Migration, Gender, and STD/HIV Risk Sexual Behavior in Contemporary*

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Abstract

The link between migration and STDs/HIV has captured a great deal of research attention. But the literature has not been very specific on whether and how men and women may experience differently in behavior change and STD/HIV risk as a result of migration. Little research has been focused on the gendered health consequences of migration. Completely lacking is our understanding of how the interplay between migration and gender may render female migrants particularly vulnerable to STDs and HIV. Using data from a large and population-based survey conducted in 2003, this paper examines the HIV/STD risk as a result of temporary migration among female migrants in China. Both Chi-squared tests of difference in proportions and multiple logistic regressions were used in the analysis. The results suggest that the impact of migration on risk sexual behavior was more pronounced among female than male migrants and that female migrants, particularly those working in the personal service and entertainment industry, experienced disproportionate increases in their risk sexual behavior and were at high risk of STDs/HIV. However, female migrants and non-migrants did not differ significantly in the self-reported history of STDs/HIV. The findings helped shed light on the role that migration and gender play in female migrants' vulnerability to STDs and HIV and also provided important empirical data for developing prevention intervention programs targeting female temporary migrants.

Introduction

After declaring its success in eradicating STDs in the 1960s, China has witnessed epidemic growth in STDs in the last two decades (Gong et al. 2001). The strong resurgence of STDs takes place in the context of widespread commercial sex and increasing sexual promiscuity in contemporary China (van den Hoek et al. 2001; Parish et al. 2003; Pan et al. 2004), creating a serious public health challenge as hundreds of thousands people are infected every year. In 2002 alone, 744,848 cases of STDs were officially reported nationwide with the actual number perhaps many times larger (Gong et al. 2001 Parish et al. 2003; China CDC 2003). While the cause of the STD epidemic is likely to be complex and multifaceted, increasing temporary migration has been portrayed by the media and implicated in the literature as the main catalyst in the spread of both commercial sex and STDs. Many studies have established the link between migration, commercial sex, and migrants' vulnerability to STDs, including HIV, around the world (Hunt 1989; Jochelson et al. 1991; Caldwell, Anarfi, and Caldwell 1997; Brockerhoff and Biddlecom 1999; Wallman 2001).

The growth of temporary migrant population in China since the early 1980s has been truly phenomenal. Although varied by sources, the total number of temporary migrants was estimated to have grown from 11 million in 1982 to 79 million in 2000 (Liang and Ma forthcoming). Among the tidal waves of rural-urban labor migrants are hundreds of thousands of young women from poor rural villages (Roberts 2002; Fan 2003; Gaetano and Jacka 2004; Liang and Chen 2004). Living and working away from home and/or regular sexual partners, the uprooting and on the move of so many migrant men and women in their primary, sexually active ages, have undoubtedly created conditions that are conducive to sexual promiscuity and commercial sex. In fact, residential immobility was considered the most important factor that explains the absence of commercial sex in pre-reform China (Whyte and Parish 1984; Troyer, Clark and Rojek 1989).

However, while the link between migration, commercial sex, and STDs has captured a great deal of research attention, the literature has not been very specific on whether and how men and women may experience differently in behavior change and STD/HIV risk as a result of migration. Similarly, while

gender has become more explicit in recent studies of labor migration in China, the increasing attention to migration of women has been focused mainly on the social, economic, and cultural experiences of female migrants (Roberts 2002; Fan 2003; Gaetano and Jacka 2004; Liang and Chen 2004; Roberts et al. forthcoming). Little research has focused on the health consequences of migration, including HIV/STD risk, for female migrants. Completely lacking is our understanding of how the interplay between migration and gender may render female migrants particularly vulnerable to HIV/STDs.

Using data from a large and population-based survey conducted in 2003, this paper examines the STD/HIV risk as a result of migration among female temporary migrants in China. The paper argues that given the gender inequality in education and occupational training, female migrants will experience greater difficulty in competing for mainstream employment in the city; many will end up working in the personal service or entertainment industry, where commercial sex is widely suspected. Economic hardship and competition may leave female migrants with little control in their commercial sex encounters; gendered moral and social values can further subject female migrants to a subordinate position in sexual relationships. Consequently, female migrants, particularly those working in the entertainment industry, are socioeconomically highly marginalized, vulnerable to both economic and sexual exploitation and at high risk of STDs/HIV. The analysis will help shed light on the role that migration and gender play in female migrants' vulnerability to STDs. It will also provide important empirical data for the design of prevention intervention programs targeting female temporary migrants.

Migration and STD/HIV Risks

Numerous studies in China and other developing countries (Anderson et al. 2003; Brockerhoff and Biddlecom 1999; Hunt 1989; Jochelson et al. 1991; Lukalo 2000; Skeldon 2000; UNAIDS 2001; Wolffers et al. 2002; Yang 2004a, 2004b) and the more developed countries (Gras et al. 1999; Lansky et al. 2000; McCoy et al. 1996; Organista and Organista 1997; Wallace et al. 1997; Wallman 2001) have highlighted the vulnerability of migrant workers to HIV/STDs and the subsequent spread of the diseases through migrant travel.

At the aggregate level, migration brings more people into close contact and creates a greater

mixing of population at places of destination, which provides the ready environment for disease transmission. Through the movement of infected persons, migration in turn offers a convenient vehicle to transport diseases to places where they are previously unknown. As such, prevalence rates of STDs/HIV tend to spread from its epicenters outward geographically along transport connections, trade routes, and migration systems, and socially along personal and social networks (McCoy et al. 1996; Obbo 1993; Wallace 1991; Wallace et al. 1995, 1997; Wood et al. 2000) and are positively correlated with intensity of residential mobility (Yang forthcoming).

At the individual level, migration is believed to actually create a sub-population (migrants) whose socioeconomic contexts are conducive to STD/HIV risk sexual behaviors (Hunt 1989; Caldwell, Anarfi, and Caldwell 1997; Parker 1997; Lukalo 2000; Wolffers et al. 2002; Yang 2004b). In particular, separation from spouse or regular sexual partner and migrants' post migration milieus are encouraging risk sexual behavior (Brockerhoff and Biddlecom 1999; Yang 2004b). When separation from spouse/regular sexual partner is frequent and lengthy, it can disrupt migrants' regular sexual relationships. This, together with post migration economic marginalization and social isolation, may lead to a more promiscuous life as a way to escape loneliness, bury anxieties about family and work, and release sexual frustration (Hunt 1989; Jochelson et al. 1991; Caldwell, Anarfi, and Caldwell 1997; Brockerhoff and Biddlecom 1999). The separation from family and home community may also create some sort of social control vacuum whereby migrants feel less constrained by social norms since families and friends back home are unlikely to find out what they do while away from home (Konde-Lule 1991; Maticha-Tyndale et al. 1997; Yang 2000a, 2001). Consequently, the more anonymous life and easier access to commercial sex in the city may help migrants to break away from social norms of morality and sexual fidelity and encourage them to seek casual sex.

Migration and Gender

The interplay between migration and gender has recently attracted attentions from migration scholars both in and outside China. Rural-urban labor migration in China, as in other developing countries (Khoo, Smith, and Fawcett 1984; Chant 1992; Pedraza 1991; Lawson 1998), is increasingly recognized

and studied as a gendered process (Davin 1998; Fan 2000; Roberts 2002; Gaetano and Jacka 2004). Due to and reflective of the deeply rooted gendered role expectations in the Chinese family and society, men and women often migrate at different rates and differ in both causes and consequences of their migration. There is mounting evidence in China that women are actively participating in rural-urban labor migration and are doing so for economic reasons (Fan 2000, 2004; Yang 2000b; Liang and Chen 2004; Liang and Ma forthcoming; Roberts et al. forthcoming). However, the conventional characterization of male dominance in rural-urban labor migration and economic motives for male and social and familial reasons for female migrants cannot be discarded completely.

For example, recent studies of migration continue to stress the sociocultural constraints facing rural women in China, which significantly limit women's participation in rural-urban labor migration (Fan 2000, 2004; Gaetano 2004). The structural forces unleashed by the economic reform have not altered and in some ways have actually reinforced century-old patriarchal traditions in China that give the priority to "the social, economic and physical mobility of men and relegate women to secondary, supporting and care-giving roles" (Fan 2000: 421). When women migrate, more do so for non-economic reasons than their male counterparts (Knight, Song, and Jia 1999; Yang and Guo 1999). The most salient factor constraining rural women's participation in labor migration is marriage and its associated supporting and care-giving roles expected of married women from the family and the society (Jacka 1997; Davin 1998, 1999; Yang and Guo 1999; Fan 2004). However, research has also suggested that the situation may have changed; neither marriage nor having children seems to have deterred migration of women (Lou et al. 2004; Roberts et al. forthcoming).

More research has focused on the gendered consequences of migration in China (Fan 2000, 2003, 2004; Roberts 2002; Gaetano and Jacka 2004; Liang and Chen 2004). On the positive side, migration is seen to allow women to break away from traditional roles and help them to gain economic independence; the urban experiences can empower woman migrants, change their views about gender roles, and enable them to benefit from development and to become potential agents for changing the sociocultural norms that define women's roles and entitlements (Goldstein, Liang, and Goldstein 2000; Fan 2000, 2004; Lou

et al. 2004; Murphy 2004).

On the other hand, migration may not be so positive for women. Due to gender inequalities in education and job training, female migrants are at a disadvantaged position in places of urban destination and do not do as well as their male counterparts (Huang 2001; Fan 2003; Liang and Chen 2004). Further, the market transition has weakened the institutional support for gender equality and increased gender segregation in the labor market. Consequently, female migrants are channeled mainly into women's and low social status occupations, which perpetuates and reinforces women's inferior and subordinate statuses (Lee 1995; Fan 2000, 2003). Being heavily concentrated in labor intensive assembly and personal service industries (Yang 2000b; Roberts 2002; Wang, Zuo, and Ruan 2002), where jobs often carry social stigma and are characterized by high turn over, low pay, long working hours, and lax labor disciplines, female migrants in particular are economically marginalized and socially isolated, vulnerable to both economic and sexual exploitation in places of urban destination. While some may put down their roots in the city (Roberts 2002; Tan and Short 2004), many female migrants return to their rural village when they reach marriageable ages and face difficulties in readjusting to rural ways of life (Murphy 2004). If gender segregation in the labor market and short duration in the city may have limited female migrants' positive experiences of labor migration, female migrants' potential role as agents for social change may be further circumscribed by both cultural and institutional constraints (Fan 2004; Murphy 2004).

Gender and HIV/STD Risk

Gender-related unequal power relationships and cultural norms about gender and sexuality are increasingly recognized as important determinants of HIV/STD risk sexual behavior among women (Amaro 1995; Raffaelli and Pranke 1995; Browning et al. 1999; Tang, Wong, and Lee 2001; Wong and Tang 2001). According to the theory of gender and power (Connell 1987; Wingood and DiClemente 2000, 2002), women's heightened vulnerability to STDs, including HIV, is a function of gendered relationships between men and women that are rooted in the sexual divisions of labor and power and the gendered structure of social norms and affective attachments. The sexual division of labor limits women's equal access to the paid labor market and creates economic inequalities between men and women. This

reinforces women's economic dependence on men and increases women's "economic exposure" to HIV/STDs. The sexual division of power leads to unequal power between men and women in issues of control, authority, and coercion that results in men's control in relationships and renders women vulnerable to sexual or physical abuse. This limits women's ability to make decisions on sexual matters and increases their "physical exposure" to HIV/STD risk. The gendered structure of social norms and affective attachments generate gender-specific cultural norms that restrict women's sexual expressions and submit women to men in sexual relationships. This discourages open discussion about sexuality within relationships and limits women's access to preventive information, thereby increasing women's "social exposure" to HIV/STDs.

Together, economic inequalities, unequal power, and gender-specific cultural norms exert critical influences over women's sexual behavior and render formidable barriers to women in exercising personal control in sexual and social relationships (Amaro 1995; Amaro and Raj 2000). Research into condom use among Chinese women (Tang, Wong, and Lee 2001; Wong and Tang 2001) suggests that the Confucian concept of model womanhood, which commands the submission of women to men, could significantly constrain women's ability to negotiate and insist on condom use. In general, condom use among Chinese women was related to lack of information, embarrassment in talking about condoms, and fear of being perceived as sexually available as a result of conservative Confucian concepts about women and sexuality (Fung and Chung 1999). Studies of young women working in China's flourishing entertainment industry (Liao, Schensul, and Wolffers 2003; Xia and Yang 2004), who are at high risk of HIV/STDs, have underscored the importance of cultural norms in understanding unprotected commercial sex. In general, women who felt guilty for their role in commercial sex, a social stigma deeply rooted in the Chinese culture and legal systems, were less likely to insist on condom use in commercial sex.

Despite the mounting evidence that suggests interlinks between migration, gender, and STD/HIV risk, the literature on migration and STD/HIV risk has paid little attention to issues of gender, while studies of migration and gender have largely bypassed the gendered health risk of migration. The lack of attention to the interplay between migration, gender, and HIV/STD risk is particularly striking, given that

a large, if not the largest, proportion of female rural-urban migrants in contemporary China work in the personal service and entertainment industries, where commercial sex is widely suspected. This paper argues that female migrants in China are subject to the influence of both migration and gender; any impact of migration and/or gender on sexual behavior will be particularly pronounced among female migrants. Female migrants in general and those involved in commercial sex in particular are at high risk of acquiring STDs/HIV while in cities; they may also act as a critical bridge population in the spread of the diseases as infected women return to rural villages (many of them do after a few years of working in the city) and unknowingly pass STDs/HIV to their marriage or sexual partner (Lau and Thomas 2001; Hirsch et al. 2002; Anderson et al. 2003; Lurie et al. 2003).

Data and Methods

Data used in the analysis are from a large population-based survey conducted in 2003, covering an entire province in southwestern China. Sample selection followed a three-stage stratified sampling procedure. First, eight counties were selected, considering HIV and drug use prevalence and geographic representation of the province. Second, all rural townships and urban neighborhoods in the selected eight counties were ranked according to estimates of HIV prevalence, number of drug users, and number of temporary migrants. From the ranked list in each county, five townships and neighborhoods were selected, based on prevalence of HIV, drug users, and temporary migrants and geographic representation of the county. This resulted in a total of 40 townships and neighborhoods as the primary sampling units (PSUs). Finally, in each PSU, all individuals between the ages of 18 and 55 were ordered in sequence in one of four categories: HIV positive, drug users, temporary migrants, and non-migrants. A random sample of about 150 individuals was selected via disproportionate probability sampling (Kalton 1993; Bilsborrow et al. 1997) and distributed as follows: 20 HIV positive, 30 drug users, 40 temporary migrants, and 60 non-migrants. In each category, sample selection started with randomly picking a person from the list and continued selecting individuals at fixed intervals determined by the ratio between the total on the list and the target number for the category, i.e., the reversal of the sampling probability. If a list contains fewer than the target number, everyone on the list was selected. Because not every PSU had the target number

of subjects in all categories, the actual sample size in a category varied across PSUs.

During the fieldwork, interviewers visited the sampled individuals, explained to them the purpose of the study, their right to refuse, and compensation for their time, and invited them to participate. If the respondent was absent, a second visit was scheduled. If a respondent could not be reached the second time or refused to participate, a replacement was selected from the original sampling list containing the absent or refused respondent unless there was no one left on the list. In total, 5,499 individuals, including 117 from the pilot testing town, were successfully recruited, who consented to participate and completed a face-to-face interview, which took place in private at respondents' home or if they preferred a place away from home.

Version 7 of the STATA software (StataCorp, 2001) is used to conduct statistical analyses, which will use the survey design based "svy" methods in STATA to adjust for population weights and PSU design effects. Data analysis focuses on comparisons between temporary migrants and non migrants in prevalence of outcome variables, which are self-reports of (1) casual sex with non stable partners and condom use in such casual sexual encounters and (2) history of STDs or HIV positive. Temporary migrants are defined as respondents who were working and living in the place of interview at the time of survey but without the official local household registration (or *hukou*). To highlight the increased STD risk associated with employment in the entertainment industry, female migrants who worked as dancers, singers, massagers, or hairdressers in the entertainment industry (*fuwu xiaojie*) will be separated from other temporary migrants in the analysis.

To examine the impact of temporary migration on STD/HIV risk, Chi-squared tests of difference in proportions are used to test if temporary migrants and non-migrants differ in prevalence of STD risk sexual behaviors and STDs/HIV. The Chi-squared tests will be conducted for males and females separately; differences between the male and female samples will be examined to see if the impact of temporary migration is more pronounced among female than male migrants.

Logistic regression will then be used to control for differences between migrants and non-migrants in individual characteristics that may confound the bivariate comparisons. Specifically, age,

educational attainment, marital status, living arrangement, and measures of economic marginalization, social isolation, and lax social control, which are believed to also influence sexual behavior, will be controlled in the logistic regression analysis. All individual characteristics are self-explanatory.

The measure of economic marginalization was constructed by first dichotomizing answers to 15 questions on employment, industry, occupation, income, perceived working conditions, and employment-related benefits and then summing the 0/1 answers. Social isolation was measured by a modified version of the UCLA Loneliness Scale (Russell and Cutrona 1988). Survey respondents reported on a four-point scale how lonely they felt on each of 20 statements; answers to the 20 statements of were summed to form the "loneliness" scale. Lax social control measure was based on a modified version of the Attitudes toward Authority Scale (Emler 1999). Study respondents reported yes or no on their personal experience with respect to nine events indicating disrespect for laws or use of "deviant" ways to achieve personal ends. Answers were then summed to create the lax social control scale. For all three measures, the higher the score, the more likely the respondent is economically marginalized and socially isolated and had behaved in disrespect for laws or deviant ways, indicating lax social control.

Results

Overall, females made up 47% of the temporary migrant population in our weighted sample. Males had a slightly higher migration participation rate (9.7%) than females (9.1%), but the difference was statistically not significant. Among female temporary migrants, a majority (52.8%) worked in restaurants, hotels, and entertainment establishments, such as dancing/karaoke TV halls, hair/beauty salons, and massage parlors (*fuwu xiaojie*). By comparison, only 3.8% of female non-migrants were working as *fuwu xiaojie.* These statistics confirm that women are as actively participating in temporary migration as men in contemporary China and female migrants are overwhelmingly channeled to the personal service and entertainment industry.

In terms of individual demographic and socioeconomic characteristics, female temporary migrants differed significantly from non-migrants; female service/entertainment workers (*fuwu xiaojie*) in turn differed from other temporary migrants in individual characteristics (Table 1). In particular, female

service/entertainment workers (FSEWs) were on average more than ten years younger than non-migrants although other female migrants did not differ significantly from non-migrants in age. Compared to non-migrants, both female migrant groups had significantly lower proportion of having a senior high school or higher education. But FSEWs had a significantly higher proportion of junior high school education while other female temporary migrants had a significantly higher proportion of elementary school education than non-migrants.

(Table 1 about here)

Non-migrant women 18 years of age or older were overwhelmingly married, and few of them lived alone at the time of the survey. By contrast, both migrant groups had significantly lower proportions who were married but significantly higher proportions who lived alone. The discrepancies between FSEWs and non-migrants were particularly striking: less than 20% of FSEWs were single and almost 24% of them lived alone as compared to the corresponding proportions of 87% and 1.2%, respectively, for non-migrants.

On average, both female migrant groups scored significantly higher on the measure of economic marginalization and social isolation than non-migrants. Similarly, while both migrant groups also scored higher on the measure of lax social control than non-migrants, only the difference between FSEWs and non-migrants was statistically significant. Clearly, FSEWs in the sample were overwhelming young, single, and living alone; they were also more likely to experience socioeconomic marginalization and isolation and lax social control than other female temporary migrants, although the difference in the three measures between the two migrant groups were statistically not significant.

Table 2 presents prevalence rates of STD/HIV risk sexual behaviors and actual STDs/HIV by temporary migrant status and by gender. Several generalizations can be made from the data. First, temporary migrants had higher prevalence rates of risk sexual behaviors than non-migrants; FSEWs in turn had significantly higher prevalence rates of risk sexual behaviors and STDs/HIV than other female migrants. Second, differences in prevalence rates of risk sexual behaviors between temporary migrants and non-migrants were more pronounced among females than males. In fact, on only three of the six

measures, did male temporary migrants score significantly higher (only one at 1% level) than their non-migrant counterparts. By comparison, both female migrant groups showed significantly higher prevalence rates of risk sexual behavior in all but one measure in Table 2. This gender difference confirmed the hypothesis that the impact of migration on STD/HIV risk sexual behavior is significantly stronger on women than men.

(Table 2 about here)

Third, except for female migrants with respect to involvement in commercial sex or casual sex in the 30 days prior to the survey, men in general had a sex life that was STD/HIV riskier than women, which is particularly apparent among the non-migrant population. But regardless of migrant status, women had significantly higher prevalence rates of STDs/HIV than men (significance tests not shown), underscoring the increased vulnerability to STDs/HIV among women, which cannot be directly attributed to women's own sexual behavior. FSEWs in turn had a significantly higher prevalence of STDs/HIV (16.9%) than other female temporary migrants (significance test not shown), who had the lowest prevalence rate (10.6%) among females.

Lastly, of the five migrant-by-gender groups in Table 2, female migrant service/entertainment workers had the highest prevalence rates of both risk sexual behaviors and actual STD/HIV infection. Clearly, the interplay of migration and gender had led to the concentration of female migrants in the personal service and entertainment industry, which in turn rendered them particularly vulnerable to risk sexual behaviors and STDs/HIV. In fact, female migrant service/entertainment workers had the highest prevalence rate of STDs/HIV, although the difference is statistically not significant between FSEWs and non-migrants.

Recall that female migrants and non-migrants differed significantly in individual demographic and socioeconomic characteristics (Table 1), which may be correlated with risk sexual behavior and thereby confounding any bivariate comparison between migrants and non-migrants. Multiple logistic regressions were, therefore, employed to control for potential confounding impacts of individual characteristics. Due to statistically insignificant difference between migrants and non-migrants in

prevalence rates of STDs or HIV (Table 2) and to save space, the logistic regressions were focused on the two key measures of risk sexual behavior, namely, the odds of having casual and unprotected casual sex.

Table 3 presents the bivariate (the unadjusted column) and multivariate (the adjusted column) logistic regression results for the lifetime measures of ever had casual sex with non-stable partner(s) and ever had unprotected casual sex. For both measures, the data suggest that a considerable amount of the observed differences in the likelihood of ever having casual and unprotected casual sex between migrants and non-migrants were indeed attributable to differences in their individual characteristics. But migration status remained to be a significant and powerful predictor of the two lifetime risk sexual behaviors even after differences in individual characteristics were accounted for in the multiple regressions. For example, the odds ratios between female migrant service/entertainment workers and non-migrants were more than halved in the multiple regression (from about 21 to 10 and 25 to 12, respectively); those between other female temporary migrants and non-migrants were also reduced considerably when individual characteristics were controlled for. But the adjusted odds of having ever had casual sex and unprotected casual sex among FSEWs remained to be 10 and 12 times, respectively, that of the corresponding odds of non-migrants. Similarly, the adjusted odds of the two lifetime measures among other female migrants remained to be two and four times those of non-migrants. The results indicate that migration and working in the personal service/entertainment industry exerted significant influence on Chinese women's HIV/STD risk sexual behaviors, independent of individual demographic and socioeconomic characteristics.

(Table 3 about here)

Among the individual characteristics included in the models, age and marital status were significant correlates of the two lifetime risk sexual behaviors among Chinese women at the bivariate level (unadjusted odds). As women grew older and get married, their odds of having casual and unprotected casual sex were significantly reduced. However, both age and marital status lost statistical significance in the multiple regressions, indicating that their impacts on the two risk behaviors were mainly mediated by other variables in the model.

Living arrangement and measures of social isolation and lax social control were all significant factors influencing Chinese women's HIV/STD risk sexual behaviors at both the bivariate and the multivariate levels. Like those of the migration variables, the positive impact of living alone on risk sexual behaviors was significantly reduced but remained significant with the adjusted odds of both lifetime measures more than doubled among women who lived alone than those living with others. Similarly, both social isolation and lax social control increased significantly Chinese women's odds of having ever had casual and unprotected casual sex with non-stable partner(s).

When the analysis was focused on the two risk sexual behaviors during the 30 days prior to the survey, data in Table 4 suggest very much the same pattern for the odds of having casual sex with non-stable partners. Both female migrants and migrant FSEWs had significantly higher odds of having engaged in casual sex than non-migrants; in turn migrant FSEWs had much higher odds of the risk sexual behavior than other female migrants. But the impacts of being a migrant and/or a migrant FSEW on the risk behavior were significantly reduced once individual characteristics were controlled for in the multiple regressions. Both age and marital status reduced the odds of having casual sex in the 30 days prior to the survey significantly at the bivariate level, but lost their significance in the multivariate model. Living alone, social isolation, and lax social control all predicted significantly a riskier sexual life at both the bivariate and multivariate levels.

(Table 4 about here)

However, the patterns for the likelihood of having unprotected casual sex in the 30 days prior to the survey differed in several ways. First, the odds of having unprotected casual sex were no longer significant between other female migrants and non-migrants; while statistically significant differences in the odds between migrant FSEWs and non-migrants were relatively speaking also more moderate at both the bivariate and multivariate levels. For example, instead of more than 10 times the odds of non-migrants for the two lifetime measures and the other monthly measure, the odds of having unprotected casual sex during the month prior to the survey among migrant FSEWs was less than five times that of non-migrants.

Second, while age was not a significant factor at the bivariate level, at the multivariate level it

increased significantly the odds of having unprotected casual sex during the 30 days prior to the survey among Chinese women. In other word, other things being equal, older women were more likely than their younger counterparts to have experienced unprotected sex with non-stable partners in the month prior to the survey. Third, neither marital status nor living arrangement had a significant influence over women's likelihood of consistent condom use during casual sex during the 30-day period.

Fourth, the measure of economic marginalization turned out to be a significant predictor of the odds of unprotected casual sex among women during the 30-day period at both the bivariate and multivariate levels. Women who were economically more marginalized were more likely to have engaged in unprotected sex with non-stable partners, indicating that the cost of condoms might have deterred women with economic difficulties from purchasing and using condoms in casual sexual encounters. And lastly, once migration and other individual characteristics were controlled for in the multiple regression analysis, neither social isolation nor lax social control had significant power in predicting women's likelihood of consistent condom use during casual sex in the month before the survey.

Figure 1 presents the mean predicted probabilities of lifetime and 30-day measures of risk sexual behaviors by migrant status. Regardless of measure, female migrants working in the personal service/entertainment industry (FSEWs) had the highest probabilities of risk sexual behavior, followed by other female migrants. Non-migrant women were the least likely to have had casual and unprotected casual sex with non-stable partners both in their lifetime or during the 30-day period prior to the survey. As a group, more than 51% of migrant FSEWs have had casual sex with non-stable partners and almost a third of them have engaged in such sexual relationship without the protection of condom in their lifetime; within the month prior to the survey, more than a third of migrant FSEWs had casual sexual encounters and almost 6% had unprotected casual sex with non-stable partners. Given that migrant FSEWs averaged only about 22 years of age (Table 1) at the time of survey, for migrant FSWEs, what the predicted lifetime probabilities actually measured might not be so much of their "lifetime" as their recent experiences as migrants in places of urban destination. These statistics made it clear that young women who migrated from rural villages and worked in the personal service and entertainment industry in cities

had experienced significant increases in their risk sexual behavior and were consequently at high risk of acquiring or transmitting HIV/STDs.

(Figure 1 about here)

Discussion and Conclusions

Despite growing recognition, few studies have actually addressed the interrelations between migration, gender, and HIV/STD risk. Using data from a recent survey conducted in 2003 in China, this paper examines if and to what extent the interplay of migration and gender renders female migrants particularly vulnerable to HIV/STD risk sexual behaviors. The results suggest that for the hundreds of thousands of young women from rural villages, life in a city is tough and does not offer many choices. While competition for mainstream jobs in cities has never been easy for rural-urban migrants, gender inequality in education and occupational training may make the prospect for female migrants even more remote. With little education or occupational credentials, along with discrimination against women in workplace and an increasingly gender segregated job market (Fan 2003), a majority of female migrants (52.8% in this study's weighted sample) end up working in the personal service and entertainment industry, where commercial sex is widely suspected.

While the interplay of migration and gender has undoubtedly contributed to the channeling of female migrants to jobs that increase their exposure to commercial sex, economic hardship and competition may have left female migrants with little control of their casual or commercial sex encounters and unable to resist the pressure for unprotected sex. Gendered moral and social values can further subject female migrants to a subordinate position in sexual relationship, which in turn limits their power in negotiating protective measures, makes them vulnerable to economic and sexual exploitation, and puts them at high risk of acquiring and subsequently transmitting STDs/HIV.

Results presented in the paper leave it with no doubt that female migrants, particularly those working in the personal service and entertainment industry, are much more likely than non-migrant women to have experienced casual sex and to have engaged in such relationships without the protection of condom. Both the lifetime and the 30-day measures suggest that the prevalence rates of having casual

and unprotected casual sex among female migrants, migrant FSEWs in particular, are much higher, in most cases many times higher, than the corresponding rates among non-migrant women. By contrast, male migrants do not always show higher prevalence rates of risk sexual behavior than non-migrants, and when they do the difference is not always statistically significant (Table 2). Multiple logistic regression of the same models in Tables 3 and 4 but including both males and females (results not shown but available upon request) revealed significant *negative* interactions between the migration and gender dummy (male=1) variables, confirming that the impact of migration on risk sexual behavior is more pronounced among female than male migrants.

However, migrants' increased risk of STDs/HIV have not seemed to have translated into a significantly higher prevalence rate of STDs/HIV, at least not statistically in the self-reported history of STDs or HIV positive. It is not clear and in fact surprising to find the comparably high proportion of non-migrant women -- actually even higher than that among other female migrants -- who reported a history of STDs or HIV positive. One possibility is that female migrants may have more limited access to health care services due to their marginal socioeconomic status, which may have under-diagnosed STDs among female migrants. On the other hand, the results may suggest that women's STD/HIV risk results from not only their own risk behavior but also and more importantly the risk behavior of their trusted husbands or lovers (Jadack, Hyde, and Keller 1995; Juran 1995; Aniekwu 2002; Montgomery et al. 2002). More research is needed on the issue of gender and HIV/STD risk. The use of biomarkers and measures of relational power dynamics and gendered cultural norms in sexual relationships may be particularly useful and highly recommended for future research.

Despite the absence of statistically significant increases in the self-reported STDs/HIV, the results make it clear that female migrants in general and migrant FSEWs in particular had experienced disproportionate increases in their risk sexual behavior as a result of migration, which in turn puts them at increased risk of STDs/HIV. There are estimated several millions of migrant FSEWs at any point in time in China in recent years; the cumulative number could be many times larger since FSEWs typically work for only a few years on the service/entertainment job and the personal service/entertainment industry is

characterized by quick rotations in workers. Further, if the prevailing perception is correct, many FSEWs would return to home villages after a brief sojourn in the city and get married and settled there; the possibility of their becoming the unwitting source in the spread of STDs/HIV in China is real and serious. The potential human suffering and public health costs resulting from female migrants' increased risk sexual behavior could be enormous in China in the coming decades.

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Table 1. Individual Characteristics by Migrant Status among Females 18 Years of Age or Older

Individual Characteristics	Unweighted sample size	Migrant Status		
		Non migrants	Temporary migrants	Migrant service/ entertainment workers
Age (mean)	1,987	32.6	31.9	22.3**
Educational attainment (%)	1,984			
Illiterate		13.9	17.2	6.6
Elementary school		23.6	38.5**	31.5
Junior high school		38.9	33.8	54.1**
Senior high school or higher		23.6	10.5*	7.9**
Married (%)	1,988	87.4	75.0**	19.7**
Live alone (%)	1,989	1.2	19.4**	23.9**
Econ. marginalization index (mean)	1,989	10.1	11.1*	11.1**
Social isolation index (mean)	1,989	37.0	41.0**	41.6**
Lax social control index (mean)	1,989	0.2	0.4	0.5**

Note: Statistical significance tests are based on comparison to non-migrants.

* $p<0.05$; ** $p<0.01$.

Table 2. STD Risk Sexual Behavior and STDs by Migrant Status and by Gender

Risk behavior/ STDs	Unweighted sample size	Migrant Status: Non migrants	Migrant Status: Temporary migrants	Migrant Status: Female Migrant entertainment workers
Female sample:				
Ever had casual sex	1,931	4.5	16.2**	49.9**
Ever had unprotected casual sex	1,931	1.9	10.8**	31.6**
Ever taking alcohol/drugs having sex	1,647	2.7	7.4*	21.3**
Ever involved in commercial sex	1,748	0.3	9.3**	38.6**
Casual sex in prior 30 days	1,917	1.9	11.1**	38.0**
Unprotected casual sex in prior 30 days	1,917	1.0	2.2	6.5**
Ever had STDs or HIV positive	1,989	12.2	10.6	16.9
Male sample:				
Ever had casual sex	3,383	12.9	20.4*	
Ever had unprotected casual sex	3,383	6.2	13.2**	
Ever taking alcohol/drugs while having sex	2,748	16.1	16.2	
Ever involved in commercial sex	2,944	3.3	5.2	
Casual sex in prior 30 days	3,336	4.6	4.8*	
Unprotected casual sex in prior 30 days	3,336	3.0	2.3	
Ever had STDs or HIV positive	3.432	4.5	3.0	

Note: Statistical significance tests are based on comparison to non-migrants.

* $p < 0.05$; ** $p < 0.01$.

Table 3. Logistic Regression of Impact of Temporary Migration on Lifetime Odds of Having Casual Sex and Unprotected Casual Sex among Females

Explanatory Variables	Casual Sex		Unprotected Casual Sex	
	Unadjusted	Adjusted	Unadjusted	Adjusted
Migrant status				
Non-migrants	1.00	1.00	1.00	1.00
Temporary migrants	4.14**	2.23**	6.37**	4.11**
Migrant service/entertainment workers	21.37**	10.26**	24.53**	11.86**
Age	0.93**	0.98	0.92**	0.98
Educational attainment				
Illiterate	1.00	1.00	1.00	1.00
Elementary school	1.76	1.25	2.62	1.66
Junior high school	1.51	1.21	1.93	1.23
Senior high school or higher	0.74	0.84	1.47	1.01
Marital status				
Single	1.00	1.00	1.00	1.00
Married	0.21**	0.94	0.17**	0.84
Living arrangement				
Live with others	1.00	1.00	1.00	1.00
Live alone	9.28**	2.36*	11.03**	2.21*
Economic marginalization	1.06	0.996	0.99	0.90
Social Isolation	1.09**	1.05**	1.08**	1.04*
Lax social control	3.01**	2.34**	2.78**	1.97**

Note: Results presented are odds ratios and are adjusted for population weights and PSU design effects.

* $p < 0.05$; ** $p < 0.01$.

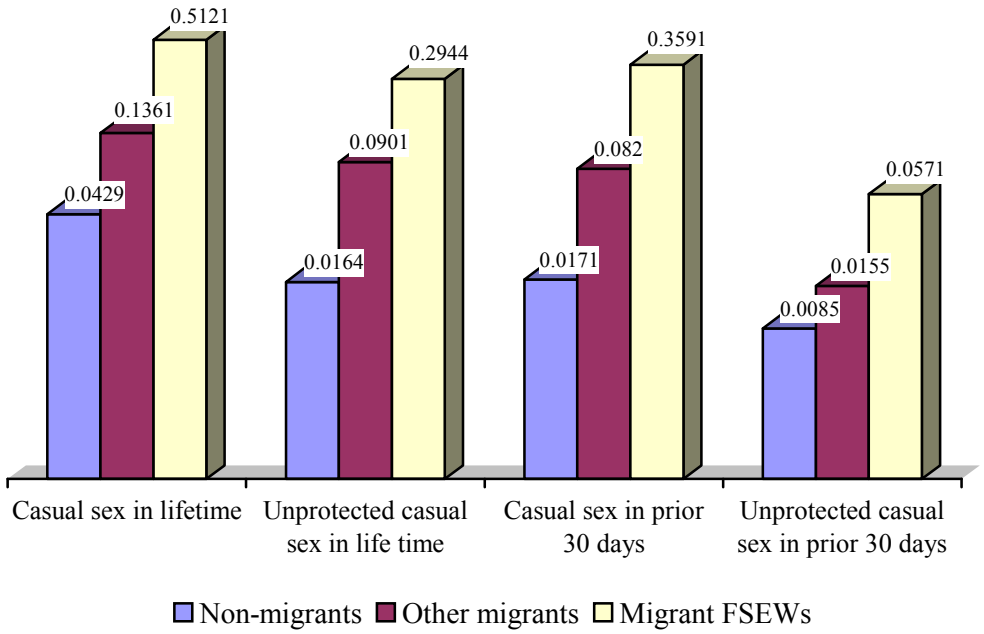
Table 4. Logistic Regression of Impact of Temporary Migration on 30-Days-Prior-to-Survey Odds of Having Casual Sex and Unprotected Casual Sex among Females

Explanatory Variables	Casual Sex		Unprotected Casual Sex	
	Unadjusted	Adjusted	Unadjusted	Adjusted
Migrant status				
Non-migrants	1.00	1.00	1.00	1.00
Temporary migrants	6.47**	3.16**	2.19	1.58
Migrant service/entertainment workers	31.86**	11.88**	6.65**	4.70**
Age	0.92**	0.999	0.98	1.01*
Educational attainment				
Illiterate	1.00	1.00	1.00	1.00
Elementary school	2.64*	1.77	3.15	3.33
Junior high school	1.84	1.39	2.45	3.12
Senior high school or higher	0.80	0.98	1.73	4.19
Marital status				
Single	1.00	1.00	1.00	1.00
Married	0.12**	0.56	0.32	0.77
Living arrangement				
Live with others	1.00	1.00	1.00	1.00
Live alone	12.40**	2.26*	3.05	0.97
Economic marginalization	1.11	1.02	1.24**	1.26**
Social Isolation	1.12**	1.06**	1.05*	1.02
Lax social control	3.23**	2.15**	1.61*	1.20

Note: Results presented are odds ratios and are adjusted for population weights and PSU design effects.

* $p < 0.05$; ** $p < 0.01$.

Figure 1. Predicted Mean Probabilities of Having Casual and Unprotected Casual Sex by Migrant Status among Females Age 18 or Older



Note: Results are based on the corresponding multiple logistic regression models in Tables 3 and 4. The bars are presented in a non-linear (logarithmic) scale. Mean probabilities are obtained by first predicting individual odds from the various models, using the "predict" option in the STATA software, and then calculating the mean odds by migrant status, which are then converted into corresponding mean probabilities.