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WILLINGNESS TO PARTICIPATE IN HIV/STD PREVENTION ACTIVITIES AMONG CHINESE RURAL-TO-URBAN MIGRANTS

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Abstract

Data from 4,208 migrants aged 18–30 years old in Beijing and Nanjing, China, were analyzed to examine the correlates of willingness to participate (WTP) in HIV/STD prevention intervention activities among Chinese rural-to-urban migrants. Overall, 83.3% of the respondents would be willing to participate. Increased WTP was associated with employment in the industrial sector (OR = 1.59, 95% CI: 1.11–2.29), migrating to cities to learn more about the outside world (OR = 1.31, 95% CI: 1.08–1.59), prior experience with health maintenance (OR = 1.36, 95% CI: 1.11–1.66), higher level of HIV/AIDS awareness (OR = 1.16, 95% CI: 1.02–1.31), and perceived severity of risk behaviors (OR = 1.32, 95% CI: 1.04–1.68). Decreased WTP was associated with increased involvement in health risk behaviors (OR = 0.50, 95% CI: 0.35–0.73), increased perceptions of peer risk involvement (OR = 0.81, 95% CI: 0.68–0.98), perceived intrinsic rewards for risk behaviors (OR = 0.81, 95% CI: 0.68–0.96) and perceptions of HIV-related stigma (OR = 0.68, 95% CI: 0.53–0.89). The high level of WTP suggests that HIV/STD prevention activities are acceptable among rural-to-urban migrants. Their awareness of HIV/AIDS should be increased and HIV-related stigma should be reduced to increase the level of WTP. Recruitment and retention of individuals with high-risk behavior in prevention activities will be critical and challenging.

Population mobility has been identified as a major risk factor for HIV/STD infection and transmission in many developing countries, including China (Bloom, Urassa, Isingo, Ng'weshemi & Boerma, 2002; Hope, 2000; Zhang & Ma, 2002). In 2000, there were approximately 121 million migrants in China who moved from rural areas to urban centers for

job and better lives without permanent urban residence (China National Bureau of Statistics, 2001). Migration from rural to urban areas was restricted in China through the household registration (*hukou*) system, which divides the Chinese population into urban and rural residents. Because of the restrictions on employment and housing in urban areas (China Ministry of Health, 2003), the movement has largely been in the form of temporary migration. This “floating population” has been frequently identified by the Chinese government, the media, and international society as a vulnerable population at risk for HIV infection or other STDs (China Ministry of Health UN Theme Group on HIV/AIDS in China, 1997; Zhang & Ma, 2002). Several HIV/STD risk factors have been attributed to this population. First, being displaced and separated from one’s spouse/family because of mobility may lead to increased sexual risk behaviors, such as engaging in sex trade or causal sex (Zheng et al., 2000). Second, lack of adequate health care in urban areas may decrease these migrants’ ability to effectively prevent disease. Third, the competitive employment situation in urban areas may force some migrants into interior job sectors that place them at risk. For example, many sex workers are rural migrants who migrated to the cities but could not find other legitimate jobs (U.S. Embassy Beijing, 2000; Zheng et al., 2000). Finally, the migrant population not only is vulnerable to HIV/STD infection but also may facilitate HIV/STD transmission. Seasonal visits back home, such as those during traditional Chinese holidays, may expose residents in rural areas to risk. Given this vulnerability of migrants to HIV/STD and the fact that most migrants lack knowledge and/or skills to prevent acquisition or transmission of infection with HIV or other STDs (Liang, 2001), effective behavioral intervention strategies need to be developed to prevent HIV/STD infection among this risk population.

For any successful intervention, a prerequisite is that adequate numbers of individuals are willing to participate in it. Estimates of willingness to participate (WTP) will help researchers to determine the feasibility of prevention intervention program. Identification of associated factors may help to develop effective strategies to address those factors in the design and planning to increase WTP and, consequently, to improve participation rates.

The issue of WTP in HIV-related programs was first addressed among intravenous drug users (IDUs) in the United States in the late 1980s (Magura et al., 1989; Marlink et al., 1987). During the past 2 decades, a growing number of studies addressing this issue have been reported among diverse populations, including men who have sex with men (MSM), bisexual men, pregnant women, and STD patients. Level of willingness and possible correlates (e.g., demographic characteristics, HIV/AIDS knowledge, health behaviors, and self-perceived susceptibility) have been examined in these studies. A broad range of willingness levels was reported among these varied populations. For example, among IDUs in methadone clinics, one study reported a WTP rate of 85% (39/46) for voluntary HIV testing, whereas another study found only a WTP rate of 38% (114/300) (Magura et al., 1989; Marlink et al., 1987). An international survey among pregnant women in 13 cities from nine developing countries reported that the overall acceptability of voluntary counseling and testing ranged from 33% to 95% (Cartoux, 1998). Similarly, a wide range of willingness among MSM was also reported by several studies (e.g., from 37% to 91%) (Bartholow et al., 1997; Hays & Kegeles, 1999; Perisse et al., 2000; Scheer et al., 1999).

In addition to the discrepancy in reported levels of WTP, mixed findings were also reported regarding the association between sociodemographic characteristics and WTP. Although no relationship was reported in several studies, some suggested that gender or educational level was associated with WTP (Lau & Wong, 2001; Meyers, Metzger, Navaline, Woody, & McLellan, 1994). Lower educational attainment was found to be related with greater willingness (Bartholow et al., 1997; Koblin et al., 1998; Perisse et al., 2000). Although in many developing countries there were concerns that women might be reluctant to be tested because of the fear of coping with a positive result (Temmerman, Ndinya-Achola, Ambani, & Piot,

1995), women were found by Bartholow et al. (1997) to be more willing to participate in HIV vaccine trials.

Previous studies have demonstrated a consistent positive association between HIV-related risk behaviors and WTP (Bartholow et al., 1997; Buchbinder et al., 1996; Gross et al., 2000; Hays & Kegeles, 1999). However, it is worthwhile to note that not all risk behaviors are associated with greater willingness. A study among IDUs suggested that IDUs who shared needles were twice as likely to report WTP in a vaccine trial, whereas measures of risk sexual behaviors (e.g., multiple sexual partners, sex trade) in the prior 6 months were not related to WTP (Meyers et al., 1994). An HIV vaccine trial study revealed that participants who reported having an HIV-1-positive partner and MSM who reported unprotected receptive anal sex were significantly more likely to be willing to participate than those who did not report these behaviors, whereas those who shared needles/equipment among IDUs and women having unprotected vaginal sex were not associated with WTP (Koblin et al., 1998).

Compared with other countries, China is still in the early stages of the HIV epidemic. However, because of the large population and coexisting HIV/STD risk factors (e.g., population mobility, sex trade, drug use), the HIV epidemic in China is accelerating. Effective behavioral intervention, particularly among high-risk populations, is of extreme importance to control the further spreading of HIV/STD. To the best of our knowledge, there were only two studies to date addressing WTP in HIV-related programs in China. One study regarding acceptability of HIV testing was conducted among rural residents in Anhui Province (Liu, Ma, & Yu, 2001) the other, also focusing on acceptance of HIV testing, was conducted among the cross-border sex networking population in Hong Kong (Lau et al., 2001). The Anhui rural residents study reported that an overall 54% of rural residents expressed their willingness to access HIV testing. However, the acceptance rate was 88% among participants who had heard of HIV/AIDS. Being male and having better HIV/AIDS knowledge were associated with increased WTP in the rural study. By contrast, only 31% acceptance rate was reported in the Hong Kong cross-border study. The study found that those who had visited more than 10 female sex workers in the past 6 months or had ever contracted STDs were more likely to express their willingness to access HIV testing. No association was found between demographic variables, attitudinal/knowledge variables, and willingness to be tested in the cross-border study. These studies suggest that WTP in HIV-related programs may vary according to the sociodemographic characteristics of the study populations.

Most of the existing studies regarding WTP were concerned with HIV testing or HIV vaccine trial participation rather than general HIV prevention intervention participation. Moreover, the existing studies focused mainly on IDUs, MSM/bisexual men, and pregnant women. No study among migrants has been reported. Accordingly, our study was designed to explore the overall level of WTP and its association with sociodemographic characteristics, HIV/AIDS knowledge, risk behaviors, and psychological factors in rural-to-urban migrants in two metropolitan areas in China. Based on the findings from the previous studies, we anticipated that greater WTP would be associated with increased HIV-related knowledge, risk behaviors, and perceived vulnerability to and severity of infection.

METHODS

SAMPLING AND DATA COLLECTION

From September 2002 to January 2003, we conducted a cross-sectional survey among rural-to-urban migrants in two cities: Beijing, capital of China, and Nanjing, capital of Jiangsu Province in eastern China. Detailed sampling and data collection methods have been described elsewhere (Li et al., this issue). Briefly, 10 occupational clusters (restaurants, hotels, barbershops/beauty salons, bathhouses, nightclubs/karaoke/dance halls/bars, small retail

shops, domestic services, street vendors, construction and factory workers), which employed more than 90% of the migrants, plus currently unemployed migrants in the job markets, served as the sampling frame. To achieve a representative sample of migrants in the cities, quota sampling of occupational groups was utilized so that the number of participants would be proportional to the estimated number of migrants in each occupational cluster. The workplaces (e.g., store, club, office, construction site, street) were used as the sampling units. To prevent oversampling from any single sampling unit, the number of subjects recruited from any unit did not exceed 10% of total migrants in the unit or 10 individuals, whichever was greater. After obtaining permission from gatekeepers, employers, or workplace managers, trained interviewers approached eligible migrants at the sampling units. An eligible subject was defined as one who (a) had a rural residence, (b) worked in the city without having a permanent city residence; (c) had been in the city for at least 6 months, and (d) was between 18 and 30 years of age. After providing informed consent, participants were asked to complete an anonymous self-administered questionnaire in a separate room at their workplace or a nearby place convenient to participants. The questionnaire, which was pilot-tested and revised before the survey, took approximately 45 minutes to complete. Assistance (e.g., reading questions to them) was provided to a small number of respondents with limited literacy.

MEASURES

Willingness to Participate (WTP)—Participants were asked the question “If we were to conduct an HIV/STD prevention intervention program to help people like you and your peers to protect yourselves from HIV/STD, would you be willing to participate in such a program?” Respondents were instructed to give a yes/no response or skip the question if they preferred not to answer.

Sociodemographic Characteristics—Demographics included age, gender, ethnicity (Han, Hui, Man, Mongolian, or others), marital status (single, currently married, divorced, remarried and widowed), and educational level (illiterate, elementary, middle, high school, or postsecondary education). We combined non-Han minorities into a single category of “non-Han” in data analysis since they accounted for a small proportion (3%) of the entire sample. Participants were also asked about their living and working conditions, which included type of dwelling, utilities in dwelling, working place, daily working hours, days off work per month, and monthly income. Reasons of migration was inquired by a question with multiple choices, including earning more money, learning more about the outside world, having nothing to do at home, and changing living environment.

HIV/AIDS Awareness—Participants were asked to assess their general HIV/AIDS awareness on a 4-point scale ranging from 1 (knowing nothing about HIV/AIDS at all) to 4 (knowing a lot about HIV/AIDS).

HIV/AIDS Knowledge—HIV/AIDS knowledge was assessed by 22 items covering modes of transmission, clinical outcomes, treatment, and prevention. These items were presented with a true/false or likely/unlikely response choice. A composite score of AIDS knowledge was created by summing all correct answers (possible range 0–22) of the 22 items, with higher scores reflecting higher levels of knowledge about HIV/AIDS. The 22 items were adapted from the scales used in the 1992 U.S. National Health Interview Survey (Schoenborn, Marsh, & Hardy, 1994) and other studies in the U.S. (DiClemente, Zorn, & Temoshok, 1986; Koopman, Rotheram-Boras, Herderson, Bradley, & Hunter, 1990).

HIV Risk Behavior—Participants were asked to report their involvement in several risk behaviors, including having ever used drugs (never, ex-drug user, current drug user), having engaged in sexual intercourse (no/yes), number of sexual partners over their lifetime,

involvement in commercial sex (either selling or buying sex), and the number of times using a condom during the most recent three sexual intercourses. Participants were also queried about the frequency of a behavior—selling blood—which could place them at risk (none, once, twice, 3 times, 4 or more times) because HIV infection among former paid blood/plasma donors through contaminated equipment has been reported in several central provinces of China (Wu, Liu, & Detels, 1995). Because only those participants who were sexually experienced were asked to answer the questions regarding sexual activities (e.g., numbers of sexual partners, involvement in commercial sex, and condom use), we recoded these three variables so that those who had never had sex were treated as having no multiple sexual partners, having never been involved in commercial sex, and consistently using condoms.

Health–Seeking Behavior—Two questions were employed to assess participant’s health-seeking behavior, including ever having had a physical exam (yes, self-initiated; yes, being required to do so; and no) and ever having had a STD/HIV test (no, only STD test, only HIV test, both STD and HIV tests). For the purpose of data analysis in the current study, we created dichotomous responses (yes/no) for these two variables by combining any positive answers to the questions as a single category (yes).

Peer Risk Involvement—Six questions were used to assess perceived peer risk behavior involvement. Participants were asked about how many (none, few, some, and most) of their peers (including those at their home villages) had engaged in a number of HIV/STD risk behaviors, including having multiple sexual partners, having unprotected sex, trading sex (selling or buying sex), having contracted a STD, and selling blood. A composite score was created by calculating the mean value of responses to the six items, with a higher score reflecting more peer risk behavior involvement. The internal consistency for the scale was 0.79.

Intrinsic Reward—The perceived intrinsic reward of risk behaviors (e.g., anticipated personal pleasure or personal advantage for engaging in risk behaviors) was a composite measure created from four original questions in the survey. Questions such as “having multiple sexual partners is cool” were asked and each question had a 4–point response ranging from 1 (strongly disagree) to 4 (strongly agree). The composite score was the average value of responses to these four questions and had a possible range of 1 to 4, with a higher score reflecting increased perceived intrinsic reward of risk behaviors. The internal consistency for the scale was 0.63.

Severity—Perceived severity of risk behaviors was a composite measure of four original questions measuring perceived negative consequence for engaging in risk behaviors. Questions such as “If one has an STD, he/she will lose his/her friends” were asked with a 4–point response option ranging from 1 (strongly disagree) to 4 (strongly agree). The composite score was the mean value of responses to these 4 questions and had a possible range of 1 to 4, with a higher score reflecting greater perceived severity of risk behaviors. The internal consistency for the scale was 0.59.

Vulnerability—Perceived vulnerability to HIV/AIDS infection consisted of two items assessing the perceived likelihood of being infected with HIV or STDs. Participants were asked to rate the likelihood of acquiring infection on a 5–point scale (1 = impossible, 2 = little possibility, 3 = some possibility, 4 = very possible and 5 = having been infected). The composite vulnerability score had a possible range of 1 to 5, with a higher score indicating a greater perceived vulnerability. The internal consistency for the scale was 0.80.

HIV–Related Stigma—The HIV–related stigma consisted of five items focusing on attitudes toward hypothetical HIV–infected others. For each item, participants were asked to choose

from a 4-point scale ranging from strongly disagree to strongly agree. A composite stigma score, using the mean value of responses to these five items, was created to measure the prejudice and discrimination directed at people perceived to have HIV/AIDS. The scale score ranged from 1 to 4 with a higher score reflecting a higher level of stigmatization. The internal consistency for the scale was 0.57.

Depressive Symptoms—Depression was measured using the Center of Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977). The 20-item CES-D was introduced into China in the early 1990s (Wang, 1993). The existing Chinese version of the CES-D was reexamined and modified by the investigators to ensure the accuracy of the translation. The internal consistency was 0.85 for the current study sample. The scale score, which was the sum of responses to these 20 items, ranged from 0 to 60, with higher scores indicating higher frequency of depressive symptoms.

Satisfaction—Two questions were employed to measure participant's satisfaction with either their current life or work on a 5-point scale ranging from 1 (very unsatisfied) to 5 (very satisfied). A composite score was created by retaining the greater response of the two questions. The possible range of this composite score was 1 to 5 with a higher score reflecting a higher level of satisfaction with their life/work.

STATISTICAL METHODS

All analyses were conducted with SPSS for Windows, Version 11.5. Chi-square tests were performed to examine differences in distribution of categorical variables by WTP, and Student *t* tests were employed for continuous variables. Basic demographic characteristics (i.e., age and gender) and variables that were associated with WTP in univariate analysis at a significance level of .10 were entered into a stepwise multivariate logistic regression model. To improve the statistical efficiency of logistic regression analysis, we combined some variables that were skewed distributed. For example, drug abuse and blood selling was combined into one variable—"having ever used drugs or sold blood" (0 = none, 1 = either used drugs or sold blood)—and lifetime multiple sexual partners, commercial sex involvement, and nonconsistent condom use during the most recent three sexual intercourses were combined into one item—"risky sexual behavior" (0 = none, 1 = any of the risk behaviors).

RESULTS

SAMPLE CHARACTERISTICS

A total of 4,301 migrants in Beijing and Nanjing were approached, and 24 of them (0.6%, 8 males and 16 females) declined to participate. Sixty-nine participants were deleted from the data file because of substantial missing data (e.g., more than half of the variables were missing) or missing values on key demographic variables (e.g., gender). A final sample of 4,208 (98%) was retained in our database.

Table 1 presents the characteristics of study participants. The mean age of the participants was 23 years. A large proportion of them were of Han ethnicity (97%), secondary school educated (88.4%) and single (71.7%). About one fifth lived in underground spaces or shelters, and 15% had no tap water in dwelling. On average, they worked 10.2 hours a day and took 3 days off per month. Compared with males, females were younger, less educated and more likely to be single but reported better living conditions in cities. Gender distribution by occupation was significantly different with more males working as industrial workers and more females being employed in entertainment establishments.

Among 4,208 participants, 2,153 (51.6%) reported having had sexual intercourse. The proportion of having sexual experience was higher for men than for women (57.1% vs. 43.5%, $p < .001$). Having any sexual risk behaviors (i.e., multiple sexual partners, commercial sex involvement, and inconsistent condom use during the most recent three sexual intercourses) was reported by 50.4% of men and by 35.7% of women. Nearly 6% of men and 4% of women reported being ever used drugs or sold blood.

WTP IN HIV/STDS PREVENTION INTERVENTION ACTIVITIES

Among all the participants interviewed, 83 (2%) skipped or had invalid answers to the question assessing WTP. Among those who responded, 3,435 (83.3% overall, 83.0% female, and 84.0% male) indicated that they would be willing to participate in HIV/STD prevention intervention activities.

CORRELATES OF WTP

Differences in sociodemographics, HIV-related knowledge, risk behaviors, health-seeking behaviors, and psychological factors between those who were WTP (i.e., WTP group) and those who were not WTP (i.e., non-WTP group) are summarized in Table 2. Compared with the non-WTP group, more WTP participants were Han ethnic (97.3% vs. 94.7%, $p = .000$). More WTP participants than non-WTP participants worked in entertainment establishments (53.4% vs. 51.7%) or industrial sectors (26.6% vs. 22.8%) ($p = .009$). Other demographic variables were not associated with differences in WTP.

Contextual variables, such as monthly income, daily working hours, and days off work per month did not differ by WTP. However, some motivations for migration, such as earning more money and learning more about the outside world, were significantly associated with WTP (see Table 2). Compared with the non-WTP group, more WTP participants said that they migrated to cities to learn more about the outside world (64.2% vs. 52.3%, $p < .001$), whereas more non-WTP participants said that they migrated to cities for the purpose of making more money (56.5% vs. 50.7%, $p < .01$).

HIV/AIDS awareness and knowledge were significantly associated with WTP. Those who were WTP had a higher level of awareness or better knowledge of HIV/STD. HIV-related risk behaviors were also associated with WTP. Those who were not willing were more likely to report having ever used drugs or sold blood, having had sexual experiences, and having engaged in risk sexual behaviors (see Table 2). Health-seeking behaviors, such as ever having had a physical exam, were also significantly related to WTP as those who were WTP tended to have more health-seeking behavior (see Table 2).

Significant differences were found in several psychological factors between the two groups. Those who were not willing to participate perceived more peer risk involvement, a higher level of intrinsic reward of the risk behaviors, a lower level of perceived severity of the risk behaviors, a higher level of HIV-related stigma, and more depressive symptoms. Satisfaction with life/work and perceived vulnerability for HIV/STD infection did not differ by WTP (see Table 2).

LOGISTIC REGRESSION ANALYSES

Table 3 depicts the results of multivariate logistic regression analyses, which confirmed the univariate results. Migrants in the industrial sectors tended to be more willing to participate (OR = 1.59, 95% CI: 1.11–2.29). Other factors associated with increased WTP included a “learning motive” of migration (e.g., migrating to cities to learn more about the outside world (OR = 1.31, 95% CI: 1.08–1.59), general HIV awareness (OR = 1.16, 95% CI: 1.02–1.31), having ever had a physical exam (OR = 1.36, 95% CI: 1.11–1.66) and perceived severity of

risk behaviors (OR = 1.32, 95% CI: 1.04–1.68). Factors that appeared to be negatively associated with WTP included having ever used drugs or sold blood (OR = 0.50, 95% CI: 0.35–0.73), a higher level of peer risk involvement (OR = 0.81, 95% CI: 0.68–0.98) and higher intrinsic reward of the risk behaviors (OR = 0.81, 95% CI: 0.68–0.96). Higher perception of HIV-related stigma was also significantly associated with less WTP (OR = 0.68, 95% CI: 0.53–0.89) (see Table 3).

DISCUSSION

A large proportion of rural-to-urban migrants reported WTP in future HIV/STD prevention intervention activities. Increased willingness was associated with being industrial workers, awareness of HIV/AIDS, and perceived severity of risk behaviors. Peer risk involvement, perceived intrinsic reward of the risk behavior and HIV-related stigma were associated with lower WTP. Sexual risk behaviors and other HIV-related risk behaviors such as drug use or blood selling were also associated with less WTP, although the association did not reach statistical significance for sexual risk behaviors in the logistic regression model.

The willingness level observed in this study was higher than those observed in the previous studies in China (Lau & Wong, 2001; Liu et al., 2001). When compared with the Anhui rural residents study, one possible reason for this is that our sample had higher educational attainment than that in the rural residents study (94% vs. 53.2% reporting having received at least 6 years of formal schooling). Higher educational attainment was found to be related to greater WTP in both studies (though it was not significant in our study). Several possible macro factors might also contribute to the higher level of willingness found in our study. The rural residents study was conducted in 1997. There has been increased national attention on the HIV/AIDS situation in China since 1998. In 1998, the Chinese government issued a national medium- and long-term strategic plan for HIV/AIDS prevention and control, which stresses prevention and health education. In 2001, an action plan was issued for implementation of the medium- and long-term strategic plan (Ministry of Health, 2001). In the same year, the First National AIDS conference was held successfully in Beijing, just 1 year before our survey. All these activities and efforts may increase Chinese awareness of HIV/AIDS. Meanwhile, some recently highly publicized event regarding HIV/AIDS in China such as “needle attacks” may motivate Chinese migrants learn more about how to protect themselves from HIV/AIDS infection (Lev, 2002). The lower willingness level in the Hong Kong cross-border study might be attributed to the higher level of risk involvement among the cross-border commercial sex networkers. However, future study is needed to confirm our speculations regarding those differences.

Our study suggests that general AIDS awareness is associated with increased WTP. Similar findings have been reported in other studies (Bartholomeyczik, Devine, & Darrow, 1989; Liu et al., 2001). The positive association between awareness of HIV/AIDS and WTP supports the perspective that knowledge is necessary, albeit not sufficient, to facilitate formation of behavior-changing motivation (Fisher, Fisher, Williams, & Malloy, 1994). Increasing HIV-related knowledge among rural-to-urban migrants is especially relevant given that more than half of our participants (54% of those with WTP and 62.3% of those without WTP) perceived themselves knowing a little or nothing about AIDS.

It is important to note that HIV-related risk behaviors (e.g., drug use and sexual risk behavior) were associated with less WTP, although sexual risk behavior was not significant in multiple logistic regression analyses. This result was not consistent with findings from some previous studies, which suggested a positive association between HIV-related risk behaviors and WTP (Buchbinder et al., 1996; Gross et al., 2000; Hays & Kegeles, 1999). A negative association was reported previously in one vaccine trial among young Thai men, which found that having sex with sex workers was associated with diminished WTP (Jenkins et al., 2000). The negative

association of WTP with risk behaviors in our study may be due to the fear of self-revelation of risk behaviors in the prevention intervention activities, as these risk behaviors (i.e., multiple sex, commercial sex, and drug use) are strongly stigmatized in the Chinese culture (Liu, Detels, Li, Ma, & Yin, 2002). This finding is relevant for implementing HIV/AIDS intervention programs in China. It suggests that it may be difficult to reach and to retain those at high risk for HIV/AIDS in prevention and intervention efforts. Rural-to-urban migrants have been reported to engage in more high-risk activity than permanent residents of either rural or urban areas (Liu et al., 1998). Our study also identified considerable involvement in risk behaviors among the migrants, with 5% having used drugs or sold blood and 45% having at least one of three risky sexual behaviors, including multiple sexual partners, commercial sex, and inconsistent condom use. Because individuals with high-risk behavior represent an important target population for intervention activities, more efforts should be made to understand reasons behind the unwillingness to participate in order to improve the recruitment and retention of those who are at high risk in prevention intervention programs.

Several studies of WTP indicated that perceived vulnerability to HIV/STD infection was associated with greater WTP in either HIV vaccine trial or HIV test (Bartholomeyczik et al., 1989; O'Connell et al., 2002). By contrast, the study among the Hong Kong cross-border sex-networking population (Lau & Wong, 2001) and the present study did not find a significant correlation between perceived vulnerability and WTP. Further study is needed to explore the possible reasons for such a discrepancy in this regard.

The current study indicated that higher levels of HIV-related stigmatization were associated with less WTP. Similar results were reported in a previously published study (Fortenberry et al., 2002). These findings support the assumption that HIV/STD stigma delays health seeking and impedes HIV/STD prevention (Centers for Disease Control and Prevention, 2001; Chesney & Smith, 1999). Health workers in China must consider the reduction of HIV-related stigma as an important component of a successful HIV/AIDS action plan.

POTENTIAL LIMITATION

There are several potential limitations in our study. First, our sample was a convenience sample. Therefore caution is indicated when generalizing results to other migrant populations. Second, information collected was by self-report. The level of WTP might be overreported because a positive answer to the question might be perceived by the participants as socially desirable, whereas risk behaviors might be underreported since risk behaviors are not socially desirable. Third, although the current study was not designed to answer certain research questions regarding WTP in HIV/STD prevention intervention programs, the study still produces hypothesis-generating data. Fourth, our outcome variable was defined based on a general question of whether the respondents would be willing to participate in an "HIV/STD prevention intervention program" to protect them from HIV/STD, rather than a specific intervention activity. Although we had encouraged respondents to ask questions for clarification, the contents or nature of the HIV/STD prevention intervention program in the survey might be too general for some respondents. Finally, the cross-sectional nature of the data precludes any causal interpretation of the findings in the current study.

IMPLICATIONS OF THE FINDINGS

Rural-to-urban migrants are at high risk for HIV/STD infection. HIV prevention intervention efforts among this population are of great urgency in China. A general high level of WTP suggests that HIV/STD prevention activities are acceptable among rural-to-urban migrants. However, the negative association of WTP with risk behavior indicates those at highest risk for HIV/AIDS infection may be the most difficult group to be recruited into health education and promotion. The negative association of WTP with HIV-related stigma highlights the

importance of HIV-related stigma reduction. Health policy makers must realize this phenomenon and view stigma reduction as an important component of an effective HIV prevention plan. Health care professionals should work together with professionals from other sectors, especially those from mass media, to reduce both risk behaviors and discrimination, fear, or hostility toward people with HIV.

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TABLE 1

DESCRIPTION OF STUDY SAMPLE BY SEX

Characteristics	Total (N = 4208)		Male (N = 2509)		Female (N = 1699)	
	n	%	n	%	n	%
Age ($\bar{x} \pm sd$)	4053	23.49 \pm 3.80	2430	23.94 \pm 3.90	1623	22.82 \pm 3.55***
Han Ethnicity ^b		97		97.4		96.1*
Education ^{ab}						
Elementary	252	6	121	4.9	131	7.8
Middle school	2313	55.5	1464	58.9	849	50.5
High school	1372	32.9	774	31.1	598	35.6
Postsecondary	231	5.5	128	5.1	103	6.1
Single ^b	2921	71.7	1646	68	1275	77.1***
Type of dwelling ^{ab}						
Building	1349	32.2	647	25.9	702	41.5
Flat	1855	44.2	1183	47.3	672	39.7
Underground	515	12.3	276	11	239	14.1
Shelter	348	8.3	319	12.8	29	1.7
other	126	3	76	3	50	3
Utilities in dwelling ^b						
Toilet	2434	58.1	1322	52.9	1112	65.8***
Kitchen	1896	45.2	1117	44.7	779	46.1
Tap water	3617	86.3	2096	83.8	1521	90.0***
Gas/Cylinder	1767	42.2	998	39.9	769	45.5***
Telephone	1400	33.4	762	30.5	638	37.8***
TV set	2290	54.6	1330	53.2	960	56.8*
Shower/Bath tub	1710	40.8	977	39.1	733	43.4***
None of the above	347	8.3	257	10.3	90	5.3
Type of current work ^{ab}						
No job	149	3.6	95	3.8	54	3.2
Self-employed	380	9.1	232	9.3	148	8.7
Entertainment establishment	2229	53.2	968	38.8	1261	74.5
Industrial worker	1084	25.9	950	38.1	134	7.9
Other	346	8.3	250	10	96	5.7
Monthly income (RMB)		846.41 \pm 732.63		872.02 \pm 723.52		808.64 \pm 744.46**
Daily working hours		10.16 \pm 3.30		10.20 \pm 3.15		10.09 \pm 3.51
Days rest per month		2.88 \pm 2.25		2.77 \pm 2.26		3.04 \pm 2.22
HIV-related measures:						
HIV/AIDS knowledge		14.10 \pm 2.89		14.01 \pm 2.92		14.23 \pm 2.85*
HIV-related stigma		2.33 \pm 0.48		2.34 \pm 0.49		2.32 \pm 0.47
Having used drugs or sold blood ^b	203	4.9	137	5.5	66	3.9*
Having sexual experience ^b	2153	51.6	1425	57.1	728	43.5***
Having risky sexual behaviors ^b	1750	44.5	1188	50.4	562	35.7***

* Note. $p < 0.05$.** $p < 0.01$.*** $p < 0.001$.^aThere was a significant gender difference ($p < 0.001$);

^bThe difference between the sum of subgroup and the total as reported in the top row was due to the omission of missing cases. The percentages of missing cases for these variables ranged from 0.4% to 1%, except the variables of marital status (3.1%) and having risky sexual behaviors (6.5%).

TABLE 2
 Comparison of Sociodemographic, Risk Behaviors and Psychological Factors Between Migrants WTP and Those Not WTP

Characteristics	WTP (N=3435)		Not-WTP (N=690)	
	n	%	n	%
Sociodemographic factors				
Age (<i>x ± sd</i>)		23.48 ± 3.75		23.60 ± 4.03
Male	2060	60	401	58.1
Han Ethnicity	3330	97.3	643	94.7***
Single	2413	72.1	459	69.2
Education				
Elementary	190	5.6	56	8.2
Middle school	1893	55.4	378	55.5
High school	1141	33.4	211	31
Postsecondary	191	5.6	36	5.3
Type of current work^a				
No job	115	3.4	32	4.6
Self-employed	292	8.5	81	11.8
Entertainment establishment	1828	53.4	356	51.7
Industrial worker	910	26.6	157	22.8
Other	278	8.1	63	9.1
Monthly income (RMB)		839.7 ± 713.0		877.7 ± 834.3
Daily working hours		10.14 ± 2.96		10.24 ± 4.77
Days rest per month		2.91 ± 2.25		2.76 ± 2.26
Migrating to earn more money	1740	50.7	390	56.5**
Migrating to learn more about the outside world	2202	64.2	361	52.3***
Knowledge and behavior				
General AIDS awareness		2.35 ± 0.79		2.19 ± 0.82***
HIV/AIDS knowledge		14.18 ± 2.84		13.76 ± 3.12**
Having ever used drugs or sold blood	131	3.8	67	9.7***
Having sexual experience	1726	50.6	393	57.3**
Having risky sexual behaviors	1420	43.8	308	49.2*
Ever had a physical exam.	2460	71.9	431	62.7***
Ever had a STD/HIV test	369	10.8	97	14.1*
Psychological factors				
Peer risk involvement		1.37 ± 0.48		1.49 ± 0.59***
Perceived intrinsic reward of risk behaviors		2.10 ± 0.56		2.24 ± 0.61***
Perceived severity of risk behaviors		2.72 ± 0.52		2.53 ± 0.55***
Perceived vulnerability to HIV/STD		3.66 ± 0.51		3.63 ± 0.61***
HIV-related stigma		2.30 ± 0.48		2.47 ± 0.49***
Depression		11.22 ± 9.36		12.90 ± 9.64***
Satisfaction with life/work		3.31 ± 0.97		3.26 ± 1.02

* Note. *p* <0.05.

** *p* <0.01.

*** *p* <0.001.

^a There was a significant difference in proportion of occupation by WTP (*p* = 0.009).

TABLE 3
 Results of Multivariate Logistic Regression Analysis, with Sociodemographic, Knowledge, Behavior, and Psychological Factors

Correlates	p value	OR	95% CI for OR	
			Lower	Upper
Age	.503	1.01	.98	1.04
Gender (F/M)	.075	.83	.67	1.02
Educational attainment	.923	.99	.86	1.14
Ethnicity (non-Han/Han)	.189	.74	.47	1.16
Type of current work (no job/all others)	.341	1.31	.75	2.30
Type of current work (self-employed/all others)	.927	.98	.65	1.48
Type of current work (entertainment establishment/all others)	.075	1.36	.97	1.92
Type of current work (industrial worker/all others)	.012	1.59	1.11	2.29
Migrating to earn more money (yes/no)	.106	.85	.70	1.03
Migrating to learn more about the outside world (yes/no)	.006	1.31	1.08	1.59
General AIDS awareness	.019	1.16	1.02	1.31
HIV/AIDS knowledge	.201	1.02	.99	1.06
Ever had a physical exam (yes/no)	.003	1.36	1.11	1.66
Having sexual experience (yes/no)	.755	.93	.57	1.51
Having ever used drugs or sold blood (yes/no)	.000	.50	.35	.73
Ever had a STD/HIV test (yes/no)	.228	.84	.63	1.12
Having risky sexual behaviors (yes/no)	.867	1.04	.65	1.66
Peer risk involvement	.029	.81	.68	.98
Perceived intrinsic reward of risk behaviors	.015	.81	.68	.96
Perceived severity of risk behaviors	.022	1.32	1.04	1.68
HIV-related stigma	.004	.68	.53	.89
Depression	.520	1.00	.99	1.01

Note. Dependent variable: willingness to participate. Overall goodness of fit of the full model: $\chi^2 (df = 8) = 12.48, p = 0.131$.