

**VULNERABILITY TO HIV TRANSMISSION AMONG
MOBILE RURAL WORKERS COMPARED TO
LOCAL RESIDENTS IN BEIJING**

– A CROSS-SECTIONAL STUDY



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To my dear Parents:

A gift to your coming 40th Wedding Anniversary

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ABSTRACT

Background. Mobile Rural Workers have been widely concern as potential source of new HIV infections in China, due to the nature of the mobility and magnitude of the population.

Objective. The study aimed at assessing disparities between mobile rural workers and local residents in HIV-related vulnerability by exploring important contextual factors contributing to the disparities.

Method. A sample of 134 mobile rural workers and 127 local residents were systematically recruited into a cross-sectional study. All 261 participants responded to a close-ended questionnaire and 24 attended a Focus Group Discussion. Information on HIV-related knowledge, attitude and perception, risk behaviors, mobility status as well as socio-economic status were collected and analyzed.

Result. Adjusted for sex, age and education, mobile rural workers were more likely to have lower income (OR =3.06, 95% CI: 1.31-7.18), no medical insurance (OR =6.58, 95% CI: 2.95-14.71), less social support (OR =2.13, 95% CI: 1.04-4.33), and poor knowledge on HIV (OR = 2.5, 95% CI: 1.05-5.99), compared to local residents. However, mobile rural workers were less likely to have multi-partners than their local counterparts (OR =0.3, 95% CI: 0.11-0.84). Among the mobile rural labors, females were more likely to be less paid (OR=7.69, 95% CI: 2.17-25), and less likely to get access to condom (OR=4.25, 95% CI: 1.64–11.00) compare to males. Differences in income, social support and condom access between mobile rural workers and local residents were much larger in female group. No female mobile worker reported multi-partnership in the study.

Conclusion. Compared to local residents in Beijing, mobile rural workers were more vulnerable to HIV infection in terms of economic constraints, access to medical services and insurance, social support and HIV-related information and knowledge. Gender disparity predisposed woman mobile workers for higher level of vulnerability. Marginalization of mobile rural workers poses potential threat to HIV/AIDS prevention, and should be averted by addressing inequity during the process of economic development and socio-cultural transition at host communities.

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LIST OF ABBREVIATION

AIDS	Acquired Immune Deficiency Syndrome
CDC	Center of Disease Control
CNY	Chinese Yuan (April 2005: 1 USD = 8.26 Chinese Yuan)
FGD	Focus Group Discussion
HIV	Human Immunodeficiency Virus
ID	Identification
IDU	Intravenous Drug Using/User
IOM	International Organization of Migration
KAP	Knowledge Attitude Practice
MOH	Ministry of Health
MSN	Man Having Sex with Man
MTCT	Mother to Child Transmission
NGO	Non-governmental Organization
OR	Odds Ratio
RTI	Reproductively Transmitted Infections
SPSS	Statistical Package for the Social Sciences
STD	Sexually Transmitted Diseases
STI	Sexually Transmitted Infections
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
VTC	Voluntary Testing and Counseling
WHO	World Health Organization

DEFINITIONS

- Vulnerability** Vulnerability is the converse of empowerment[1]. By vulnerability we mean the extent to which individuals are incapable of making and effecting free and informed decisions about their life. A person who is genuinely able to make free and informed decisions is least vulnerable; the person who is ill-informed, or whose ability to make informed decisions freely and carry them out is most vulnerable[2].
- Household Registration** A system formulated in 1958 under the Regulations of Household Registration, in response to massive influx of rural people into urban areas. Under previous planning economy system, social resources allocated to a person are attached to his or her registration place, not following personal movement.
- Mobile Rural Worker** Also known as ‘floating population’ in China, refers to itinerant rural workers who move within country border to any urban setting of China, and temporarily (usually less than 5 years) work and live there, yet officially registered as rural residence.
- Local Resident** Refers to resident who is officially registered as ‘permanent’ resident of the place, city of Beijing in this study.
- Identity** Refers to a person’s status of being either ‘Mobile Rural Worker’ or ‘Local Resident’ in this study.

CHAPTER I. INTRODUCTION

1.1 Background

1.11 HIV/AIDS

China is experiencing one of the world's most rapidly expanding HIV epidemics. By 2003, according to a China CDC survey supported by WHO, UNAIDS and US CDC, China has 840,000 people living with HIV/AIDS, among which 80,000 are AIDS patients[3]. Even though the overall adult prevalence rate is relatively low at 0.1 percent, the cumulative number of HIV/AIDS case is increasing by over one third each year[4-6]. Like the case of many other HIV-hit countries, the epidemic is now spreading from 'high-risk' groups to general population, with remarkably rising proportion of heterosexual transmission and mother to child transmission (MTCT) [3;7;8].

1.12 Mobility

In the meantime, China finds probably the largest internal mobile population in the world if not in history. Presently over 140 million people are moving nationwide, of which, about 100 million are rural to urban workers[9]. This is a group of people born in rural areas thus identified as 'rural' on their ID cards. The identification or 'household' registration system in China was initiated in 1950s', aiming at controlling the movement of population. But with dramatic economic and societal transition in past two decades, the function is actually fading out. More and more people leave their home places for urban areas fueled by expectations for job, better payment and urban life.

1.13 Beijing

Beijing, the capital city, is one of the 'hot spots' for mobile workers. The city sees 3.5 million people annually come and go, about one-third the number of local residents[10]. However, behind red brick walls of the Forbidden City, the virus is sprawling silently, unexpected and often neglected by both mobile workers and Beijing residents. According to official statistics, the annual incidence of HIV/AIDS

in Beijing is increasing at an alarming rate of 50 percent, and among the detected cases, over 70 percent are people from other provinces[11].

1.2 Rationale

Mobility has long been linked with many infectious diseases, including HIV/AIDS[12;13]. But it was not until the year 2001 that UN Theme Group on HIV/AIDS raised the issue of mobile workers as a potential source of HIV infections in China, in their technical report ‘HIV/AIDS: China’s Titanic Peril’[4]. Considering the magnitude of the mobility and further connection with over two-thirds of the nation’s population in rural, the potential impact on society and economy can be devastating[14]. The issue, however, is far from being brought onto agenda of China’s HIV/AIDS campaign, for several reasons. First, current efforts still concentrate on high-risk groups rather than general population. As intravenous drug users, former insanitary plasma donors and sex workers account for 70 to 80 percent of reported infections[3;7]. Second, risk reduction and behavioral change remain to be the focus of preventive programmes, adequate attention has yet to be paid to contextual factors and vulnerability analysis. Third, mobile rural worker in society has long been marginalized and neglected, especially when resources are limited.

Whereas when convincing statistics is absent, there seems to be an attitude in public that consider mobile worker as just another ‘newly’ emerged risk-group. Being a person that has been mobile for twelve years both in China and overseas, I keep skeptical to it. First and foremost, this is more of an assumption based on theory or deduction, rather than a conclusion established on real data and research. Next, from ethical point of view, rural identity predisposes one to be a second-class citizen in cities. This is an unspoken truth in China. Lots of social stigma has already been linked with mobile workers. Now here comes HIV. It is not new in human history to throw out scapegoats when fear gets the run, and often we were not aware of the tragic consequences till very late[15]. Thus the ethnical concern here are: first, unsubstantiated allegation will increase the discrimination to this already marginalized group, pushing the mobile population further away from ‘mainstream’ society and HIV interventions; second, it will create a false ‘sense of security’ among

immobile people, weakening their awareness to risk, and impairing public solidarity to combat the epidemic.

Based on above considerations, we believe that it is worth to do this study on one hand to gain more knowledge on context and environmental factors that may predispose mobile rural workers to vulnerability to HIV infection; on the other hand, to clarify the misconception about vulnerable group and vulnerable factors, and provide information to facilitate targeting prevention and intervention.

1.3 Existing Knowledge

Linkage between migration and HIV/AIDS has been adverted since start of the epidemic[1;16;17]. Earlier studies on certain highly mobile groups have observed high rates of HIV infection[12;18]. Supportive views that mobility played a prominent role in the dissemination of HIV can also be found in regional researches of Quinn [19;20] and Decocas[21;22]. In 1998, UNAIDS/IOM joint report *Migration and AIDS* and its supplementary *Population Mobility and AIDS* acknowledged the possibility of increased vulnerability to HIV/AIDS triggered by migration and mobility, as well as the far-reaching and tragic consequences of it[16;23]. The 2001 UNAIDS Technical Updates further addressed that ‘being mobile in and of itself is not a risk factor for HIV/AIDS; it is the situations encountered and the behaviours possibly engaged in during mobility or migration that increase vulnerability and risk regarding HIV/AIDS’[16]. These documents encompass state of knowledge on association of mobility and HIV/AIDS, and represented a shift of perspective from mobile population as a ‘risk group’ to ‘risk behaviour’ and contexts of such behaviours that mobile population is apt to engaged in.

Ronald Skeldon, on the other hand, in his report to UNDP *Population Mobility and HIV Vulnerability in South East Asia* (1998) pointed out that the linkages between the movement of people and the dissemination of HIV/AIDS, and between the movement of people and the creation of environments that facilitate rates of infection, has been intuitive. He believed that many subjective elements had been involved, both in the measurement of the movement of people and in the estimation of the number of

HIV/AIDS carriers. In this report, he advocated that most profitable interventions shall be both space and time-specific, which in fact reemphasizes the existence of certain environment, if not created, as a contextual factor for risk behaviors to happen[24].

Back in China, extensive studies addressing mobility and HIV/AIDS have been rare, even if internal mobility has broadly been linked with potential HIV transmission[25]. One latest study suggested that high mobility among rural-to-urban migrants in China was associated with increased risk for sexually transmitted diseases including HIV/AIDS[26]. Xiushi Yang, a scholar interested in mobility study in China, recently published another article where he calls for attention to community characteristics that may be conducive to HIV/STD risky behaviors and to the spread of HIV epidemics. His study also showed that migration significantly increases prevalence of HIV and STDs. In the end Yang concluded that HIV and STDs were found not to be diseases of poverty but more likely byproducts of social and behavior changes associated with development and urbanization[27]. Anderson and colleagues' study also seemed to support Yang's view of increased behavioral risk[9]. From the studies mentioned above, representative HIV prevalence study among rural to urban mobile population has yet to be found.

1.4 Knowledge Gap & Research Questions

Enormous epidemiological research over the last two decades has focused on association of personal behaviors with HIV/AIDS. These productive researches, however, often led to preventive programmes that blame individuals for their unhealthy behaviors, rather than the powerful social and environmental forces that drive these behaviors[28]. The focus on individual risk factors identifies only one of the pathways to the disease; therefore challenge remains to clarify other important influences to HIV infection.

In regards to mobility, it seems unsubstantiated if not 'intuitive' to differentiate mobile worker from general population and to assert that the group is of 'higher risk' to HIV. Even though certain collective characteristics and pattern of behaviors of the

mobile people are proven to be associated with STDs and HIV, there is no convincing evidence suggesting that the other segment of general population are less 'at risk', simply because they are immobile or 'permanent'. In published articles, we were unable to find a study that makes comparison between mobile and immobile population in China. A comparative study will thus contribute to narrow the knowledge gap by focusing on mobility's impact on vulnerability to HIV/AIDS.

There are two sub-sets of immobile population that are comparable to mobile workers; people staying in rural areas, and people living 'permanently' in cities. We chose the latter for practical reasons and also because we are more interested to see the differences when two groups are exposed to same societal settings, rather than the change of risk resulting from mobility.

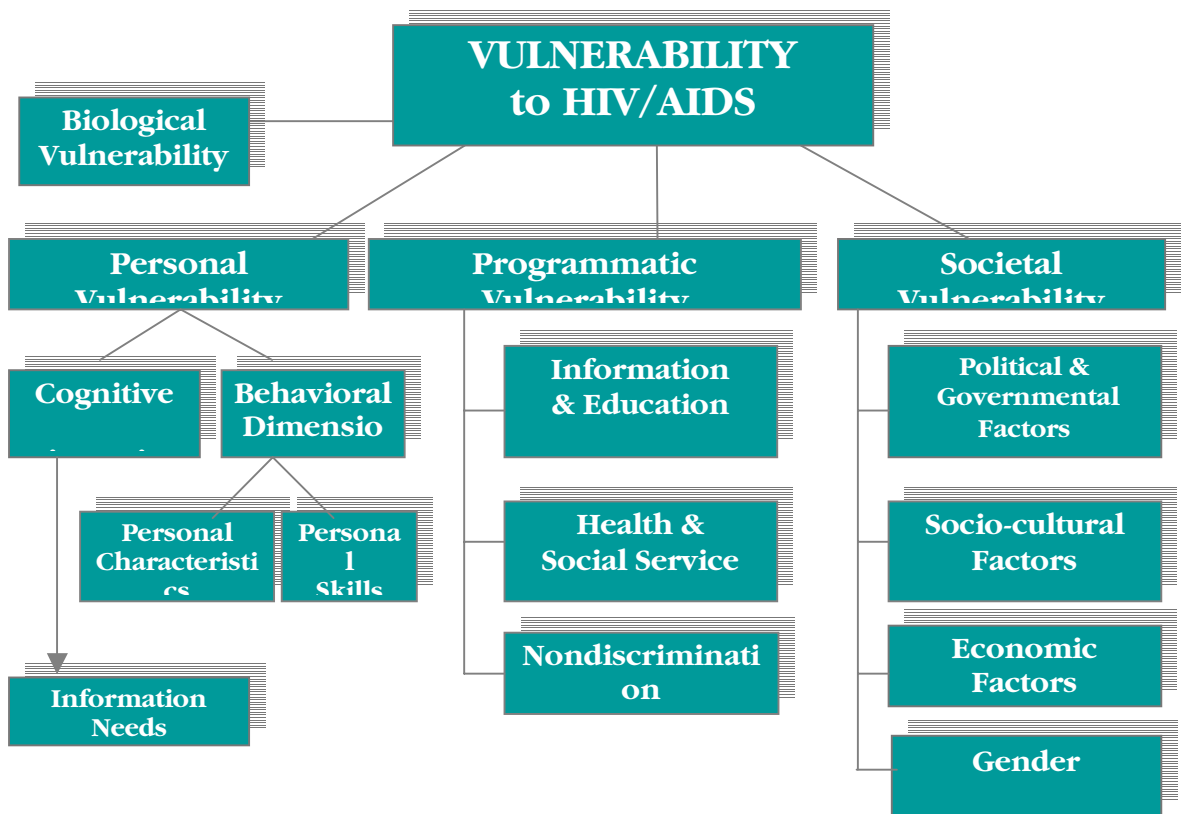
Research questions of the study:

- Are mobile rural workers more vulnerable to HIV infection comparing to local residents in host communities?
- How large is the disparity, if any, between mobile rural worker and host resident in terms of HIV-related vulnerability?
- What are the major contextual factors that contribute or enlarge such disparities?
- How do society and policy react to prevent mobile rural worker from becoming a potential source for HIV infection?

1.5 Conceptual Model

Whether AIDS is a ‘disease of poverty’ or not, an increasing understanding is that in order to address the problem we have to put it back into the **contexts** that it belongs to. The concept of **vulnerability** therefore has been brought into central. As described in *AIDS in the World*, vulnerability focuses on constraints and barriers, which requires consideration of the political, social, cultural, and economic influences on decision-making, behavior and health[1]. This study is based upon a vulnerability framework elaborated by Jonathan Mann in *AIDS and WORLD*[1], where various vulnerability factors collectively contribute to the overall vulnerability of HIV/AIDS. In the study, we assessed selected personal, programmatic and societal vulnerabilities, but not biological vulnerability (Figure 1).

Figure 1. Vulnerability Framework[1]



1.6 OBJECTIVES

Based upon above research questions and conceptual frameworks, objectives of the study were set as below:

1.6.1 Principal Objectives

Assess HIV-related vulnerability among mobile rural workers in comparison with local residents in host area of Beijing, China.

1.6.2 Specific Objectives

- Describe mobile rural worker from six categories of HIV-related vulnerability factors:
 - ◆ HIV-related Knowledge, Attitude, Perception (KAPs)
 - ◆ Attitude toward sexuality
 - ◆ Risk sexual behaviors
 - ◆ Socio-economic Status
 - ◆ General health status
 - ◆ Mobility status
- Find out if any disparity existing between mobile rural worker and local resident in vulnerability factors listed above.
- Look at association between identity and other vulnerability factors, to see how the identity interacts on diminishing or enlarging the disparity.
- Identify appropriate reactions that would be helpful in reducing HIV-vulnerability among mobile rural workers in host place.

CHAPTER II. METHODOLOGY

2.1 Study Description

From August to December 2004, a cross-sectional study was conducted in selected areas of Beijing, collecting data from mobile workers and local residents aged 16 years old or above, both men and women were included. The study consisted of two parts, a survey using standardized questionnaire, and a Focus Group Discussion (FGD). 134 mobile rural workers and 127 local residents were recruited into the study. All 261 participants responded to close-ended questionnaires and 24 attended the Focus Group Discussion.

2.2 Population

- ◆ **Target Population:** mobile rural workers in China
- ◆ **Study Population:** mobile rural workers in Beijing
- ◆ **Study Sample:** mobile rural workers recruited from selected communities where mobile population living or working in clusters, during a period from August to December, 2004, in Beijing.
- ◆ **Reference Group:** urban residents living adjacently to the selected communities stated above.
- ◆ **Inclusion Criteria:** all participants were at a lawfully working age of 16 or above at the time of the study. Both sexes were included into the study.

2.3 Variables

As described in Objectives, variables fall into following categories:

- **Demographic & Background:** Sex; Age; Marital Status; Identity
- **Scio-economic Status:** Education; Income Level; Discrimination; Social Support; Environment of Living; Environment of Working; Type of Living Places
- **General Health Status:** Self-evaluated Health Status; Have or not have Medical Insurance; Out-of-pocket Medical Cost in 12 months; Mental Health Problem; Depression; Health Seeking Pattern
- **Attitude towards Sexuality:** Acceptance to different sexual relationship; Perception on condom use; Perception on condom accessibility

- **HIV-related Knowledge, Attitude, Perception:** Knowledge on Transmission Route; Knowledge on HIV-related Services; Resources on HIV-related information; Knowledge on Preventives: abstinence; Risk Perception; Information Needs
- **Risk Sexual Behaviors:** Number of Sex Partner in 12 months; Condom use; Type of Partner in 12 months
- **Mobility (mobile rural worker only):** Length of stay in Beijing; Frequency Home Visiting; No. of Job in past 12 months; Self-rated Job Stability

2.4 Sample Size

The sample size was calculated by using 'HIV/AIDS related knowledge' as a proxy indicator. The target prevalence of HIV/AIDS knowledge among urban resident is set to be 85%, according to Beijing HIV/AIDS Prevention Action Plan 2003-2005[29]. And we estimate a 20% prevalence difference of HIV knowledge between the two groups. With an equal sample size in each group, there is 90% chance of discovering at 5% significant level a difference of 20% in the prevalence of 'HIV/AIDS related knowledge', as showed below:

Significance Level (α):	0.05
Power (1- β):	0.90
Target Group Prevalence (p1):	0.65
Reference Group Prevalence (p2):	0.85
Relative Sample Sizes (Reference / Target):	1

The following formula was used for calculating sample size. C is the constant related to level of α and β value. In this study, $C = 10.5$ [30].

$$N = \frac{P1*(1-p1) + p2*(1-p2)}{(p1 - p2)^2} *C = 94$$

The sample size used in the study is **106**, which incorporates a continuity correction to the usual sample-size formula based on the normal approximation to the binomial distribution, adding about 15 percent of the sample size calculated above [31].

2.5 Geographic Description & Sampling Method

2.5.1 Geographic Description of Study Areas

Rural workers in Beijing reside in a highly dispersive pattern. About 3.5 million mobile rural workers scatter over 1,370 km² downtown and near suburban areas of Beijing[32;33], approximately seven times the population and three times the land area of Oslo. The population is ‘floating’, as it is named in Chinese. People move with job and opportunity, some registered some not. In this case, it is difficult to take a random sample of the study population, largely because a complete sampling frame does not exist.

Nevertheless, according to previous sociological studies on mobile rural workers, many ‘villages’ have gradually come into being in Beijing. They are congregating communities initially emerged when mobile workers of close origin, and more often, of similar jobs gather[34]. There are hundreds of such villages in Beijing, big or small. Unfortunately, we were unable to find a complete record of the number and geographic distribution of these villages. And it is practically impossible to make a list of all the villages. Therefore, we decided to choose four large ‘villages’ as study areas to draw sample.

We may assume that migrant workers of diversified origin and occupations are randomly distributed in our selected study areas, as population in these areas is quite big[34], but with one exception. Mobile rural workers in construction industry usually do not have settled places but move with projects. Consider that construction industry is a major sector that mobile rural workers concentrate[33], we chose one construction site as a supplementary to the above four communities in order to make the study sample closer to target population in occupational composition. The site was selected from 13 by then ongoing projects in downtown area.

Altogether five clusters were selected as study areas, as illustrated in a map of Beijing (Figure 2) and Table 1. Local communities geographically adjacent to the ‘villages’ and the site were also selected to draw references from.

2.5.2 Sampling

The layout of these villages is diversified. Some are consisting of a few radical or interlaced roads, some concentrates into one or more blocks. We used systematic sampling method, i.e. at each of the selected communities, starting from an index unit, we visited every third unit. 20 to 30 cases were drawn this way from each area. And we recruited additional people to the sample when non-response happened, so as to make up for the absence.

Table 1. Study Area Description[34]

Refer No.	Name of Community	Geographical Position	Origin of Major Habitants	Major Job Type
1	Zhenjiang Village	Dahongmen (Southern suburban)	Zhenjiang province	Costume production and sales
2	Xijiang Village	Weigongcun (Western urban)	Xinjiang Municipality	Restaurant and grocery
3	Henan Village	Huoying (Northern suburban)	Henan Province	Garbage Processing, household service
4	An'hui Village	Lanqiyang (Northwestern suburban)	An'hui, Hebei, Henan, Jiangsu Provinces	Vegetable Vendor, garbage processing, cleaning and other household service
5	Construction site	Guomao (Eastern Urban)	Various	day-pay site workers

Figure 2. Map of Beijing and Study Areas



Map Source: Window to China[35].

2.6 Data Collection

2.6.1 Ethical Issues

Ethical clearance of the study had been granted by the National Committee for Medical Research Ethics in Norway in July 2004. Consultation was made to Ethical Clearance Committee under Chinese Center for Disease Control and Prevention (CDC), attached by a letter from Norwegian Ethical Clearance Committee. Feedback from CDC had been that additional ethical clearance was not required for a behavioral study like this unless invasive methods or clinical trials were to be applied during the study.

Before participating in the project, candidate participants were given a written 'Information Sheet and Consent Form' (see Annex), where purpose, procedures confidentiality and other relevant information of the project, as well as participant's rights were stated in plain Mandarin Chinese. Assistance was offered for those with reading difficulties. Upon clear understanding the information provided, informants agreed to participate in the study by signing on the Consent Form, and were given a copy of the form upon request.

2.6.2 Questionnaire

Development of Questionnaire

The questionnaire consisted of 36 close-end questions, corresponding to the variables described earlier in this chapter. Questions were selected from Youth Survey Question Bank[36], a research tool compiled by Population Council, and were adapted for local contexts. Clarity, comprehensibility and acceptability were considered when deciding the content and length of the questionnaire.

Pretest

Starting by end of July 2004, the process of translating and pre-testing questionnaire took about three weeks. Investigator's translation of the questionnaire was checked for accuracy and consistency with that of an external translator. Afterwards 18

persons were recruited into a pretest. Following aspects were evaluated during pre-testing:

- **Validity of Questions**

As the target population is generally known as less educated, acceptability of the questions asked and responses provided was directly relevant to the validity of the data collected. The pretest thus paid more attention to informant's comprehension and possible uncoded answers. According to the feedback from the informants, the questionnaire was revised in terms of wording and sequence of the questions.

- **Willingness of collaboration**

In the pretest, willingness of the informants was evaluated. Of the 18 people invited for pretest, eight are local residents and the rest mobile workers. The sample was drawn in a convenient way from two out of the five study communities. All agreed to participate and completed the pre-test, except a young female mobile worker. She refused to complete the questionnaire with the reason that the questions asking about sexual behaviors were not relevant to her.

- **Availability of the study population**

The timing of visit and length of interview were also assessed in the pretest to ensure that informant's schedule be best respected in formal survey.

2.6.3 Response Rate

In formal data collection, refuse rate for the mobile rural worker group was about 30-40%, and among those who refused, female outnumbered male. A higher level of collaboration was achieved among the local residents, in terms of both genders. Exact numbers of refusing were not systematically registered in the study. Instead certain fixed patterns of answering 'no' was recalled, such as 'I have no time for it now', 'this is irrelevant to me', or simply 'I don't want this'. There were a few people who refused to participate giving a reason that they 'can not read or write'.

The collaboration rate was much higher in pretest than in the formal data-collecting. Possible explanations include; first, the number in pretest is quite small; second, only two out of the five study areas were chosen for the pretest, chances are they may not be representative; third, more time and interview-guidance were given during pretest.

2.6.4 Focus Group Discussion

In December 2004, 24 male and female mobile rural workers attended a focus group discussion. Purpose of the focus group discussion (FGD) was set to supplement information to information already available from questionnaire but needed to be clarified or explained. The investigator facilitated the discussion by using a written list of topics, formulated as a series of open-ended questions. Attendants were encouraged to express their opinions and understandings on their migrant status, social support in the city, HIV-related attitude, perceptions and beliefs. The discussion was tape-recorded upon participants' consent, and note of a recorder was crosschecked with the recorded file for validation. By the end of the discussion, participants were given pamphlets on HIV and STDs prevention.

2.7 Data Management and Statistical Analysis

The questionnaires administered to mobile rural workers and local resident were coded separately right after they were sorted. Quantitative data were double entered into a database by using EpiData (EpiData Association, Odense Denmark). Reliability of the data was further controlled by two steps, first manually checking for possible entry error on a random basis; second, examining outliers for each variable for suspected wrong input. SPSS for Windows 12.0 was used for statistical analysis. Qualitative data were organized manually and analyzed as supplementary to quantitative data.

CHAPTER III. RESULT



3.1 Description of Study Sample

3.1.1 Demographic Variables

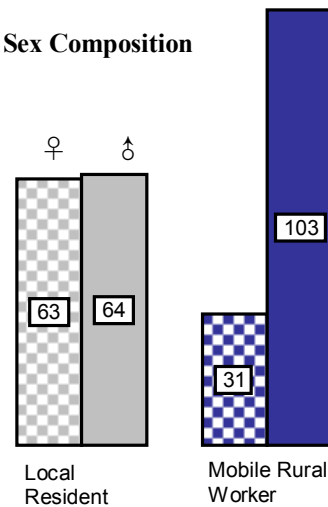
Sex

Out of 134 mobile workers recruited in the study, male outnumbered female by 3 folds. While in the local resident group, the sex ratio is almost 1.

Table 2. Sex Composition

		Identity	
		local resident	mobile rural worker
Sex	Female	63 (49.6%)	31 (23.1%)
	Male	64 (50.4%)	103 (76.9%)
Total		127	134

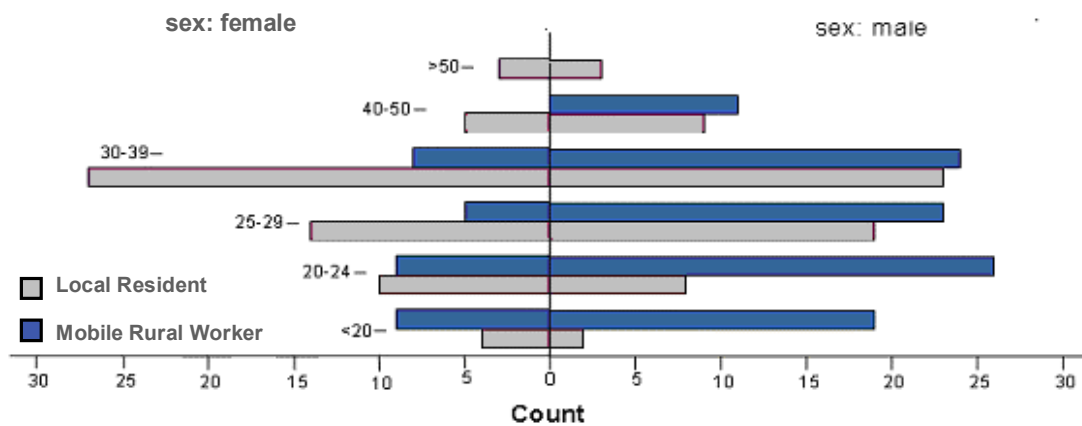
Figure 3 Sex Composition



Age

Age distribution is significantly different between two groups. Within male-dominant mobile worker group, two-thirds people are less than 30 years old.

Figure 4. Age-Sex Distribution

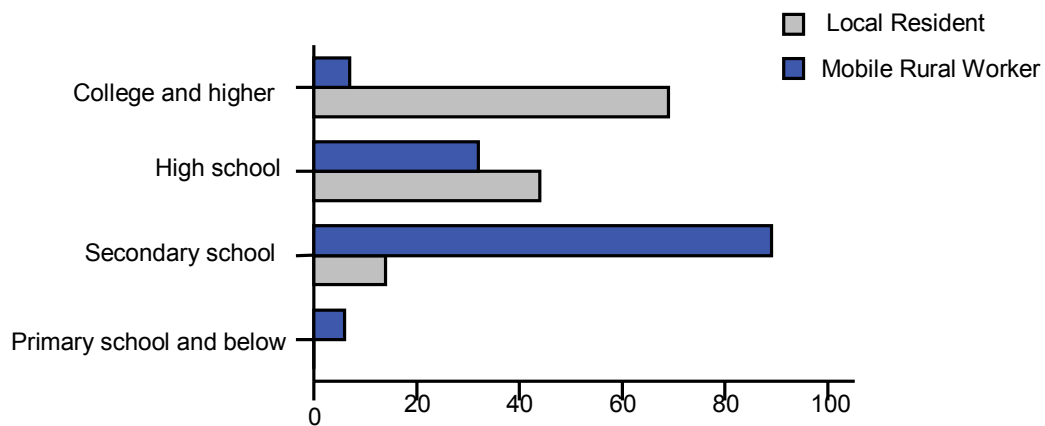


3.1.2 Socio-economic Status

Education

While 89% of local resident received high school and college level education, over 70% of mobile rural workers barely had secondary education.

Figure 5. Educational level



Income

The data show that 61% of mobile workers had an income of less than 6,000 CNY (ca. 720 USD) in past 12 months, while the proportion of local resident with same low income level is only 13%. (Table 3)

Job

Most participants had a job at the time of the study, and there is no significant difference between two identity groups in the number of job had in past 12 months. However, when asked about stability of their current job, more people in mobile worker group felt it unstable. (Table 3)

Social Support

More than 40% of mobile workers were pessimistic about getting support in Beijing when needed. Only 14.4% said they always get supported. The situation in local resident group is just the opposite, with 34.6% always get needed support, and 11.8% hardly get any. (Table 3)

Environment of Working and Living

About one-fifth mobile workers described their working and living environment as ‘poor’, just a few local residents had the same feeling. It is also noteworthy that a remarkably high proportion of mobile workers live in places provided from work (42.5%). (Table 3)

Discrimination

There is also a significant difference between two identity groups on level of discrimination. 16.4% of mobile workers reported that they always felt discriminated in past 12 months. Only less than 4% local resident reported the same. (Table 3)

Table 3. Description of Socio-economic Variables

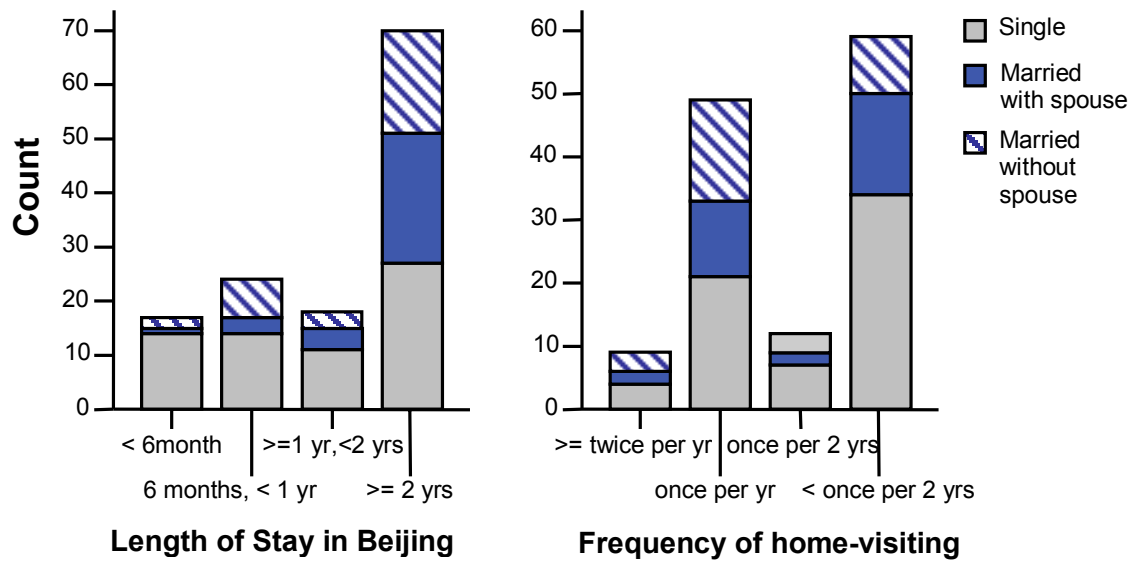
Variable	Identity		Variable	Identity	
	Local Resident	Mobile Rural Worker		Local Resident	Mobile Rural Worker
Income	<i>P < 0.001</i>		Have a Job	<i>NS</i>	
no income	6 (4.8%)	19 (14.7%)	No	16 (12.6%)	19 (14.2%)
< 6,000 RMB	11 (8.8%)	60 (46.5%)	Yes	111 (87.4%)	115 (85.8%)
6,000-12,000 RMB	25 (20.0%)	34 (26.4%)			
> 12,000 RMB	83 (66.4%)	16 (12.4%)			
No. of Job in 12 mth	<i>NS</i>		Job Stability	<i>P < 0.01</i>	
4 jobs or more	5 (4.1%)	3 (2.3%)	Not stable	16 (13.9%)	39 (31.0%)
2 to 3 jobs	30 (24.4%)	33 (25.6%)	Hard to say	39 (33.9%)	45 (35.7%)
1 job	84 (68.3%)	88 (68.2%)	Quite stable	60 (52.2%)	42 (33.3%)
No job	4 (3.3%)	5 (3.9%)			
Environment of Working	<i>P < 0.01</i>		Environment of Living	<i>P < 0.001</i>	
Satisfied	28 (23.3%)	21 (16.0%)	Satisfied	32 (25.2%)	17 (12.8%)
Acceptable	27 (22.5%)	23 (17.6%)	Acceptable	31 (24.4%)	25 (18.8%)
Not so good	59 (49.2%)	60 (45.8%)	Not so good	55 (43.3%)	61 (45.9%)
Poor	6 (5.0%)	27 (20.6%)	Poor	9 (7.1%)	30 (22.6%)
Social Support	<i>P < 0.001</i>		Discrimination	<i>P < 0.001</i>	
Always	44 (34.6%)	19 (14.4%)	always	5 (3.9%)	22 (16.4%)
Sometimes	43 (33.9%)	30 (22.7%)	sometimes	25 (19.7%)	41 (30.6%)
Occasionally	25 (19.7%)	28 (21.2%)	Seldom	57 (44.9%)	45 (33.6%)
Hardly	15 (11.8%)	55 (41.7%)	Never	40 (31.5%)	26 (19.4%)

NS. = not significant

3.1.3 Mobility

Data show that half of the mobile workers recruited in the study have stayed in Beijing for two years or more. 38.1% of mobile workers visit home annually and 45% of them visit home biannually or even less frequently. It is noteworthy that among married people (N=31), about half mobile workers stayed in Beijing without company of their spouse; only 3 out of 64 married local residents were in the same situation.

Figure 6. Mobility Status of Mobile Rural Workers



3.1.4 Health Status

General Health and Depression

No statistically significant difference is shown between two identity groups in self-rated health status, most are satisfied with their health condition. However, proportion of people that always depressed in past 12 months is higher among mobile workers (23.9%) than local residents (11.9%). (Table 4)

Medical Insurance, Medical Cost and Health Seeking Pattern

Up to 87.2% of mobile worker did not have any medical insurance. Among local resident, that percentage is much lower (28.3%). In terms of out-of-pocket medical cost, 61.4% of mobile workers spent less than 200 CNY (ca. 24 USD) in past 12 months. When it comes to health seeking pattern when falling ill, self-diagnosis was the most popular choice for both groups. 18% mobile workers would go to private

clinics, which are usually small and low-standard, thus almost never an option for local resident. (Table 4)

Table 4. Description of Health Status

Variable	Identity		Variable	Identity	
	Local Resident	Mobile Rural Worker		Local Resident	Mobile Rural Worker
Health Status	<i>Ns</i>		Depression	<i>P<.005</i>	
not so good	9 (7.1%)	13 (9.7%)	Always	15 (11.9%)	32 (23.9%)
Not bad	50 (39.4%)	50 (37.3%)	sometimes	74 (58.7%)	61 (45.5%)
Good	68 (53.5%)	71 (53.0%)	seldom	37 (29.4%)	41 (30.6%)
Medical Insurance	<i>P< 0.001</i>		Medical Cost in 12 mth	<i>Ns</i>	
Yes	91 (71.7%)	17 (12.8%)	< 200 RMB	65 (51.2%)	81 (61.4%)
No	36 (28.3%)	116 (87.2%)	200 to 1,000 RMB	48 (37.8%)	37 (28.0%)
			> 1,000 RMB	14 (11.0%)	14 (10.6%)
Health Seeking Pattern (M)					
when sick: go to hospital	63 (50.0%)	45 (33.8%)	self-diagnose and buy drugs	69 (54.8%)	69 (51.9%)
go to private clinic	3 (2.4%)	24 (18.0%)	try to get over as possible	35 (27.8%)	26 (19.5%)

(M) = Multiple choice
Ns = not significant

3.1.5 Sexuality

Attitude towards sexuality

Both identity groups expressed high levels of acceptance towards diversified sexual relationships. Over two-thirds of people in both groups considered ‘sex between friends or acquaintance’ even ‘casual sex’ as ‘acceptable’, besides marital sex.

Condom - Attitude, Accessibility & Use

The data show that local resident acknowledged more of the importance of condom use compared with mobile worker. About 80-85% of local resident recognized condom use as ‘necessary’ for extra-marital sex including casual and commercial sex, a lower proportion of 65-75% mobile workers thought the same. There is no significant difference in terms of access to condom, about one-third of people in both identity groups did not think condom is easily obtained for them. The low accessibility of condom use is partially reflected in actual condom use. Only 26.7% of local resident and 32.5% of mobile workers reported consistent use of condom for every intercourse in past 12 months. 24.4% local resident and 20% mobile workers

never use condom. Just as access to condom, there is no significant difference in condom use between the two groups. (Table 5)

Sexual behavior

Majority in the study reported having no or just one partner in past 12 months. 20 local resident and 13 mobile workers had multiple partners. There is a significant difference between two identity groups (p=0.023). When looking at high risk behaviors, i.e. having multiple partners without consistently condom use, we found that 17 local resident and 9 mobile workers had high risk behaviors in past 12 months. (Table 5)

Table 5. Description of Sexuality

Variable	Identity		Variable	Identity	
	Local Resident	Mobile Rural Worker		Local Resident	Mobile Rural Worker
Acceptability of Sex (m)			Attitude towards Condom Use (m)		
sex between Husband and wife	54 (48.2%)	34 (39.1%)	sex between Husband and wife	54 (48.2%)	34 (39.1%)
sex between friends or acquaintance	89 (79.5%)	60 (69.0%)	sex between friends or acquaintance	89 (79.5%)	60 (69.0%)
Casual sex	96 (85.7%)	66 (75.9%)	when having casual sex use or provide commercial sex	94 (83.9%)	56 (64.4%)
Access to Condom *			Condom Use ‡		
	Ns			Ns	
yes	72 (66.7%)	64 (62.1%)	use in every intercourse	21 (26.7%)	16 (32.5%)
no	36 (33.3%)	39 (37.9%)	sometimes but not every time	42 (48.8%)	38 (47.5%)
			never	23 (24.4%)	26 (20.0%)
No. of Partner in 12 month †			Type of Partner in 12 month (m)		
	p < 0.05			Ns	
No partner or 1 person	92 (82.1%)	102 (88.7%)	Husband or wife	54 (62.8%)	57 (67.1%)
2-5 person	18 (16.1%)	7 (6.1%)	fixed partner(s)	28 (32.6%)	18 (21.2%)
More than 6 person	2 (1.8%)	6 (5.2%)	friends or acquaintance	13 (15.1%)	10 (11.8%)
			stranger(s)	4 (4.7%)	7 (8.2%)

(m) = multiple choices, accumulative count and percentage are showed for each choice.

* N. Missing = 50 (19.2%)

† N. Missing = 34 (13.0%)

‡ N=166, select case= have sex in past 12 months; N. Missing = 26 (13.5%)

Ns not significant

3.1.6 HIV-related Information & Risk Perception

Source of HIV-knowledge

Mass media such as TV shows and newspaper were identified as the major channels of getting knowledge on HIV. HIV education and preventive programmes also played

a role in knowledge dissemination, so did friends chatting. Comparing to mobile workers, local resident made better use of internet resources. (Table 6)

Information Needs

When asked about whether they need more HIV-related information or not, most people in both groups answered yes, indicating a gap between information provision and demand. (Table 6)

HIV-related Service

Only about 13% people in both identity groups gained HIV-knowledge from voluntary testing and counseling (VTC). In another question asking about VTC, less than 12% of local residents and 5% mobile workers heard about it and knew where to get the service if wanted. Both groups have low proportion of people knowing how to use AIDS hotline, another HIV/AIDS counseling service. (Table 6)

Risk Perceptions

A surprisingly large proportion of people in both groups believed that they are completely free of any risk to HIV infection. Even the choice is given as absolutely as ‘zero’, 66.1% of local resident and 70.5% of mobile workers ticked it off. (Table 6)

Table 6. HIV-related knowledge, risk perception,

Variable	Identity		Variable	Identity	
	Local Resident	Mobile Rural Worker		Local Resident	Mobile Rural Worker
Risk Perception	<i>Ns</i>		Information Needs	<i>Ns</i>	
zero	84 (66.1%)	91 (70.5%)	no	43 (33.9%)	28 (22.2%)
small	36 (28.3%)	32 (24.8%)	yes	84 (66.1%)	98 (77.8%)
big	7 (5.5%)	6 (4.7%)			
Very big	0 (0%)	0 (0%)			
VTC	<i>P < 0.05</i>		AIDS hotline	<i>Ns</i>	
Never heard	29 (22.8%)	47 (37.0%)	Never heard	43 (33.9%)	47 (33.1%)
Heard but don't know how to get	83 (65.4%)	74 (58.3%)	Heard but don't know how to get	73 (57.5%)	74 (62.2%)
know how to get	15 (11.8%)	6 (4.7%)	know how to get	11 (8.7%)	6 (4.7%)
Sources of HIV Knowledge					
TV shows	117 (92.1%)	101 (80.8%)	VTC	16 (12.6%)	16 (12.8%)
Newspaper	108 (85.0%)	80 (64.0%)	Hospital	41 (32.3%)	25 (20.0%)
Radio	84 (66.1%)	54 (43.2%)	Web	57 (44.9%)	17 (13.6%)
Preventive Programme	67 (52.8%)	47 (37.6%)	Friends Chat	73 (57.5%)	48 (38.4%)

Ns not significant

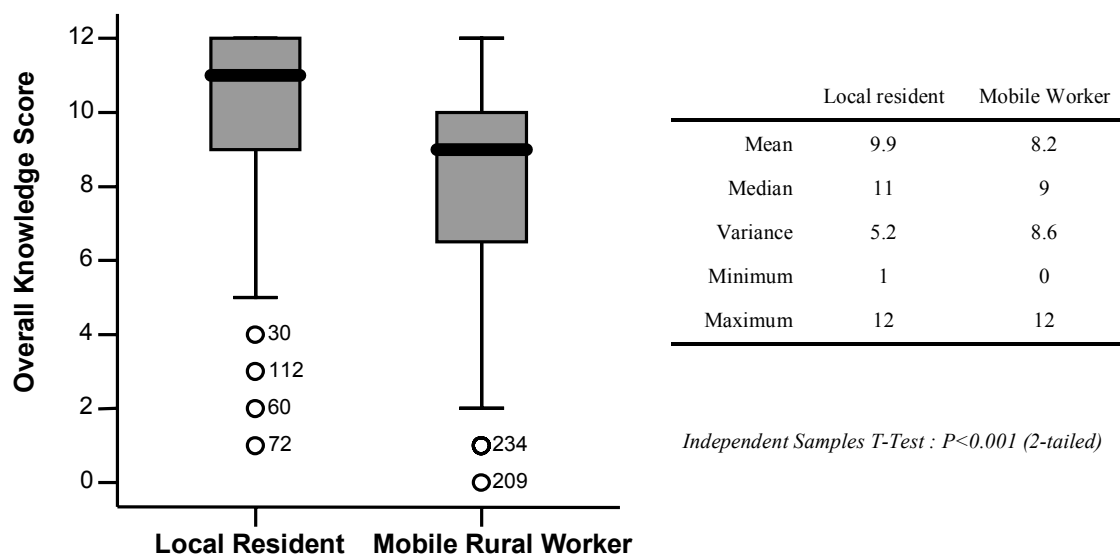
VTC voluntary testing and counseling

3.1.7 HIV-related Knowledge

HIV-related Knowledge Score

HIV-related knowledge was indexed by two variables, knowledge on routes of transmission and preventive measures. Each case gets a score of HIV-related knowledge (as described in *Method* below). Independent sample T-test shows that difference of mean knowledge score between the two groups is 1.7, and the difference is highly significant ($p < 0.001$), as showed in a boxplot below.

Figure 7. Boxplot –HIV Knowledge Score



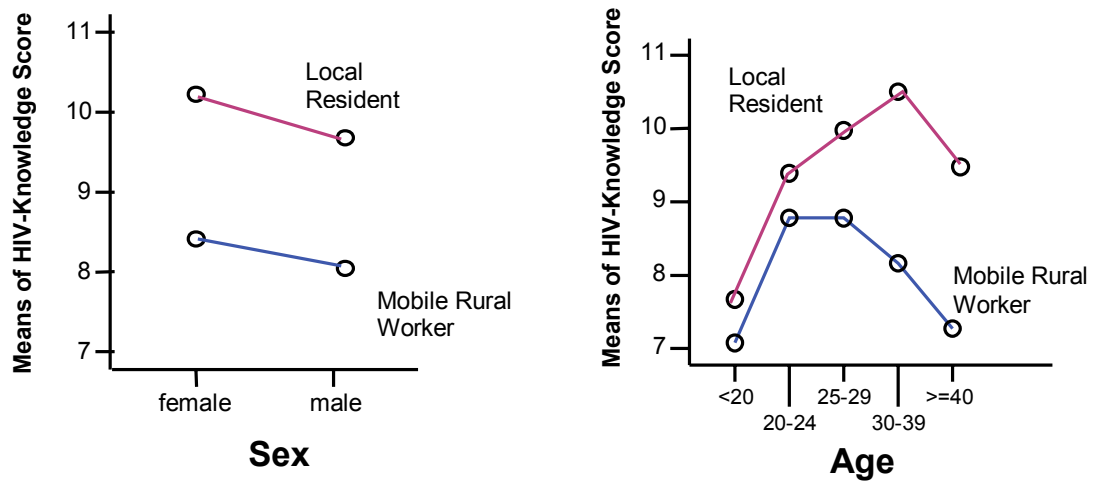
Method: The final score of HIV-related knowledge for each subject is the sum of the scores on knowledge of transmission route and preventive measure. Weight is given to the correct answers, so that each correct answer chosen adds 2 scores, and each incorrect chosen reduces 1 score. In this way each subject gets a score for knowledge on transmission route, ranging from -3 to 8, and a score for knowledge on preventive measures ranging from 0 to 4. The final score thus ranges from -3 to 12.

Variance of Knowledge Score by Identity

Two-way between-groups ANOVA indicate that beneath the general disparity in HIV-knowledge score between the two identity groups, variance exists among subcategories of both groups.

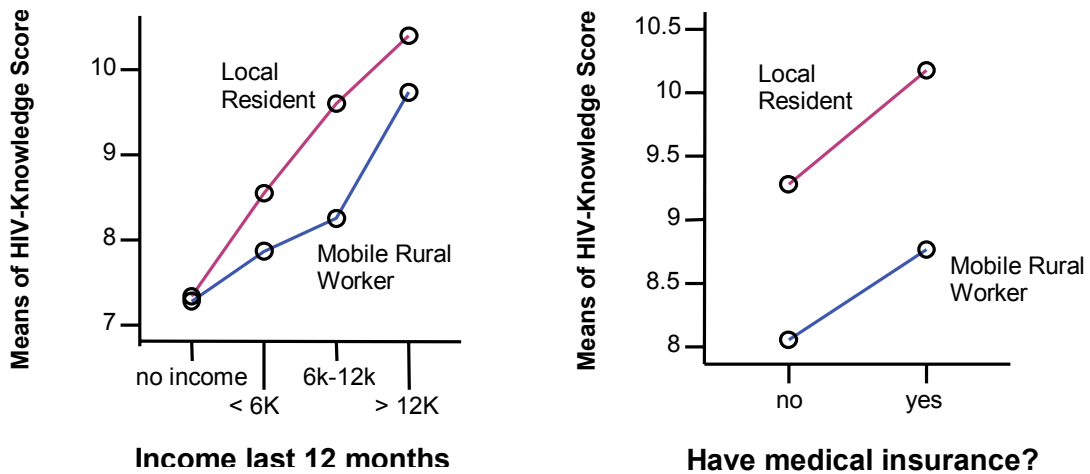
In both identity groups, female gained higher mean score of HIV-knowledge. And the trends of change in different age groups are in agreement. While local resident aged 30 to 39 years old achieved the highest mean of knowledge score (Mean=10.5), mobile worker aged 20 to 29 took the lead in their group (Mean=8.8), as showed in Figure 7.

Figure 8. Variance of Mean Knowledge Score – sex, age



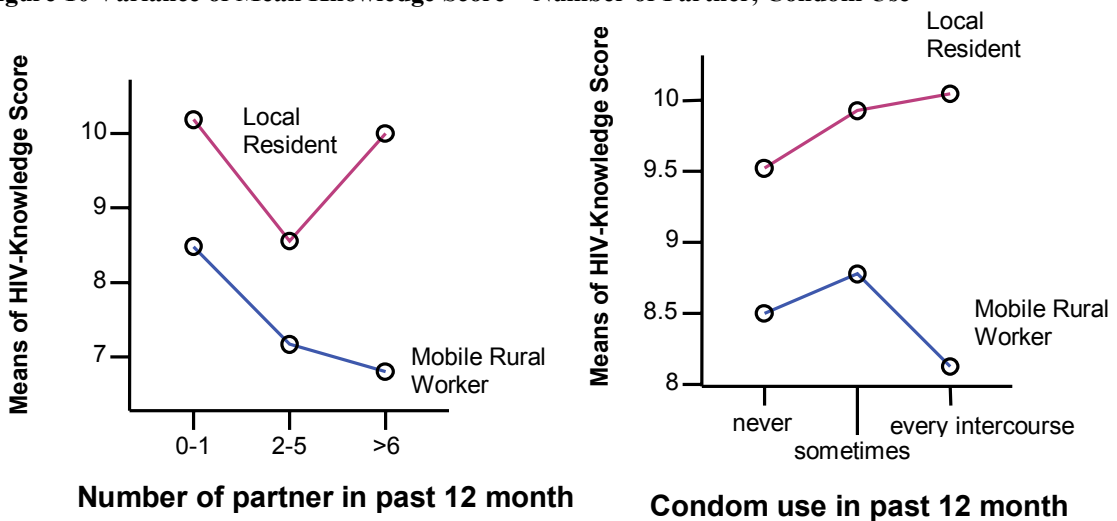
In both groups, mean of knowledge score increased with income for both groups (Figure 9). And people having medical insurance gained higher knowledge score than those who hadn't (Figure 9). Also for both group, people who found condom less accessible achieved lower mean knowledge score, compared to those who consider access to condom as not a problem.

Figure 9. Variance of Mean Knowledge Score – Income, Medical Insurance



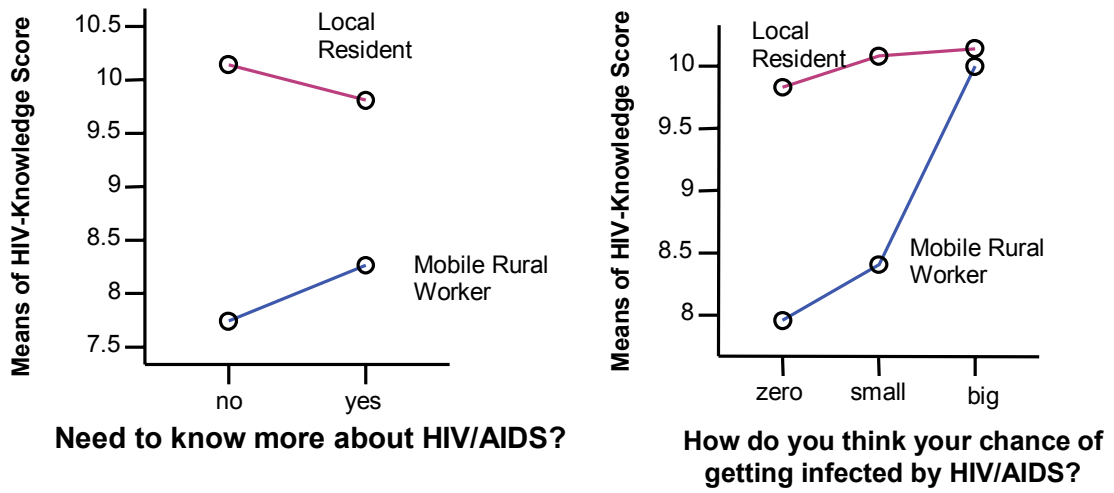
Among mobile workers, mean knowledge score decreases when number of partner increases. For local residents, those with more than 6 partners achieved almost as high a mean score of knowledge as those who have 1 or no partner. Another variance occurs in condom use. When mean knowledge score increases with more frequent use of condom among local resident, the mean score of mobile workers who reported consistent condom use for every intercourse is surprisingly lower than those reported never or sometimes using condom.

Figure 10 Variance of Mean Knowledge Score – Number of Partner, Condom Use



In contrast with local resident, mobile workers saying no need for more information about HIV are those with lowerer mean knowledge score. Higher perception of risk leads to higher mean knowledge score, in both groups, as showed in Figure 10.

Figure 11. Variance of Mean Knowledge Score – Information Needs, Risk Perception



3.2 Association – Identity & Vulnerability

3.2.1 Disparity in Vulnerability Linked to Identity

In order to explore the association between identity and the vulnerability factors, logistic regression analysis was used firstly with identity as the only covariate, and each vulnerability factor as independent variable. In this way we got a ‘crude’ odds ratio without considering any possible interfering effect.

Whereas in reality, knowledge is that some background variables such as sex, age and education have inevitable impacts on factors contributing to vulnerability. Descriptive analysis of the data also indicated that the two identity groups significantly differ in sex, age and education. Logistic regression analysis therefore was used once again with each vulnerability factor as dependent variable, identity together with sex, age and education entered simultaneously as covariates into the model, in order to see impact of identity on vulnerability factors when the interfering effects are controlled for. Thus we get another series of odds ratio, adjusted for sex, age and education. Both crude and adjusted odds ratio are listed in Table 7.

***Method:** To calculate odds ratio, we dichotomize important vulnerability factors including income, environment of working, environment of living, social support, health status, discrimination, mental health condom use, number of partner and risk perception. We also divided the HIV-knowledge score into two categories by introducing cutoff point of 8. The decision of cutoff point is not completely ‘arbitrary’, as we can see from the possible combination of scores (7+1; 6+2; 5+3; 4+4) that to get a score of 8, one has to at least correctly identify two transmission routes and all preventive measures; or all transmission routes and one preventive measure, or somewhere in between. By doing so we actually increase the reliability of the data considering that knowledge of transmission route and preventive measures are in fact overlapping to each other. Finally those who scored 8 or more are rated as having better knowledge on HIV, and those scored less than 8, poorer knowledge on HIV.*

When adjusting for sex, age and education, the data shows that mobile rural workers were more likely to have lower income (OR = 3.06, 95% CI: 1.31-7.18), no medical insurance (OR = 6.58, 95% CI: 2.95-14.71), less social support (OR =2.13, 95% CI: 1.04-4.33), and poor knowledge on HIV (OR = 2.50, 95% CI: 1.05-5.99), compared to local residents. However, mobile rural workers were less likely to have multi-partners than their local counterparts (OR = 0.3, 95% CI: 0.11-0.84), and needed more information on HIV/AIDS (OR = 2.50, 95% CI: 1.14-5.49). The study also shows no statistical difference between the two groups in self-rated general and mental health, risk perception to HIV, and access to as well as use of condom. Table 7 presents the crude and adjusted odds ratio of two identity groups.

Table 7. Significant Disparity in Vulnerability linked with Identity – Crude & Adjusted OR

Variable	Local Resident	Mobile Rural Labor	Crude OR	Adjusted for age, sex and education	
				OR	95% C.I.
Income2	N=254, Missing=7 (2.7%)		** 10.04	* 3.06	(1.31 - 7.179)
>=6000	108	50			
<6000	17	79			
Medical Insurance	N=260, Missing=1 (.4%)		***17.25	*** 6.59	(2.95 - 14.71)
Yes	91	17			
No	36	116			
Social Support2	N=259, Missing=2 (.8%)		*** 3.68	* 2.12	(1.04-4.33)
More likely to get social support	87	49			
Less likely to get social support	40	83			
Multi-Partner	N=227, Missing=34 (13.0%)		1.71	* 3.29	(1.19-9.09)
yes	20	13			
no	92	102			
High-Risk Sexual Behavior	N=163, Missing=98 (37.5%)		1.92	* 4.22	(1.35 - 13.22)
multi-partner without consistent condom use	17	9			
others	68	69			
Knowledge Score2	N=253, Missing=8 (3.1%)		*** 4.20	* 2.50	(1.05-5.98)
Better knowledge on HIV	111	81			
Poorer knowledge on HIV	15	46			
Information Needs	N=253, Missing=8 (3.1%)		* 1.79	* 2.50	(1.14 - 5.49)
No	43	28			
Yes	84	98			

* P<0.05
 ** P<0.01
 *** P<0.001

3.2.2 Gender Disparity in Vulnerability - between & within Identities

The result of descriptive analysis displays remarkable sex imbalance among mobile rural workers. Therefore we look at male and female separately, to see if the disparity between identities varies by sex. Within groups analysis shows that among the mobile rural labors, females were more likely to be less paid (OR = 7.69, 95% CI: 2.17-25), and less likely to get access to condom (OR = 4.25, 95% CI: 1.64–11.00) comparing to males. Between groups analysis indicates that differences in income, social support and condom access between mobile rural workers and local resident were larger in female than in male, as presented in Table 8. While male mobile workers were slightly less likely (OR = 0.84, 95% CI: 0.69–1.00, P = 0.04) to have multiple partners than local resident, none female mobile worker reported multi-partnership in the study.

Table 8. Between-group Difference for female and male

Variable	Female			Male		
	Local Resident	Mobile Rural Worker	OR (95% C.I.)	Local Resident	Mobile Rural Worker	OR (95% C.I.)
Income²	N=91, Missing=3 (3.2%)			N=163, Missing=4 (2.4%)		
>=6000	55	3	*** 68.10 (16.29 – 284.74)	53	47	*** 5.98 (2.73 – 13.01)
<6000	7	26		10	53	
Medical Insurance	N=93, Missing=1 (1.1%)			N=167, Missing=0 (0%)		
Yes	15	24	*** 12.80 (4.41 – 37.17)	21	92	*** 17.13 (7.59 – 38.67)
No	48	6		43	11	
Social Support²	N=94, Missing=0 (0%)			N=165, Missing=2 (1.2%)		
More likely to get social support	16	20	** 5.34 (2.11 – 13.52)	24	63	** 2.76 (1.44 – 5.28)
Less likely to get social support	47	11		40	38	
Condom Access	N=78, Missing=16 (17.0%)			N=133, Missing=34 (20.4%)		
No	21	16	2.71 (1.01 – 7.25) P=0.043	15	23	NS
Yes	32	9		40	55	
Condom Use²	N=54, Missing=40 (42.6%)			N=112, Missing=55 (32.9%)		
never or sometimes	26	14	NS	39	50	NS
in every intercourse	10	4		11	12	
Multi-Partner	N=81, Missing=13 (13.8%)			N=146, Missing=21 (12.6%)		
Yes	52	25	+∞	40	77	2.37 (1.04 – 5.41) P=0.040
No	4	0		16	13	
Knowledge Score²	N=91, Missing= 3 (3.2%)			N=162, Missing=5 (3.0%)		
Better knowledge on HIV	8	10	** 3.55 (1.22 – 10.32)	7	36	*** 4.73 (1.95 – 11.47)
Poorer knowledge on HIV	54	19		57	62	

* P<0.05

** P<0.01

*** P<0.001

3.2.3 Length of Stay

Among mobile rural workers, length of stay in host place may also influence some vulnerability factors. We found disparity existing in income and social support between those who had a relatively longer period of stay and those who were relatively later migrants. Mobile rural workers who stay longer than two years in Beijing were more likely to earn a higher income, but less optimistic about their chance of get supported when needed. Statistically significant difference of other vulnerability factors has yet to be found between long-term and short-term migrant, as showed in Table 9.

Table 9. Difference between long-term and short-term migrants

Variable	Length of Stay in Beijing		Variable	Length of Stay in Beijing	
	< 2 year	>= 2 years		< 2 year	>= 2 years
Income2	<i>P</i> < 0.01		Social Support2	<i>P</i> < 0.05	
>=6000	16	34	more likely to get supported	30	19
<6000	44	35	less likely to get supported	32	51
No. of job in 12 month	<i>Ns</i>		Job Stability	<i>Ns</i>	
>= 4	1	2	not stable	18	21
2-3	18	15	hard to say	24	21
1	41	47	quite stable	18	24
0	1	4			
Environment of Working	<i>Ns</i>		Environment of Living	<i>Ns</i>	
lower satisfaction	42	45	lower satisfaction	47	44
higher satisfaction	19	25	higher satisfaction	15	27
Medical Insurance	<i>Ns</i>		General Health Status	<i>Ns</i>	
no	52	64	not so good	33	38
yes	9	8	not bad or good	23	27
Discrimination	<i>Ns</i>		Depression	<i>Ns</i>	
more likely to feel discriminated	35	36	less likely to get depressed	17	24
less likely to feel discriminated	27	36	more likely to get depressed	45	48
Multi-Partner	<i>Ns</i>		Condom use	<i>Ns</i>	
no	47	55	never or sometimes use condom	22	42
yes	4	9	use condom in every intercourse	9	7
Knowledge Score2	<i>Ns</i>		Risk Perception	<i>Ns</i>	
poorer knowledge on HIV	23	23	no risk at all	42	49
better knowledge on HIV	36	45	certain risk	18	20

Ns = Not Significant

3.3 Qualitative Data

During the Focus Group Discussion, attendant's comments on major topics were gathered and sorted as below.

Perception on migration status

Most attendants hold positive attitude towards migration experience. They tended to accept the reality that their income and standard of living were not comparable to local level. Most had prepared for the hardship especially in early period of migration, and working and living in the capital city gave them not only possibilities for increased income, but also expanded horizon and new experience. *'I am proud of working in Beijing,'* one security guard said, *'in my village only competent people go out for work'.* In general, the advantages outweigh drawbacks.

When asked about the major differences from local resident, people mentioned household identity, education and job opportunity, as well as social resources like personal relationship network. *'We are unlike the urban people. They are lucky to be born in the city and have everything easily. For us, the city is too big. You do not know anything in the beginning and feel yourself like an idiot.'* A household service woman said. Though life is not easy in Beijing, some people expressed their willingness to stay for longer period of time, as long as they can get jobs to support themselves.

Hardship in migration

One young female restaurant worker complained about her off hours: *'...it is often so boring that I get upset and longing to go home. Annual home visiting means a real break for me, after which I could cope with the migration life for another period of time.'* Lacking of 'entertainment' was a common feeling for other participants as well. Comparing to single people, married couples were more concerned about children's educational opportunities. Discrimination existed but was not considered as a big problem. Lack of social security is so common in the group that nobody thought the situation would change in near future.

Social network & support

According to the attendants, it was quite uncommon that one came to Beijing without any previous connection there. Usually there are people from the same village, or relatives came earlier and already *'had a leg to stand on'*. *'...things are hardly done without having any relationships... I got my job, shelter and help from my acquaintances.'* People maintain such personal network because they know it is probably the most reliable source of support once they need it. Most attendants were not optimistic about getting supported from local community. *'We have to count on ourselves'*, one participant said.

Attitude toward sexuality

Although exposed to a much 'opener' urban society, female attendants expressed a high loyalty to traditional values that still persevere in rural areas. They were serious about marriage and cherish virginity before marriage. 'Game-playing' type of love was also much criticized in the group. It seems that stronger tie to rural culture play a role in their decision-making. As one female time-worker commented, *'Most of us will go back to villages and get married one day. You will never raise your head in the village if you lost your reputation outside.'*

Risk perception & Attitude towards HIV infected people

HIV/AIDS was viewed as something far away from them, or a *'rich disease'* belonging to local people, according to some attendants. When asked about reaction to HIV infected people, most said *'scared'* and *'stay away'*, suggesting a high degree of stigmatization.

Information need

During the focus group discussion, attendants showed great interest to HIV-related knowledge. Attendants also acknowledged such discussion as a good way to gain knowledge. *'I've seen TV shows about HIV/AIDS, but it was too short. I have lot of questions afterwards but don't know whom to ask.'* One mobile worker said.

CHAPTER IV. DISCUSSION

4.1 Finding of the Study

The study describes mobile rural worker as a young, poorly educated and male-dominant group. Compared to local urban resident, mobile rural workers were more likely to be exposed to HIV-related vulnerability such as economic constraint, lack of social security and support, and limited information about the disease and prevention. However, the study does not find strong evidence that mobile rural workers are more vulnerable in terms of risky sexual behaviors, which from empirical experience have established link with risk to HIV infection. Homogeneity of both identity groups exists also in cognitive dimensions in terms of risk perception and attitude towards sexuality. Gender disparity outstands as a factor further contributing to vulnerability for female mobile workers. Females were found to be the ‘vulnerable’ subgroup of the vulnerable mobile rural workers in economic and socio-cultural dimensions. But female mobile workers also tended to be the more conservative than male mobile workers in both attitudes and behaviors, which may serve as a protective factor to HIV infection.

4.1.1 Demographic Characteristics

The gender imbalance in mobile rural workers reflects such a reality that male are the majority of the mobile population. The observation coincides with earlier official registration although the percentages slightly vary [33]. But according to official record, female mobile workers are increasing rapidly[33]. In age distribution, most people were at reproductive ages from 16 to 49. Child labor under 16 years old is in principle not part of the target population and we did not encounter anyone in the field.

4.1.2 Knowledge and Awareness

As long as efficient vaccine and cure remains out of reach, the fundamental weapon against HIV/AIDS is knowledge[4]. The weapon, however, is far less powerful for mobile rural workers compared to local resident. In our study, 63.8% of mobile rural workers were rated as obtaining a higher level of HIV-related knowledge, much lower than the portion of local resident (88.1%). In addition, variance analysis indicated that

certain subtypes of mobile rural workers might be even less vulnerable in regard to HIV-knowledge. They are females, people age 30 old and above, less paid, with no medical insurance, and those have more than one partner. The common lack of risk awareness is another signal of danger, suggesting universal existence of the false sense of security among the general population.

4.1.2 Access to Information

Access to information is even a more important issue than knowledge itself, especially when rural migrant's status makes it difficult for them to look for necessary information and made informed choices. The larger the gap between information and needs is, the further vulnerability results, as in case of mobile rural worker. Besides, the awareness and use of HIV-related services such as testing and counseling rely much on access to respective information as well. The relative lower level of knowledge and higher information needs implies asymmetric resource of information, which may lead to discrimination and marginalization that further enlarge the vulnerability to HIV among mobile rural workers.

4.1.3 Economic Stability

Economic constraint is another aspect of the many-facet vulnerability to HIV. The lowest monthly salary line set by Beijing municipal government is 545 CNY, meaning a minimum income of 6,540 CNY (ca. 788 USD) in 12 month on a full-time employed basis[37]. We observed from our data that mobile rural workers were more likely than local residents to have annual income below 6,000 CNY, and with less sense of stability about their jobs. With unstable, minimal income, those mobile rural workers' top priority could be nothing more than surviving in the city. Another possible consequence of economic disadvantage more likely happen to female migrant is exchanging sex for money, though not reflected by this study. It is of interest to notice that length of stay of a migrant also had an impact on his or her economic status. Relatively long-term migrants earned more money, which nevertheless did not mean more stable jobs, as showed in the data.

4.1.4 Medical Insurance

According to Labor Security Law in China, it is obligatory for employer to pay medical insurance for employee. In reality, more often mobile workers are employed temporarily without signing labor contract. It is reflected in the data that majority (87.2%) of mobile worker did not have any medical insurance, which means that they have to pay everything out of their own pockets. Unexpectedly, their medical cost was almost minimum (24 USD), less than one fourth the average health expenditure per capital in urban areas (ca. 112 USD) according to the latest Chinese health statistics in 2005[38]. Two possibilities account for the seeming contradiction, either the mobile workers are younger and thus healthier than average urban residents, or they intentionally restrict expenditures on health. Considering the pricing level of medical services and pharmaceuticals in Beijing, we cannot rule out the latter possibility. It poses a potential threat to HIV/AIDS prevention, as mobile rural workers' investment on health care and disease prevention becomes further limited.

Though no statistical difference has been shown for out-of-pocket medical cost, it does not mean that allocable expenditure on health is the same for mobile rural worker and local resident. Over two-thirds of local residents could have most of their medical cost covered by medical insurance, and data show that they paid extra money in addition to the part. Explanation may be that local residents were more conscious about their health and more willing to invest on health care issues. The impact of lacking medical insurance can also be observed from the pattern of health seeking behaviors. 18% mobile rural workers chose low-standard private clinic for health care largely because of cost concern. Local residents were much more like to go to big hospitals, where quality of service is often expected.

The absence of security system and medical insurance to a large extent are political byproduct of household classification in history. But with the economic development and urbanization process, the old system is fading out. Exclusion of mobile rural worker from public health care scheme will only result in unequal distribution of public resources that lead to increased vulnerability to HIV infection.

4.1.5 Social Support, Environment, Health & Discrimination

During the process of adapting to the host environment and culture, mobile rural workers often face various difficulties. We observed in this study that mobile workers were almost twice less likely to get supported when needed. It may reflect part of the reality. On the other hand, the support that a migrant needs can be quite different from that of a local resident in scope and extent. Expectation and tolerance also vary by two identity groups due to largely different living backgrounds. These issues may help to explain why we did not find a significant difference in environment of working and living, self-reported health status and discrimination, whereas from theory and knowledge of reality we know disparity may exist.

Qualitative data shows that mobile rural workers tend to seek support from their loosely-constructed inner relationship network. The network comprises of earlier, more experienced mobile workers, and often, from same origin place. However, without proper interaction with host communities the support seems to be limited and inadequate, as confirmed by quantitative data that majority of mobile rural workers (63%) felt less optimistic about getting needed support.

4.1.6 Gender

Our study indicates that gender disparity exists in regard to income, social support and condom access, as well as in risk behavior. And we found out from qualitative data that adherence to traditional values may play a protective role for female mobile workers. But it is by no means a sign of 'safety', and maybe the opposite. Chinese traditional values address women's absolute obedience to men. Although no longer a law in reality, woman's status both in society and family are still greatly influenced by it. Women are less empowered in decision for sex and condom use, and are economically and psychologically dependent to men. This is especially true in rural areas. Thus when a rural young woman comes to city, having difficulties in finding a job, not much money left, and nowhere to get any help, her choice is quite limited, even though she might still believe in traditional norms to marriage. Violence and forced sex are other potential threats to woman. These topics are not tackled in a study like this and may require further in-depth researches.

4.1.7 Sexuality & Risk Behavior

Risk-taking behavior is a well-acknowledged proxy indicator for HIV infection. In this study, the only significant difference in behavioral dimension between two identity groups is in number of partner during past 12 months. Proportion of having multi-partner among rural mobile workers (12%) is 6 percentages lower than that of local resident (18%). Except for this slight difference, no statistical difference has been found in condom use, access to condom, as well as attitude towards sexuality and to condom use, pointing to homogeneity in sexual behaviors.

The homogeneity however is superficial, considering that most mobile workers did not travel together with their spouse or partner, as confirmed by our study. But most of them were at reproductive ages and visit their rural homes once in a year. Therefore, the resemblance might imply a more active sexual status of local resident, or a refrained sexual need of mostly mobile rural worker. From a prospective view, the unmet sexual need must have an impact on the pattern of sexual behaviors, for example by increasing visits to female sex workers, though not reflected from this study

The high level of acceptance to extra-marital sexual relationship suggests a clear deviation from traditional Chinese values. This is happening to Chinese society during the process of modernization and openness to western influences. Mobile rural workers, during their adaptation to host communities, will inevitably find their rural norms in conflict with both urban subculture and western values simultaneously. From some female mobile worker's adherence to traditional values in attitude we could see a small part of the picture. It is worth attention as in short term, traditional values can still play a protective role in regards to sexual transmission of HIV/AIDS. But from a long run, traditional beliefs and norms facing challenges might result in change of behavioral models[39].

4.2 Findings of Other Studies

Vulnerability study on population mobility and HIV/AIDS is quite limited in China, and research on migrant workers' vulnerability is even scanty. We could not find a similar study comparing mobile worker with local resident. But certain risk factor analysis and behavioral studies from their perspectives reinforced the association of contextual factors and vulnerability to HIV infection. As one study suggested that among migrants, acquisition of STIs was associated with higher participation in risk behaviors, higher perceived stigma, education, stable jobs, salary, and with female gender[40]. Data in another recent study indicated that high mobility among rural-to-urban migrants was associated with increased sexual risk, as compared to non-migrant in rural China[26]. Xiushi Yang found in his study that community social and behavioral norms predicted significantly the prevalence of illicit drugs and commercial sex. He called for attention to what he termed as 'community characteristics', which may be conducive to HIV/STD risky behaviors and to the spread of the disease. The 'community characteristics' is actually a cluster of certain vulnerability factors[27].

UNDP's serial reports on South East Asia HIV and Development Project described diversified vulnerability status of mainly cross-border migrants groups in South East Asian countries. In HIV high-prevalent Thailand, migrant workers were extremely vulnerable in language abilities, cultural variations, levels of AIDS knowledge and access to health services[41]. In Japan, non-Japanese HIV positive workers had restricted access to medical care due to limited language skill and socio-economic barriers[42]. Gomes and colleagues found that migrants in Bangladesh did not increase their sexual knowledge and experiences when in a host country. But when access to spouses and relatives ceased, migrants maintained sexual contacts with casual partners and commercial sex workers[15]. Back to Hong Kong, China, women migrant workers were linked with extra vulnerability to HIV/AIDS due to sexual abuse, rape, violence, and discrimination[39].

4.3 Methodological Discussion

4.3.1 Study Design

Mobility and Identity

The study is cross sectional. It measured the prevalence of various HIV-related vulnerability factors to display differences between mobile rural workers and local residents. Two characters were involved in the study when grouping people. One is mobility, another is identity. Therefore any difference found in the study is associated with a combined effect of these two characters. We may not be able to distinguish the difference attributable to mobility or identity individually. Neither can we assure a cause-effect relationship in between.

Vulnerable Group Vs Vulnerable Factor

Vulnerability as defined in concept, concerns about constraints and barriers to individual control over health. Theoretically, if there is a line of vulnerability status, everybody may have his or her own position on the pathway from extremely low to extremely high vulnerability. In this case we describe the vulnerability of mobile rural worker by introducing local resident as reference. But we compare vulnerability factors by category without making a final assertion that one group is more vulnerable than the other. The reasons are firstly discrepancy shows when comparing various vulnerability factors; and secondly we do not know how sensitive various factors are to the overall vulnerability to HIV. After all, focus of the study is to identify contextual factors contributing to vulnerability, and provide evidence for formulating vulnerability reduction strategies.

Biological Vulnerability

Biological and physiological factors are definitely important parameters of vulnerability to HIV. But the topics were not covered in this study due to resource and capacity constraints. According to a UN report in 2001, many women in rural China suffer from RTIs and STIs without treatment[4]. The situation among mobile rural women is then worth attention from other more specific studies.

Commercial Plasma Donor, Intravenous Drug User, and MSM

In terms of vulnerability factor in behavioral dimension, we assessed risk sexual behavior as an indicator without differentiating heterosexual and homosexual sex. Commercial plasma donation and intravenous drug using are both high-risk behaviors. But we decided to focus on sexual behavior because the epidemic is spreading from high-risk group to general population, indicated by increasing proportion of heterosexual transmission. And the target population of the study belongs to general population rather than risk groups.

Variety and Variability of Target Population

Mobile rural worker is a highly diversified group. Behind the shared token of identity is a variety of background, stratification, occupation, and personality. In a small-scaled student investigation like this, what we can do is trying to achieve some representation of the population through design and sampling. But there must be certain subgroups of mobile rural workers that largely stay beyond our field of vision, for example, the homeless migrant workers. They could be newcomers searching for a job, or relatively long-term migrant without fixed living places. Our chance of recruiting these people into the study is small due to the sampling methods. And it is not difficult to imagine that their situation could be even worse off than average mobile workers.

Another subgroup barely represented in the study is female sex workers. The estimated number of commercial sex workers in Beijing is about two to four million, with a considerable proportion coming from rural area, according to a report in 1997[43]. These people are difficult to reach largely because prostitution is illegal in China. Sex workers are generally invisible from public sight. In certain services business where sex for money is known to be common, people tend to hold a negative attitude towards preventive programmes because of fear for stigmatization and punishment linked to practicing prostitution. Experiences in this study also illustrated the situation - a much higher refusal rate happened in hair salons and small hostels which were dominated by female workers.

Furthermore, mobility in reality is a highly dynamic process. It is triggered by and keeps interacting with rapid socio-cultural transition, economic development and urbanization. This study by design is cross-sectional, where all the assessment was made at one point in time, variability by time is then impossible to measure. However, issues like adaptation to host subculture and stratification with long-term stay may constantly influence vulnerability status of the mobile population.

4.3.2 Selection Bias

Sampling & Representation

The study population is mobile rural workers in Beijing. Ideally, we should try to select a random sample from all the rural workers in Beijing and invite them to fill in the questionnaire about vulnerability to HIV. However the reality makes it difficult to perform such a randomized design. Therefore, we decided to use the ‘villages’ as our sampling areas, as described in Methodology part. In a situation where target population is highly dispersing, reliable registration information is absent, and time and resource are too restricted to make large-scale stratified randomization, we think sampling from ‘villages’ is a reasonable choice for us.

However, that method might have an impact on representation of the study. People living or working in the villages are probably more established. They might have been staying in Beijing for a longer period of time and become more adapted to the host environment and subculture. Such an assumption is partially supported by the result that 54% of mobile rural worker recruited in the study had a stay period in Beijing for over two years. Since no authoritative documentation of the study population is found, we can not rule out the possibility that those who are relatively new migrants were proportionally underrepresented in the study. Besides, there are certain subgroups of mobile rural workers that might be under- or unrepresented by the study, for example, the vagrant, and female sex workers, as discussed in *Variety and Variability of Target Population* in last section.

Non-respondent

The reasons for refusal, as sorted in Methodology part, to some extent can be interpreted as indifference under disguise, which disclosed a lack of awareness towards the threat of HIV epidemic. The study thus might under-represent people that are more vulnerable in terms of awareness to HIV, in both identity groups. The vulnerability may further relate to low knowledge and risk perception. Besides, illiterate rural mobile workers were probably underrepresented too, though not a big proportion of the target population.

Incomplete Response

Likely bias may also result from incomplete response. People are less willing to answer questions asking about sexuality, as showed in Table 10. One plausible explanation is that these topics are too sensitive to some people. We checked the extent of bias arising from non-response by replacing missing values with extreme assumptions, i.e., we replaced the missing value of ‘*number of partner*’ into ‘0’, assuming all the missing case had ‘no or just one partner’, and into ‘1’, assuming all of them had ‘more than 1 partner’, and see how odds ratios between mobile population and rural mobile workers changes with each assumption. No major changes were observed for the extreme assumptions, as displayed in Table 11.

Table 10. Number and percentage of missing of selected variables ^a

Variables	Local Resident		Mobile Rural Worker	
	Missing	(percentage)	Missing	(percentage)
Attitude towards sex	5	(3.9%)	12	(9%)
No. of partner	15	(11.8%)	19	(14.2%)
* Type of partner	14	(14%)	7	(7.6%)
Attitude towards condom use	11	(8.7%)	17	(12.7%)
Condom Access	19	(15%)	31	(23.1%)
* Condom Use	14	(14%)	12	(13%)

a. Unselected variables have percentage of missing less than 5%.

* Calculated based on exclusion of cases that reported having no sex during past 12 month (N= 192).

Table 11. Extreme Assumption of Missing Values

Variable	Original OR	OR Extreme assumption of Missing = 0	OR Extreme assumption of Missing = 1
Multiple Partner	* 3.29 (1.19-9.09)	* 3.12 (1.12-8.72)	* 2.38 (1.08 -5.28)
Condom Access	1.48 (0.65 - 3.38)	1.57 (0.78 - 3.12)	1.43 (0.65 - 3.15)
Condom Use	1.05 (0.406 - 2.728)	0.97 (0.37 - 2.55)	0.99 (0.43 - 2.27)

* $P < 0.05$

4.3.3 Information Bias

There are issues that might have potential impact on the quality of data. First, mobile workers have a relatively lower educational level. In order to minimize misunderstanding, we used plain language to design the questions, and pre-tested the questionnaire in order to minimize ambiguities and misinterpretations. We also gave assistance when informants had difficulty in reading and comprehending. Nevertheless, there is a possibility of distortion of information. Second, sensitive topics such as sexuality, commercial sex and drug abuse were brought onto the table. We addressed strict adherence to privacy confidentiality throughout the study, yet uncertainty for under-reporting because of privacy concern or fear for punishment still exists. Besides, using self-evaluation as measurement of certain factors like environment of living had an impact on the objectivity of the data. Finally, Expectations for improvement of conditions were common among mobile workers. A subjective linkage of the expectation with the study might result in biased information.

4.3.4 Validity of Questionnaire

First of all, in respect of construct validity, questions contained in the questionnaire are structurally related to the underlying concept and theory. The factors for assessing vulnerability were identified from the vulnerability analysis framework as described in the chapter of Introduction (figure1). We classified the factors into six categories, and each contains a list of factors that are deemed influential in people's vulnerability to HIV.

In fact, each of the factors could make a wide spectrum of research issues in itself. Whereas since focus of the study is how and in what direction mobility interacts with other factors in contributing to HIV vulnerability, we chose factors that can be practically assessed and look at them in the same time in our study. Another issue then brought about is the width and depth of each factor assessed. It is rarely that a few questions will suffice in the measurement of a concept. But due to practical limitations, what we can do is try to pick the most illustrative ones to serve the purpose of the assessment. For example, in respect to accessibility of condom, we asked if people agree that condom is easily obtained for them. On same topic we could have asked at least ten questions about price, place, attitude, gender difference and so on, if length permits. By focusing on more of a general aspect instead of each single facet of the factors, we actually cannot avoid uncertainty that brought about to our findings and leave it open to argument.

We tested the questionnaires for clarity and comprehensiveness in a pilot study of 18 patients and made changes in content, wording and sequence of questions where necessary. Analysis of missing data also give a glimpse of acceptability of the questionnaire that the systematic missing of most items did not exceed 5%.

4.3.5 Reliability

As this is a cross-sectional study, we cannot comment on reproducibility or stability of the questionnaire over time. But we get some confidence over the reliability from consistency between quantitative and qualitative data on same topics, also from the agreement on some of the findings with similar studies.

CHAPTER V. IMPLICATION

5.1 Vulnerability Reduction

This study focused on factors that potentially contribute to the HIV epidemics by polarizing mobile rural workers in urban settings. The ultimate purpose is to provide baseline data for reactions to reduce barriers that constrain mobile worker's capability to make and effect informed decision. In current situation of China, a major challenge is how to integrate the information into public health policy and practice sufficiently. Following aspects are discussed as key issues to the success integration and implementation of vulnerability reduction interventions.

Community-based Vulnerability Reduction

As post-arrival interventions at host places, the vulnerability reduction may take advantage of relatively concentrated target population. Migrant's communities, or 'villages', are therefore ideal sites of such intervention. The task is to integrate necessary social resources and make them as accessible as possible at these sites. Content of vulnerability reduction may encompass general living support, occupational training, legal aids and psychological consultation. The system shall also provide convenience for health intervention and prevention. Short-term reactions may include establishing health posts in congregating areas and integrating HIV education and prevention with other established programmes such as reproductive health services, STD clinics and voluntary testing and counseling. In long-term plan, basic primary health care service shall also be considered to be integrated into the mechanism.

Physical existence of such a system could operate cost-effectively and efficiently at community level. Modality of the system could be either the existing Resident Committees, a semi-official organization at community-level; or establishing paralleled Mobile Resident Committees at large congregated living areas of mobile rural workers. Representatives of both mobile rural workers and local residents need to be involved in planning and operating. Such participation is expected to create suitable programmes and to develop trust that is crucial to achieve success[44]. Certainly, financial feasibility and sustainability of such programmes depend to a large extent the political commitment at municipal and national level.

Multi-sectoral Approach

Although multi-sectoral approach in HIV/AIDS prevention faces critiques as being superficial [1], the contextual reaction required by vulnerability analysis cannot be achieved without collaboration of key governmental sectors. For example, institutional approach such as bring mobile rural worker into social security scheme involves legislative authority to enact relevant regulation, Department of Labor and Social Security as well as Industry Administration Bureau to be responsible for implementation and supervision. Provision of free health care and prevention programmes to mobile population should be brought onto the agenda of Ministry of Health and CDC at different levels. From medium to long-term perspective, there is a need to reallocate the healthcare resources and to provide equal services for different populations in society.

Broad Social Mobilization

To address HIV vulnerability, political commitment and institutional efforts are crucial, but should not be exclusive. Nowadays the public health sector in China is running the risk of doing everything but nothing satisfied. It is time for politicians to recognize the needs for broader social mobilization. Values and contributions represented by NGOs, civil groups and private sectors deserve respect and should be integrated into the overall HIV vulnerability reduction strategy. Interest and initiative from within the mobile community are also crucial contributing factors but are often overlooked in planning and implementing intervention programmes. Broad social mobilization also has the far-reaching meaning of dispelling prejudice and marginalization towards mobile rural workers.

Media's Role and Responsibility

Media's contribution in HIV knowledge has been acknowledged from this study. Yet it is far from adequate especially when rare specific programme targets the vulnerable mobile population, and the contents is often too general, lack of focus, sometimes even erroneous and discriminative. Media needs be fully aware of its role and responsibility in HIV prevention campaign, and enhances collaboration with health authorities, interest groups and stakeholders.

Recommendation for Implementation

At present, pressing issue is the need to build the health infrastructure to facilitate the delivery of HIV-related services. A very encouraging development was that the by September 2004, Beijing Municipal Governmental has enacted several regulations outlining the basic scheme of medical insurance policy for mobile rural workers[45]. Other challenges remain to hold executing agencies accountable for implementation as well as supervision. From a policy perspective, clearly-defined factors appeal to more attention and are less difficult to react to. Therefore based on findings of the study, we initiated a scheme of vulnerability reduction measures, identifying major vulnerable issues, possible reactions, major player and places of the interventions, as showed in Table 12.

Far from being comprehensive, the recommendations aims at provoking strategic and holistic approaches for reducing HIV-related vulnerability among mobile rural workers, and igniting more in-depth thinking and researching over the topic.

Research Issues

At an age of AIDS epidemic, it is not only of scientific interest to examine the complicated and constant interaction of contextual factors and vulnerability to HIV, but also the responsibility of public health researchers to provide information for evidence-based policy making. The pathway between the social and environmental characteristics and HIV status are complex and require extensive, multi-disciplinary studies. Further research issues may include: a) influence of host culture on migrant's beliefs, values and practices; b) change of migrant's vulnerability status over time; c) pattern of sexual behaviors change as a reaction to host environment; d) woman migrant's vulnerability to HIV as compared to male including violence and sexual abuse; e) other aspects of vulnerability, i.e. biological vulnerability, specific behavioral vulnerability such as illegal drug injecting and man having sex with man (MSM).

Table 12. Recommended Vulnerability Reduction Interventions

Issues to be addressed	What	Who	Where
Lack of knowledge and access to information	Design and implement tailored educational programmes, Integrate with other health programmes such as RH, STDs, and VTC. Disseminating key information	Municipal and District Health Administration, local CDCs, NGOs, Research institutes	Congregating areas, working places, regularly organized events and activities, health facilities
No medical insurance	Peer education programme	Television and Film Bureau, media groups	TV, radio, newspaper, public advertisement
Gender Disparity	Plan medical care schemes covering temporary labor and supervising its implementation	Self-supported groups, NGOs	Working/living places, organized events and activities
Economic restraint	Provision of free or subsidized health service	Health Administration, Labor and Security Bureau, Industry and Commerce Administration	Clinic, hospitals, outreach team, health post in congregating areas
Social Support	Researches and programmes addressing gender disparity	Municipal Health Administration	Congregating areas of mobile population, Women's Clinics, female-dominated working places
Reduce risk behaviors	Income generating, address inequality in payments Creating and implementing on-the-job training programme Support provision Advocate correct and consistent condom use, free condom distribution in high-risk settings	Association of Woman and Children, NGOs, Research institutes Municipal Labor and Security Bureau, Legislative and Judicial sector, NGOs Municipal Labor and Security Bureau, Municipal Industry and Commerce administration Bureau Mobile Resident Committee, care-groups Mass media, health facilities, preventive and educational programmes, and Administration, NGOs	Working places Small business centers, construction projects, other working places Congregating areas of mobile population TV, radio, newspaper, public advertisement, clinic, hospitals, outreach team, entertainment sites favored by low-income population

5.2 Sum-up

Behind the phenomenon of large-scale internal mobility in China is a complex of underlying causes; demographic change as result of population growth and family planning, economic development and reconstruction, socio-cultural transition as well as process of urbanization are all driving forces. It has been demonstrated by numerous research how population health could be very sensitive to social and environmental changes over time, as illustrated in global AIDS epidemic[28]. Public health practitioners in China should keep alert to any types of inequities as byproducts of interaction of these underlying causes, and make constant efforts in generating evidence and facilitating policies aiming at tackling health inequities. Especially in HIV/AIDS prevention, reducing the relevant social inequities shall be regarded as a footing foundation for both short and long-term strategies targeting vulnerable groups such as mobile rural workers

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ANNEX.

Annex 1. Information Sheet and Consent Form: English Version

Annex 2. Questionnaire: English Version

Annex 3. Results of Descriptive Analysis

Annex 4. Results of Logistic Regression Analysis

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ETHICS REVIEW INFORMATION SHEET/CONSENT FORM

Dear Participant:

You have been asked to take part in a research project described below. The researcher will explain the project to you in detail. You should feel free to ask questions. If you have more questions later, please feel free to call Yang Fang, the person mainly responsible for field work of this study, phone: +86 (10) 82 90 65 09.

TITLE OF THE PROJECT

Assessment of HIV-related Vulnerability among Rural Mobile Laborers in Beijing, China

INVESTIGATORS

Project Leader: Florence Dalgard

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SPONSOR

NORAD

BACKGROUND & PURPOSE OF RESEARCH

In past decade, HIV/AIDS epidemic escalates rapidly in China and is spreading to general population. In the meantime, an increasingly larger number of people are moving from rural to urban areas. Within specific socio-economic context these mobile rural laborer are believed to be playing a crucial role in China's HIV dynamic over the coming years. Hence, the project plans to observe the ongoing HIV pandemic from social-contextual perspective; provide information on HIV-related vulnerability of the mobile laborer and make comparisons to non mobile population in the host community. By outstanding the vulnerable condition/factors, the project aims at calling for more awareness and response to the situation by public and government as well.

ELIGIBILITY

To participate in this study you must be OLDER THEN 16 YEARS OLD.

PROCEDURES

The whole data collection will last for approximately 6 months, in 2nd half of year 2004. If you decide to take part in this study, your participation will involve filling out a *questionnaire* or participating into a *focus group discussion* pertaining to HIV/AIDS related knowledge, attitude, behavior and perceptions, as well as socio-economic situation.

A total of (not less than) 222 informants currently working and living in Beijing will be invited to participate in the questionnaire section of the research. A method of multi-staged sampling will be followed to achieve randomization and representativeness. In a latter stage of the study, not more than 30 subjects will be invited to participate into a focus group discussion.

The expected duration of your participation shall not exceed 30 minutes.

VOLUNTARY PARTICIPATION & EARLY WITHDRAWAL

The decision to participate in this research project is up to you. You do not have to answer any/all questions. You are free to withdraw at any stage of the research with no adverse consequences.

RISK/BENEFITS

Participation in this study is not expected to be harmful or injurious to you. However, if you feel emotionally disturbed for any question or topic, you may refuse to answer or decide to withdraw the project. You could also contact the *Student Investigator or project leader (phone number you may find in the beginning of the document)*.

As this is a student project with limited funding, no material compensate will be made to the participants. Although there are no direct benefits of the study, your participation will help increase your awareness and knowledge on HIV/AIDS. And the investigator will offer possible counseling on related fields.

PRIVACY & CONFIDENTIALITY

Your part in this study is anonymous. That means that your answers to all questions are private. No one else can know if you participated in this study and no one else can find out what your answers were. Scientific reports will be based on group data and will not identify you or any individual as being in this project. The above terms will be observed if the data collected in this project will be used for other research or analysis.

FEEDBACK

Feedback of major findings and result of analysis will be given upon request. However, the formal feedback may not be available till May, 2005 when the thesis is finished.

RIGHTS OF PARTICIPANTS

You waive no legal rights by participating in this research. If you have questions about your rights as participant, you may contact investigators or the institution for further instructions.

CONSENT FORM

Signing your name at the bottom of this form means that you have read or listened to what it says and you understand it. Signing this form also means that you agree to participate in this research. You will be given a copy of this form after you have signed it.

“I have received the above information both in writing and verbally and am willing to participate in the study.”

Signature:

Date:

Questionnaire

INSTRUCTIONS

- **Make sure that you have understood and signed 'Ethnics Review Information Sheet/Consent Form' before you start to fill in the questionnaire.**
- **For each question, please click • in the circle before the answer that you think is appropriate.**
- **The questions marked with a ' * ' are multi-response questions. You may choose more than one answer to these questions.**
- **For any further questions, please feel free to consult the field investigator.**

1. Your gender is: • male •

female

2. Your age is:

- below 20 • 20-24
- 25-29 • 30-39
- 40-50 • above 50

3. Your current marital status is:

- single • married

4. Your highest educational level is or equals to:

- preliminary and below
- secondary
- High school (technical school and professional school)
- college and above

5. Your current identification in Beijing is:

- rural mobile labor
- Beijing local resident

6. How long have you have been staying in Beijing? (Skip this question if you are a BJ resident)

- less than 1 month
- 1 to 3 months (1 month incl.)
- 3 to 6 months (3 month incl.)
- 6 month to 1 year (6 month incl.)
- 1 to 2 years (1 year incl.)
- 2 years or more

7. How frequent you travel back and forth your home places?

(skip this question if you are a BJ resident)

- more than twice a year
- once per year
- once per every two years
- less than once per every two years, irregular

8. Do you have a job at present?

- yes • no

9. (if yes to above questions) you think your current job is:

- unstable • hard to say • stable

10. In past 12 months, how many different jobs have you had?

- 4 or more • 2-3 • 1 • no job

11. How do you think your current working environment?

- poor • not so good • acceptable
- satisfactory

12. Your total income for the past 12 months is (in RMB):

- no income • less than 6000 RMB
- 6,000-12,000 • more than 12,000

13. At present your living place is:

- your own house/flat
- provided by your employer
- leased • borrowed from relatives or friends • no fixed places

14. How do you think you current living environment:

- poor • not so good
- acceptable • satisfactory

15. Please evaluate respectively the level of pressures that the following situations may bring to your life:

	<i>Big Pressure</i>	<i>moderate Pressure</i>	<i>minor Pressure</i>
a. Jobless	•		•
b. Getting sick		•	•
c. Salary delay	•		•
d. Discriminated		•	•
e. Depression		•	•
f. Sexually	•		•
g. Dissatisfaction	•		•

16. When you facing problems (such as listed above) and need help, you think you:

- could always get help
- sometimes can get help
- occasionally can get help
- hardly get any help

17. In past 12 months, how often did you feel sad, annoyed, frustrated or depressed?

- often • sometimes • seldom

18. In past 12 months, how often did you feel discriminated?

- often • sometimes • seldom • never

19. How do you think your health condition:

- not so good • not bad
- good

20. When having health problem you usually will: (multi-responses)

- go to hospital
- go to clinic
- self-diagnose and buy medicines in pharmacies
- try to get over if possible

21. Do you have medical insurance?

- yes • no

22. How much did you pay out-of-pocket for your health in past 12 month (including seeing doctors and buying medicines)?

- less than 200 RMB
- 200 to 1000 RMB
- more than 1000

23. Do you now live with your spouse /partners in Beijing (skip the question if you are alone)

- yes • no

‡ 24. **According to you, ‘sexual behaviors’ may happen (multi-response)**

- between married couples
- between persons with good relationships, not necessarily married
- upon free decisions

25. **During past 12 months, how many persons did you sex with?**

- 0 or 1 person
- 2 to 5 person
- more than 6 person

‡ 26. **During past 12 months, the type of your sex partners is: (multi-response)**

- Husband or wife
- unmarried but fixed sex partner(s)
- Acquaintance or friend(s)
- Strangers

27. **Please evaluate necessity of using condom in following situation**

necessary

unnecessary

Sex between

husband and wife • •

Sex between acquaintance

and friends • •

One night stand • •

Use/provide paid

sex service : • •

28. **It is easy for you to get condom if you want:**

- agree
- disagree

29. **During past 12 months, you use condom (skip the question if you had no sex at all)**

- for every intercourse
- sometimes but not always
- never use

30. **Have you heard of HIV/AIDS?**

- yes
- no

‡ 31. **According to your knowledge, HIV can possibly be transmitted through which of the following routes? (multi-response)**

- through blood
- through

sex

- from mother to child
- by air

- by general contact(kissing, shaking hands, sharing food & utensils)

- mosquito bites
- sharing

- contaminated needles

32. **How do you know following services, please choose respectively:**

a.AIDS hotline

- Never heard
- heard but don't know how to use
- know how to use

b.HIV voluntary testing and counseling

- Never heard
- heard but don't know how to use
- know how to use

33. * You gain your knowledge on HIV/AIDS from:

- television • newspaper • radio
- HIV/AIDS preventive programmes
- HIV testing and counseling service
- hospital • web • friends chat

34. Do you need to know more about HIV/AIDS? • yes

- no

35. * According to you, in order to prevent from HIV infection, one should:

- be faithful to your partner
- correctly using condom
- Abstain from illegal drug abuse
- not participating in illegal blood-selling

When you complete the questionnaire, please return it to the field investigator. THANK YOU FOR YOUR COOPERATION!

36. You think your change of getting infected with HIV is:

- zero • small
- big • very big

Result of Descriptive Analysis

Cross-tabulation, Chi-square test & Mean Knowledge Score

Variable	Count (percentage)		Chi-square test <i>P</i>	Mean Knowledge Score	
	Local Resident	Mobile Rural Worker		Local Resident	Mobile Rural Worker
Sex			.000		
Female	63 (49.6%)	31 (23.1%)		10.19	8.41
Male	64 (50.4%)	103 (76.9%)		9.66	8.07
Age			.000		
<20	6 (4.7%)	28 (20.9%)		7.67	7.08
20-24	18 (14.2%)	35 (26.1%)		9.39	8.78
25-29	33 (26.0%)	28 (20.9%)		9.97	8.78
30-39	50 (39.4%)	32 (23.9%)		10.50	8.16
40-50	14 (11.0%)	11 (8.2%)		9.00	7.27
>50	6 (4.7%)	0 (.0%0)		11.00	-
Marital Status			Ns		
Single	58 (45.7%)	66 (49.3%)		9.93	8.33
Married	69 (54.3%)	68 (50.7%)		9.91	7.98
Education			.000		
Primary school and below	0 (.0%)	6 (4.5%)		9.64	5.17
Secondary school	14 (11.0%)	89 (66.4%)		9.53	8.00
High school and equivalent	44 (34.6%)	32 (23.9%)		10.22	8.86
College and higher	69 (54.3%)	7 (5.2%)		-	9.57
Job			Ns		
No	16 (12.6%)	19 (14.2%)		9.20	7.22
Yes	111 (87.4%)	115 (85.8%)		10.02	8.30
Job Stability			.002		
Not stable	16 (13.9%)	39 (31.0%)		9.00	7.82
Hard to say	39 (33.9%)	45 (35.7%)		10.08	8.40
Quite stable	60 (52.2%)	42 (33.3%)		10.12	8.26
No. of Job had in 12 month			Ns		
4 jobs or more	5 (4.1%)	3 (2.3%)		7.80	8.00
2 to 3 jobs	30 (24.4%)	33 (25.6%)		9.67	8.12
1 job	84 (68.3%)	88 (68.2%)		10.10	8.29
No job	4 (3.3%)	5 (3.9%)		10.50	4.50
Environment of Working			.003		
Satisfied	28 (23.3%)	21 (16.0%)		10.46	7.72
Acceptable	27 (22.5%)	23 (17.6%)		10.11	9.38
Not so good	59 (49.2%)	60 (45.8%)		9.80	8.50
Poor	6 (5.0%)	27 (20.6%)		7.33	6.81

To be continue

Variable	Count (percentage)				Chi-square test <i>P</i>	Mean Knowledge Score	
	Local Resident		Mobile Rural Worker			Local Resident	Mobile Rural Worker
Environment of Living					.001		
Satisfied	32	(25.2%)	17	(12.8%)		10.25	7.64
Acceptable	31	(24.4%)	25	(18.8%)		10.32	8.65
Not so good	55	(43.3%)	61	(45.9%)		9.67	8.47
Poor	9	(7.1%)	30	(22.6%)		8.89	7.27
Income					.000		
no income	6	(4.8%)	19	(14.7%)		7.33	7.28
< 6,000 RMB	11	(8.8%)	60	(46.5%)		8.55	7.86
6,000-12,000 RMB	25	(20.0%)	34	(26.4%)		9.60	8.25
> 12,000 RMB	83	(66.4%)	16	(12.4%)		10.40	9.73
Type of Residence					.000		
borrowed	10	(7.9%)	4	(3.0%)		11.40	10.00
leased	41	(32.3%)	58	(43.3%)		9.32	8.26
no fixed place	4	(3.1%)	11	(8.2%)		10.00	7.70
self-owned	62	(48.8%)	3	(2.2%)		10.16	6.00
provided from work	10	(7.9%)	57	(42.5%)		9.40	8.05
Social Support					.000		
Always	44	(34.6%)	19	(14.4%)		9.95	44
Sometimes	43	(33.9%)	30	(22.7%)		10.31	42
Occasionally	25	(19.7%)	28	(21.2%)		9.84	25
Hardly	15	(11.8%)	55	(41.7%)		8.87	15
Mental Health Problem					.025		
Always	15	(11.9%)	32	(23.9%)		9.53	8.75
sometimes	74	(58.7%)	61	(45.5%)		9.78	8.03
seldom	37	(29.4%)	41	(30.6%)		10.30	7.81
Discrimination					.000		
always	5	(3.9%)	22	(16.4%)		9.40	7.33
sometimes	25	(19.7%)	41	(30.6%)		8.92	9.05
Seldom	57	(44.9%)	45	(33.6%)		10.40	7.35
Never	40	(31.5%)	26	(19.4%)		9.92	8.83
Health Status					Ns		
Not so good	9	(7.1%)	13	(9.7%)		9.50	8.15
Not bad	50	(39.4%)	50	(37.3%)		10.10	8.02
Good	68	(53.5%)	71	(53.0%)		9.84	8.24
Medical Insurance					.000		
Yes	91	(71.7%)	17	(12.8%)		9.28	8.05
No	36	(28.3%)	116	(87.2%)		10.18	8.76
Medical Cost in 12 month					Ns		
Less than 200 RMB	65	(51.2%)	81	(61.4%)		10.02	8.03
200 to 1,000 RMB	48	(37.8%)	37	(28.0%)		9.81	8.54
More than 1,000 RMB	14	(11.0%)	14	(10.6%)		9.85	7.77

Variable	Count (percentage)				Mean Knowledge Score	
	Local Resident		Mobile Rural Worker		Local Resident	Mobile Rural Worker
No. of Partner in 12 month †					.023	
No partner or 1 person	92 (82.1%)	102 (88.7%)			10.18	8.48
2-5 person	18 (16.1%)	7 (6.1%)			8.56	7.17
More than 6 person	2 (1.8%)	6 (5.2%)			10.00	6.80
Access to Condom ‡					Ns	
yes	72 (66.7%)	64 (62.1%)			9.56	8.26
no	36 (33.3%)	39 (37.9%)			10.04	8.72
Condom Use §					Ns	
use in every intercourse	21 (26.7%)	16 (32.5%)			9.52	8.50
Sometimes but not every time	42 (48.8%)	38 (47.5%)			9.93	8.78
never	23 (24.4%)	26 (20.0%)			10.05	8.12
Information Needs					.055	
no	43 (33.9%)	28 (22.2%)			10.14	7.74
yes	84 (66.1%)	98 (77.8%)			9.81	8.27
Risk Perception					Ns	
zero	84 (66.1%)	91 (70.5%)			9.83	7.96
small	36 (28.3%)	32 (24.8%)			10.08	8.41
big	7 (5.5%)	6 (4.7%)			10.14	10.00
Very big	0 (0%)	0 (0%)			-	-
Stay Time in Beijing						
<1 month	- -	2 (1.5%)			-	7.50
>=1 month,<3 months	- -	8 (6.0%)			-	8.50
>=3 months,<6 months	- -	7 (5.2%)			-	7.86
>=6 months,<1 year	- -	26 (19.4%)			-	7.84
>= 1 year,<2 years	- -	19 (14.2%)			-	7.12
>= 2 years	- -	72 (53.7%)			-	8.53
Frequency of home-visit						
>= twice per yr	- -	10 (7.5%)			-	8.80
once per yr	- -	51 (38.1%)			-	8.29
once per 2 yrs	- -	12 (9.0%)			-	7.67
< once per 2 yrs	- -	61 (45.5%)			-	8.02
VTC					.013	
Never heard	29 (22.8%)	47 (37.0%)				
Heard but don't know how to get	83 (65.4%)	74 (58.3%)				
Heard and know how to get	15 (11.8%)	6 (4.7%)				
AIDS hotline					Ns	
Never heard	43 (33.9%)	47 (33.1%)				
Heard but don't know how to get	73 (57.5%)	74 (62.2%)				
Heard and know how to get	11 (8.7%)	6 (4.7%)				

† N. Missing = 34 (13.0%)

‡ N. Missing = 50 (19.2%)

§ N=166, select case= have sex in past 12 months; N. Missing = 26 (13.5%)

Ns Not significant

Multi-Response Variables Descriptive

Multi-Response Tables

Variable	Count (percentage)				Chi-square		
	Local Resident		Mobile Rural Worker		<i>p</i>	OR	95% CI
Health Seeking Pattern							
when sick: go to hospital	63	(50.0%)	45	(33.8%)	0.008	0.51	(0.31-0.84)
go to private clinic	3	(2.4%)	24	(18.0%)	0.000	9.03	(2.65-30.81)
self-diagnose and buy drugs	69	(54.8%)	69	(51.9%)	ns		
try to get over as possible	35	(27.8%)	26	(19.5%)	ns		
Acceptable Type of Sex							
sex between Husband and wife	54	(48.2%)	34	(39.1%)	ns		
sex between friends or acquaintance	89	(79.5%)	60	(69.0%)	ns		
casual sex	96	(85.7%)	66	(75.9%)	0.036	1.8	(1.07-3.02)
Type of Partner in 12 mth							
Husband or wife	54	(62.8%)	57	(67.1%)	ns		
fixed partner(s)	28	(32.6%)	18	(21.2%)	ns		
friends or acquaintance	13	(15.1%)	10	(11.8%)	ns		
stranger(s)	4	(4.7%)	7	(8.2%)	ns		
Attitude towards Condom Use							
sex between Husband and wife	54	(48.2%)	34	(39.1%)	0.006	2.16	(1.24-3.74)
sex between friends or acquaintance	89	(79.5%)	60	(69.0%)	ns		
when having casual sex	96	(85.7%)	66	(75.9%)	0.021	3.15	(1.14-8.71)
use or provide commercial sex	94	(83.9%)	56	(64.4%)	0.000	13.43	(2.98-60.59)
Sources of HIV Knowledge							
TV shows	117	(92.1%)	101	(80.8%)			
Newspaper	108	(85.0%)	80	(64.0%)			
Radio	84	(66.1%)	54	(43.2%)			
Preventive Programme	67	(52.8%)	47	(37.6%)			
Testing and Consulting Service	16	(12.6%)	16	(12.8%)			
Hospital	41	(32.3%)	25	(20.0%)			
Web	57	(44.9%)	17	(13.6%)			
Friends Chat	73	(57.5%)	48	(38.4%)			

Ns Not significant

Result of Logistic Regression

– Crude and Adjusted Odds Ratio (controlled for Age, Sex and Education)

Variable	Count		Regression – Controlled for age, sex and education		
	Local Resident	Mobile Rural Labor	Crude Odds Ratio	Exp(B)	95% C.I. for Exp(B)
Income2	N=254, Missing=7 (2.7%)		** 10.04	* 3.06	(1.31 - 7.179)
>=6000	108	50			
<6000	17	79			
Job Number2	N=243, Missing=18 (6.9%)		1.02	1.72	(0.80 – 3.71)
Had more than 2 jobs in 12 mth	35	36			
Had 1 job in 12 mth	84	88			
Environment Working2	N=251, Missing=10 (3.8%)		*.1.67	1.35	(0.66 - 2.75)
Higher satisfaction	55	44			
Lower satisfaction	65	87			
Environment Living2	N=260, Missing=1 (.4%)		** 2.13	1.60	(0.78 - 3.21)
Higher satisfaction	63	42			
Lower satisfaction	64	91			
Medical Insurance	N=260, Missing=1 (.4%)		***17.25	*** 6.59	(2.95 - 14.71)
Yes	91	17			
No	36	116			
Social Support2	N=259, Missing=2 (.8%)		*** 3.68	* 2.12	(1.04-4.33)
More likely to get social support	87	49			
Less likely to get social support	40	83			
General Health Status2	N=239, Missing=22 (8.4%)		.96	1.15	(0.55 - 2.37)
not so good	68	71			
Not bad, or good	50	50			
Discrimination2	N=261, Missing=0 (0%)		**2.87	1.41	(0.69 - 2.88)
more likely to feel discriminated	97	71			
less likely to feel discriminated	30	63			
Mental Health2	N=260, Missing=1 (.4%)		.94	.96	(0.46 - 2.01)
less likely to get depressed	37	41			
more likely to get depressed	89	93			
Condom Access	N=211, Missing=50 (19.2%)		1.22	1.48	(0.65 - 3.38)
Yes	72	64			
No	36	39			
Condom Use2	N=166, Missing=95 (36.4%)		0.77	1.05	(0.406 - 2.728)
never or sometimes	65	64			
in every intercourse	21	16			
Multi-Partner	N=227, Missing=34 (13.0%)		1.71	* 3.29	(1.19-9.09)
yes	20	13			
no	92	102			

to be continue

Variable	Count		Regression – Controlled for age, sex and education		
	Local Resident	Mobile Rural Labor	Crude Odds Ratio	Exp(B)	95% C.I. for Exp(B)
High-Risk Sexual Behavior	N=163, Missing=98 (37.5%)		1.92	* 4.22	(1.35 - 13.22)
multi-partner without consistent condom use	17	9			
others	68	69			
Knowledge Score2	N=253, Missing=8 (3.1%)		*** 4.20	* 2.50	(1.05-5.98)
Better knowledge on HIV	111	81			
Poorer knowledge on HIV	15	46			
Information Needs	N=253, Missing=8 (3.1%)		* 1.792	* 2.497	(1.135 - 5.493)
No	43	28			
Yes	84	98			
Risk Perception2	N=256, Missing=5 (1.9%)		.816	1.155	(0.542 - 2.464)
no risk at all	84	91			
certain risk	43	38			

* $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$