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The study of KBP of road construction workers of highway AIDS prevention project before and after intervention

Dan Liu¹, Si-Ping Dong², Guang-Ming Gao³, Ming-Yu Fan⁴, Zong-Jiu Zhang^{3*}, Peng-Qian Fang^{1*}

¹School of Medicine and Health Management, Tongji Medical College, Huazhong University of Science and Technology, Wuhan 430030, Hubei, China

²Hospital Accreditation Department, National Institute of Hospital Administration, Beijing 100191, China

³National Health and Family Planning Commission of the People's Republic of China, Beijing 100044

⁴The Third Hospital of Wuhan City, Wuhan 430060, Hubei, China

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ABSTRACT

Objective: To get scientific basis for further health education through the research of the road construction workers' KBP before and after the interventions of highway AIDS prevention project.

Methods: Multi-stage random sampling method was employed to select workers of 8 sites from 14 sites along highway to investigate their AIDS knowledge, belief and performance (KBP) before and after highway AIDS prevention project. **Results:** Over 90% of the investigated workers had ever heard about AIDS, and the non-skilled workers of lower educational level improved more after intervention. The correct answer rate of the three transmitting ways of AIDS of drivers which is the focused group of highway before and after intervention had the obvious statistical significance ($P < 0.05$), and the other group's correct answer rates also had improved after intervention. Most people's understanding of preventing AIDS through correct use of condoms when having sex had a statistically significant difference ($P < 0.05$) after prevention. The rates of using condoms of foremen and skilled workers when having sex with commercial sex worker/casual partner increased after intervention. **Conclusions:** The health education of HIV among the road construction workers is effective and further health education of HIV prevention should be carried out among the road construction workers to improve their knowledge and awareness of avoiding the high-risk behaviors.

1. Introduction

The prevention and control of HIV/AIDS has entered a critical stage in China. HIV/AIDS in China now is widely spreading. Health education remains the main measure to prevent and control HIV/AIDS when without effective drugs and vaccines. The number of people with HIV/AIDS in Yunnan Province has increased a lot. Some foreign researches find that the construction of highways in the acceleration surrounding economic development may also

bring about the spread of diseases (especially HIV/AIDS and STDs) at the same time. Interventions should be carried out for road construction workers timely to prevent the spread of HIV/AIDS. This research is conducted to investigate the road construction workers' KBP before and after intervention to explore the influencing factors of the high-risk behaviors.

HIV/AIDS in China has entered a critical stage of rapid spreading[1]. It has been estimated that more than one million people in China have been infected with HIV and the rate of increase has topped the world. The number has gone up to 10 million by 2010[2]. So, China is the next probable frontier for the global HIV epidemic[3]. Central to this anticipated growth of the epidemic is the nation's new and growing population of rural-to-urban migrants. They frequently identified as being vulnerable to acquiring behaviors that are considered to be health risks[4]. The

*Corresponding author: Zong-Jiu Zhang, Ph.D., Director, National Health and Family Planning Commission of the People's Republic of China, Beijing 100044.
E-mail: zjiuzhang@gmail.com.

Peng-Qian Fang, Ph.D., Assistant Dean, School of Medicine and Health Management, Tongji Medical College, Huazhong University of Science and Technology, Wuhan 430030, Hubei, China.

Tel: +86-27-87543437

E-mail: pengqian_fang@163.com

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rural-to-urban migrant population has been identified as the “tipping point” for the AIDS epidemic in China^[5,6]. Data also demonstrate that the so-called ‘floating population’ - the approximately 130 million migrant workers, 73% of them come from poorer regions of the country and work in the cities as labourers, restaurant workers and sex workers^[5]. As a harbinger of this looming development in the epidemic, new cases of HIV infection in China increased by 140% from 2002 to 2003 and the incidence of STDs increased 390% among men from 1990 to 1998. About 70% of HIV infection is among rural residents, 80% of whom are males and 60% aged 16–29 years. Since sexual behaviours are closely associated with HIV transmission, there is heightened concern that HIV/AIDS may threaten more and more Chinese youths^[7]. Migrants’ perception of HIV risk, knowledge of HIV and rates of condom use are low and they face barriers in accessing education and health care. Therefore, HIV prevalence is relatively high^[8].

Nevertheless, current HIV prevention programs have primarily targeted drug users^[9] and commercial sex workers^[10], with few intervention efforts focus on the migrants. Moreover, the social, economic, and health implications of the migratory lifestyle in China have received little scholarly attention. Road construction workers is an important part of migrant workers, and they show more interest in learning about health-related knowledge. Road construction workers is an sexually active segment of the population, and separate from their families, lovers, and communities, involve in more dangerous work which may make such group more prone to peer pressure and urban life style influences^[11], and ultimately lead them to engage in more risky sexual behaviors. Road construction workers’ vulnerability can also attribute to situational and psychosocial factors, such as economic and cultural transitions, as well as reduced access to health care services^[12]. These results have been confirmed the findings of other reports^[13,14].

Since the identification of HIV/AIDS, a vast number of research and programmes have been implemented in various regions to explore the effective methods to reduce sexual risk behaviours^[15]. The research in Ghana shows that the Health Belief Model (HBM) is one of the most influential and widely used models to explain health conditions and health-related behaviours. It has been used with great success to promote greater condom use. The model’s major strength is in its ability to highlight the range and complexity of factors involved in attempting to modify health-related behaviour. It therefore offers a useful framework for analysing the factors influencing condom use behaviour, and focus in particular on the role of beliefs in condom use. The research in Latino addresses the specific needs of migrant workers which is

becoming well recognized. HIV prevention interventions that train and employ community health workers are a culturally appropriate way to address the issues of community trust and capacity building in this community^[16]. Nepali AIDS workers’ sense of the “difficulties” in AIDS education, and the language ideology this reflects, greatly influences the practices through which they implement strategies of AIDS education that are encouraged by the international experts who fund their work^[17].

In order to prevent the spread of AIDS, the intervention on road construction workers should be early started. This paper fills an important research gap as one of the few large-scale quantitative studies that examines HIV/AIDS knowledge, belief and performance in road construction workers, with the goal of discussing the factors that influence risk behaviours, and providing an evidence for developing a social behavioral intervention program to make health promotion interventions, and increasing the health knowledge, risk awareness of the road construction workers, and improving their access and utilization of health services, in order to decrease health risks among this vulnerable population. The study is also timely given the numerous calls to identify sociocultural factors and discourses that inform safer sex.

2. Methods

2.1. Sampling and data collection

The participants included the supervisors of the project, management staff, contractors, drivers, skilled workers, and non-skilled workers. The number of participants in baseline survey was 946, the number of finish-line survey was 975.

Education and behavioral intervention were carried out towards construction workers for 1 year. Baseline survey was taken in the highway in 2006 and finish-line surveys in 2007. The survey questionnaire about behavior surveillance for road construction workers was developed on the basis of the questionnaire which developed by Yunnan Province in 2004. The method of Behavioral Surveillance Surveys (BSS) was taken to understand the trend of HIV infection in different groups. The contents included the general situation, AIDS related knowledge, attitude and behavior survey. The questionnaire included additional instructions and emphasized the confidentiality and authenticity. The questionnaires were filled in by investigators after asking the investigated workers and were anonymous. In our study, an index of health risk awareness was established, which was derived from responses to questions associated to knowledge of HIV/AIDS and related behavioral aspects, awareness of its hazards.

2.2. Measures

The data entry was adopted by Epidata.3.1. After logical proof, the statistical analysis of data was performed with SPSS11.5 software. The data was analyzed by using *t* test.

3. Results

The number of participants in the baseline survey was 946, all male, and the average age was (31.45±9.723) years. The degrees of education were: college or above 40 people (4.2%), high school / secondary 111 people (11.6%), junior high school 476 people (49.6%), primary school 287 people (29.9%), illiteracy 32 people (3.3%). The number of participants in the finish–line survey was 975, all male, and the average age of (32.21±9.87) years. The degrees of education were: college or above 123 people (12.6%), high school/secondary 186 people (19.1%), junior high school 419 people (42.9%), primary school 224 people (23%), illiteracy 23 people (2.4%). There was no significant difference of ages before and after the intervention, *P*=0.863 (test level 0.05), and there were no no significant statistical differences in educational level (*P*=0.344).

3.1. Basic knowledge of AIDS

Most people had heard of the term AIDS. The situation between the baseline and finish–line was similar, and only the rate of unskilled workers rose greatly, increased from

86.4% to 93.2%. The correct answer rate of the knowledge of the three routes of transmission of AIDS before and after the intervention is shown in Table 1. The correct answer rates of the transfusion transmission of the project management personnel and the sexual transmission of labor contractors had significant difference before and after intervention (*P*<0.05). The correct answer rate of the three routes of transmission (blood, sex, mother to child) of the drivers showed significant difference before and after the intervention (*P*<0.05). In addition, other groups showed no statistical significance before and after the intervention, but the right answer rate increased after the intervention.

3.2. Health belief

The correct answer rate of preventing AIDS through correct use of condoms when having sex before and after the intervention can be seen in Table 2. Except the supervisors, the other groups included project managers, labor contractors, drivers, skilled workers, and unskilled workers all had significant differences (*P*<0.05) before and after intervention.

3.3. Sexual behavior

The condom use rate of each group with sex workers/ temporary sex partners the last time before and after the intervention had no statistically significant difference (*P*>0.05), which is shown in Table 3. But the condom use rates with temporary sex partner of labor contractors and

Table 1
The correct answer rate of the three routes of transmission of AIDS before and after the intervention[n(%)].

Participants	Before				After			
	<i>n</i>	Blood	sex	Mother tochild	<i>n</i>	Blood	sex	Mother tochild
Supervisors	63	62(98)	61(97)	59(94)	69	68(99)	68(99)	65(94)
Managers	116	108(93)	110(95)	109(94)	123	122(99)*	121(98)	120(98)
Contractors	46	41(89)	39(85)	38(85)	56	54(96)	55(98)*	50(89)
Drivers	104	95(91)	97(93)	88(85)	101	101(100)**	101(100)*	96(95)*
Skilled workers	292	265(91)	258(88)	252(86)	269	242(90)	243(90)	234(87)
Unskilled workers	274	237(86)	233(85)	213(78)	331	293(89)	293(89)	275(83)*

* *P*<0.05, ***P*<0.01 Comparing with that before intervention.

Table 2
The correct answer rate of preventing AIDS through correct use of condoms when having sex before and after the intervention

Participants	Before		After		<i>P</i>
	<i>n</i>	%	<i>n</i>	%	
Supervisors	52(63)	83	56(69)	81	1.000
Managers	72(116)	62	113(123)	92	0.000
Contractors	28(46)	61	46(56)	82	0.025
Drivers	67(104)	64	87(101)	86	0.000
Skilled workers	159(292)	55	193(269)	72	0.000
Unskilled workers	125(274)	46	225(331)	68	0.000

Table 3

The condom use rate with sex worker/ temporary sex partner during the last time.

Participants	The condom use rate with sex worker				P	The condom use rate with temporary sex partner				P
	Before		after			Before		After		
	n	%	n	%		n	%	n	%	
Supervisors	10(13)	77	14(14)	100	0.098	5(9)	56	4(8)	50	1.000
Managers	14(19)	74	6(9)	67	1.000	23(28)	82	14(18)	78	0.721
Contractors	4(9)	44	3(3)	100	0.205	5(11)	45	4(5)	80	0.308
Drivers	19(27)	70	8(10)	80	0.694	14(25)	56	4(11)	36	0.471
Skilled worker	23(33)	70	19(21)	90	0.099	17(36)	47	15(24)	63	0.297
Unskilled worker	8(12)	67	11(19)	58	0.717	7(15)	47	3(13)	23	0.254

technical workers all increased after intervention. The condom use rates with sex worker of supervisors and the drivers all increased after the intervention.

4. Discussion

The findings show that the AIDS knowledge of the groups all increased generally after the intervention. The result suggests that some road construction workers have some health related knowledge, but still lack of health risk awareness, and do not aware of serious harmfulness of HIV infection, other road construction workers still lacked knowledge about HIV/AIDS, especially for skilled and unskilled workers. The findings also show that the correct cognition rate of every time when have sex with the correct use of condoms can prevent AIDS infection was rising in all groups except the supervisors after intervention, which declares that the interventions show some positive effect.

Although this is encouraging, considerable proportion of the study groups like drivers, and unskilled workers didn't use condom during sex with temporary sex partners which keep accordance with the result of the research of the Mitike G 18, and the condom use rate of most people when they had sexual behavior with sex worker/temporary sex partner had not increased significantly compared with that before the intervention. The result suggests that the act itself is very difficult to change. Although there is no significant difference in the condom use rate in groups when they had sexual behavior with sex worker/ temporary sex partner before and after intervention, but the condom use rate of the labor contractor and technical workers when they had sex with sex worker/temporary sex partner all increased after intervention, while the use rates of condom of supervisors and the drivers when they had sexual behavior with sex worker were also on the rise after the intervention. It suggests that many people have started to change their consciousness, and change their unsafe sex behavior, and

the behavior change still requires a long process.

The findings highlight road construction workers is associated with greater risks for poor health in general. Their migrant status renders them economically marginalized, socially isolated, HIV knowledge is poor, perceptions of personal HIV risk are low, which have been confirmed in Morrow's research^[19]. when engaged in sexual behaviors without condoms use will placed them at risk of infection. A number of interrelated factors contribute to road construction workers' vulnerability to HIV infection. So, the advertising and education on AIDS prevention should continued to be strengthened, and comprehensive interventions need to be taken to protect them from HIV infection.

The main method of behaviour change is based on the IEC(Information, Education, Change) model. Information should be "quality messages" and are dependent on the messy reality of local contexts. Information or Knowledge, however, is considered a necessary but insufficient condition for behaviour change. Ghana's prevention of information on HIV infection indicates that behaviour change is yet to correspond with the amount of information and education provided^[20]. The correct Information can help us establish risk awareness. A high level of health risk awareness is very useful to increase the perceptual vigilance on HIV, which can improve utilization of health services, and decrease HIV risk^[21]. For instance, Zellner described AIDS knowledge as a form of self-empowerment that may influence one's perception of risk and create awareness for sexual behaviour change^[22]. For the information design, the local beliefs regarding AIDS causation must be considered. The Southern Africa research found that Indigenous beliefs pertaining to health behavior emerged as multidimensional in both structure and effect^[23]. Health outcomes are attributed to an external, uncontrollable force that cannot be overcome (e.g. ancestors, witchcraft, fate, a superior being). Research shows that individuals holding such fatalistic health beliefs are less likely to engage in HIV-preventative behaviours, and are less likely to have used condoms at last sexual intercourse^[24]. The belief in myths and misconceptions often

undermine preventive efforts^[25, 26]. So, the policy maker can provide accurate information about how the disease is spread, to counter myths surrounding HIV transmission. For the education mode, a peer-led education intervention in HIV/AIDS prevention should be taken on migrant workers. Because youth migrants often be significantly impacted by their peers and colleagues, which has been tested in other research^[27]. The education work could be done by NGOs (non-governmental organizations), because they can play the role as one of mediating between communities and government agencies as well as external donors, The work that NGOs perform in terms of HIV/AIDS is wide-ranging, such as 'ecological intervention' which can identify root causes and intervening at these points, 'prevention', 'empowerment' and 'community'^[28]. Beyond that, cultural competence training program^[29] should be supplied to improve the knowledge, skills and self-efficacy of the HIV agencies to response to road construction workers.

The study have two limitations. First, the information collected was self-reported. Respondents' health risk awareness levels may be exaggerated because a positive answer to the question might be perceived by the participants as socially desirable, whereas risk behaviors, such as sexual behaviors, might be underreported since risk behaviors are not socially desirable.

Secondly, because of the cross-sectional nature of the data, most responses were evaluated retrospectively and recall bias was therefore unavoidable.

The highway AIDS prevention project experience suggests that the key crowd should be taken key point intervention in future AIDS prevention and control work. A number of different cause factors have been identified in our research on HIV/AIDS to change the road construction workers behavior and improve their health risk awareness, health related knowledge. So, the comprehensive interventions should be taken to the target groups.

First, misconceptions may be barriers to HIV prevention. Thus, it is important to transmit accurate information and overcome misconceptions about HIV and AIDS in communities. Men's HIV/AIDS misconceptions changing may promote theirs positive attitudes and beliefs about condoms. Knowledge about distinct types of misconceptions and their correlates can help in the design of culturally appropriate HIV-prevention messages, e.g., AIDS related knowledge lecture can be held.

Secondly, the findings suggest that peer-led education is an effective method in improving knowledge, attitude and protection self-efficacy in road construction workers. Peer-led AIDS education in native language for road construction workers and adaption of the message to the needs of specific target groups is recommended.

Thirdly, preventive skills training should be paid to enhance the cultural competence of HIV sector agencies and their staff. It can support the building of relationships, trust and partnerships with the road construction workers to ensure that HIV interventions are culturally appropriate and less likely to stigmatise people with, or at risk of HIV and AIDS.

If road construction workers will actually to be relieved of their risk status in respect of HIV, there will be revolutionary changes in the world. They are changes that deal not only with health but also with economic, social and environmental change.

Conflict of interest statement

The authors declare that there are no conflicts of interest.

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