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HIV-Related Risk Behaviors and History of Sexually Transmitted Diseases Among Male Migrants Who Patronize Commercial Sex in China

BO WANG, PhD^{*}, XIAOMING LI, PhD^{*}, BONITA STANTON, MD^{*}, XIAOYI FANG, PhD[†], DANHUA LIN, PhD[†], and RONG MAO, PhD[‡]

^{*} *The Carman and Ann Adams Department of Pediatrics Prevention Research Center, Wayne State University, Detroit, Michigan*

[†] *Beijing Normal University Institute of Developmental Psychology, Beijing, China*

[‡] *Nanjing University Institute of Mental Health, Nanjing, China*

Abstract

Background and Objective— Men who pay for sexual services are at increased risk for HIV/sexually transmitted disease. Data on the sociodemographic and behavioral characteristics of such men in China are limited.

Study Design— Two cross-sectional surveys, using similar instruments, were completed among Chinese migrants in Beijing, Shanghai, and Nanjing in 2002. A total of 1304 rural-to-urban migrant men from community settings (“community sample”) and 465 migrant men attending sexually transmitted disease clinics (“STD clinic sample”) were included in the current study.

Results— Ten percent of men in the community sample and 32.7% of men in the STD clinic sample reported having ever paid for sex. Nearly 20% of clients from the community sample and 60% of clients from the STD clinic sample reported a history of STDs. For both the community and STD clinic samples, working at industrial or construction sectors, multiple sexual partners, regular sex partner having sex with others, and a history of drug use were associated with being a male client. In addition, perceived peer sexual risk and perceived vulnerability to STD were associated with being a male client in the community sample, and a history of STD and being tested for STD/HIV were associated with being a male client in the STD sample.

Conclusion— Male migrants who paid for sex in China were vulnerable to HIV/STDs. HIV prevention efforts should target young migrant men who work at factory and construction sectors. STD clinics may be important sites for outreach and intervention efforts among male clients.

Male clients of female sex workers (FSWs) constitute one of the core groups for HIV transmission. These men are at high risk for contracting HIV/sexually transmitted disease (STD). They are an important “bridge population,” transmitting HIV/STD between high-risk groups and the general population through unprotected sex with both FSWs and other sexual partners. However, limited data are available about the demographic characteristics and the behavioral patterns of male clients of FSWs in developed countries^{1,2} and developing countries.³ Therefore, few prevention programs have specifically focused on these men, their identification, and accessibility has been an obstacle.¹

Previous studies specifically targeting male clients of FSWs in Africa, Europe, and Southeast Asia reported a high prevalence of STDs and inconsistent condom use.^{4–7} A study, in which seminal fluid from used condoms from male clients attending a brothel in Thailand was analyzed, revealed that 26% of specimens were positive for one or more STDs.⁸ Another study conducted in Benin, which included urine sample testing from male clients just before they visited FSWs, indicated that 7.7% were infected with either chlamydia or gonorrhea.⁹ Miller and colleagues reported from a cross-sectional survey conducted in Lima, Peru, that 86% of clients always used a condom with FSWs and the prevalence of chlamydia and gonorrhea was 2%.¹⁰ Male clients attending STD clinics in Australia reported more sexual partners and more condom use than men who denied any commercial sexual contact; clients were more likely to report a history of STDs than nonclients.¹¹ Behavioral surveillance data has shown that 20% of the male clients of FSWs in Hong Kong had 4 or more sex partners in the previous 6 months, one fourth of them did not always use a condom, and 4% to 6% had contracted an STD.³ Male clients often report high rates of other risk behaviors such as injecting drug use, homosexual activity, and multiple noncommercial partners and report high rates of history of STDs.^{2,12} These limited data suggest that condom use and prevalence of STDs vary considerably across locales and cultures.

Male clients attending STD clinics in Australia were older, more likely to be married, and of non-English-speaking background.¹¹ Studies in African nations found that clients represented diverse educational backgrounds, occupations, and incomes.^{13,14} In Vietnam, Indonesia, Lao, and Pakistan, sex workers reported that civil servants, government officials, and businessmen were among their most frequent clients.¹⁵ In India, exit interviews with clients established that nearly one third were transport workers, but over one fourth also worked as businessmen or in the service industry.¹⁶ In a recent national representative sexual behavior survey in China, it was reported that Chinese men who earned a high income, traveled, and socialized frequently were more likely to engage in unprotected commercial sex.¹⁷

Male migrants have been reported as an important subgroup of clients of FSWs.¹⁸ The separation from family, lack of social control, relative affluence, and anonymity of living in a city make male migrants particularly vulnerable to commercial sex and HIV risk behaviors.^{18–20} Previous studies reported that migrant workers involved in multiple sexual encounters with different, changing partners, and usually without condom protection,¹⁸ had twice the prevalence rate of HIV as compared with nonmigrant men.²¹ Limited behavioral studies among Chinese migrants have suggested that male migrants engage in HIV/STD risk behaviors. A recent population-based survey in southwest China found that temporary migrants had significantly higher prevalence of HIV risk sexual behaviors (including commercial sex, casual sex, unprotected sex, and multiple sex partners) and drug use compared with nonmigrants.¹⁹ Another investigation among over 4000 migrants in 2 large Chinese cities has suggested that high mobility was associated with increased sexual risk.²² A study conducted in eastern China reported that the prevalence of STDs was as high as 18% among market stall vendors, most of whom were migrants.²⁰ However, according to a recent study by Hesketh and colleagues, there is no significant difference in the prevalence of syphilis and proportion of using sex workers between migrant workers and urban workers.²³

China's burgeoning AIDS epidemic is fueled by widespread sex work. Sexually transmitted HIV infection in China increased from 5.5% in 1997 to 19.8% in 2003.²⁴ It is estimated that there are approximately 4 to 10 million active FSWs in China.²⁵ Recent surveys have shown rising HIV infection levels among sex workers in China.¹⁵ Given the large number of active sex workers,²⁵ there may be millions of Chinese men who buy sex from them.¹⁷ Furthermore, high rates of infection and low condom use among sex workers make male clients an epidemiologically important group for HIV prevention in China. However, little is known about the sociodemographic and behavioral characteristics of clients of FSWs.

Accordingly, we conducted a study to investigate the characteristics of male migrants who patronized commercial sex about demographics, HIV-related risk behaviors, and history of STD. We compared male migrants who patronized commercial sex with men who denied having commercial sex contact using data from 2 independent samples of migrant men (i.e., a community sample and an STD clinic sample).

Methods

Research Sites and Participants

This study was conducted in 2002 in Beijing, Shanghai, and Nanjing, 3 Chinese major metropolitan areas with large rural-to-urban migrant populations. Participants were recruited from 1 different populations: migrants from community settings (“community sample”) and migrants seeking care at STD clinics (“STD clinic sample”). The community sample was obtained from participants in a large feasibility study of an HIV/STD behavioral prevention intervention among Chinese rural-to-urban migrants in Beijing and Nanjing. The original sample was recruited using “quota sampling” of 10 occupational groups, including restaurants, hotels, barbershops/beauty salons, bathhouse/massage parlors, nightclub/karaoke/dance halls/bars, small retail shops, domestic services, street stalls, construction sites, and factories. Based on available government statistics regarding migrant occupations in China, the 10 occupational clusters accounting for more than 90% of migrants were selected as the main sampling frame. The number of participants recruited in each occupational cluster was approximately proportionate to the overall estimated distribution of migrants in the cluster. A small percent of migrants (4%) who did not have a job were recruited from the job market. Detailed recruitment procedure has been described elsewhere.²² Among the 4301 migrants in Beijing and Nanjing approached to participate in the cross-sectional survey, 4208 (2509 males and 1699 females) consented to participate and completed a questionnaire. Among the 2509 migrant men, 1425 (56.8%) reported having ever had sexual intercourse. Among them, 1304 (91.5%) provided complete data regarding whether they had ever engaged in commercial sex and constitute the community sample in the current study.

The STD clinic sample was recruited from 19 public STD clinics in Nanjing, Shanghai, and Beijing in 2002. Detailed recruitment procedure has been described elsewhere.²⁶ Briefly, 1189 migrant patients in waiting rooms at STD clinics were invited to participate in the survey, and 1033 migrant patients (537 males and 496 females) consented to participate and completed a questionnaire. Among 537 male migrant patients, 465 (86.6%) reported having ever had sexual intercourse and comprise the STD clinic sample in the current study.

Survey Procedure

After obtaining permission from gatekeepers, employers, or workplace managers, trained interviewers approached eligible migrants at their worksites. A structured questionnaire was administered to migrants who provided written informed consent. The survey was anonymous and conducted in separate rooms at their workplace or a nearby place convenient to participants. Migrants attending STD clinics completed their questionnaires in a private waiting room before seeing a doctor. The survey was conducted by trained interviewers, and no personal identifiable information was recorded on the questionnaire. Interviewers provided explanations and instructions for completing the surveys and were available to assist participants with any problems they experienced in understanding the questionnaire (i.e., reading part of questionnaire to a few migrants with limited literacy). The questionnaire took approximately 45 minutes to complete. The study protocol was approved by the Institutional Review Boards at Wayne State University in the United States and Beijing Normal University and the National Center for STD and Leprosy Control in China.

Measures

Patronage of Commercial Sex—Participants were asked whether they had ever given money or valuable gifts in exchange for sexual intercourse. According to their responses, they were divided into 2 groups: those who had ever paid for sexual services (clients) and those who had not (nonclients).

Sociodemographic Characteristics—Age, ethnicity (i.e., Han, Hui, Man, Mongolia, and others), education level (i.e., illiterate, primary school, junior high school, senior high/technical school, college or above), and marital status (i.e., never married, married, divorced, widowed, and remarried) were collected. Information was also collected regarding monthly income, workplace (i.e., entertainment establishments, service sectors, industrial sectors, construction sites, and others), and living arrangement (i.e., alone or with spouse, coworker, village fellow, friend). Participants were queried about the total years of their migratory experience, the number of jobs that they had ever had, the number of cities in which they had lived, and the frequency of home visits during their migration. The ratio of the number of migratory cities to years of total migration was used as an index of mobility. In bivariate or multivariate analysis, education and marital status were grouped into 2 categories (junior high school or below and senior high or above; and never married and ever married).

HIV-Related Behaviors—Both risk and protective sexual behaviors were assessed among community and STD clinic samples, including the number of sexual partners in the last month, whether their sexual partner had sex with other partners, number of times using a condom during the last 3 sexual encounters, and condom discussion with sexual partners. Other HIV-related risk behaviors were also assessed, including having sold blood or plasma at least once last year, having been intoxicated with alcohol at least once last month, and having ever used illicit drugs (e.g., heroin, opium, and marijuana). Information on participants' sexual history was collected, including age of sexual debut and whether they had sex before marriage. The participants were also asked whether they had ever been tested for STDs or HIV and had a history of any STDs.

Vulnerability—Participants were asked to rate their perceptions regarding the likelihood of acquiring HIV and STD infection on a 5-point scale (1 = unlikely, 2 = somewhat likely, 3 = likely, 4 = very likely, and 5 = having already been infected). For the purpose of data analysis, the last 4 categories were combined to form one category (i.e., likely).

Attitudes Toward Condom Use—Participants were asked to indicate whether they agreed with statements regarding the efficacy of condom use in HIV/STD prevention (one item), self-efficacy to use condoms (4 items), and barriers to use condoms (3 items). Each statement has a 4-point response option ranging from “1 = strongly disagree” to “4 = strongly agree.” For the purpose of data analysis in the current study, “strongly disagree” and “disagree” were combined into “disagree,” and “agree” and “strongly agree” were combined into “agree.”

Perceived Peer Risk Involvement—Perception of peer risk involvement was assessed using 3 questions. Participants were asked about how many (1 = none, 2 = few, 3 = some, and 4 = most) of their peers had engaged in a number of HIV/STD risk behaviors, including having had multiple sexual partners, having engaged in commercial sex, having not used condoms, and having contracted an STD. The internal consistency (α) of the questions was 0.71 for the community sample and 0.58 for the STD clinic sample. A composite score was created by averaging the responses to the 3 questions.

Knowledge of HIV Transmission—Participants' knowledge of HIV transmission was assessed using 10 items covering modes of transmission and misconception of HIV

transmission. These items were presented with a likely/unlikely response choice. A composite score of HIV transmission knowledge was created by summing the correct responses (possible range 1–10) of the 10 items with a higher score reflecting a higher level of knowledge about HIV transmission. The internal consistency of this scale was 0.63 for the community sample and 0.74 for the STD clinic sample.

Analysis

Chi-squared tests (for categorical variables) and analysis of variance (for continuous variables) were conducted to examine the differences in sociodemographic variables between clients and nonclients. Multivariate logistic regression analysis was performed to predict risk factors for being a male client, including for all factors found to be significantly associated with purchasing sexual services. These factors included social demographic characteristics (i.e., marital status, ethnicity, workplace, living with a village fellow, total time of being a migrant worker, frequency of changing jobs, and mobility index), sexual behaviors and history (i.e., age at first sexual intercourse, premarital sex, having multiple sex partners, regular sex partner having sex with others, and discussion of condom use with sex partner), other risk behaviors (i.e., selling blood, using alcohol, and using drugs), STD/HIV testing, history of STDs, knowledge of HIV transmission, self-efficacy of condom use, barriers to condom use, vulnerability to STD and HIV, peer sexual risk involvement, and willingness to participate in HIV prevention activities. All statistical analyses were performed using the SAS 9.1 statistical software package (SAS Institute Inc., Cary, NC).

Results

Sample Characteristics

The community sample consisted of 1304 migrant men (606 men from Beijing and 698 men from Nanjing). The STD clinic sample included 465 migrant men attending STD clinics (219 men from Beijing, 80 men from Nanjing, and 166 men from Shanghai STD clinics). Approximately 10% of the community sample and one third of the STD clinic sample reported that they ever had paid for sexual intercourse. Participants' sociodemographic characteristics are presented by commercial sex engagement in Table 1. The mean age was higher in the STD clinic sample than in the community sample. The majority of community and STD clinic samples were Han ethnicity. More than 40% of the men had never been married. Approximately 60% of men in the community sample and 56% of men in the STD clinic sample had received no more than a junior high school education. The average monthly income was higher in the STD clinic sample than in the community sample. Most men of the community sample and STD clinic sample worked in the entertainment, service, and construction sectors and had an average of 6 years of migratory experience. Nearly one third of men in the community sample and one fourth of men in the STD clinic sample had changed their jobs at least once per year. On average, men moved to and worked in another city every 2 years. Most (80%) men visited their hometown at least once per year.

Compared with nonclients, clients in the community sample were more likely to be unmarried (53.5% vs. 42%, $P < 0.05$). They had relatively shorter migratory experience but were more mobile and changed their jobs more frequently. A smaller proportion of clients in the community sample than nonclients worked at service sectors (5.4% vs. 12.8%, $P < 0.05$), and a smaller proportion of migrant men from Beijing reported having ever paid for sexual intercourse (7.3% vs. 12.3%, $P < 0.01$). A larger proportion of clients than nonclients in the STD clinic sample were non-Han, worked at industrial or construction sectors (39.5% vs. 28.9%, $P < 0.05$), and lived with their village fellows (21.7% vs. 10.2%, $P < 0.001$). Men's average monthly income and proportion of top 25% income earners did not differ between clients and nonclients in either sample (Table 1).

HIV-Related Behaviors

Differences in HIV-related risk behaviors between clients and nonclients are presented in Table 2. Compared with nonclients, clients in the community sample were more likely to have engaged in HIV-related risk behaviors, including sexual risk behaviors and other health risk behaviors. A greater proportion of clients reported premarital sex (83.7% vs. 67.7%, $P < 0.001$) and a sexual onset age younger than 18 years (37.7% vs. 17.2%, $P < 0.0001$). Clients were more likely than nonclients to report having had multiple sexual partners in the last month (34.4% vs. 7.1%, $P < 0.0001$) with 16% having had at least 3 sexual partners. A larger proportion of clients reported that their regular sexual partners were having sex with others (38% vs. 8%, $P < 0.0001$), and a smaller proportion of them had discussed condom use with their sexual partners (38.1% vs. 53.8%, $P < 0.001$). No significant difference was found between the 2 groups regarding condom use, with 14% reporting consistent condom use during the previous 3 episodes of sexual intercourse.

Compared with nonclients, a larger proportion of clients in the community sample reported having been intoxicated with alcohol at least once during the previous month (60% vs. 38.9%, $P < 0.0001$). They were also more likely to have a history of drug use (13.1% vs. 1%, $P < 0.0001$) and selling their blood or plasma for money (20.2% vs. 4.1%, $P < 0.0001$). A larger proportion of clients reported having ever been tested for STD or HIV (31% vs. 12.4%, $P < 0.0001$) and a history of STDs (19.2% vs. 4.8%, $P < 0.001$). A larger proportion of clients reported that they were infected by a temporary partner (Table 2).

There were fewer differences between clients and nonclients in the STD clinic sample with regard to their HIV-related risks. Clients in the STD clinic sample were more likely to report having had multiple sexual partners in the last month (31.1% vs. 17.2%, $P < 0.001$) and having regular sexual partners who had sex with others (40.8% vs. 20.3%, $P < 0.0001$). They were also more likely to have a history of drug use (13.2% vs. 2.9%, $P < 0.0001$) and selling their blood/plasma (7.9% vs. 2.2%, $P < 0.01$). A larger proportion of clients reported having ever been tested for STD or HIV (66.9% vs. 51%, $P < 0.01$) and a history of STDs (59.2% vs. 46.3%, $P < 0.01$). Nearly three fourths of clients and half of nonclients reported that they were infected by a temporary partner. No significant differences were found between the 2 groups regarding age at first sexual intercourse, proportion of premarital sex, condom use, and alcohol use (Table 2).

Knowledge of HIV Transmission

The mean of HIV transmission knowledge was significantly lower among clients than nonclients in the community sample (5.3 vs. 5.9, $P < 0.01$). No significant difference was found between clients and nonclients in the STD clinic sample (Table 3).

Attitudes Toward Condom Use

Approximately one third of the community sample believed that they could persuade a sexual partner to use a condom when she was reluctant to use it, and half of them thought they could refuse to have sex if their sexual partner did not want to use a condom. One fourth of men believed that they and their partners knew where to obtain condoms, and three fourths knew how to correctly use condoms. Most men (70%) believed that using condoms was an effective way to prevent STDs. Perceptions of barriers to condom use were common among these men. Approximately one third of the men believed that men did not like to use condoms and that using condoms would reduce the sense of sexual pleasure. More than half of them thought that condoms broke frequently. No significant differences were found between clients and nonclients regarding condom use perceptions except that more clients perceived that they knew where to get condoms (33.3% vs. 23.8%, $P < 0.05$). Similar results were found in the STD clinic sample, except that smaller proportions of clients compared with non-clients agreed that men

did not like to use condoms (22% vs. 33.2%, $P < 0.05$), that using condoms would reduce the sense of sexual pleasure (16.6% vs. 31.6%, $P < 0.001$), and perceived that they knew how to use condoms (63.2% vs. 77.9%, $P < 0.001$) (Table 3).

Vulnerability to HIV/Sexually Transmitted Disease Infection

Compared with nonclients, a larger proportion of clients in the community sample perceived themselves to be susceptible to HIV (56.9% and 32.5%, $P < 0.0001$) and other STDs (63.9% vs. 39.1%, $P < 0.0001$). For participants in the STD clinic sample, more than 90% of them considered themselves to be susceptible to HIV and other STDs, and no significant difference was found between clients and nonclients (Table 3).

Perception of Peer Risk Involvement

As shown in Table 3, the means of the peer sexual risk involvement scores were significantly higher for clients than nonclients in both community sample (2.1 vs. 1.6, $P < 0.001$) and STD clinic sample (2.3 vs. 2.0, $P < 0.01$). Compared with nonclients, a significantly higher percentage of clients believed that some or most of their peers had engaged in HIV/STD risk behaviors, including having multiple sexual partners, not using condoms, engaging in commercial sex, and having contracted an STD (Table 3).

Willingness to Accept Sexually Transmitted Disease/HIV Testing

Compared with nonclients, a smaller proportion of clients in the community sample were willing to participate in STD/HIV prevention activities (72.4% vs. 83.5%, $P < 0.01$). Nearly 80% of participants in the STD clinic sample were willing to participate in STD/HIV prevention activities. No significant differences were found regarding their willingness to access HIV/STD testing in the community and STD clinic samples (Table 3).

Multivariate Findings on Risk Factors for Being a Male Client

The results of the logistic regression analysis suggest that a number of social demographic and behavioral factors were associated with being a male client. For both the community and STD clinic samples, working at industrial or construction sectors, having multiple sex partners in the last month, regular sexual partner having sex with others, and a history of drug use were associated with being a male client. Interestingly, peer sexual risk involvement and perceived vulnerability to STD were associated with being a male client in the community sample. History of STD and having had STD/HIV testing were associated with being a male client in the STD sample. In addition, clients of the community sample were less likely to discuss condom use with their sex partners, and clients of the STD clinic sample were less likely to perceive that using condom reduces sexual pleasure (Tables 4 and 5).

Discussion

Data in the current study showed that approximately one tenth of migrant men in the community sample reported ever having paid for sex, which is consistent with the results from a nationally representative sexual behavior survey reporting that 9% of Chinese men in similar age range (20–44) purchased sexual services.¹⁷ A larger proportion of the STD clinic sample reported this behavior. The percentages of clients having multiple sexual partners in the previous month were much higher than that of nonclients, and both clients and nonclients typically failed to use a condom. Taken together, the high percentages of risk behaviors among clients in our study support the perspective that clients of FSWs are at increased risk of exposure to HIV/AIDS infection.

Although recent data from China suggested that men who earned a high income were more likely to engage in commercial sex,¹⁷ the current study did not find an association between patronage of commercial sex and income. This may be the result of the overall low social economic status (SES) in migrants. Future studies with samples from different SES niches are needed to further examine the association between income and engagement in sex trade. Data from the current study showed that peer sexual risk involvement was associated with being a male client, which is consistent with the finding from a study of male clients of FSWs in Indonesia.²⁷ Clients in the current study were more likely to perceive that they were vulnerable to STD and to have had STD/HIV testing, reflecting the possibility of their engagement of high-risk behaviors and experience of STD symptoms.

Male clients of FSWs were significantly more likely to have used drugs and had more number of sexual partners than nonclients but reported similar rates of condom use as nonclients. Likewise, more clients reported a history STDs than nonclients and larger proportions of clients were infected by a temporary partner. Data from a community-based study in southern China suggest a high prevalence of STDs in FSWs (i.e., syphilis 14%, chlamydia 32%, and gonorrhea 8%).²⁸ Considering these findings, the high prevalence of STD history among clients may suggest a link between the infection and FSWs and their clients.

Perceived self-efficacy regarding condom use among migrant men was relatively low compared with previous studies among migrant women in China,²⁹ whereas migrant men perceived a high level of response efficacy of condoms in preventing STDs. The gap between perception of response efficacy and self-efficacy in our study may be explained by the high level of perceived barriers to condom use. Migrant men did not use condoms because they might have been reluctant to sacrifice their sexual pleasure from not using a condom or were worried about the inconvenience or embarrassment if the condoms were to break during intercourse. Rimal found in a longitudinal study that knowledge-behavior correlations were increased among those with increased self-efficacy and were decreased among those with decreased self-efficacy.³⁰ This knowledge and behavior gap calls for a reorientation of health education to include critical elements for behavioral change such as self-efficacy.

Only 18.5% and 13.8% of clients in our 2 samples consistently used condoms during their last 3 sexual encounters. Consistent with the low condom use was the high perception of barriers to condom use. A study in Sichuan, China, indicated that 62% of sex workers reported that they did not use condoms because their clients did not want to do so.¹⁵ In addition, more than one fourth of clients did not know how to correctly use condoms. Condom use skills acquisition should be an important component for future HIV preventive interventions among clients.

Given the illegal nature of commercial sex in China, it is difficult to establish contact with male clients to provide HIV prevention efforts. However, data in the current study suggest that migrant men who work at factories or construction sectors were more likely to patronize commercial sex. This may imply that factories or construction sectors are ideal settings to identify, contact, and implement HIV prevention programs among male clients who are migrants.

Several limitations to this study must be noted. First, convenience samples rather than random samples were used because there is no complete governmental register for the migrant population. Migrants were recruited from three large cities (e.g., Beijing, Shanghai, and Nanjing) in developed regions. Generalization of findings from this study to other migrant populations is limited. Second, all behavioral data (including condom use and history of STDs) are from self-reports and subject to socially desirable reporting because questions regarding sexual and nonsexual risk behaviors are sensitive and stigmatized in Chinese culture. Thirteen percent of the male migrants attending STD clinics reported not having previously had sexual

intercourse, which is consistent with a recent study among market vendors in Eastern China that found a high prevalence of STDs (5.5%) among individuals reporting no sexual intercourse.²⁰ This may imply that migrant men underreported their sexual behavior in the current study. Third, some important information such as sexual networks, condom use with different partners, and homosexual activity were not available in our study. However, to our knowledge, this is the first study on male clients that includes behavioral and STD history data in mainland China.

Implications

Findings of this study have some important implications for the future prevention efforts among clients. First, this study has shown that migrant men who work at factory and construction sectors are more likely to purchase sexual services and engage in other HIV-related risk behaviors. HIV behavioral interventions among this population are of great urgency in China. This will require intensive education efforts to increase their awareness of HIV/STDs and self-efficacy regarding condom use. Given the nature of highly mobile populations, it may be more practical to set up intervention programs targeting young migrant men before they leave for cities. Second, given that nearly one third of migrant men who attended STD clinics reported having purchase sexual services, STD clinics may be important sites for outreach and intervention efforts among male clients. Further studies specifically focused on clients are needed to explore their sexual practices, sexual networks, and condom use with different sexual partners.

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References

1. Faugier J, Cranfield S. Reaching male clients of female prostitutes: The challenge for HIV prevention. *AIDS Care* 1995;7(suppl 1):S21–32. [PubMed: 7632781]
2. Barnard MA, McKeganey NP, Leyland AH. Risk behaviors among male clients of female prostitutes. *BMJ* 1993;307:361–362. [PubMed: 8374419]
3. Lau JT, Tsui HY. Behavioral surveillance surveys of the male clients of female sex workers in Hong Kong: Results of three population-based surveys. *Sex Transm Dis* 2003;30:620–628. [PubMed: 12897683]
4. do Espirito Santo ME, Etheredge GD. HIV prevalence and sexual behavior of male clients of brothels' prostitutes in Dakar, Senegal. *AIDS Care* 2003;15:53–62. [PubMed: 12655833]
5. Estebanez P, Rua-Figueroa M, Aguilar MD, et al. Condom use in clients of prostitutes in Spain. *AIDS* 1996;10:445–446. [PubMed: 8728053]
6. Fajans P, Ford K, Wirawan DN. AIDS knowledge and risk behaviors among domestic clients of female sex workers in Bali, Indonesia. *Soc Sci Med* 1995;41:409–417. [PubMed: 7481934]
7. Morris M, Pramualratana A, Podhisita C, et al. The relational determinants of condom use with commercial sex partners in Thailand. *AIDS* 1995;9:507–515. [PubMed: 7639977]
8. Tabrizi SN, Skov S, Chandeying V, et al. Prevalence of sexually transmitted infections among clients of female commercial sex workers in Thailand. *Sex Transm Dis* 2000;27:358–362. [PubMed: 10907913]
9. Alary M, Lowndes CM, Mukenge-Tshibaka L, et al. Sexually transmitted infections in male clients of female sex workers in Benin: Risk factors and reassessment of the leucocyte esterase dipstick for screening of urethral infections. *Sex Transm Infect* 2003;79:388–392. [PubMed: 14573834]

10. Miller GA, Mendoza W, Krone MR, et al. Clients of female sex workers in Lima, Peru: A bridge population for sexually transmitted disease/HIV transmission? *Sex Transm Dis* 2004;31:337–342. [PubMed: 15167641]
11. Coughlan E, Mindel A, Estcourt CS. Male clients of female commercial sex workers: HIV, STDs and risk behavior. *Int J STD AIDS* 2001;12:665–669. [PubMed: 11564334]
12. Thomas RM, Plant MA, Plant ML, et al. Risk of HIV infection among clients of the sex industry in Scotland. *BMJ* 1990;301:525. [PubMed: 2207422]
13. Pickering H, Todd J, Dunn D, et al. Prostitutes and their clients: A Gambian survey. *Soc Sci Med* 1992;34:75–88. [PubMed: 1738859]
14. Wilson D, Chiroro P, Lavelle S, et al. Sex worker, client sex behavior and condom use in Harare, Zimbabwe. *AIDS Care* 1989;1:269–280. [PubMed: 2488289]
15. MAP report. Sex Work and HIV/AIDS in Asia. 2005 [Accessed August 12, 2005]. Available at: http://www.mapnetwork.org/docs/MAP_SW%20in%20Asia%20Final%2004July05_en.pdf
16. Manjunath JV, Thappa DM, Jaisankar TJ. Sexually transmitted diseases and sexual lifestyles of long-distance truck drivers: A clinic-epidemiologic study in south India. *Int J STD AIDS* 2002;13:612–617. [PubMed: 12230925]
17. Parish WL, Laumann EO, Cohen MS, et al. Population-based study of chlamydial infection in China: A hidden epidemic. *JAMA* 2003;289:1265–1273. [PubMed: 12633188]
18. Jochelson K, Mothibeli M, Leger JP. Human immunodeficiency virus and migrant labor in South Africa. *Int J Health Serv* 1991;21:157–173. [PubMed: 2004869]
19. Yang, X.; Derlega, VJ.; Luo, H. Migration, Behavior Change, and HIV/STD Risks in China. [Accessed August 12, 2004]. Available at: <http://iussp2005.princeton.edu/download.aspx?submissionId=50983>
20. Detels R, Wu Z, Rotheram MJ, et al. Sexually transmitted disease prevalence and characteristics of market vendors in eastern China. *Sex Transm Dis* 2003;30:803–808. [PubMed: 14603085]
21. Lurie MN, Williams BG, Zuma K, et al. The impact of migration on HIV-1 transmission in South Africa: A study of migrant and non-migrant men and their partners. *Sex Transm Dis* 2003;30:149–156. [PubMed: 12567174]
22. Li X, Fang X, Lin D, et al. HIV/STD risk behaviors and perceptions among rural-to-urban migrants in China. *AIDS Educ Prev* 2004;16:538–556. [PubMed: 15585430]
23. Hesketh T, Li L, Ye X, et al. HIV and syphilis in migrant workers in eastern China. *Sex Transm Infect* 2006;82:11–14. [PubMed: 16461594]
24. State Council AIDS Working Committee Office and UN Theme Group on HIV/AIDS in China. A Joint Assessment of HIV/AIDS Prevention, Treatment and Care in China. [Accessed February 28, 2005]. Available at: <http://www.unchina.org/unaid/JAREng04.pdf>
25. Tucker JD, Henderson GE, Wang TF, et al. Surplus men, sex work, and the spread of HIV in China. *AIDS* 2005;19:539–547. [PubMed: 15802971]
26. Liu H, Li X, Stanton B, et al. Risk factors for sexually transmitted disease among rural-to-urban migrants in China: Implications for HIV/sexually transmitted disease prevention. *AIDS Patient Care STDS* 2005;19:49–57. [PubMed: 15665635]
27. Ford K, Wirawan DN, Muliawan P. Social influence, AIDS/STD knowledge, and condom use among male clients of female sex workers in Bali. *AIDS Educ Prev* 2002;14:496–504. [PubMed: 12512850]
28. van den Hoek A, Fu Y, Dukers NH, et al. High prevalence of syphilis and other sexually transmitted diseases among sex workers in China: Potential for fast spread of HIV. *AIDS* 2001;15:753–759. [PubMed: 11371690]
29. Yang H, Li X, Stanton B, et al. HIV-related risk factors associated with commercial sex among female migrants in China. *Health Care Women Int* 2005;26:134–148. [PubMed: 15804913]
30. Rimal RN. Closing the knowledge–behavior gap in health promotion: The mediating role of self-efficacy. *Health Commun* 2000;12:219–237. [PubMed: 10938914]

TABLE 1
 Characteristics of 2 Groups of Sexually Experienced Migrant Men, by Purchasing Sexual Services (%)

Characteristics	Community Sample		STD Clinic Sample	
	Clients	Nonclients	Clients	Nonclients
N	130	1174	152	313
Age (years, mean $\pm$ SD)	25.7 $\pm$ 4.5	26.0 $\pm$ 3.4	29.2 $\pm$ 5.2	28.4 $\pm$ 5.2
Ethnicity: Han ethnicity	95.4	97.6	92.6	96.8 [†]
Education: $\leq$ 9 grades	67.2	59.8	55.0	56.7
Marital status: never married	53.5	42.0 [†]	35.4	42.7
Average monthly income (U.S. \$, mean $\pm$ SD)	118.6 $\pm$ 115.7	128.6 $\pm$ 102.3	217.9 $\pm$ 236.4	230.7 $\pm$ 200.1
Top 25% income (145 or 245 U.S. \$)	23.4	25.2	23.7	25.6
City				
Beijing	7.3	92.7 [‡]	29.7	70.3
Nanjing	12.3	87.7	31.3	68.7
Shanghai	NA	NA	37.3	62.7
Working place [^]				
Service sectors	5.4	12.8 [†]	26.3	26.9 [†]
Entertainment sectors	44.6	37.8	19.1	18.0
Industrial/construction sectors	39.2	36.0	39.5	28.9
Others (i.e., unemployed, etc.)	10.8	13.4	15.1	26.3
Living arrangement				
Alone	12.3	11.9	14.5	16.3
With spouse	18.5	25.1	30.9	34.2
With coworker	46.2	43.6	27.6	25.2
With village fellow	26.9	21.1	21.7	10.2 [§]
With friend	17.7	13.4	9.2	4.8
Total time of being a migrant worker (years)	5.5 $\pm$ 3.5	6.3 $\pm$ 3.5 [†]	6.1 $\pm$ 3.9	6.8 $\pm$ 4.2
Changing jobs $\geq$ 1 per year	46.9	29.3 [§]	27.6	24.0
Mobility index: mean $\pm$ SD	0.7 $\pm$ 0.4	0.6 $\pm$ 0.5 [†]	0.5 $\pm$ 0.5	0.5 $\pm$ 0.7
Frequency of home visit [*]				
Never	6.3	6.6	10.6	6.7
Once every 2–3 y	15.6	9.9	12.6	15.3
Once per year	42.2	41.2	45.7	46.0
Two or more per year	35.9	42.4	31.1	32.0

* Cochran-Mantel-Haenszel Statistics.

[†] $P < 0.05$.

[‡] $P < 0.01$.

[§] $P < 0.001$.

[^] Difference between clients and nonclients in the 2 samples was significant ($P < 0.05$).

STD indicates sexually transmitted disease; SD = standard deviation; NA = not available.

TABLE 2
Relationship Between HIV-Related Behaviors and Purchasing Sexual Services

Characteristics	Community Sample		STD Clinic Sample	
	Clients	Nonclients	Clients	Nonclients
N	130	1174	152	313
Sexual behaviors and history (%)				
Age at first sexual intercourse <18y	37.7	17.2 [‡]	18.4	12.8
Sex debut occurred before marriage	83.7	67.7 [‡]	78.9	75.7
Having multiple sex partners, last month	34.4	7.1 [‡]	31.1	17.2 [‡]
Number of sexual partners, last month [§]				
0	12.8	28.8 [‡]	6.0	15.3 [‡]
1	52.8	64.1	62.9	67.5
2	18.4	4.9	19.2	14.6
3 or more	16.0	2.2	11.9	2.6
Regular sex partner has sex with others	38.0	8.0 [‡]	40.8	20.3 [‡]
Consistent condom use, last 3 sexual encounters	18.5	13.9	13.8	16.4
Discussed condom use with sexual partner	38.1	53.8 [‡]	36.8	50.7 [‡]
Other risk behaviors (%)				
Sold blood or plasma at least once last year	20.2	4.1 [‡]	7.9	2.2 [‡]
Got drunk at least once last month	60.0	38.9 [‡]	46.1	40.3
Ever used drugs over lifetime	13.1	1.0 [‡]	13.2	2.9 [‡]
Ever had STD or HIV testing	31.0	12.4 [‡]	66.9	51.0 [‡]
History of STDs	19.2	4.8 [‡]	59.2	46.3 [‡]
Perceived transmitters/source of infection [§] (n)	25	56	59	78
Regular partner	32.0	13.0 [*]	10.2	24.4 [*]
Temporary partner	44.0	25.9	72.9	51.3
Contact with STD patients	4.0	13.0	8.5	9.0
Do not know	20.0	48.1	8.5	15.4

* $P < 0.05$.

[†] $P < 0.01$.

[‡] $P < 0.001$.

[§] Difference between clients and nonclients was significant in both samples ($P < 0.001$).

STD indicates sexually transmitted disease.

TABLE 3

Association of Purchasing Sexual Services With HIV-Related Perceptions and Willingness to Accept STD/HIV Testing and Participate in STD/HIV Prevention Activities (%)

Characteristics	Community Sample		STD Clinic Sample	
	Clients	Nonclients	Clients	Nonclients
N	130	1174	152	313
Knowledge of HIV transmission (0–10)	5.3 ± 2.0	5.9 ± 2.0 [†]	6.5 ± 2.7	6.4 ± 2.2
Self-efficacy of condom use				
I can persuade my partner to use condom if she does not want to	37.7	34.9	30.2	30.3
I will refuse to have sex if my partner does not want to use a condom	59.4	56.8	48.3	50.8
My partner and I know where to get condoms	33.3	23.8 [*]	26.0	20.8
My partner and I know how to use condoms	70.9	76.3	63.2	77.9 [‡]
Perceived condom efficacy				
Using condom is an important way to prevent STD	65.1	71.3	81.8	81.7
Barriers to condom use				
Few men like to use condoms during sex	31.0	33.3	22.0	33.2 [*]
Using condoms reduces sexual pleasure	25.4	30.5	16.6	31.6 [‡]
Condoms often break	48.8	54.2	49.3	51.5
Vulnerability to STD and HIV				
Likely to get STD in the future	63.9	39.1 [‡]	96.7	96.1
Likely to get HIV in the future	56.9	32.5 [‡]	97.4	98.1
Peer risky sexual involvement (mean ± SD)	2.1 ± 0.7	1.6 ± 0.6 [‡]	2.3 ± 0.5	2.0 ± 0.5 [†]
Willingness to accept STD or HIV testing	65.4	68.2	88.7	81.7
Willingness to participate in HIV prevention activities	72.4	83.5 [†]	78.0	78.9

* $P < 0.05$.

[†] $P < 0.01$.

[‡] $P < 0.001$.

STD indicates sexually transmitted disease; SD = standard deviation.

TABLE 4

Odd Ratios From Logistic Regression Analysis Showing Risk Factors for Being a Male Client Among Migrants of a Community Sample in China (N = 1034)

Characteristics	Odds Ratio	95% Confidence Interval
City		
Beijing (reference)	1.00	
Nanjing	1.34	0.80–2.25
Marital status (married vs. never married)	0.99	0.96–1.04
Workplace		
Service sectors (reference)	1.00	
Entertainment sectors	2.04	0.76–5.51
Industrial/construction sectors	3.53	1.30–9.59
Others (i.e., unemployed, etc.)	1.49	0.46–4.81
Total time of being a migrant worker [†]	1.00	0.90–1.10
Changing jobs ≥ 1 per year [*]	1.65	0.83–3.25
Mobility index [†]	0.75	0.38–1.48
Age at first sexual intercourse [†]	0.99	0.89–1.10
Sex debut occurred before marriage [*]	1.57	0.76–3.25
Having multiple sex partners, last month [*]	2.64	1.46–4.76
Regular sex partner has sex with others [*]	6.00	3.45–10.42
Discussed condom use with sex partner [*]	0.56	0.34–0.93
Sold blood at least once last year [*]	1.49	0.64–3.48
Got drunk at least once last month [*]	1.33	0.81–2.18
Ever used drugs over lifetime [*]	5.65	1.68–19.05
Ever had STD or HIV testing [*]	1.40	0.77–2.56
History of STDs [*]	1.84	0.78–4.33
Knowledge of HIV transmission [†]	0.94	0.83–1.07
My partner and I know where to get condoms [*]	1.54	0.89–2.66
Likely to get HIV in the future [*]	1.19	0.64–2.19
Likely to get STD in the future [*]	1.92	1.03–3.61
Peer risky sexual involvement [†]	1.71	1.18–2.49
Willingness to accept STD/HIV testing [*]		
Willingness to participate in HIV prevention activities [*]	0.86	0.49–1.53

* Dichotomous variables, “yes” versus “no” (reference group).

[†] Continuous variables.

STD indicates sexually transmitted disease.

TABLE 5

Odd Ratios From Logistic Regression Analysis Showing Risk Factors for Being a Male Client Among Migrants of an STD Clinic Sample in China (N = 465)

Characteristics	Odds Ratio	95% Confidence Interval
Ethnicity (non-Han vs. Han)	2.22	0.79–6.25
Workplace		
Service sectors (reference)	1.00	
Entertainment sectors	1.17	0.59–2.33
Industrial/construction sectors	1.78	1.00–3.22
Others (i.e., unemployed, etc.)	0.66	0.33–1.32
Living with village fellow [*]	1.52	0.78–2.96
Having multiple sex partners, last month [*]	2.38	1.40–4.05
Regular sex partner has sex with others [*]	2.53	1.51–4.26
Discussed condom use with sex partner [*]	0.64	0.38–1.08
Sold blood at least once last year [*]	2.02	0.58–7.09
Ever used drugs over lifetime [*]	2.76	1.01–7.56
Ever had STD or HIV testing [*]	2.00	1.23–3.24
History of STDs [*]	1.80	1.08–3.01
My partner and I know how to use condom [*]	0.63	0.36–1.07
Few men like to use condoms during sex [*]	0.94	0.54–1.64
Using condoms reduces sexual pleasure [*]	0.53	0.29–0.97
Peer risky sexual involvement [†]	1.29	0.91–1.83

^{*} Dichotomous variables, “yes” versus “no” (reference group).

[†] Continuous variables.

STD indicates sexually transmitted disease.