

Original Article



Relationship between Migration and HIV Risky Behavior: a Comparative Study of Returning Migrants and Non Migrants Based on Rural Out-of-school Youth in Jilin, China*

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Abstract

Objective To estimate the relationship between migration and HIV risky behavior when controlling for gender, age, and educational levels and to evaluate the gender differences in migration, HIV knowledge, and HIV risky behaviors among rural youth in China.

Methods A cross-sectional, anonymous, investigative questionnaire for 1710 unmarried, out-of-school rural youth, aged between 15 and 24 years, was handed out in Gongzhuling county of Jilin province, China.

Results 58.5% of participants had a history of migration, irrespective of gender. There were gender differences observed in other factors such as drug abuse (4.3% for males and 5.5% for females, $P < 0.01$), multiple sexual partners (24.1% for males and 44.1% for females, $P < 0.01$), and HIV knowledge rate (35.2% for males and 25.5% for females, $P < 0.001$). While controlling for gender, age, and educational levels, the relationships between migration and drug abuse, selling sex, and non usage of condoms during last instance of sexual activity were found to be significant. The cases of premarital sex and multiple sexual partners were both not found to be related to migration.

Conclusion Among rural youth, the HIV risky behavior such as drug abuse, selling sex, and lack of condom use, is significantly related to migration, while premarital sex and multiple sexual partners seem unrelated to migration.

Key words: Migration; Rural out-of-school youth; HIV risky behavior; China

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INTRODUCTION

According to statistics in the 2010 Population Census of the People's Republic of China, total migrant population reached 260 million, of which youth aged 15-24 years accounted for 26.7%^[1]. Another study showed that 64% of female migrants and 47.1% of

male migrants are aged 15-24 years^[2]. The large numbers in the migrant population not only bring challenges to China's HIV prevention programs but also point to a huge, hidden health burden for rural youth^[3].

The vulnerability of rural-to-urban migrants has been vigorously studied and it has been documented that they are vulnerable to HIV infections due to

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various factors^[4]. In particular, migrant youth have a high prevalence of HIV risky behavior and a low level of HIV knowledge^[5].

The migrant population studied floats from rural to urban areas, and then back from urban to rural areas. They construct a bridge between the urban and rural areas, including the diseases that spread between the two areas. However, a systematic review found that only a few studies have looked at the relationship between migration and HIV risky behavior among rural residents, especially rural out-of-school youth (OSY)^[6].

One study suggested that about one-third of OSY in rural areas will become rural-to-urban migrants^[7]. Other studies showed an even higher percentage^[8]. Migration might bring about huge changes for them in terms of knowledge, attitudes, and behaviors within the context of HIV prevention. This study will describe the situation of migration, HIV knowledge, and HIV risky behavior among rural OSY, as well as analyze the gender differences pertaining to migration, HIV knowledge, and HIV risky behavior; furthermore, it will estimate the relationship between migration and HIV risky behavior and HIV knowledge controlling for gender, age, and educational levels. The results will contribute to a better understanding of the mechanism of migration in affecting HIV spread.

MATERIALS AND METHODS

Data Collection

The data was collected in Gongzhuling County, Jilin Province, northeast China. The county has 18 villages and is one of the 100 Chinese counties where the National AIDS Comprehensive Prevention and Control program was conducted, with a low HIV prevalence rate and a high labor migration rate. According to government statistics, labor migration accounted for 62% of the total rural labor of the county in 2006^[9].

The data was collected by self-administered anonymous questionnaires in October and November 2007 at the County Occupational Training Center (COTC). The COTC provides employment services for OSY and other people. They provide occupational skills training, employment information, and counseling. They recruit new labor for enterprises nationwide and provide short-term pre-employment training for the new labor, according to the job requirements. In order for OSY to access the recruitment information in time, they

often go to villages to conduct outreach activities. Therefore, the COTC is a good site to gain access to OSY.

The inclusion criteria of participants were as follows: they had to be 15-24 years old, not studying in the national formal educational system, unmarried, and local residents. Four young staff members of the COTC, who had a higher education level, were selected and trained as research assistants to conduct the data collection. The sampling sites included the head quarter of the COTC at the county center and 4 villages were specifically selected from a total of 18 villages. While recruiting participants, the research assistants accessed the OSY through various OCTC activities, such as occupational counseling, outreach activities, and so on. All those who met the study inclusion criteria were invited to take part in the investigation. The research assistants informed the participants of the aims, content, time commitment, and compensation for their cooperation in addition to their right to quit during the investigation. Once informed consents were obtained, the research assistants distributed questionnaires with an empty envelope to each participant and asked them to self-administer the questionnaires, independently and anonymously. Then, the completed questionnaires were put into empty envelopes, and then, these were put into a large ballot box in order to retain the confidentiality of the participants. In total, 1800 questionnaires were obtained, and 1710 were qualified for analyzing. 90 questionnaires were not qualified since they had more than 10% responses omitted or were not filled out in a serious manner.

Variables and Measures

Demographic characteristics included 3 variables: age, gender, and educational levels. Age was categorized into 3 groups (15-17, 18-20, and 21-24 years); gender was classified as either male or female; educational level referred to the 4 levels of primary school and lower school, junior middle school, senior middle school, and college and higher.

The word 'migrants' refers to those who had ever been away from their village for temporary jobs, measured by the question: 'Have you ever migrated out to other cities for temporary jobs?'. Those who responded 'yes' were named returning migrants and assigned with the numeral '1'; those who responded 'no' were named non migrants and assigned with the numeral '0'.

HIV risky behavior includes 6 behaviors that are

closely related to the spread of HIV, including premarital sex, multiple sexual partners, non usage of condoms, selling sex, buying sex, and drug abuse. Premarital sex refers to sexual intercourse before marriage; multiple sexual partners refers to having 3 or more sexual partners concurrently; non usage of condoms refers to not using condoms during the last sexual intercourse; drug abuse refers to having ever used drugs; selling sex refers to having sold sex; buying sex refers to having bought sex. Those who responded 'yes' to these risky behaviors were deemed to exhibit risky behavior and were assigned with the numeral '1', those who responded 'no' were deemed to not exhibit risky behavior and were assigned with the numeral '0'.

HIV knowledge refers to participants' correct understanding about HIV spread and prevention, measured by a scale composed of 17 items related to HIV transmission and prevention (see Table 2). Those participants who could correctly understand 75% and more of the 17 items were regarded as being aware of HIV prevention and assigned with the numeral '1'; others were regarded as not being aware of HIV prevention and assigned with the numeral '0'.

Data Analysis

The database was set up using software EpiData 3.01 (The EpiData Association, Odense, Denmark) with double input and logistic check functions in order to ensure input quality. Data analysis was conducted employing SPSS 20.0 (SPSS China, version 20, IBM Statistics). The descriptive analysis function was used to explore the situation of migration, HIV knowledge rate, and HIV risky behavior in participants, as well as gender difference as applicable to these variables. In order to get a more reliable analysis, binary logistic regressions were utilized to estimate the odds ratios of HIV knowledge and HIV risky behavior among rural OSY, both with and without a history of migration while controlling for gender, age, and educational levels. Backward likelihood ratios were used with an entry criterion of 0.05 and a removal criterion of 0.10. Where there were missing answers to questions, the calculation for the question would be based on cases that had no missing answers.

Ethical Considerations

This study collected data anonymously using questionnaires. Informed consents were obtained orally, due to anonymity, and without any personal

identification. The participants took part in or quit the investigation voluntarily. All cases were only part of the database without any single case analysis. The hard copy of the questionnaires collected would be destroyed in a systematic manner two years later, after the database setup. The database was only used for scientific research rather than for any other purpose. The procedure of data collection and data analysis meets international ethical standards and was approved by Peking University Institutional Review Board.

RESULTS

Descriptive Analysis

Among the 1710 participants, 61.5% were male and 38.5% were female. In total, 58.5% (1000/1710) had a history of migration and there was not significant gender difference. Most participants were 18-20 years old, accounting for 72.5%. Junior middle school was the educational level of the majority, and there was education difference connected to migration (Table 1).

Regarding HIV knowledge, it was found that participants had a poor knowledge of HIV. Only 79.5% were aware that HIV is a serious transmitted disease. 76.8% were aware that HIV could be transmitted through blood contacts and 76.3% knew that HIV could be transmitted through sexual intercourse. It was interesting to note that only 31.5% believed that mosquito bites could not transmit HIV; 37.3% were clear that sharing of shavers could transmit HIV, and 39.4% could correctly understand that condoms would not work for the prevention of some sexually transmitted diseases. As a whole, the HIV knowledge rate was 31.3% (Table 2).

As for the situation of HIV risky behavior among the participants, 11.3% were sexually experienced and the rate of drug abuse at some point was 5.5%. Among the sexually experienced participants, the prevalence of multiple sexual partners, bought sex, sold sex, and non usage of condoms during the last sexual intercourse were 30.8%, 13.4%, 12.4%, and 63.6%, respectively (Table 3). Gender differences were found for drug abuse, multiple sexual partners, and HIV knowledge. More females had abused drugs than males (7.5% vs. 4.3%, $P<0.01$), more females had 3 and more sexual partners than males (44.1% vs. 24.1%, $P<0.01$), and females' HIV knowledge rate was much lower than that of males (25.5% vs. 35.2%) (Table 4).

Table 1. Demographic Characteristics by Migrant Status among Rural Out-of-school Youth

Demographic Characteristics	Returning Migrants	Non Migrants	Total	χ^2	P Value
Gender					
Male	600 (60.0%)	451 (63.5%)	1052 (61.5%)	1.98	0.160
Female	400 (40.0%)	259 (36.5%)	658 (38.5%)		
Total	1000 (100.0%)	710 (100.0%)	1710 (100.0%)		
Age cohort (y)					
15-17	140 (14.1%)	180 (25.5%)	320 (18.9%)	42.02	<0.001***
18-20	745 (75.2%)	485 (68.7%)	1230 (72.5%)		
21-24	106 (10.7%)	41 (5.8%)	147 (8.6%)		
Total	991 (100.0%)	706 (100.0%)	1697 (100.0%)		
Educational attainment					
Primary school and lower	148 (15.1)	147 (20.9)	295 (17.5)	13.03	<0.01***
Junior middle school	615 (62.7)	388 (55.1)	1003 (59.5)		
Senior middle school	116 (11.8)	83 (11.8)	199 (11.8)		
College and higher	102 (10.4)	83 (11.8)	199 (11.8)		
Total	981 (100.0)	704 (100.0)	1685 (100.0)		

Note. *** significant at $P \leq 0.001$.

Table 2. HIV Related Knowledge among Rural Out-of-school Youth (N=1710)

Knowledge Items	Correct Answer n(%)
HIV/AIDS is a serious transmitted disease	1359 (79.5)
HIV can be transmitted through sexual intercourse	1304 (76.3)
HIV can be transmitted through blood contact	1313 (76.8)
HIV carriers look like normal healthy persons	1156 (67.6)
Presently, there is no drug that can cure HIV/AIDS	983 (57.5)
Appropriate use of condoms in sexual intercourse can prevent HIV transmission through sex	947 (55.4)
Anyone can get HIV if they exhibit risky behaviors	897 (52.5)
Piercing of ear lobes at street shops might lead to HIV infection	778 (45.5)
Everyday contacts would not transmit HIV	1051 (61.5)
Syringe sharing during intravenous drug abuse might transmit HIV	1020 (59.6)
The patients with sexually transmitted diseases are more vulnerable to HIV	904 (52.9)
The behavior of drug abuse violates public security regulations and require compulsory detoxification	1194 (69.8)
Correct use of condoms during sex does not work for prevention of some sexually transmitted diseases	674 (39.4)
Shaver sharing could lead to HIV infection	637 (37.3)
Mosquito bites could transmit HIV	538 (31.5)
Eating together with HIV carriers would lead to HIV infection	901 (52.7)
Having only one sexual partner who is faithful and without HIV could prevent getting HIV through sex	724 (42.3)
HIV Knowledge	532 (31.1)

Table 3. HIV Risky Behavior and HIV Knowledge among Rural Out-of-school Youth, by Migration

Behaviors and Knowledge	Returning Migrants, n (%)	Non Migrants, n (%)	Total, n (%)	χ^2	P Value
Drug abuse					
Yes	75 (7.6)	18 (2.6)	93 (5.5)	20.21	<0.001***
No	908 (92.4)	683 (97.4)	1593 (94.5)		
Total	983 (100.0)	703 (100.0)	1686 (100.0)		
Sexually experienced					
Yes	120 (12.4)	67 (9.8)	187 (11.3)	2.85	0.09
No	846 (87.6)	620 (90.2)	1466 (88.7)		
Total	966 (100.0)	687 (100.0)	1653 (100.0)		
Multiple sexual partners					
Yes	37 (31.1)	20 (30.3)	57 (30.8)	0.01	0.911
No	82 (68.9)	46 (69.7)	128 (69.2)		
Total	119 (100.0)	66 (100.0)	185 (100.0)		
Bought sex					
Yes	16 (13.3)	9 (13.6)	25 (13.4)	0.01	0.95
No	104 (86.7)	57 (86.4)	161 (86.6)		
Total	120 (100.0)	66 (100.0)	186 (100.0)		
Sold sex					
Yes	16 (13.3)	7 (10.6)	23 (12.4)	0.29	0.59
No	104 (86.7)	59 (89.4)	163 (87.6)		
Total	120 (100.0)	66 (100.0)	186 (100.0)		
Not used condom at last sexual intercourse					
Not Used	65 (57.5)	45 (75.0)	110 (63.6)	5.17	0.02*
Used	48 (42.5)	15 (25.0)	63 (36.4)		
Total	113 (100.0)	60 (100.0)	173 (100.0)		
HIV Knowledge					
Yes	226 (25.9)	246 (38.1)	472 (31.1)	25.69	<0.001***
No	645 (74.1)	399 (61.9)	1044 (68.9)		
Total	871 (100.0)	645 (100.0)	1516 (100.0)		

Note. * significant at $P\leq0.05$, *** $P\leq0.001$.

Table 4. HIV Risky Behavior and HIV Knowledge among Rural Out-of-school Youth, by Gender

Behaviors and Knowledge	Male n (%)	Female n (%)	Total n (%)	χ^2	P Value
Drug abuse					
Yes	42 (4.3)	46 (7.5)	88 (5.5)	7.46	<0.01**
No	842 (95.7)	570 (92.5)	1512 (94.5)		
Total	984 (100.0)	616 (100.0)	1600 (100.0)		
Sexually experienced					
Yes	110 (11.2)	68 (11.4)	178 (11.3)	0.02	0.90
No	868 (88.8)	526 (88.6)	1394 (88.7)		
Total	978 (100.0)	594 (100.0)	1572 (100.0)		
Multiple sexual partners					
Yes	26 (24.1)	30 (44.1)	56 (31.8)	7.73	<0.01**
No	82 (75.9)	38 (55.9)	120 (68.2)		
Total	108 (100.0)	68 (100.0)	176 (100.0)		
Buying sex					
Yes	12 (10.9)	12 (17.6)	24 (13.5)	1.64	0.20
No	98 (89.1)	56 (82.4)	154 (86.5)		
Total	110 (100.0)	68 (100.0)	178 (100.0)		
Selling sex					
Yes	14 (12.8)	9 (13.2)	23 (13.0)	0.01	0.94
No	95 (87.2)	59 (86.8)	54 (87.0)		
Total	120 (100.0)	68 (100.0)	177 (100.0)		
Not used condom at last sex					
Not Use	62 (60.2)	43 (69.4)	105 (63.6)	1.4	0.24
Use	41 (39.8)	19 (30.6)	60 (36.4)		
Total	103 (100.0)	62 (100.0)	165 (100.0)		
HIV Knowledge					
yes	313 (35.2)	144 (25.5)	457 (31.4)	14.88	<0.001***
No	577 (64.8)	420 (74.5)	997 (68.6)		
Total	890 (100.0)	564 (100.0)	1454 (100.0)		

Note. ** significant at $P\leq0.01$, *** $P\leq0.001$.

Binary Logistic Regressions

Controlling for demographic factors such as gender, age, and educational levels, the independent impacts of migration on specific HIV risky behavior were estimated using binary logistic regressions. Altogether, 7 logistic regressions model were calculated (Table 5). It was found that when controlling for age, gender, and educational levels, the relationship between migration and premarital sex, multiple sexual partners, and HIV knowledge were not significant. The relationship between migration and drug abuse, non usage of condoms and selling sex were all significant, OR values were 2.23 (1.01-2.41), 0.35 (0.16-0.73), and 1.56 (1.20-2.91), respectively. The results suggested that returning migrants might have a 2.23 times higher likelihood to abuse drugs, 0.35 times lower likelihood to not use condoms, and a 1.56 times higher likelihood to selling sex than non migrants when age, gender, and education were controlled.

DISCUSSIONS

Presently, migration continues to be a great challenge for containing the spread of HIV in China. In our study, 58.5% of the rural OSY had migrated out to other cities at some point for temporary jobs, and there was no gender difference. It suggests that OSY in rural areas constitute a bridge for communication between rural and urban areas, including the communication of HIV. Through this bridge, various diseases, including HIV, could spread from rural to urban, as also from urban to rural areas. Labor migration cannot be stopped in the context of the modern society. What we can do may be to empower the migrants who constitute the bridge in order to reduce the spread of diseases.

Youth are vulnerable to HIV mainly because they lack the capability to correctly respond to HIV attacks. They often have poor HIV knowledge, lower risk perception, and higher prevalence of HIV risky behavior^[10-11]. In this study, similar results were obtained. Among rural OSY, the HIV knowledge rate was only 31.1%-much lower than the 75% that the national plan required^[12]. In addition, among those who were sexually experienced, 30.8% had 3 or more sexual partners, and 63.6% did not use condoms during their last sexual encounters. Former studies had similar findings. Turner AK conducted a study among African-American OSY based on occupational training center and found that 65% of

Table 5. Migration and HIV Risky Behavior and HIV Knowledge (7 items) Controlling for Gender, Age, and Educational Levels (ORs) by Binary Logistic Regressions

Risky Behaviors	(Models)	Gender			Age			Education			Migrant		
		OR	95% CI	P value	OR	95% CI	P value	OR	95% CI	P value	OR	95% CI	P value
Sex experienced	(model1)	-	-	-	1.15	1.02-1.32	0.002	1.23	0.65-1.09	0.008	1.39	1.26-3.89	0.057
Multi-sex concurrently	(model2)	1.91	0.97-1.37	0.08	1.35 ^{**}	0.82-1.97	0.003	0.73	0.15-0.70	0.109	-	-	-
Drug abuse	(model3)	-	-	-	1.14 [*]	1.01-1.26	0.045	-	-	-	2.23 ^{**}	1.01-2.41	0.005
No-use condom	(model4)	-	-	-	-	-	-	-	-	-	0.35 ^{**}	0.16-0.73	0.006
Prostitution	(model5)	-	-	-	1.128 [*]	0.53-0.97	0.029	-	-	-	1.56 [*]	1.22-3.40	0.046
Go whoring	(model6)	-	-	-	1.11	0.53-1.23	0.070	-	-	-	1.55	1.20-2.91	0.062
HIV awareness	(model7)	0.62 ^{**}	1.05-1.26	0.00	1.67 ^{***}	1.06-1.44	0.000	0.85 ^{***}	1.20-1.94	0.001	0.53	0.99-1.95	0.000

Note. ^{*} significant at P≤0.05, ^{**} P≤0.01, ^{***} P≤0.001; -, No significant.

the participants reported having 5 or more sexual partners in their lifetime^[13]. These results documented that this population was vulnerable to HIV.

Gender differences were found in this study in terms of HIV knowledge, drug abuse, and multiple sex partners. Compared to male OSY, female OSY had a lower level of HIV knowledge, higher rate of drug abuse, and higher rate of having multiple sex partners. These results suggest that female OSY were more vulnerable to HIV infection and should be paid more attention. Previous studies have also found that there was gender difference in terms of HIV knowledge^[14] and indicated that gender perspective should be mainstreamed in the HIV/AIDS prevention programs^[15].

When talking about the vulnerability of migrants to HIV, promiscuity, prostitution, non usage of condoms, and drug abuse would be frequently mentioned. However, the relationship of migration to these risky behaviors has not been well studied so far. This study found that migration did not have a significant relationship with multiple sexual partners, but had a significant relationship with the factors of selling sex, drug abuse, and condom use. In previous studies, findings differ regarding the relationship between migration and multiple sexual partners. Some studies reported that migrants are more likely to have multiple sexual partners than non migrants^[16]. Another study reported that migration does not have any significant effects on the factor of multiple sexual partners, or the results are not reliable^[17]. After reviewing the international research reports pertaining to the correlation of migration and HIV vulnerability, Palo, S. indicated that on the one hand, there was ample empirical evidence to uphold a higher level of positive correlation between labor migration and HIV vulnerability. On the other hand, there was evidence that effaces the above inference and maintains that staying in the country of origin does not necessarily reduce the risk of HIV infection^[18]. Among the studies pertaining to the association of migration and multiple sexual partners, few studies have been conducted among rural OSY^[19]. So, this study would be a valuable reference for further such studies.

Drug abuse can expose youth to HIV through several ways, such as intravenous drug abuse, commercial sex, immunodeficiency, and so on. Few studies have been conducted that focus on the association of migration and drug abuse^[20]. This study suggested that returning migrants might have

a 2.23 times higher likelihood to abuse drugs than non migrants when controlling for age, gender, and educational levels. The reasons might be associated with the migrants' economic pressures, workload, psychological anxiety, risky peers, and risky environment, which gives them more opportunity to be exposed to drugs. As stated in previous studies, migration could bring about some negative effects on the psychological health and self-efficacy of youth^[21-24]. Therefore, drug abuse prevention education should be emphasized and provided for migrants as soon as possible in order to protect their health.

Prolonged separation from the family and socio-cultural norms, combined with isolation, loneliness, and a sense of anonymity, can lead to social and sexual practices that make migrant youth more susceptible to drug abuse and commercial sex. Regarding the linkage of migration and commercial sex, a few studies have reported a significant relationship^[25]. A study in rural Ethiopia found that there was a higher prevalence rate of commercial sex among temporary migrants than among non migrants^[26]. Meanwhile, some studies reported no significant relationships at all^[17]. In this study, migration had a significant relationship with commercial sex. Migrants had more likelihood to get involved in commercial sex partly because of difficulties in finding a job, and sometimes because many of them worked for the entertainment and services sector^[27].

This study has several limitations. First, responses may be subject to social desirability bias due to the sensitive topic. Second, anonymity and retaining confidence prevented investigators from checking the completeness of the questionnaires. Third, the data are based on a cross-sectional study, and causality cannot be established. Fourth, risky behaviors were measured by asking whether a certain issue happened or not, without any given timeframe. In addition, the database is a bit dated, so the main objective of this article is to analysis the relationship between migration and HIV risky behavior that would not change much over time. Finally, drug abuse was measured roughly rather than pertaining to specific drugs.

Despite these limitations, this study explored the relationship between migration and HIV risky behavior, which were not well researched in previous studies, and would be a valuable reference for future related studies and policy-making. This study suggested that in order to reduce the bridge

effects of HIV spread, HIV prevention education should be strengthened for rural OSY, including both returning migrants and non migrants.

CONCLUSION

This study’s results indicate that among the rural youth in China, the HIV risky behavior, such as drug abuse, selling sex, and lack of condom use, is significantly related to migration. The premarital sex and multiple sexual partners seemed unrelated to migration. HIV knowledge was not certainly related to migration and need to be further studied.

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