

Who Has Correct Information and Knowledge about HIV/AIDS in China?

Given the wide disparities in knowledge about HIV/AIDS within China and the large population with disadvantaged sociodemographic characteristics, it is important to have strategic approaches that tailor health education programmes specifically to target those with low education and those in farming occupations in rural areas.

By Jiajian Chen, Chen Shengli and Minja Kim Choe*

Acquired immunodeficiency syndrome (AIDS) is the late clinical stage of infection with the human immunodeficiency virus (HIV). The first AIDS case in China was reported in 1985. By 1998, new HIV infections had spread to all

* Jiajian Chen, Senior Fellow, East-West Center, Population and Health Studies, Honolulu, United States of America, e-mail: chenj@eastwestcenter.org; Chen Shengli, Director, IEC Department, National Population and Family Planning Commission of China, Beijing, China, e-mail: chen-sl@263.net; and Minja Kim Choe, Senior Fellow, East-West Center, Population and Health Studies, Honolulu, United States, e-mail: mchoe@hawaii.edu.

provinces, autonomous regions and municipalities. It has been estimated that HIV/AIDS prevalence among adults rose from less than 0.002 per cent (10,000 cases) in the period 1990-1995 to about 0.2 per cent (1 million cases) in the period 2000-2001 (UNAIDS China, 2002; WHO, 2001). While the rate is still low in comparison with some other affected countries, there is no indication that the spread of HIV/AIDS in China will be controlled or will slow down in the near future (Zeng, 2001; UNAIDS and WHO, 2002).

In response to the rising HIV/AIDS epidemic, by 1998, the Government of China issued the China Mid- and Long-Term Plan for HIV/AIDS Prevention and Control (1998-2010). The plan calls for HIV/AIDS prevention and control programmes to be integrated into the social and economic development plans at different levels of Government. The plan emphasizes that “by the year 2002, over 70 per cent of the urban population, 40 per cent of the rural population and 80 per cent of the high risk population should have basic knowledge about HIV/AIDS and STD prevention and control” (State Council, China, 1998).

The most recent Five-year Action Plan of China sets new goals and targets of reaching 75 per cent of the urban population and 45 per cent of the rural population to have basic knowledge of HIV/AIDS by the year 2005 (China, 2002). The new plan reports that while local governments in all regions have vigorously promoted health education and behavioural intervention campaigns with some progress, the HIV/AIDS prevention work in China has yet to meet the big challenges. For example, the very rapid spread of HIV among intravenous drug users has still not been brought under control. The transmission of HIV through the collection or transfusion of blood still exists owing to illegal blood plasma collection (China, 2002).

Worldwide experience has suggested that public knowledge of HIV/AIDS is the most fundamental weapon against the HIV/AIDS pandemic as long as a vaccine or cure has not been developed (UNAIDS China, 2002). The level of knowledge of the population is thus an important measure for understanding the magnitude of the challenges Governments and non-governmental organizations have to deal with (United Nations, 2002).

Previous reports show that 80 per cent of the Chinese population had heard of HIV/AIDS by the end of 2000, while a wide gap in the general awareness of HIV/AIDS existed between rural (74 per cent) and urban (95 per cent) populations (State Family Planning Commission, 2001; Chen and others, 2002). However, it is suggested that general awareness of HIV/AIDS does not reveal any specific knowledge and does not lead to behavioural change to reduce risk. Much HIV/AIDS prevention requires identification of specific forms of safe behaviour for behavioural change (UNAIDS China, 2002; Ingham, 1995).

To assess the prospects for adopting effective preventive behaviour change, it is crucial to ascertain current levels of specific knowledge about HIV/AIDS in China. A more recent report shows that, consistent with current literature on levels of knowledge about HIV/AIDS among various subpopulations, there were considerable sociodemographic variations in levels of knowledge about

HIV/AIDS transmission and prevention among the population in China (Holtzman and others, 2003; Wu and others, 1999). Nevertheless, sociodemographic variations in specific knowledge about HIV/AIDS transmission and prevention need to be further identified.

Epidemiological studies have shown that the only routes of HIV transmission are through sexual intercourse, transfusion of blood, intravenous injections using HIV-contaminated needles or syringes, and transmission from an infected mother to her foetus or infant (United Nations, 2002; WHO, 1990). To meet the targets and goals of HIV/AIDS prevention and control, there is a strong need to assess the current levels of specific knowledge about HIV/AIDS transmission and prevention by urban-rural residence and other key sociodemographic factors. This baseline information is also important for identifying target areas where future health education will need to be intensified for HIV/AIDS prevention and control.

Based on previous research, the present study is aimed at assessing the sociodemographic factors related to specific knowledge about HIV/AIDS transmission and prevention. The factors that have been identified as determinants of HIV/AIDS knowledge in other studies include urban-rural residence, sex, age, marital status, educational achievement, occupation, exposure to media and perceived presence of neighbourhood risks (Holtzman and others, 2003; Brown, 2002; UNAIDS China, 2002; United Nations, 2002; Wang and others, 2000; Wu and others, 1999; Balk and others, 1999; Ingham, 1995).

Data and method

The authors use data from the cross-sectional Baseline Survey for HIV/AIDS Prevention conducted by China's State Family Planning Commission in December 2000. The survey interviewed 7,053 individuals aged 15-49 in two urban areas and five rural counties selected from seven provinces in China. Respondents were drawn from a multistage random sample of the population in urban and rural areas with varying levels of economic development and seriousness of the HIV/AIDS problem (State Family Planning Commission, 2002). The survey was funded by the United Nations Children's Fund (UNICEF), the Ford Foundation and the Joint United Nations Programme on HIV/AIDS (UNAIDS). It was expected to provide baseline information on AIDS knowledge, attitudes and practice in order to develop further action plans (State Family Planning Commission, 2002; Chen and others, 2002).

In the survey questionnaire, the section on knowledge of HIV/AIDS prevention starts with a general question: Have you ever heard of [HIV/AIDS]? It is to be noted that HIV infection and AIDS were not distinguished in the Chinese questionnaire. Respondents who answered "yes" to the question were further asked about their knowledge of the routes of transmission and ways of prevention. Respondents who had not heard of AIDS, and thus were not asked about their knowledge of transmission and prevention, were classified as not having correct knowledge of HIV/AIDS.

The dependent variables in this study are (a) whether the respondents gave a correct answer concerning HIV/AIDS routes of transmission and (b) whether the respondents gave a correct answer concerning ways of prevention. Respondents who identified “blood transfusion”, “sharing needles among drug users”, “foetus or baby of HIV-positive mother”, or “sexual intercourse” to the question “How is HIV/AIDS transmitted?” were classified as having correct knowledge on HIV/AIDS transmission. Respondents who identified “use condoms correctly”, “avoid unsafe blood transfusion” and “use disposable or sterilized needles” to the question “How can AIDS be prevented?” were classified as having correct knowledge of HIV/AIDS prevention. In constructing the dependent variables, responses of “don’t know” or “no answer” were treated as having incorrect knowledge. Persons who did not respond were excluded from the analysis.

Near the end of the survey, all respondents (regardless of their answer to the screening question on HIV/AIDS knowledge) were asked whether they agreed or disagreed with some statements about condoms, the last one being: Correct use of condoms can prevent AIDS. Respondents who answered “agree” with the statement were classified as having correct knowledge of HIV/AIDS prevention and those who answered “disagree” or “don’t know” were grouped as not having correct knowledge.

Multivariate logistic regression was used to estimate the net effects of a number of determinants on the correct knowledge of HIV/AIDS. The dependent variables (or outcome variables) included knowledge about HIV/AIDS routes of transmission through blood transfusion, sharing needles, mother-to-foetus and sexual intercourse; and ways of prevention through avoidance of unsafe blood transfusion, use of disposable or sterilized needles and use of condoms. While knowledge about the use of condoms as a way of HIV/AIDS prevention was asked more than once in the survey, only the multivariate result for the response to the latter question is reported owing to limited space. All the dependent variables had a value 1 for having correct knowledge and 0 for not having correct knowledge.

The independent variables include place of residence (rural, urban), sex, age (15-24, 25-34, 35-44 and 45-49), marital status (currently married, currently not married), education (primary school or none, middle school, high school, senior high school, technical college or university), occupation (farmers, other farm workers, non-farm blue-collar workers, white-collar workers including students, and unemployed or others), media exposure (sometimes/never, often) and perceived presence of HIV/AIDS-related risk in the neighbourhood (yes, no).

Media exposure was based on information about how often the respondents watched television, listened to the radio, read the newspaper and read magazines. Each answer of “never” was scored as value 0, “occasionally” was scored as 1 and “often” as 2. Scores of all answers were added and then grouped into 3 categories based on one standard deviation of the average total score: 0-1 for low level of media exposure, 2-5 for medium exposure and 6-8 for high exposure.

Perceived presence of HIV/AIDS-related risk in the neighbourhood was defined as a dichotomous variable based on the following questions: To your knowledge, are there prostitutes in your neighbourhood? Are there people paying for sex in your neighbourhood? Are there people using illegal drugs in your neighbourhood? Are there people selling blood in your neighbourhood? Any response of “very common” or “somewhat” was defined as perceived presence of neighbourhood risks; a response of “none” was defined as non-presence of neighbourhood risks. Respondents who did not answer were excluded from the analysis.

Limitation

The data used in this study are from a mixture of communities from five counties and two urban districts over seven provinces in China. The sample was expected to provide results that were representative of the total population of China (State Family Planning Commission, 2002). However, owing to sampling variations with limited geographic coverage of a very large and heterogeneous population, caution should be exercised in generalizing the results.

Results

Sample characteristics

Of the total of 7,053 adults aged 15-49 interviewed in 2002, about 52 per cent are males and about 48 per cent are females (table 1). The majority of respondents are rural residents (72 per cent), aged 25-44 (73 per cent), currently married (84.2 per cent), farmers (54 per cent), have some middle school or senior high school education (62 per cent) and have been exposed to mass media at a medium level (65 per cent). With regard to neighbourhood risk problems such as prostitution, paying for sex, drug use, or illegal blood selling, 34 per cent of the respondents perceived the presence of such risks.

Basic knowledge of HIV/AIDS transmission

Table 2 shows the urban-rural differences in the proportion of persons who had correct knowledge about HIV/AIDS transmission. Among selected routes of transmission, the most frequently mentioned route was sexual intercourse: 71 per cent in the urban and 42 per cent in the rural population. However, knowledge of HIV/AIDS transmission through blood transfusion, sharing needles among drug users and mother-to-foetus was low among the rural population (table 2). Except for knowledge about sexual intercourse as a route of transmission, increasing the knowledge about the HIV/AIDS transmission to 40 per cent of the rural population by the end of 2002 appears to be a big challenge.

Table 1. Sample characteristics and distribution of persons aged 15 to 49, China, 2000

Selected characteristics	Sample size	Percentage
Total	7,053	100.0
Residence		
Urban	2,000	28.4
Rural	5,053	71.6
Sex		
Men	3,702	52.5
Women	3,351	47.5
Age		
15-24	944	13.4
25-34	2,496	35.4
35-44	2,659	37.7
45-49	954	13.5
Marital status		
Currently married	5,941	84.2
Currently not married	1,112	15.8
Education		
Primary or less	1,971	27.9
Middle school	3,155	44.7
Senior high school	1,238	17.6
College or higher	688	9.8
Missing	1	0.0
Occupation		
Farmer	3,789	53.7
Other farm worker	1,119	15.9
Urban worker	591	8.4
White collar/students	781	11.1
Unemployed and others	773	11.0
Media exposure		
Low	1,225	17.4
Medium	4,578	64.9
High	1,249	17.7
Missing	1	0.0
Presence of neighbourhood risks		
None	4,619	65.5
Existing	2,405	34.1
Missing	29	0.4

Source: China's HIV/AIDS knowledge survey, 2000.

Table 2. Percentage of people aged 15 to 49 with correct knowledge about routes of HIV/AIDS transmission by place of residence, China, 2000

Routes of transmission	Urban	Rural	Total
Blood transfusion	56.6	25.9*	34.6
Sharing needles	35.1	9.6*	16.8
Mother-to-foetus	25.2	7.0*	13.0
Sexual intercourse	71.2	41.9*	50.2

Source: China's HIV/AIDS knowledge survey, 2000.

* Urban-rural difference is statistically significant at $p < 0.05$

Table 3 shows the multiple logistic regression model of factors related to correct knowledge about routes of HIV/AIDS transmission. It is important to note that the large urban-rural differential in knowledge of HIV/AIDS diminished after taking the effects of other sociodemographic factors into account. For example, before taking into account other factors, the estimated odds of having correct knowledge about HIV/AIDS transmission through blood transfusion, needle sharing, and mother-to-foetus transmission for the urban population were three to five times those for the rural population (data not shown). However, after adjusting for all other selected sociodemographic factors in the multiple logistic regression model, the corresponding odds ratios were reduced to 2.4 or smaller. Furthermore, the urban/rural differences in knowledge about sexual intercourse were not significant at all after taking into account the effects of other factors (table 3).

Among all the sociodemographic factors that are significantly associated with knowledge of HIV/AIDS, the effects of the respondents' schooling, media exposure and perceived risk in neighbourhood appear to be the strongest. For example, the adjusted odds of having correct knowledge about AIDS transmission for those with the highest level of schooling were three to five times as high as those with the lowest level of education. In addition, the adjusted odds of having accurate knowledge about AIDS routes for respondents with high media exposure were about two to five times those for respondents with low media exposure (table 3).

Table 3 also shows that the adjusted odds of knowing about sexual intercourse as a route of AIDS transmission were significantly higher for married persons than for unmarried persons. Youth 15-24 years of age tended to have lower adjusted odds of knowing about sexual intercourse as a route of AIDS transmission than others. As unmarried persons and youth are more vulnerable to uncommitted sexual relationships than married and older persons, the significant differences in knowledge about sexual intercourse as a route of HIV/AIDS transmission by marital status and age are noteworthy.

Table 3. Odds ratios, estimated by multiple logistic regression, of having correct knowledge about HIV/AIDS routes of transmission, by selected characteristics, persons aged 15 to 49, China, 2000

Characteristics	Blood transfusion	Sharing needles	Mother-to-foetus	Sexual intercourse
Residence				
Urban	1.38*	2.32*	1.85*	1.00
Rural ^a	1.00	1.00	1.00	1.00
Sex				
Men	1.19*	1.51*	1.06	1.13*
Women ^a	1.00	1.00	1.00	1.00
Age				
15-24 ^a	1.00	1.00	1.00	1.00
25-34	1.03	1.00	1.07	1.43*
35-44	0.71*	0.56*	0.58*	1.25*
45-49	0.68*	0.53*	0.42*	1.19
Marital status				
Currently married	1.11	0.96	1.21	1.48*
Currently not married ^a	1.00	1.00	1.00	1.00
Education				
Primary or less ^a	1.00	1.00	1.00	1.00
Middle school	1.80*	1.29*	1.64*	2.06*
Senior high school	2.91*	1.87*	2.36*	2.61*
College or higher	5.38*	3.18*	5.07*	5.08*
Occupation				
Farmer ^a	1.00	1.00	1.00	1.00
Other farm worker	1.16	1.61*	1.11	1.50*
Urban worker	1.95*	2.14*	1.91*	1.98*
White collar/students	1.90*	1.69*	1.89*	2.07*
Unemployed and others	1.20	1.54*	1.69*	2.05*
Media exposure				
Low ^a	1.00	1.00	1.00	1.00
Medium	1.56*	1.72*	1.65*	2.50*
High	2.55*	2.16*	2.36*	5.16*
Presence of neighbourhood risks				
No ^a	1.00	1.00	1.00	1.00
Yes	1.80*	2.12*	2.31*	1.95*

Source: China's HIV/AIDS knowledge survey, 2000.

^a Reference group.

* Significantly different from the reference group at $p < 0.05$.

Knowledge of HIV/AIDS prevention

While specific knowledge about HIV/AIDS transmission had not reached the vast majority of the people, even fewer knew about how to prevent it. For example, the unadjusted proportions of the rural population who mentioned avoidance of unsafe blood transfusion, use of disposable/sterilized needles and correct use of condoms as means of preventing HIV/AIDS were only 9 per cent, 6 per cent, and 9 per cent, respectively (table 4). Increasing the level of knowledge of HIV/AIDS prevention to 40 per cent of the rural population by the year of 2002 appears to be an enormous challenge.

Table 4. Percentage of people aged 15 to 49 with correct knowledge about ways of HIV/AIDS prevention, by place of residence, China, 2000

Ways of prevention	Urban	Rural	Total
Avoid unsafe blood transfusion	33.9	8.9*	16.0
Use disposable/sterilized needles	26.7	5.9*	11.8
Use condoms correctly (1)	27.7	8.8*	14.1
Use condoms correctly (2)	61.1	39.7*	45.8

Source: China's AIDS knowledge survey, 2000.

* Urban-rural difference is statistically significant at $p < 0.05$.

(1) Response to question asked earlier during the interview.

(2) Response to question asked at the end of the interview.

By contrast, when respondents were asked near the end of the survey whether they agreed or disagreed with the statement that correct use of condoms can prevent AIDS the proportion giving the correct response went up to 40 per cent for the rural population and 61 per cent for the urban population (table 4). The increased level of knowledge is an interesting phenomenon. Such an increase in demonstrating correct knowledge could be partially related to the survey question format effect or survey learning effect (Fowler, 1988; De Bruin and Fischhoff, 2000). Nevertheless, it is evident that people could acquire correct knowledge about HIV/AIDS easily through increased publicity.

Multivariate logistic regression results show that education has a major effect on having correct knowledge about AIDS prevention independent of other variables. For example, the odds of knowing about the correct use of condoms, avoiding unsafe blood transfusion and using disposable or sterilized needles for persons with the highest level of education were three-six times as high as those with the lowest level of education (table 5). In addition, the positive relationship between media exposure and the knowledge about AIDS prevention persists even after controlling for all other selected factors.

Table 5. Odds ratios, estimated by multiple logistic regression, of having correct knowledge about HIV/AIDS prevention, by selected characteristics, persons aged 15 to 49, China, 2000

Characteristics	Avoid unsafe blood transfusion	Use disposable or sterilized needles	Use condoms correctly
Residence			
Urban	2.21*	2.53*	0.97
Rural ^a	1.00	1.00	1.00
Sex			
Men	1.26*	1.23*	1.14*
Women ^a	1.00	1.00	1.00
Age			
15-24 ^a	1.00	1.00	1.00
25-34	1.06	0.90	1.48*
35-44	0.68*	0.51*	1.27*
45-49	0.53*	0.46*	1.28*
Marital status			
Currently married	1.10	1.10	2.24*
Currently not married ^a	1.00	1.00	1.00
Education			
Primary or less ^a	1.00	1.00	1.00
Middle school	1.67*	1.88*	1.82*
Senior high school	2.64*	2.36*	1.75*
College or higher	5.85*	5.28*	3.48*
Occupation			
Farmer ^a	1.00	1.00	1.00
Other farm worker	1.04	0.87	1.42*
Urban worker	1.63*	1.81*	2.17*
White collar/students	1.36*	1.36	1.94*
Unemployed and others	1.06	1.19	1.60*
Media exposure			
Low ^a	1.00	1.00	1.00
Medium	2.35*	1.81*	1.63*
High	3.64*	2.23*	3.95*
Presence of neighbourhood risks			
No ^a	1.00	1.00	1.00
Yes	2.05*	2.37*	1.09

Source: China's HIV/AIDS knowledge survey, 2000.

^a Reference group.

* Significantly different from the reference group at $p < 0.05$.

It is noteworthy that when other factors were taken into account, the odds ratios of knowing about condom use as a preventive method were significantly higher among married persons than among unmarried persons (table 5). Further, after controlling for the effects of marital status and other factors, young adults (aged 15 to 24) were the least likely to agree that condom use could prevent AIDS. The statically significant effects of marital status and age on the knowledge of condom use as a way of HIV/AIDS prevention suggest that unmarried and young adults had less information about condoms than married or older persons. This is not surprising because in China information on contraceptives is disseminated mainly to married couples.

Discussion

In summary, the results of the survey show wide differences in specific knowledge about HIV/AIDS between rural and urban areas. The rural population was less knowledgeable about HIV/AIDS transmission through blood transfusion, sharing needles and mother-to-foetus routes, and ways of prevention by correct use of condoms and disposable or sterilized needles, as well as by avoiding blood transfusion. To reduce the risk of HIV/AIDS spreading in the future to the general population, there is a strong need to provide full and specific knowledge to the general public, especially the rural population.

The results show that the wide urban-rural gaps in knowledge about HIV/AIDS diminished when sociodemographic factors, especially education, occupation, media exposure and the presence of neighbourhood risks, were taken into account. Given the wide disparities in knowledge about HIV/AIDS within China and the large population with disadvantaged sociodemographic characteristics, it is important to have strategic approaches that tailor health education programmes specifically to target those with low education and those in farming occupations in rural areas. Some in these population groups are more vulnerable to risk behaviours, such as having unsafe blood transfusions, intravenous drug use and unprotected high-risk sexual behaviour.

Media exposure has a statistically significant positive influence on correct knowledge of AIDS transmission and prevention, net of educational and occupational effects. This indicates that diffusion of knowledge on AIDS prevention could be successful with effective and efficient mass media coverage, given the existing infrastructure for long-term structural improvement in socio-economic status of the population. Sound health education programmes through television, radio, newspapers and magazines should be made more accessible to the people with little education in rural areas. In addition, the family planning network could also be utilized to facilitate the access to health education programmes through existing reproductive health programmes.

Last but not least, the lesser knowledge about HIV/AIDS transmission through sexual intercourse and about prevention by condom use among unmarried

Chinese youth is especially worrisome. HIV/AIDS has spread rapidly among high-risk populations in China. In the light of the fact that unmarried and young adults are potentially most vulnerable to HIV/AIDS infection through unprotected sex (UNAIDS, 1999; 2002a; Population Council and UNFPA, 2002; Balk and others, 1999), there is also a need to expand efforts to inform the public, especially unmarried and young adults, about safe sex with the use of condoms in order to prevent the spread of HIV/AIDS.

The goal of promoting basic knowledge about HIV/AIDS to 40 per cent of the rural population and 70 per cent of the urban population has probably been accomplished by now. However, the observed wide sociodemographic disparities in knowledge about HIV/AIDS within the population indicate that the level of HIV/AIDS knowledge might be much lower among some vulnerable populations: women, youth, unmarried persons and those with low levels of education and media exposure. Preventing potential HIV/AIDS outbreaks calls for a broader and faster dissemination of AIDS-prevention knowledge to the total population (UNAIDS China, 2002). The lack of knowledge needs to be overcome by extensive publicity, especially by targeting those who are in a disadvantaged situation concerning access to sources of information.

Increasing HIV/AIDS knowledge during the early stage of the epidemic is seen as one of the most cost-effective measures for HIV/AIDS prevention (UNAIDS China, 2002). Currently, the prevalence of HIV/AIDS is low in China, but a rapid increase is projected: a total of 10 million Chinese might acquire HIV by the end of this decade if effective prevention programmes do not take place (UNAIDS and WHO, 2002). However, spreading knowledge to the majority of the population in a short time is by no means an easy task without strong support from all levels of the Government in China. The spread of knowledge also needs innovative and carefully-designed education programmes to address a new set of sensitive topics in public. In addition, it needs sufficient funding resources and manpower to advocate and implement the campaigns. To monitor and evaluate any further progress towards desired targets and goals for reducing and stopping the spread of the AIDS epidemic, repeated high-quality sample surveys on changes in knowledge and risk behaviours at regular time intervals may become an indispensable tool (Cleland, Ferry and Carael, 1995).

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