally acceptable"	3.89 (1.06)	1/5
Knowledge of HIV/AIDS	Five items	3.13 (1.10)	1/5
Knowledge of STDs	Three items	2.56 (0.78)	1/3
Marital status	Unmarried	337 (54.9%)	0/1
	Married	277 (45.1%)	
Age	28-35	231 (37.2%)	0/1
	Older than 35	390 (62.8%)	
Education	Primary school and less	212 (34.1%)	0/1
	High school and above	409 (65.9%)	
Monthly personal income	1,000 Yuan and below	390 (62.8%)	0/1
	Higher than 1,000 Yuan	231 (37.2%)	

Note. STD = sexually transmitted disease.

villages were then randomly selected from each of these townships, for a total of 24 villages. As the survey was designed to study the characteristics of single men, they were intentionally overrepresented in the sample. For this reason, a ratio of single to married men of about 3:2 was applied to the selection of an initial sample. Fifteen single men were then drawn from each village for an initial sample of 360 single men aged over 28 years.

To guarantee anonymity and encourage honest responses, the computer-assisted personal interviewing method was used (Gribble, Miller, Rogers, & Turner, 1999). Although an interviewer was present to give technical assistance if necessary, he sat in such a way that he could not see the respondent's computer screen. Before respondents began the questionnaire, an interviewer met with them one-on-one to read out the regulations concerning privacy protection and to inform participants that they could withdraw at any time without penalty. For respondents who were illiterate (they could not read and could not understand what they read) or had a low educational level (had not finished primary school; $n = 38$) the interviewer obtained consent to read the questions, explained how to use the laptop to answer the questions, and helped him to complete the survey.

Measurements

Four key variables for measuring commercial sex and condom use were adopted for use in the present study: *use of commercial sex for first sexual intercourse, use of commercial sex for most recent sexual intercourse, condom use for first sexual intercourse*, and *condom use for most recent sexual intercourse*. Each variable had two possible responses (e.g., 0 = *engaged in commercial sex*, 1 = *did not engage in commercial sex*; or 0 = *used a condom* and 1 = *did not use a condom*).

Participants' attitudes toward commercial sex were measured on a 5-point Likert-type scale ranging from 1 = *totally unacceptable* to 5 = *totally acceptable*. Knowledge of HIV/AIDS and STDs was measured with scores obtained from respondent sets of the relevant questions; higher scores indicated more knowledge about HIV/AIDS and STDs. Cronbach's alpha for the HIV/AIDS scale was .75 and that for the STD scale was .78.

Marital status and age were also assessed. For marital status, participants had to choose between the following two categories: 0 = *unmarried* and 1 = *married or cohabitating with a partner*. We have already discussed how the age of 28 years is considered a threshold age for male marriage; another important threshold age for rural men is 35 years, beyond which the chance of getting married is almost zero (Yang et al., 2012a, 2012b). Participants therefore indicated their age with one of the two following categories: 0 = *28 to 35 years old* and 1 = *older than 35 years*.

Socioeconomic variables such as educational level and monthly personal income have also been associated with the likelihood of engaging in commercial sex, as well as condom use behavior (Celentano et al., 1993; Leclerc & Garenne, 2008; B. Liu et al., 2007; Parrado et al., 2004).

A summary of the measurements for all variables is presented in Table 1.

Analysis

To describe the characteristics of unmarried men and to make comparisons between married and unmarried men, and between first and most recent sexual experiences, we created a contingency table using cross-tabulation and conducted independent sample *t* tests.

To determine the factors associated with commercial sex experiences, we created two models, one with *use of commercial sex for first sexual intercourse* as the dependent variable and one with *use of commercial sex for most recent sexual intercourse* as the dependent variable. *Attitudes toward commercial sex, knowledge of HIV/AIDS*, and *knowledge of STDs* were used as the independent variables. *Marital status, age, education*, and *monthly personal income* were the control variables.

Two other models were created to determine the relationship between commercial sexual intercourses and condom use. In these models, *condom use for first sexual intercourse* and *condom use for most recent sexual intercourse* were set as the dependent variables, and *knowledge of HIV/AIDS* and *knowledge of STDs* were set as the independent variables. *Use of commercial sex for first/most recent sexual intercourse, marital status, age, education*, and *monthly personal income* were set as the control variables.

About 24.5% of the total sample reported that they had never had sexual intercourse and therefore did not respond to items regarding commercial sex. Another 15% of respondents had had sexual intercourse at least once, but did not respond to the items pertaining to commercial sex. Because of these two groups, data regarding commercial sexual intercourses were absent for about 40% of the questionnaires. We therefore used Hua's (2012) technique of pairwise deletion to account for the missing data pertaining to commercial sex.

The block regression models described above give a better description of the different roles played by the independent and control variables than would a single multivariate regression. The odds ratios of the independent variables (when control variables were not included) indicate a rough impact of the independent variables on the dependent variable. When control variables are included, the adjusted odds ratios of the independent variables indicate the net impact of the independent variables on the dependent variable. Such an analytical strategy is commonly used in sociological studies (e.g., Selim et al., 2004).

Results

We approached 665 men in total asking them to complete the questionnaire. Thirty-eight men withdrew during the process (a dropout rate of 5.7%). Six questionnaires (0.9%) were excluded because they had been filled in too quickly (in less than 20 minutes), leaving 621 usable questionnaires (93.4% of the initial sample), 45.1% (n = 277) of which were from married men and 54.9% (n = 337) from single men.

Preliminary descriptive analysis yielded the following information about the characteristics of unmarried and married men: only about 18.8% of unmarried men had an education level of high school or above, which was significantly less than the 58.5% of married men ($\chi^2 = 87.06$, $p = .000$). Furthermore, 34.9% of unmarried men had a monthly income of 1,000 Yuan or more, which was significantly lower than the 62.2% of married men ($\chi^2 = 43.23$, $p = .000$). The prevalence of sexual behaviors in unmarried men was only about 40.5%, which was significantly lower than that among married men, at 98.7% ($\chi^2 = 156.50$, $p = .000$).

Prevalence of Commercial Sex and Rate of Condom Use

The prevalence of commercial sex for first and most recent sexual intercourses, behavioral differences between unmarried and married men, and the demographic characteristics of married and unmarried men are presented in Table 2. The notable findings were as follows. The prevalence of commercial sex for first sexual intercourse among unmarried men was 11.0%, which was significantly higher than the 1.6% among married men. For most recent sexual intercourse, it reached 13.6% among unmarried men, which is significantly higher than the 1.9% reported by married men. For first sexual intercourse, the mean value of *attitudes toward commercial sex* among married men who had reported having a commercial sex experience was 5.00 (*totally acceptable*); this indicated that such married men had significantly more acceptance of commercial sex than did married men who reported no commercial sex experience (mean attitude value = 4.22; between *totally acceptable* and *acceptable;* $t = 12.69$, $p = .000$). For most recent sexual intercourse, the mean value for *attitudes toward commercial sex* among married men who reported a commercial sex experience was 4.80 (between *totally acceptable* and *acceptable*), which was slightly higher than that among married men who reported no commercial sex experience (4.22, between *totally acceptable* and *acceptable;* $t = -2.79$, $p = .04$). For most recent sexual intercourse, the mean score obtained regarding *knowledge of STDs* among unmarried men who reported a commercial sex experience (2.93) was significantly higher than that among unmarried men who did not report such an experience (2.56; $t = -3.64$, $p = .001$), indicating better knowledge of STDs for men who had engaged in commercial sex.

Significant differences in condom use were also reported between married and unmarried men, for both

Table 2. Comparison of Commercial Sex Experience Between Unmarried and Married Men.

	Unmarried (frequency + ratio/mean + *SD*)		Married (frequency + ratio/mean + *SD*)	
Commercial sex for first sexual intercourse?	No	Yes	No	Yes
	105 (89.0%)	13 (11.0%)	254 (98.4%)	4 (1.6%)
χ^2 (Unmarried and married)	$\chi^2 = 16.81^{***}$ ($p = .000$)			
Attitudes toward commercial sex	4.02 (1.04)	4.08 (1.04)	4.22 (0.98)	5.00 (0.00)
t Test (if commercial sex)	$t = 0.19$ ($p = .85$)		$t = -12.69^{***}$ ($p = .000$)	
Knowledge of HIV/AIDS	3.19 (1.23)	3.17 (1.27)	3.52 (0.90)	3.75 (0.96)
t Test (if commercial sex)	$t = 0.07$ ($p = .94$)		$t = -0.52$ ($p = .61$)	
Knowledge of STDs	2.57 (0.76)	2.77 (0.60)	2.83 (0.54)	3.00 (0.00)
t Test (if commercial sex)	$t = -1.09$ ($p = .29$)		$t = -0.64$ ($p = .52$)	
Age				
28-35	50 (90.9%)	5 (9.1%)	93 (96.9%)	3 (3.1%)
Older than 35	55 (87.3%)	8 (12.7%)	161 (99.4%)	1 (0.6%)
χ^2 (if commercial sex)	$\chi^2 = 0.39$ ($p = .53$)		$\chi^2 = 2.48$ ($p = .12$)	
Education				
Primary school and less	45 (93.8%)	3 (6.2%)	31 (100%)	0 (0%)
High school and above	60 (85.7%)	10 (14.3%)	223 (98.2%)	4 (1.8%)
χ^2 (if commercial sex)	$\chi^2 = 1.88$ ($p = .17$)		$\chi^2 = 0.56$ ($p = .46$)	
Monthly personal income				
1,000 Yuan and less	61 (89.7%)	7 (10.3%)	121 (98.4%)	2 (1.6%)
More than 1,000 Yuan	44 (88.0%)	6 (12.0%)	133 (98.5%)	2 (1.5%)
χ^2 (if commercial sex)	$\chi^2 = 0.08$ ($p = .77$)		$\chi^2 = 0.01$ ($p = .93$)	
Commercial sex for most recent sexual intercourse?	No	Yes	No	Yes
	95 (86.4%)	15 (13.6%)	255 (98.1%)	5 (1.9%)
χ^2 (Unmarried and married)	$\chi^2 = 20.74^{***}$ ($p = .000$)			
Attitudes toward commercial sex	3.97 (1.07)	4.07 (1.22)	4.22 (0.99)	4.80 (0.45)
t Test (if commercial sex)	$t = -0.33$ ($p = .75$)		$t = -2.79^{*}$ ($p = .04$)	
Knowledge of HIV/AIDS	3.15 (1.27)	3.43 (1.09)	3.51 (0.90)	3.60 (0.55)
t Test (if commercial sex)	$t = -0.75$ ($p = .45$)		$t = -0.21$ ($p = .83$)	
Knowledge of STDs	2.56 (0.77)	2.93 (0.26)	2.83 (0.54)	3.00 (0.00)
t Test (if commercial sex)	$t = -3.64^{**}$ ($p = .001$)		$t = -0.71$ ($p = .47$)	
Age				
28-35	46 (88.5%)	6 (11.5%)	94 (96.9%)	3 (3.1%)
Older than 35	49 (84.5%)	9 (15.5 %)	161 (98.8%)	2 (1.2%)
χ^2 (if commercial sex)	$\chi^2 = 0.37$ ($p = .54$)		$\chi^2 = 1.12$ ($p = .29$)	
Education				
Primary school and less	40 (90.9%)	4 (9.1%)	29 (93.5%)	2 (6.5%)
High school and above	55 (83.3%)	11 (16.7%)	226 (98.7%)	3 (1.3%)
χ^2 (if commercial sex)	$\chi^2 = 1.29$ ($p = .26$)		$\chi^2 = 3.83^{+}$ ($p = .050$)	
Monthly personal income				
1,000 Yuan and less	56 (86.2%)	9 (13.8%)	122 (47.8%)	3 (60.0%)
More than 1,000 Yuan	39 (86.7%)	6 (13.3%)	133 (98.5%)	2 (1.5%)
χ^2 (if commercial sex)	$\chi^2 = 0.01$ ($p = .94$)		$\chi^2 = 0.29$ ($p = .59$)	

Note. STD = sexually transmitted disease.
$^{+}p < .1$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

first and most recent sexual intercourses. The rate of condom use for first sexual intercourse among unmarried men was reported to be 8.0%, which was significantly lower than that among married men (13.4%; $\chi^2 = 5.027$, $p = .025$; Table 3).

The mean score on the *knowledge of STDs* subscale among unmarried men who used condoms for their first sexual intercourse was 2.70, which was significantly higher than that among unmarried men who did not use condoms for their first sexual intercourse (2.35; $t = -2.82$; $p = .008$). The rate of condom use among unmarried men aged 28 to 35 years reached 14.7%, which was significantly higher than that among unmarried men over 35 years (3.8%; $\chi^2 = 12.80$, $p = .000$). The rate of condom use among unmarried men with monthly personal incomes higher than 1,000 Yuan was 17.2%, which was significantly higher than the 4.8% among those with monthly personal incomes of 1,000 Yuan or less.

The mean score for *knowledge of HIV/AIDS* among unmarried men who used condoms during their most recent sexual intercourse was 3.34, which was significantly higher than that among unmarried men who did not use condoms (2.78; $t = -3.28$, $p = .002$). The mean score for *knowledge of STDs* among unmarried men who used condoms during their last sexual intercourse was 2.77, which was significantly higher than that among unmarried men who did not use condoms (2.31; $t = -4.61$, $p = .000$). The rate of condom use for unmarried

Table 3. Comparison on Condom Use Between Unmarried and Married Men.

	Unmarried (frequency + ratio/mean + *SD*)		Married (frequency+ ratio/mean + *SD*)	
Condom use for first sexual intercourse?	No	Yes	No	Yes
	310 (92.0%)	27 (8.0%)	240 (86.6%)	37 (13.4%)
χ^2 test (unmarried and married)	$\chi^2 = 4.65^*$ ($p = .025$)			
Commercial sex for first sexual intercourse				
No	82 (78.1%)	23 (21.9%)	219 (99.1%)	2 (0.9%)
Yes	9 (69.2%)	4 (30.8%)	35 (94.6%)	2 (5.4%)
χ^2 Test (if use condom)	$\chi^2 = 0.51$ ($p = .47$)		$\chi^2 = 4.21^*$ ($p = .04$)	
Knowledge of HIV/AIDS	2.85 (1.16)	3.00 (0.93)	3.44 (0.96)	3.47 (0.92)
t Test (if commercial sex)	$t = -0.76$ ($p = .46$)		$t = -0.14$ ($p = .89$)	
Knowledge of STDs	2.35 (0.87)	2.70 (0.61)	2.77 (0.62)	2.89 (0.39)
t Test (if commercial sex)	$t = -2.82^{**}$ ($p = .008$)		$t = -1.16$ ($p = .25$)	
Age				
28-35	110 (85.3%)	19 (14.7%)	86 (84.3%)	16 (15.7%)
Older than 35	200 (96.2%)	8 (3.8%)	154 (88.0%)	21 (12.0%)
χ^2 (if commercial sex)	$\chi^2 = 12.80^{***}$ ($p = .000$)		$\chi^2 = 0.76$ ($p = .38$)	
Education				
Primary school and less	157 (93.5%)	11 (6.5%)	36 (92.3%)	3 (7.7%)
High school and above	153 (90.5%)	16 (9.5%)	204 (85.7%)	34 (14.3%)
χ^2 (if commercial sex)	$\chi^2 = 0.98$ ($p = .32$)		$\chi^2 = 1.26$ ($p = .26$)	
Monthly personal income				
1,000 Yuan and less	238 (95.2%)	12 (4.8%)	123 (91.8%)	11 (8.2%)
More than 1,000 Yuan	72 (82.8%)	15 (17.2%)	117 (81.8%)	26 (18.2%)
χ^2 (if commercial sex)	$\chi^2 = 13.56^{***}$ ($p = .000$)		$\chi^2 = 5.95^*$ ($p = .015$)	
Condom use for most recent sexual intercourse?	No	Yes	No	Yes
	293 (86.9%)	44 (13.1%)	232 (83.8%)	45 (16.2%)
χ^2 Test (unmarried and married)	$\chi^2 = 1.25$ ($p = .26$)			
Commercial sex for most recent sexual intercourse				
No	62 (65.3%)	33 (34.7%)	213 (83.5%)	42 (16.5%)
Yes	8 (53.3%)	7 (46.7%)	2 (40.0%)	3 (60.0%)
χ^2 Test (if use condom)	$\chi^2 = 0.80$ ($p = .37$)		$\chi^2 = 6.49^*$ ($p = .011$)	
Knowledge of HIV/AIDS	2.78 (1.15)	3.34 (0.99)	3.41 (0.97)	3.63 (0.82)
t Test (if commercial sex)	$t = -3.28^{**}$ ($p = .002$)		$t = -1.37$ ($p = .17$)	
Knowledge of STDs	2.31 (0.88)	2.77 (0.57)	2.76 (0.62)	2.91 (0.36)
t Test (if commercial sex)	$t = -4.61^{***}$ ($p = .000$)		$t = -2.20^*$ ($p = .03$)	
Age				
28-35	98 (76.0%)	31 (24.0%)	78 (76.5%)	24 (23.5%)
Older than 35	195 (93.8%)	13 (6.2%)	154 (88.0%)	21 (12.0%)
χ^2 (if commercial sex)	$\chi^2 = 22.18^{***}$ ($p = .000$)		$\chi^2 = 6.30^*$ ($p = .012$)	
Education				
Primary school and under	156 (92.9%)	12 (7.1%)	36 (92.3%)	3 (7.7%)
High school and above	137 (81.1%)	32 (18.9%)	196 (82.4%)	42 (17.6%)
χ^2 (if commercial sex)	$\chi^2 = 10.32^{**}$ ($p = .001$)		$\chi^2 = 2.44$ ($p = .12$)	
Monthly personal income				
1,000 Yuan and less	232 (92.8%)	18 (7.2%)	118 (88.1%)	16 (11.9%)
More than 1,000 Yuan	61 (70.1%)	26 (29.9%)	114 (79.7%)	29 (20.3%)
χ^2 (if commercial sex)	$\chi^2 = 29.26^{***}$ ($p = .000$)		$\chi^2 = 3.54$ ($p = .60$)	

Note. STD = sexually transmitted disease.
$^+p < .1$. $^*p < .05$. $^{**}p < .01$. $^{***}p < .001$.

men aged 28 to 35 years was 24%, which was significantly higher than that for unmarried men aged 35 years or older (6.2%; $\chi^2 = 22.18$, $p = .000$). The rate of condom use among unmarried men with a high school education or higher was 18.9%, which was significantly higher than that among unmarried men with a primary school education or less (7.1%; $\chi^2 = 10.32$, $p = .001$). The rate of condom use among unmarried men with a monthly personal income higher than 1,000 Yuan was 29.9%, which as significantly higher than that among unmarried men with a monthly personal income of 1,000 Yuan or less (7.2%; $\chi^2 = 29.26$, $p = .000$).

The rate of *condom use at first sexual intercourse* for married men who reported at least one commercial sex experience reached 5.4%, which was significantly higher than that among married men who did not report at least one commercial sex experience (1.9%; $\chi^2 = 4.21$, $p = .04$). The rate of condom use among married men with a monthly personal income higher than 1,000 Yuan was 18.2%, which was significantly higher than that among married men with a monthly personal income of 1,000 Yuan or less (8.2%; $\chi^2 = 5.95$, $p = .015$).

The rate of *condom use at most recent sexual intercourse* among married men who reported at least one

Table 4. Factors Associated With Commercial Sex.

Dependent variable: Commercial sex for first sexual intercourse (Reference: No)	Model A1	Model A2
Attitudes toward commercial sex	1.10	1.15
Knowledge of HIV/AIDS	0.76	0.72
Knowledge of STDs	1.57	2.00
Marital status (Reference: Unmarried)		
Married		0.08**
Age (Reference: 28-35)		
Older than 35		1.45
Education (Reference: Primary school and under)		
High school and above		4.28+
Monthly personal income (Reference: 1,000 Yuan and less)		
More than 1,000 Yuan		0.89
2 Log likelihood	129.37	109.66
Cox and Snell R^2	0.003	0.06
Nagelkerke R^2	0.008	0.18
Dependent variable: Commercial sex for last sexual intercourse (Reference: No)	**Model B1**	**Model B2**
Attitudes toward commercial sex	1.02	1.12
Knowledge of HIV/AIDS	0.78	0.75
Knowledge of STDs	3.65	6.33+
Marital status (Reference: Unmarried)		
Married		0.09***
Age (Reference: 28-35)		
Older than 35		1.39
Education (Reference: Primary school and under)		
High school and above		1.24
Monthly personal income (Reference: 1,000 Yuan and less)		
More than 1,000 Yuan		0.80
2 Log likelihood	143.85	121.71
Cox and Snell R^2	0.009	0.071
Nagelkerke R^2	0.027	0.203

Note. STD = sexually transmitted disease.
+$p < .1$. *$p < .05$. **$p < .01$. ***$p < .001$.

commercial sex experience reached 60%, which was significantly higher than that among married men who reported no commercial sex experiences (40%; $\chi^2 = 6.49$, $p = .011$). The mean score for *knowledge of STDs* among married men who used condom was 2.91, which was significantly higher than those who did not use a condom (2.76; $t = -2.20$, $p = .03$). The rate of condom use among married men aged 28 to 35 years was 23.5%, which was significantly higher than that among married men aged 35 years or above (12.0%; $\chi^2 = 6.30$, $p = .012$).

Factors Associated With Commercial Sex

The results of the regression analysis for the factors associated with commercial-sex-related behaviors for first and most recent commercial sex experience are presented in Table 4.

In Models A1 and A2, *attitudes toward commercial sex, knowledge of HIV/AIDS*, and *knowledge of STDs* were not significantly related to commercial sex for first sexual intercourse, regardless of whether the control variables were included. Among the control variables, only *marital status* was significantly related to *use of commercial sex for first sexual intercourse*, with an odds ratio of 0.08 ($p < .01$).

In Models B1 and B2, *attitudes toward commercial sex, knowledge of HIV/AIDS*, and *knowledge of STDs* were not significantly related to *use of commercial sex for most recent sexual intercourse*, regardless of whether or not the control variables were included. Among the control variables, only *marital status* was significantly related to *use of commercial sex for most recent sexual experience*, with an odds ratio of 0.09 ($p < .001$).

When the independent and control variables were integrated step by step into the regression models, Cox and Snell R^2 values and Nagelkerke R^2 values increased: 0.003 and 0.008 for Model A1, 0.06 and 0.18 for Model

Table 5. Commercial Sex and Condom Use.

Dependent variable: Condom use for first sexual intercourse (Reference: No)	Model C1	Model C2
Knowledge of HIV/AIDS	0.87	0.71^{+}
Knowledge of STDs	2.04*	1.45
Commercial sex for first sexual intercourse (Reference: No)		
Yes		2.00
Marital status (Reference: Unmarried)		
Married		0.56^{+}
Age (Reference: 28-35)		
Older than 35		0.55^{+}
Education (Reference: Primary school and under)		
High school and above		0.79
Monthly personal income (Reference: 1,000 Yuan and less)		
More than 1,000 Yuan		2.37*
2 Log likelihood	357.51	285.22
Cox and Snell R^2	0.013	0.062
Nagelkerke R^2	0.027	0.105
Dependent variable: Condom use for most recent sexual intercourse (Reference: No)	**Model D1**	**Model D2**
Knowledge of HIV/AIDS	1.15	0.92
Knowledge of STDs	2.12**	1.61
Commercial sex for most recent sexual intercourse (Reference: No)		
Yes		1.65
Marital status (Reference: Unmarried)		
Married		0.32***
Age (Reference: 28-35)		
Older than 35		0.41**
Education (Reference: Primary school and under)		
High school and above		1.45
Monthly personal income (Reference: 1,000 Yuan and less)		
More than 1,000 Yuan		1.55*
2 Log likelihood	454.41	333.61
Cox and Snell R^2	0.035	0.11
Nagelkerke R^2	0.062	0.17

Note. STD = sexually transmitted disease.
$^{+}p < .1$. *$p < .05$. **$p < .01$. ***$p < .001$.

A2, 0.009 and 0.027 for Model B1, and 0.071 and 0.203 for Model B2, respectively, indicating an increase in the explanatory power of the models.

Relationship Between Commercial Sex and Condom Use

The factors associated with condom use for first and most recent sexual intercourse are presented in Table 5. In Models C1 and C2, *knowledge of STDs* was significantly related to condom use during first sexual intercourse, with an odds ratio of 2.04 ($p < .05$). However, when the control variables were included in Model C2, the impact of *knowledge of STDs* became nonsignificant. *Knowledge of HIV/AIDS* was not significantly related to *condom use for first sexual experience*, regardless of whether the control variables were included. Regarding the influence of the control variables, only *monthly personal income* was significantly related to condom use, with an odds ratio of 2.37 ($p < .05$).

In Models D1 and D2, *knowledge of HIV/AIDS* had no significant impact on *condom use for most recent sexual intercourse*, regardless of whether the control variables were included. *Knowledge of STDs* was significantly related to condom use in Model D1, with an odds ratio of 2.12 ($p < .01$). However, when the control variables were included in Model D2, the impact of *knowledge of STDs* became nonsignificant, while *marital status* and *age* became significantly related to condom use, with odds ratios of 0.32 ($p < .001$) and 0.41 ($p < .01$), respectively.

When the independent and control variables were integrated step by step into the regression models, Cox and

Snell R^2 and Nagelkerke R^2 values increased to 0.013 and 0.027 for Model C1, 0.062 and 0.105 for Model C2, 0.035 and 0.062 for Model D1, and 0.11 and 0.17 for Model D2, respectively, indicating an increase in the explanatory power of the models.

Discussion and Conclusions

The significantly lower education and income levels observed among unmarried men in this study indicate a lower socioeconomic status and "marriage squeezed" characteristics, suggesting that they were excluded by the marriage market due to the *gradient marriage pattern* (Li & Wei, 1986). Moreover, these men are short of sex. In the present study, more than half of the unmarried men reported never having had sex. These *involuntary bachelors* might understandably adopt other tactics, such as commercial sex, to compensate for insufficient sexual fulfillment.

Marriage Squeeze and the Prevalence of Commercial Sex

The above analyses indicate that commercial sex experiences were significantly more prevalent among unmarried than among married men in our sample, both for first and most recent sexual intercourses. This is generally consistent with existing research conducted in China, which has reported rates of commercial sex experience ranging from 4% to 10% (Cai et al., 2006; B. Li et al., 2008; Wang et al., 2007; Wen et al., 2012). The present study, however, is not completely comparable with previous research, as most of the available studies for China focus on urban migrants, while the present survey targeted only rural men. This difference is especially noteworthy because studies taking place in other countries have determined that the likelihood of engaging in commercial sex differs by population (Carael et al., 2006; Leclerc & Garenne, 2008; Parrado et al., 2004), meaning that findings on commercial sex behaviors among urban Chinese migrants may not accurately predict behavior among rural men in China.

The results from our regression analysis indicate that marital status is almost the only significant variable for predicting the prevalence of commercial sex, both for first and most recent sexual intercourse, and the explanatory power of the models was greatly improved when *marital status* was included (Table 4). In a context of the *male marriage squeeze*, the reduced availability of female sexual partners for marriage appears to have made commercial sex an important way for *involuntary bachelors* to meet their sexual needs (Attané et al., in press). We might also tentatively say that given that commercial sex is illegal and taboo in Chinese society, if *involuntary bachelors* cannot find or use commercial sex services, it may lead to an increase in the abduction and trafficking of women. Although there is little to support this hypothesis, Internet news stories seem to suggest there is a strong possibility of this occurring, for example, the U.S. Department of State's 2009 Trafficking in Persons report listed widening sex imbalance in Asia as a cause of increased sex trafficking; tends are increasing in Asia for forced marriages, forced prostitution, and transborder marriages where women in poor areas are married off to men in richer regions (Panagoda, 2012).

Commercial Sex, Condom Use, and Public Health

During their first and most recent sexual intercourses, all men sampled (both unmarried and married) reported rates of condom use below 20%, which is lower than levels observed in existing research using Chinese samples (B. Li et al., 2008; B. Liu et al., 2007; Wen et al., 2012). In the present study, the rate of condom use for first sexual intercourses was lower among men who were still unmarried during the survey period than among men who had gotten married, whereas this gap narrowed for condom use during the most recent sexual intercourses, it did not disappear, suggesting that *involuntary bachelors* face higher risks than their married peers when having sex. This may be because, in rural China, free condoms are provided to married men by the local family planning bureau, but these are not provided to unmarried men (H. Y. Liu, 2003). This situation may pose various public health challenges, especially concerning HIV/AIDS and STD transmission, as the vast majority of commercial sex engaged in by *involuntary bachelors* is still unprotected (Table 3).

Regression analysis indicated that, in the present study, condom use was strongly associated with *knowledge of STDs*, in particular among unmarried men. However, given the wide gap in knowledge of STDs between unmarried and married men, *marital status* had an adjusted impact on the relationship between *knowledge of STDs* and *condom use*. Although our descriptive analysis indicates that *knowledge of STDs* had a more sensitive impact on *condom use* among unmarried men, those with higher scores for *knowledge of STDs* were therefore more likely to use condoms. This was even more apparent when participants were surveyed regarding their most recent sexual intercourse.

Our descriptive analysis indicates that the married men who reported having commercial sex for either their first or their most recent intercourse were more likely to use condoms for both of those intercourses than married men who did not report engaging in commercial sex.

However, such a relationship does not exist for unmarried men. This difference can be explained by the fact that married men are eager to protect their wives from HIV/AIDS and STDs. A similar phenomenon was noted by Vanwesenbeeck, De Graaf, Van Zessen, Straver, and Visser (1993).

Both our descriptive and regression analyses indicate that both younger men and those with higher educational levels—whom we would expect to have higher levels of knowledge of HIV/AIDS and STDs—are more likely to use condoms. This is consistent with existing literature (B. Liu et al., 2007; Morris et al., 1995).

In the present study, condom use was strongly dependent on income level. Men with higher monthly incomes were more likely to use condoms; this link was even more robust among unmarried men, as illustrated in the latter regression analysis (Table 5); this was consistent with findings from existing research (B. Liu et al., 2007; Morris et al., 1995). The comparatively high cost of one box of condoms (about 15-30 Yuan) could post an economic burden to many rural bachelors with low incomes, impeding condom use. Providing free condoms to unmarried men might be an effective means of encouraging them to use condoms more frequently, reducing HIV/AIDS and STD transmission. The Income Doubling Program proposed by the new Chinese government (People's Daily Online, 2012) aims to double income by 2020; this may greatly increase the condom use rate among marriage-squeezed men, thanks to their higher disposable income. This would have a positive impact on men's health and public health security.

Another conclusion drawn from the above analyses is the public health risk posed by the higher prevalence of commercial sex among unmarried men, combined with their relatively lower rate of condom use. This makes commercial sex significantly more risky with regard to HIV/AIDS and STD transmission. Furthermore, the rate of condom use among *involuntary bachelors* is strongly associated with their knowledge of STDs, age, education, and monthly income.

Limitations and Future Work

Although the computer-assisted personal interviewing method was used to reduce participants' inhibitions in accurately reporting potentially shameful sexual information, we believe that concerns about personal privacy resulted in a relatively high amount of missing data. Data were missing for items regarding commercial sex for both the first and the most recent sexual intercourses in about 15% of questionnaires, which might have influenced the stability of the results.

A second limitation was that survey was not designed to specifically address commercial sex among *involuntary bachelors* in rural China. The limited number of items about commercial sex and the limited scope of possible responses only gave very general information on behaviors associated with commercial sex.

A third limitation was that the present study only surveyed first and most recent sexual intercourses when assessing commercial sex and condom use, whereas most related research assessed frequency of sexual intercourses within a certain time frame (e.g., the 12 months preceding the survey). This makes it difficult to accurately compare the results of the present study with existing research.

Future studies should survey a larger sample of rural migrants, improve the accuracy of reporting on sexual issues, add specific questions relevant to commercial sex, and conduct in-depth interviews among *involuntary bachelors* who report engaging in commercial sex.

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References

Albert, A. E., Warner, D. L., Hatcher, R. A., Trussell, J., & Bennett, C. (1995). Condom use among female commercial sex workers in Nevada's legal brothels. *American Journal of Public Health*, *85*, 1514-1520.

Attané, I., Zhang, Q. L., Li, S. Z., & Yang, X. Y. (in press). How bachelorhood affects men's sexuality in a context of female shortage: Some evidence from an exploratory survey in rural Anhui, China. *The China Quarterly*.

Cai, W. D., Tan, G. J., & Luo, X. R. (2006). A survey on knowledge and behaviors of AIDS among migrants in Shenzhen City (in Chinesse). *Journal of Public Health and Preventive Medicine*, *17*, 103-104.

Calazans, G., Araujo, T. W., Venturi, G., & França, I. J. (2005). Factors associated with condom use among youth aged 15-24 years in Brazil in 2003. *AIDS*, *19*, 42-50.

Carael, M., Slaymaker, E., Lyerla, R., & Sarkar, S. (2006). Clients of sex workers in different regions of the world: Hard to count. *Sexually Transmitted Infections*, *82*(3), 26-33.

Celentano, D. D., Nelson, K. E., Suprasert, S., Wright, N., Matanasarawoot, A., Eiumtrakul, S., . . .Sirisopana, N. (1993). Behavioral and sociodemographic risks for frequent visits to commercial sex workers among northern Thai men. *AIDS*, *7*, 1647-1652.

Chen, Y. H., & Ullrich, M. (2001). Chinese male overpopulation-scale, structure, influence factors and development trends analysis (in Chinese). *Marketing and Population Analysis*, *3*, 1-11.

China National Bureau of Statistics. (2012). *Social, science and technology statistics: Tabulation on the 2010 Population Census of the People's Republic of China*. Beijing: China Statistics Press.

Das Gupta, M., & Li, S. (1999). Gender bias in China, South Korea and India 1920-1990: The effects of war, famine, and fertility decline. *Development and Change*, *30*, 619-652.

Ford, K., Wirawan, D. N., Fajans, P., Meliawan, P., MacDonald, K., & Thorpe, L. (1996). Behavioral interventions for reduction of sexually transmitted disease/HIV transmission among female commercial sex workers and clients in Bali, Indonesia. *AIDS*, *10*, 213-222.

Gribble, J. N., Miller, H. G., Rogers, S. M., & Turner, C. F. (1999). Interview mode and measurement of sexual behaviors: Methodological issues. *Journal of Sex Research*, *36*(1), 16-24.

Guo, Z. G., & Deng, G. S. (2000). Study on marriage squeeze in China (in Chinese). *Marketing and Population Analysis*, *3*, 1-16.

Hua, L. L. (2012). *Simulated comparison of different treat methods on missing data* (Unpublishe master's thesis). Zhengzhou University (in Chinese).

Lau, J. T., Tang, A. S., & Tsui, H. Y. (2003). The relationship between condom use, sexually transmitted diseases, and location of commercial sex transaction among male Hong Kong clients. *AIDS*, *17*, 105-112.

Leclerc, P. M., & Garenne, M. (2008). Clients of commercial sex workers in Zambia: Prevalence, frequency, and risk factors. *Open Demography Journal*, *1*, 1-10.

Li, B., Wang, Y., Zhang, F., Gao, B., Yong, L. Z., & Wei, L. Q. (2008). A study on extramarital sexual intercourse and condom use related factors among floating population (in Chinese). *Chinese Journal of Public Health*, *24*, 791-792.

Li, S. Z., Jiang, Q. B., & Feldman, W. M. (2006). *Gender preference and social development*. Beijing: China Social Sciences Literature Press.

Li, S. Z., Zhang, Q. L., Yang, X. Y., & Attané, I. (2010). Male singlehood, poverty and sexuality in rural China: An exploratory survey. *Population-E*, *65*, 679-694.

Li, Y. H. (1998). *The subculture of same-sex sexuality*. Beijing: China Today Press.

Li, Z., & Wei, S. Z. (1986). Gradient marriage problem (in Chinese). *The Contemporary Youth Studies*, *9*, 21-28.

Liu, B., Lv, Y. P., Wan, L. S., & Ren, X. L. (2007). Analysis on influential factors of extramarital, commercial sexual behaviors and condom use of STD patients in Jiangxi Province (in Chinese). *Contemporary Preventive Medicine*, *34*, 2606-2608.

Liu, D. L., & Lu, L. G. (2005). *The study on Chinese same-sex sexuality* (in Chinese). Beijing: Chinese Society Press.

Liu, H. Y. (2003). The gender issues in reproductive health (in Chinese). *Population and Family Planning*, *9*, 30-32.

McMillan, J. (2006). *Sex, science and morality in China*. New York, NY: Routledge.

Mills, S., Saidel, T., Bennett, A., Rehle, T., Hogle, J., Brown, T., & Magnani, R. (1998). HIV risk behavioral surveillance: A methodology for monitoring behavioural trends. *AIDS*, *12*, 153-159.

Morison, L., Weiss, H. A., Buve, A., Carael, M., Abega, S. C., Kaona, F., & Hayes, R. J. (2001). Commercial sex and the spread of HIV in four cities in sub-Saharan Africa. *AIDS*, *15*(4), 61-69.

Morris, M., Pramualratana, A., Podhisita, C., & Wawer, M. J. (1995). The relational determinants of condom use with commercial sex partners in Thailand. *AIDS*, *9*, 507-515.

Panagoda, C. (2012). *Global gender imbalance poses critical problems for women*. Retrieved from http://www.ipsnews.net/2012/02/global-gender-imbalance-poses-critical-problems-for-women

Parrado, E. A., Flippen, C. A., & McQuiston, C. (2004). Use of commercial sex workers among Hispanic migrants in North Carolina: Implications for the spread of HIV. *Perspectives on Sexual and Reproductive Health*, *36*, 150-156.

People's Daily Online. (2012). *Hu calls for doubling of income*. Retrieved from http://english.peopledaily.com.cn/90785/8012789.html

Selim, A. J., Fincke, B. G.,Ren, X.S., Lee, A., Rogers, W. H., Miller, D. R., Skinner, K. M., Linzer, M.& Kazis, L. E. (2004). Comorbidity assessments based on patient report, results from the veterans health study, *Journal of Ambulatory Care Manage*, *27*(3):281-295.

Vanwesenbeeck, I., De Graaf, R., Van Zessen, G., Straver, C. J., & Visser, J. H. (1993). Protection styles of prostitutes' clients: Intentions, behavior, and considerations in relation to AIDS. *Journal of Sex Education and Therapy*, *19*(2), 79-92.

Wang, B., Li, X., Stanton, B., Fang, X., Lin, D., & Mao, R. (2007). HIV-related risk behaviors and history of sexually transmitted diseases among male migrants who patronize commercial sex in China. *Sexually Transmitted Diseases*, *34*(1), 1-8.

Wen, B., Li, Y. Y., Zhou, Y., Wu, J. Q., & Zhao, R. (2012). Commercial sexual behavior among migrants in Shenzhen city (in Chinese). *Chinese Journal of Public Health*, *28*, 391-392.

Wilson, D., Chiroro, P., Lavelle, S., & Mutero, C. (1989). Sex worker, client sex behaviour and condom use in Harare, Zimbabwe. *AIDS Care*, *1*, 269-280.

Xinqin Research Institute. (2008). *The Chinese awareness of marriage* (in Chinese). Retrieved from http://report.searchina.net.cn/art/report342.htm

Yang, X. Y., Attané, I., Li, S. Z., & Zhang, Q. L. (2012a). On same-sex sexual behaviors among male bachelors in rural China: Evidence from a female shortage context. *American Journal of Men's Health*, *6*, 108-119.

Yang, X. Y., Attané, I., Li, S. Z., & Zhang, Q. L. (2012b). Masturbation as a compensation for partnered-sex among enforced male bachelors in rural China—Findings from a survey conducted in a context of a deficit of females. *Journal of Men's Health*, *9*, 220-229.

Zuo, Q., Shan, G. L., He, B., Zhang, K. L., Liu, M., & Liu, D. H. (2003) Analysis on the correlation between men's commercial sex behavior patterns and their personality (in Chinese). *Health Psychology Journal*, *11*, 328-330.