# HIV/AIDS KNOWLEDGE AMONG REPRODUTIVE AGED WOMEN IN CHINA

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Thesis
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## ABSTRACT

This study is aimed to investigate the effects of socio-demographic characteristics and HIV/AIDS information sources on HIV/AIDS related knowledge among reproductive aged women in China. The study employs data from the 2001 Chinese National Family Planning/Reproductive Health Survey (NRHS2001) which was conducted by the National Population and Family Planning Commission (NPFPC). A total of 39,586 women aged 15-49 were randomly selected from the whole country.

The research provides evidence that Chinese women at reproductive age are not equipped with a satisfactory HIV/AIDS awareness and HIV/AIDS knowledge to combat the quick and wide spread HIV. The awareness of HIV/AIDS was very low among those women from rural areas, who were less educated and members of minority groups. HIV/AIDS knowledge is also very low among those more vulnerable groups, i.e. low educated and rural women. The results indicate that IEC programs should focus on those women to increase their HIV/AIDS awareness and HIV/AIDS knowledge.

The study confirms that individuals' socio-demographic characteristics as well as exposure to information sources affect their HIV/AIDS knowledge. The combination of broadcast media and printed media is the most effective multichannel mass media, not only because it covers the majority of reproductive aged women in China, but also it offers accurate information to women. Interpersonal channels are least effective, even though they are one of the main HIV-related information sources of those disadvantage women. The study also finds that the larger number of information sources, the higher level of HIV/AIDS knowledge the women have. Therefore, the future IEC programs should provide HIV/AIDS information to reproductive aged women through as many information channels as possible to increase women's HIV/AIDS knowledge.

KEY WORDS: HIV AIDS KNOWLEDGE/ REPRODUCTIVE HEALTH

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# CHAPTER 1

# INTRODUCTION

## 1.1 Problem statement

Since the Acquired Immunodeficiency Syndrome (AIDS) was first reported in 1981, HIV/AIDS has spread rapidly to most parts of the world. More than one million Chinese were estimated to be living with HIV/AIDS at the end of 2002, and the number could reach 10 million by the end of the decade unless effective and urgent action is taken (United Nations Theme Group, 2002). Though men still outnumber women in HIV infection in the nation, the female infection level has been increasing rapidly in recent years. The ratio of males to females among the recently infected has decreased from nine to one in 1990 to four to one in 2000 (United Nations Theme Group, 2002). Moreover, the proportion of mother to child transmission (MTCT) of HIV/AIDS has increased year by year since 1995. The case report data shows that the proportion of MTCT increased from 0.1percent in 1997 to 0.4 percent in 2002 (China Ministry of Health, 2003).

However, Chinese women still lack knowledge about HIV/AIDS. A study based on the 1997 Demographic and Reproductive Health Survey (DRHS) (Gao, et al., 1997) shows that only 63 per cent of reproductive aged women had heard of HIV/AIDS. Misconceptions about HIV/AIDS among reproductive age women are widespread. Among those women who have heard about HIV/AIDS, only 49 per cent knew that HIV can not be transmitted through hugs and handshakes, 34 per cent knew it can not be transmitted by dining with people living with HIV/AIDS (PLWHA) and 23 per cent knew it can not be spread through kissing. The results reveal that a large number of Chinese women of reproductive age have inadequate knowledge of HIV/AIDS. The National Family Planning/Reproductive Health Survey in 2001 found that among 39,586 reproductive aged women, only 73 per cent of them had heard about HIV/AIDS (Ke, 2002), but lack further information about the HIV/AIDS knowledge.

China is on the verge of HIV/AIDS epidemic break-out. Lack of awareness about HIV/AIDS in China is a major concern that has to be addressed urgently (UN Theme Group, 2002). This thesis explores the effects of socio-demographic factors and sources of HIV/AIDS information on HIV/AIDS knowledge among women in reproductive ages.

## 1.2 Rationale

According to the four most commonly cited theories in HIV/AIDS prevention literature: Health Belief Model, AIDS Risk Reduction Model, Stages of Change and Theory of Reasoned Action, whilst knowledge of the risks is not sufficient to prevent high risk behavior, the perception about HIV/AIDS is essential to respondents' risk behavior change (Baden, 1992; AIDS Control and Prevention Project, 1996). Lack of straightforward, clear and rational HIV/AIDS knowledge does not only put individuals at risk, but also increases people's fear, aggression and discrimination against PLWHA. As long as no vaccine or cure exists, the fundamental weapon against HIV/AIDS is knowledge (UN Theme Group, 2002).

Lack of knowledge makes people vulnerable to HIV/AIDS infection. Chinese women are more likely to have inadequate HIV/AIDS knowledge than men because of their lower education, income, and status (Chen, et al., 2002; Yang, 2004). Women's social and economic status have witnessed great improvements since the founding of the People's Republic of China in 1949. They are encouraged to go out of their home and participate in social life, receive education and find jobs to support themselves. However, gender inequalities remain in a large scale: illiteracy rate for women is higher than for men, fewer girls enroll the secondary schools compared with boys; more women than men are living in poverty; unemployment rates are higher among adolescent girls and women; a woman is often not in a position to negotiate safe sex or demand condom use; and it is a taboo for women to speak about sex (Zhang et al. 1999; UN Theme Group, 2002). All the above social and cultural factors hinder women in the access of HIV/AIDS information. In order to protect women from HIV/AIDS infection, it is important to find ways to empower them by implementing policies and programs that increase their access to education and information (Turmen, 2003). Therefore, this study explores the relationship of socio-demographic and

information sources with HIV/AIDS knowledge among Chinese reproductive aged women, and extrapolates the implications of the findings for future HIV/AIDS education and prevention.

## 1.3 Background

### 1.3.1 Country Overview

China is a large developing country in East Asia with 31 provincial regions. The population is 1,295.33 million, including 348 million reproductive aged women. The Han nationality accounts for 92 percent of the population and about 64 percent of the population live in rural areas (National Statistics Bureau , 2000).

### 1.3.2 HIV/AIDS situation in China

The first AIDS case was reported in China in 1985. The virus has spread to all 31 provinces, autonomous regions and municipalities. The HIV/AIDS epidemic has gone through the entry phase (1985-1988), expansion phase (1989-1994) and entered into a rapid increasing phase (1995-present) (Zeng, et al., 2000). By 2001, over 50 percent of reported HIV/AIDS infections in China were related to sharing of contaminated needles among male injecting drug users (IDUs). In Yunnan Province, Xinjiang Uygur Autonomous Region, Guangxi Zhuang Autonomous Region, Sichuan Province, Guangdong Province, injecting drug use is fueling the HIV/AIDS spread. The HIV/AIDS infection rate is very high among the IDU population, often above 20 percent and even as high as 80 percent, depending on the site. However, extensive HIV/AIDS infection has occurred among plasma sellers in rural areas of central China like Henan Province where poor people were selling blood plasma to supplement their meagre farm incomes. Infection levels of 10 to 20 percent have been found, rising to 60 percent in certain communities. More recently, there has been a large increase in the number of people infected through commercial sex, especially in coastal areas in east and south China, and in big cities. As a result, many people have already died of AIDS (UN Theme Group, 2002).

In response, the Chinese government has declared a policy of vigorous behavior change intervention among groups at higher risk of HIV/AIDS exposure. Although some measures, such as condom promotion, needle exchange and methadone

maintenance therapy, have been considered controversial by some government departments and the public, the new policies that actually support those approaches are already under way in various parts of the country. For example, in 2002, a pilot project for marketing syringes and needles was conducted in Guangxi Zhuang Autonomous Region and Guangdong Province, using staff of local centers for disease control (China Ministry of Health, 2003).

In recent years, national HIV/AIDS prevention and control efforts relating to public education on HIV/AIDS in China have improved (China Ministry of Health, 2003). In 1998, nine Ministries and Agencies including the Propaganda Department of the Communist Party of China jointly stipulated the regulation on “principles for HIV/AIDS education and communication”. It describes the basic principles for HIV/AIDS education and communication through the mass media and other channels, key messages for HIV/AIDS prevention and condom promotion among high-risk groups. In 1999, a document was issued by the National Bureau of Broadcast, Film and Television, requiring the Central Radio Station, Chinese Central Television and Provincial Bureaus of Broadcasting, Film and Television to consider HIV/AIDS prevention education as one of the two priority topics for publicity through the mass media. It clearly indicates that mass media such as central and local newspapers, radio stations, television, etc. should integrate HIV/AIDS education into their own work plans. Mass media at all levels and in all places should make their own plans for conducting HIV/AIDS/STI prevention publicity. This was followed in 2001 by the National AIDS Awareness Raising Campaigns, held on and around “The World AIDS Day” on December 1$^{st}$ every year which was organized by local health agencies. The activities include conferences, entertainment, interviews with experts, on-site consultations, hotlines, distribution of educational material and activity reports. In recent years, “The World AIDS Day” has evolved into a regular and continuous activity in many regions. In addition, health education and behavior change communication programs have been implemented among target populations, such as students, migrant workers, and people who engage in high risk behavior. Moreover, some ministries of the State Council, i.e. the Ministry of Health, the National Population and Family Planning Commission, the Ministry of Education, the Ministry

of Railways, the All-China Federation of Trade Unions, etc. have conducted HIV/AIDS trainings and education activities within their own systems.

However, legislative measures have not been implemented well, and awareness concerning the importance of HIV/AIDS prevention and care has made little progress in China, especially at provincial and local levels. Systematic and effective information, education and communication remain a challenge in China. The content and style of the activities are often generic and overlook the differences among various target groups(China Ministry of Health, 2003).

### 1.4 Research questions

- ? What socio-demographic factors affect HIV/AIDS related knowledge among reproductive aged women in China?
- ? What kind of information sources affect HIV/AIDS related knowledge?
- ? To what extent are the impact of socio-demographic factors on HIV/AIDS related knowledge mediated by sources of information about HIV/AIDS?

### 1.5 Objectives

- ? To examine the effects of socio-demographic factors and information sources on HIV/AIDS knowledge among reproductive aged women in China.

# CHAPTER 2

# LITERATURE REVIEW

The spread of AIDS through the transmission of HIV was first recognized as a pressing public health problem in the early 1980s. There are different factors that might have an effect on HIV/AIDS knowledge among reproductive aged women, such as demographic characteristics, socioeconomic factors and program factors. Therefore, in order to offer insight into what could possibly influence HIV/AIDS related knowledge, selected socio-demographic factors (education, age, racial/ethnic, proximity to HIV/AIDS) and information sources are reviewed in this study. They are considered to have an effect on the HIV/AIDS related knowledge.

## 2.1 Factors associated with HIV/AIDS knowledge

### 2.1.1 Socio-demographic characteristics

Socio-economic status (SES) (e.g., educational attainment, income, occupational prestige) is a very important factor affecting access to information about, and attitudes toward, health and disease (LeBlanc, 1993). Those persons with lower SES are less well informed than persons of higher SES about health and illness (Rogers, 1983; London & Robles, 2000).

**Education:** Education is one of the most powerful predictor of HIV/AIDS related knowledge. There are consistent results among previous studies: the higher education the more HIV/AIDS knowledge (Badhan, 1999; McCaig, et al., 1991; Shah, 1991; Untied Nations, 2002). The reasons why education plays a crucial role in knowledge acquisition were explained (Tichenor, et al., 1970): The first is communication skills. Persons with more formal education would be expected to have the higher reading and comprehension abilities that are necessary to acquire public affairs or science knowledge; the second is the amount of stored information, or existing knowledge resulting from prior exposure to

the topic through mass media or from formal education itself; the third is relevant social contact. Education generally indicates a broader sphere of everyday activity, a greater number of reference groups, and more interpersonal contacts, which increases the likelihood of discussing public affairs topics with others; the fourth includes selective exposure, acceptance, and retention of information. Sears and Freedman (1967) pointed out that voluntary exposure is often more closely related to education than to any other set of variables; the final factor is the nature of the mass media system that delivers information. Most scientific information is carried in printed media which, traditionally, has been more heavily used by higher-status persons. However, where national awareness is very high, even those with no education have heard of HIV/AIDS. In Brazil, Malawi, Uganda and Zambia, fully 98 percent of those with no education say they know about HIV/AIDS (United Nations, 2002). So in addition to education, there are other factors that influence HIV/AIDS knowledge.

**Age:** Age is one characteristic that merits consideration as a predictor of HIV/AIDS knowledge. An increase in age reflects an increase in knowledge, because young people are not getting access to the right information about HIV/AIDS (Sonenstein, et al., 1989; Anderson, 1990). However, there is argument that age is negatively associated with HIV/AIDS knowledge, because the HIV/AIDS pandemic affects younger people more than older people. In Madagascar, age was negatively correlated significantly with HIV/AIDS knowledge test scores, with younger participants performing better (Lanouette, et al., 2003). Age is also argued to be positively associated with misperceptions about HIV/AIDS transmission (McCaig, et al., 1991).

**Race/Ethnicity:** There is also evidence of differences across racial/ethnic groups in regard to levels of health-related knowledge, where whites in the US often exhibiting greater knowledge levels, because of racial and ethnic disparities in health care and access of health-related information (Anderson, et al, 1990; LeBlanc, 1993). Similarly, several studies have suggested that, among both adults and adolescents, racial/ethnic minority group persons exhibit lower levels of HIV/AIDS knowledge (Sonenstein, et al., 1989; LeBlanc, 1993; Chen, et al., 2002; Chen, et al, 2004).

**Place of residence:** Place of residence have been also shown to be related to knowledge of the health issue. Awareness of HIV/AIDS is usually higher among urban people than among rural ones. One possible reason is that people living in urban areas normally have higher SES than rural people. This brings them more opportunities to access information (Rogers,1983; Witwer, 1997; United Nations, 2002). In China (Chen, et al., 2002), one study indicated that awareness about HIV/AIDS is much lower in rural areas than in urban areas. The same result has been found in Vietnam (Bui, et al., 2001) and in Brazil (London & Robles, 2000).

**Proximity to HIV/AIDS**: Knowledge of HIV/AIDS is associated with proximity to HIV/AIDS in many studies. Evidence from 39 African, Asian and Latin American countries shows that awareness grows with the incidence of HIV/AIDS (United Nations, 2002). In Thailand, researchers also found that proximity to an AIDS epicenter was positively related to knowledge of AIDS and HIV/AIDS transmission. Residents living in high-AIDS prevalence areas were more knowledgeable of HIV/AIDS than those living in low-prevalence areas (Im-Em & Suwanarat, 2002). The probable explanation is that people living in areas with higher HIV/AIDS prevalence normally have more perceived risk of HIV/AIDS infection, which motivated them to seek exposure as much as possible to information sources and to get more knowledge. And when information is made easily available, motivation is strong enough to generate some processing and retention of the information (Ettema, et al.,1983). However, McCaig, et al., (1991) found that residents of high-incidence areas exhibited greater misperceptions about HIV/AIDS transmission than people living in medium or low-incidence areas.

### 2.1.2 Exposure to information sources and HIV/AIDS knowledge:

Information sources of HIV/AIDS can include broadcast media (radio, TV) printed media (newspaper, books, leaflets, and posters), interpersonal information like advice from other people (adults, family members, friends, relatives); counseling from health workers, doctors mobile teams, etc. (WHO, 1998).

**Exposure to HIV/AIDS information through mass media:** Mass media are all those means of transmitting messages that involve a mass medium, such as television, radio, newspapers, magazines, posters, etc. Among information sources, the mass media play an important role in diffusing knowledge because it reaches a large audience rapidly and it can create knowledge and spread information (Rogers, 1983). Moreover, public communication campaigns which heavily rely on mass media can play a large role in communicating information to the public, placing health on the public's agenda and contributing to changing lifestyle behaviors (Wallack, 1990). However, the proportion of people exposed to various types of media varies considerably (Witwer, 1997; Wolitski, et al, 1996; Chatterjee, 1999; Chen, et al., 2002; Thapa & Mishra, 2003). In sub-Saharan Africa, the proportion of women who listened to the radio at least once a week varied from 39 percent in Madagascar and 41 percent in Burkina Faso to 82 percent in Namibia. Weekly exposure to television was much lower overall, ranging from 9-11 percent in Burkina Faso, Madagascar and Kenya to 34 percent in Ghana. Weekly use of newspapers and magazines was lower still, ranging from 5 percent in Burkina Faso to 49 percent in Namibia (Witwer, 1997). While in the U.S. (Wolitski, et al, 1996), India (Chatterjee, 1999), Japan (Maswanya, 2000), China (Chen, et al., 2002) and Nepal (Thapa & Mishra, 2003), television was the most frequently mentioned media source for most people in getting the HIV/AIDS information. Printed media is another important source, particularly in urban areas. Researchers have found that in the U.S., those with access to printed information had more specific information than persons whose chief source was one of the broadcast media (Wade & Schramm, 1969). In Nigeria (Termin, et al., 1999), newspapers, magazines and posters are the most common sources of STD/HIV/AIDS information sources for young people, followed closely by radio, television and film.

Although the mass media can serve to disseminate information about sexuality, health and other aspects of well-being to a variety of audiences, they can also be a source of misinformation, misperception and negative ideas and attitudes about reproductive health issues (Mann, 1992). A study in the U.S. has indicated that women who had more information sources had the more accurate AIDS knowledge (Lahiri, et al., 1995). So Some researchers argue that the best combination of channels for

reaching target groups are combining TV, radio, newspaper, brochures or posters, counseling, theater and self-help groups (Mann, 1992; Lahiri, et al., 1995).

**Exposure to HIV/AIDS information through interpersonal channels:** Interpersonal channels involve a face-to-face exchange between two or more individuals, which are more effective in persuading an individual to adopt a new idea, especially if the interpersonal channels links two or more individuals who are peers (Rogers, 1983). The use of peer education as effective role models in the prevention of HIV/AIDS especially among adolescents has already been supported in a number of studies in Uganda, Thailand, Nigeria, Botswana, and the U.S. (UNAIDS, 1998; Cash, 1993; Terin, et al., 1999; Norr, et al., 2004; Bhattacharya, et al., 2000; Robillard, et al., 2001). The effectiveness of this model is based on the developmental concept that peers substantially influence each other's behaviors, even when dealing with intimate, safer-sex acts. Besides, it is a low-cost and sustainable intervention that can change HIV/AIDS prevention knowledge, attitudes and behavior.

Some other interpersonal channels also can be employed to spread information. In 10 African countries, at least 50 percent of female respondents say they have heard of AIDS from friends or relatives (United Nations, 2002). In Tanzania, school adolescents regarded parents and health workers as credible sources of reproductive health information (Masatu, et al., 2003). In the U.S., although mass media was the most frequently mentioned source of HIV/AIDS information among low-risk and at-risk population, interpersonal sources (in particular, physicians, clinic counselors, and AIDS patients) were perceived as highly credible by a majority of individuals (Wolitski, et al., 1996; Bhattacharya, et al., 2000). In China, one pilot project in Yunnan province showed that a community based intervention (recruiting village leaders, teachers and women and youth leaders to participate in the program) can be successful in increasing HIV/AIDS knowledge and preventing drug use in rural areas (Wu, et al., 2002).

## 2.2 Socio-demographic factors that affect exposure to information sources

Different types of information sources are suitable for different target groups and have different effects on information processing. Which source of health-related

information is the most frequently used by, or the most successful to reach various segments of the population? Rogers (1983) highlights the consistent findings that those people of high socioeconomic status have greater exposure to virtually all information channels. Persons of higher social status and educational attainment seem to have greater access to both printed and broadcast media. In the U.S. (Wade & Schramm, 1969), it has been found that better educated people are more likely than less educated people to read about health. The more education a person has, the less likely he/she relies on TV for health information. The broadcast media are more likely used by the less educated and racial/ethnic minorities because of limited reading skills. In Sub-Saharan Africa, married women with at least some education and those living in urban areas were more likely than women with no schooling and those living in rural areas to expose to mass media. Younger women were less likely than older women to expose to television. Childless women were more likely than women with children to expose to both radio and television (Witwer, 1997). In a study in five U.S. cities, the researchers found that exposure to specific mass media was related to gender, ethnicity and risk status. Women and individuals at risk of HIV/AIDS infection were most likely to have talked with someone about HIV/AIDS (Wolitski, et al., 1996).

## 2.3 Conceptual framework:

From the literature review, it has been found that HIV/AIDS knowledge varies by individual's socio-demographic characteristics (including education, age, racial/ethnic and place of residence) and exposure to HIV/AIDS information sources (including TV, radio, newspapers, posters, health workers, friends and relatives). Individual's socio-demographic characteristics also affect exposure to HIV/AIDS information sources. So we argue that there is not only a direct relationship between socio-demographic variables and HIV/AIDS knowledge, but also part of the relationship operating through exposure to information sources. Based on the literature review, this study adopts the conceptual framework shown in Figure 2.1.

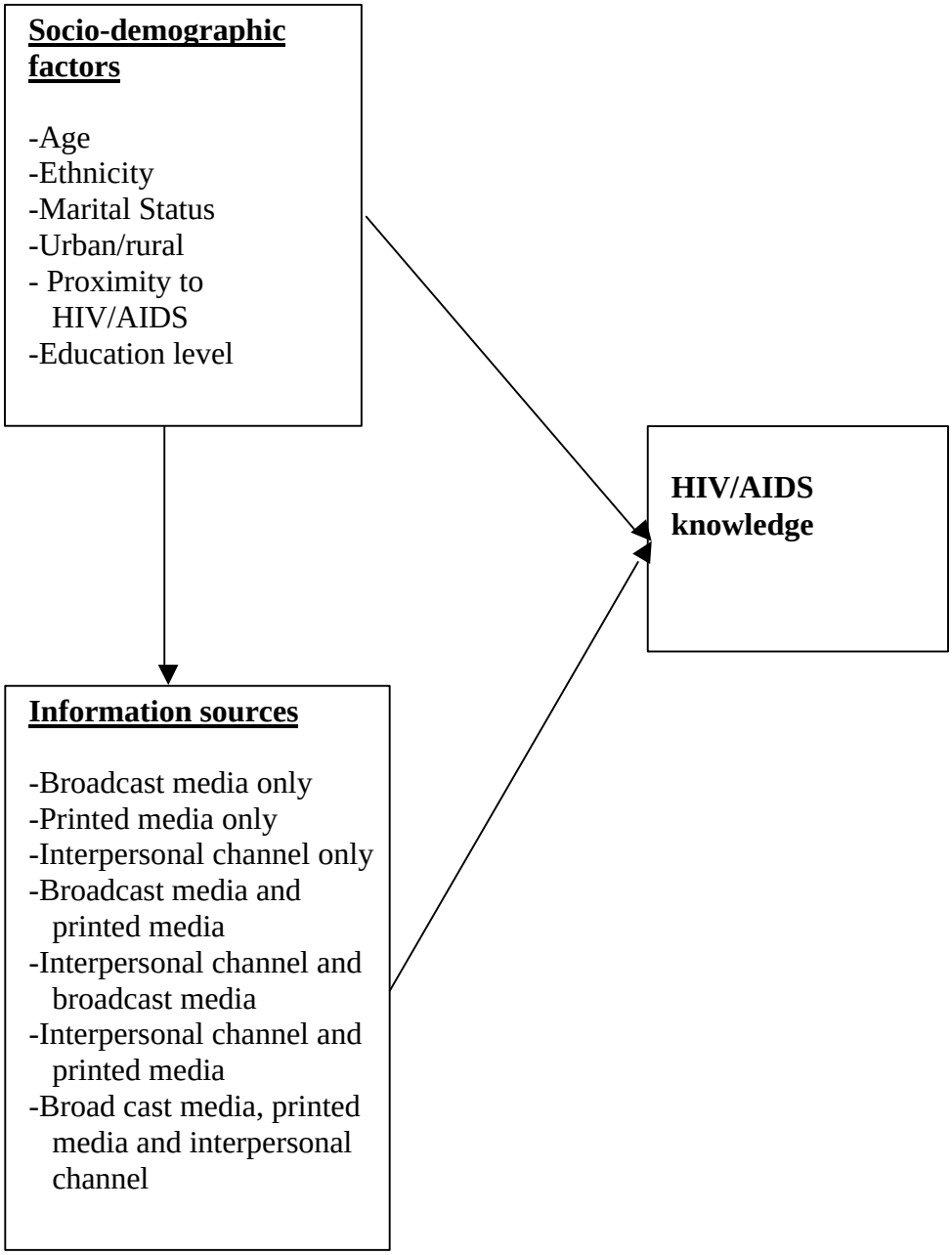


**Figure 2.1: Conceptual framework**

## 2.4 Hypotheses

- ? Socio-demographic characteristics affect HIV/AIDS knowledge.
- ? Sources of information affect HIV/AIDS knowledge.
- ? Some of the relationship between socio-demographic variables and HIV/AIDS knowledge operates through sources of information.

# CHAPTER 3

# RESEARCH METHODOLOGY

## 3.1 Source of data

This study utilized data from the 2001 Chinese National Family Planning/Reproductive Health Survey (NRHS2001) which was conducted by the Population and Family Planning Commission. The NRHS2001 is a nationally representative survey of women age 15-49 years containing detailed information on reproductive health, fertility, family planning practices and socio-demographic characteristics.

## 3.2 Sample design

A two stage random sampling method was used in the NRHS2001. For the first stage, out of 2000 counties/cities/districts across the country, 337 of them were randomly selected. For the second stage, 1041 sample villages were randomly selected from 337 counties/cities/districts. In the sample villages, all 39,586 reproductive women aged 15 to 49 years were interviewed.

## 3.3 Operational definitions

Based on the conceptual framework and data source, the operationalization of the variables are as follows:

### 3.3.1 Dependent variable: HIV/AIDS knowledge

HIV/AIDS knowledge refers to some basic knowledge about HIV/AIDS which the majority of them are related to HIV transmission routes. Thirteen questions were asked to measure how much a respondent knows about HIV/AIDS. A correct response to each

question was represented by a value of 1, an incorrect response or no answer was represented by a value of 0. The responses of each respondent were summed across the 13 items. The knowledge score of each respondent ranges from 0 to 13. If women provided all 13 correct answers, this total knowledge score would be 13; if women provided all 13 incorrect answers, this total knowledge score would be 0.

### 3.3.2 Independent variables: Sources of HIV/AIDS information

Respondents exposed to HIV/AIDS information through several sources: broadcast media (TV, radio); printed media (newspapers, magazines, posters); and interpersonal channel (Health workers, families, relatives, friends, and other persons). HIV/AIDS information sources in this study refer to the above three sources and their combinations. This variable thus has 7 following categories.

- Broadcast media only
- Printed media only
- Interpersonal channel only
- Broadcast media and printed media
- Interpersonal channel and broadcast media
- Interpersonal channel and printed media
- Broadcast media, printed media and interpersonal channel

### 3.3.3 Control variables: Socio-demographic characteristics

**Age:** age refers to the completed years of current age of respondents at the time of survey. The age of respondents were grouped into two categories: adolescent group 15-24, and adult group 25-49 in the bivariate analyses and the complete age was used in the multivariate analyses.

**Race/ethnicity: refers to the ethnicity of the respondent with two categories: Han nationality and other ethnic groups.**

**Marital status:** refers to the marital status of the respondents at the time of survey. This is represented by two categories: single and ever married (currently married, divorced and widowed).

**Place of residence:** Refers to the place of residence at the time of survey. It has two categories of urban and rural.

**Proximity to HIV/AIDS:** Refers to the number of HIV/AIDS new cases of the province where the respondent lived at the time of interview. It has two categories, more proximate to HIV/AIDS and less proximate to HIV/AIDS. More proximity to HIV/AIDS included women living in Yunnan province, Xinjiang Uygur Autonomous Region, Guangxi Zhuang Autonomous Region, Sichuan Province, Guangdong Province, and Henan Province, where there were more infected cases, with more than 100 newly reported HIV/AIDS cases in 2000. Less proximity to HIV/AIDS refers to women living in other areas where the AIDS situation were less serious, with less than 100 newly reported HIV/AIDS cases in 2000.

**Education:** refers to the highest level of formal education attained by a respondent. The levels are categorized into two groups: lower education (less than primary school) and higher education (above primary school).

**Table 3.1 Summary description of the dependent and independent variables for multiple regression models**

| Variable name | Description | Measurement scale |
|---|---|---|
| **Dependent variable:** | | |
| Knowledge of HIV/AIDS | Refers to the HIV/AIDS basic knowledge which measured from 13 questions on AIDS knowledge. Each correct response is scored as 1 and each incorrect response and not mentioned answer is scored 0. A composite index of knowledge score is constructed by summing all the correct responses. The values of this variable rang from 0 through 13. . | interval |
| *Independent variables:* | | |
| Exposure to HIV/AIDS information through broadcast media | Got HIV/AIDS message from broadcast media only<br>Yes=1 and No=0 | Dichotomous |
| Exposure to HIV/AIDS information through printed media | Got HIV/AIDS message from printed media only Yes=1 and No=0 | Dichotomous |
| Exposure to HIV/AIDS information through interpersonal channel | Got HIV/AIDS message interpersonal channel only<br>Yes=1 and No=0 | Dichotomous |
| Exposure to HIV/AIDS information through broadcast media and printed media | Got HIV/AIDS message from the combination of broadcast media and printed media<br>Yes=1 and No=0 | Dichotomous |
| Exposure to HIV/AIDS information through broadcast media and interpersonal channel | Got HIV/AIDS message from the combination of broadcast media and interpersonal channel<br>Yes=1 and No=0 | Dichotomous |
| Exposure to HIV/AIDS information through printed media and interpersonal channel | Got HIV/AIDS message from the combination of printed media and interpersonal channel<br>Yes=1 and No=0 | Dichotomous |
| Exposure to HIV/AIDS information through broadcast media , printed media and interpersonal channel | Got HIV/AIDS message from the combination of broadcast media, printed media and interpersonal channel<br>Yes=1 and No=0 | Dichotomous |
| **Control variables:** | | |
| Age | Age of the respondents | interval |
| Ethnicity | Other minorities =1 and Han=0 | Dichotomous |
| Marital status | Ever married=1 and single = 0 | Dichotomous |

**Table 3.1 Summary description of the dependent and independent variables for multiple regression models (Continued)**

| Variable name | Description | Measurement scale |
|---|---|---|
| Place of residence | Urban=1 and Rural =0 | Dichotomous |
| Proximity to HIV/AIDS | Living provincial region Where the number of new reported HIV/AIDS cases in 2000 less than 100=1 Where the number of new reported HIV/AIDS cases in 2000 more than 100 =0 | Dichotomous |
| Education | Higher education (above primary school) =1 Lower education (below primary school) = 0 | Dichotomous |

### 3.4 Methods of Data Analyses

Univariate analyses such as frequency, percentage distribution, mean, median and standard deviation were used to describe respondents' socio-demographic characteristics, HIV/AIDS information sources and HIV/AIDS knowledge.

Bivariate analyses such as crosstabulation, $?^2$ and t-test were used to examine the differences of HIV/AIDS awareness and knowledge among respondents with different socio-demographic characteristics and the relationship of socio-demographic characteristics and HIV/AIDS information sources with HIV/AIDS knowledge.

In multivariate analyses, the dependent variable was measured at an interval level, and independent variables were either measured at interval scale or dummy variables, so multiple regression models were used. Model 1 included socio-demographic factors and HIV/AIDS knowledge, in order to see how much variation of HIV/AIDS knowledge can socio-demographic factors explain. Model 2 added information sources to see how much more variation of HIV/AIDS knowledge can information sources explain, and to examine the affect of socio-demographic factors and exposure to information sources on HIV/AIDS knowledge

### 3.5 Limitation of the study

This study analyzed cross-sectional data from the Chinese National Family Planning/Reproductive Health Survey in 2001 (NRHS2001). In the questionnaire, the

multiple choices of information sources question did not classify every single information source, but grouped them as broadcast media (TV, radio); printed media (books, newspapers, magazines); interpersonal channels (relatives, colleagues, neighbors; families; health workers); etc. So it is difficult to specify which single information source affects the HIV/AIDS knowledge.

# CHAPTER 4

# RESULTS OF THE STUDY

The main results of this study are presented in three sections. The first section provides the level of HIV/AIDS awareness of the respondents. The second section explores HIV/AIDS knowledge and the exposure to HIV/AIDS information sources among those women who had ever heard of HIV/AIDS. The third section presents the multivariate analyses where the relationship of HIV/AIDS knowledge with sources of information and socio-demographic characteristics is analyzed.

## 4.1 HIV/AIDS awareness

Among 39,586 reproductive aged women, 27 percent had never heard of HIV/AIDS. HIV/AIDS awareness varied by place of residence, education, ethnicity, marital status, proximity to HIV/AIDS and different age. Ninety three percent of urban women had heard about HIV/AIDS, while only 66 percent of rural women had heard of HIV/AIDS. Eighty-nine percent of more educated women had heard about HIV/AIDS, while only 53 percent of less educated women had heard of HIV/AIDS. HIV/AIDS awareness is higher among Han women than in other ethnic groups, with proportion of 75 percent and 51 percent respectively. HIV/AIDS awareness was higher among younger women, single women, and women who were less proximate to HIV/AIDS than older women, ever married women and women who were more proximate to HIV/AIDS. (Table 4.1)

**Table 4.1 HIV/AIDS awareness by socio-demographic characteristics**

| Socio-economic characteristics | Percent of women who had ever heard of HIV/AIDS | Percent of women who had never heard of HIV/AIDS | Total number |
|---|---|---|---|
| **Age***** | | | |
| 15-24 | 78.0 | 22.0 | 8256 |
| 25-49 | 71.3 | 28.7 | 31330 |
| **Residence***** | | | |
| Rural | 65.7 | 34.3 | 29512 |
| Urban | 93.4 | 6.6 | 10074 |
| **Proximity to HIV/AIDS***** | | | |
| More HIV/AIDS proximity | 67.6 | 32.4 | 10758 |
| Less HIV/AIDS proximity | 74.6 | 25.4 | 28828 |
| **Marital status***** | | | |
| Single | 80.0 | 20.0 | 6458 |
| Ever married | 71.3 | 28.7 | 33128 |
| **Education***** | | | |
| Lower education | 52.7 | 47.3 | 17916 |
| Higher education | 89.2 | 10.8 | 21670 |
| **Ethnicity***** | | | |
| Han | 75.0 | 25.0 | 35800 |
| Minority groups | 50.7 | 49.3 | 3786 |
| *Total* | 72.7 | 27.3 | 39586 |

***significant at .01 level ($?^2$ test)

## 4.2 HIV/AIDS knowledge and sources of HIV/AIDS information

### 4.2.1 HIV/AIDS knowledge

Only those women who had ever heard of HIV/AIDS were asked the 13 questions related to HIV/AIDS and sources of HIV/AIDS information. The vast majority of the women knew the main HIV transmission routes. They knew that HIV could be transmitted by sex, blood, needle sharing and mother-to-fetus (84 percent, 82 percent, 82 percent and 78 percent, respectively). However, only a small proportion of women responded to misconceptions correctly, i.e. HIV/AIDS could be transmitted by mosquito bite, sharing toilet PLWHA, kissing, sharing food with PLWHA, and shaking hands with PLWHA, (18 percent, 26 percent, 28 percent, 38 percent, and 58 percent, respectively).

The total HIV/AIDS knowledge score was also computed from the number of correct answers women gave to 13 questions on HIV/AIDS. The knowledge scores

range from 0-13. The mean knowledge score was 7.6 (Table 4.2). Very few women had no knowledge or very good knowledge. Five percent of women got a score of zero, which means that even though they had heard of HIV/AIDS, they did not have any knowledge on HIV/AIDS. One percent of women got a score of 13 which means that they could answer the 13 questions correctly.

**Table 4.2 HIV/AIDS related questions, and mean score on knowledge index**

| **HIV/AIDS related question** | **Percent of women who provided correct response** | **Number** |
|---|---|---|
| Is HIV transmittable? | 90.8 | 26138 |
| Can HIV be transmitted through having sex with a person with HIV/AIDS? | 83.9 | 24158 |
| Can HIV be transmitted through blood ? | 82.1 | 23643 |
| Can HIV be transmitted from sharing needle with a person with HIV/AIDS ? | 81.5 | 23460 |
| Can HIV be transmitted from mother to fetus ? | 77.7 | 22354 |
| Can HIV/AIDS be cured? | 65.9 | 18980 |
| Can HIV be transmitted from mother to child in breastfeeding? | 64.7 | 18610 |
| Can HIV be transmitted from shaking hands with a person with HIV/AIDS? | 58.5 | 16845 |
| Is HIV different from AIDS ? | 44.3 | 12750 |
| Can HIV be transmitted from sharing food with a person with HIV/AIDS? | 37.6 | 10823 |
| Can HIV be transmitted from kissing with a person with HIV/AIDS? | 28.5 | 8196 |
| Can HIV be transmitted from sharing toilet with a person with HIV/AIDS? | 25.8 | 7424 |
| Can HIV be transmitted from mosquito bite | 18.3 | 5266 |
| Mean knowledge score =7.6 Median=8.0 S.D.= 3.2 Minimum=0 Maximum=13 | | |

HIV/AIDS knowledge was significantly different among women with selected socio-demographic characteristics. Women who lived in urban areas, were more educated, younger, or single had significantly higher HIV/AIDS related knowledge (P

<0.01). Han women or women who were more proximate to HIV/AIDS also had significantly higher HIV/AIDS knowledge (P<0.05). (Table 4.3)

**Table 4.3 Mean knowledge scores by socio-demographic characteristics**

| **Socio-demographic characteristics** | **Mean knowledge scores** | *Number* |
|---|---|---|
| **Age***** | | |
| 15-24 | 8.1 | 6442 |
| 25-49 | 7.5 | 22339 |
| **Ethnicity*** | | |
| Han | 7.6 | 26861 |
| Other Minorities | 7.4 | 1920 |
| **Marital Status***** | | |
| Married | 7.5 | 23613 |
| Single | 8.1 | 5168 |
| **Residence***** | | |
| Urban | 8.7 | 9406 |
| Rural | 7.1 | 19375 |
| **Proximity to HIV/AIDS*** | | |
| More proximity to HIV/AIDS | | |
| Less proximity to | 7.7 | 7276 |
| HIV/AIDS | 7.6 | 21501 |
| **Education***** | | |
| Lower education | 6.3 | 9441 |
| Higher education | 8.2 | 19340 |

***Significant at .01 level, *Significant at .05 level (T test), Scores range from 0 to 13

### 4.2.2 Sources of HIV/AIDS information

Broadcast media played the most important role in disseminating information on HIV/AIDS knowledge. Eighty one percent of women received information from broadcast media (TV, radio). The other 2 major sources were printed media (book, newspaper, magazine) and interpersonal channels through relatives, colleagues and neighbors (50 percent and 38 percent, respectively). A small proportion of women got information from the other interpersonal channels, i.e., health workers, families and other sources (5 percent, 5 percent and 1 percent, respectively). (Table 4.4)

**Table 4.4 Sources of HIV/AIDS information(multiple answers are possible)**

| Information sources | Percentage | Number |
|---|---|---|
| Broadcast media | | |
| TV, Radio | 81.4 | 23439 |
| Printed media | | |
| Books, newspaper, magazines | 49.8 | 14330 |
| Interpersonal channels | | |
| Relatives, colleagues, neighbors | 38.0 | 10932 |
| Health workers | 5.3 | 1526 |
| Families | 4.5 | 1308 |
| Other persons | 0.8 | 235 |

A very small number of women got HIV/AIDS information from health workers, families and other persons (Table 4.4), Therefore, we grouped them with relatives, colleagues, neighbors as one group of interpersonal channels. In the following analyses, sources of HIV/AIDS information refer to mutually exclusive seven combinations of broadcast media, printed media and interpersonal channels, through which women got HIV/AIDS information. Table 4.5 shows the variation of information sources by socio-demographic characteristics. Women who were more educated or lived in urban areas obtained HIV/AIDS knowledge from a combination of information sources, while less educated or rural women received their HIV/AIDS knowledge from single information sources, i.e. almost half women living in urban areas and 39 percent of higher educated women, obtained HIV/AIDS knowledge from a combination of broadcast media and printed media, while 27 percent of women living in rural areas and 33 percent of lower educated women got HIV/AIDS knowledge from broadcast media only. Women who were older, ever married, with lower education, and lived in rural areas were more likely to get HIV/AIDS information from interpersonal channels (15 percent, 14 percent, 26 percent, and 17 percent respectively) compared with those who were younger, single, with higher education or lived in urban areas (6 percent, 5 percent, 6 percent and 4 percent, respectively).

**Table 4.5: Percentage distribution of information sources by socio-demographic characteristics**

| | Sources of information | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Interpersonal only A** | **Broadcast only B** | **Printed media only C** | **A+B** | **A+C** | **B+C** | **A+B+C** | **Total** |
| **Residence*** ** | | | | | | | | |
| Rural | 17.0 | 27.4 | 3.2 | 17.0 | 1.8 | 20.4 | 13.1 | 100 |
| Urban | 3.8 | 17.1 | 5.2 | 5.9 | 2.0 | 48.4 | 17.6 | 100 |
| **Age*** ** | | | | | | | | |
| 15-24 | 5.9 | 21.3 | 5.4 | 8.0 | 2.6 | 37.3 | 19.5 | 100 |
| 25-49 | 14.6 | 24.9 | 3.5 | 14.9 | 1.6 | 27.3 | 13.2 | 100 |
| **Marital status*** ** | | | | | | | | |
| Single | 4.9 | 19.9 | 5.7 | 6.6 | 2.6 | 40.8 | 19.5 | 100 |
| Ever married | 14.4 | 25.0 | 3.5 | 14.9 | 1.7 | 27.1 | 13.5 | 100 |
| **Proximity*** ** | | | | | | | | |
| More | 15.3 | 18.7 | 3.7 | 16.7 | 2.2 | 25.5 | 18.0 | 100 |
| Less | 11.8 | 25.9 | 3.9 | 12.3 | 1.7 | 30.9 | 13.5 | 100 |
| **Ethnicity*** ** | | | | | | | | |
| Han | 12.7 | 23.6 | 3.9 | 13.5 | 1.9 | 29.6 | 14.8 | 100 |
| Minorities | 12.2 | 30.2 | 3.6 | 11.2 | 1.7 | 29.0 | 12.0 | 100 |
| **Education*** ** | | | | | | | | |
| Lower | 26.1 | 33.2 | 1.6 | 21.4 | 1.1 | 9.7 | 7.0 | 100 |
| Higher | 6.1 | 19.6 | 5.0 | 9.5 | 2.2 | 39.2 | 18.3 | 100 |

***significant at .01 level ($?^2$ test)

### 4.3 Relationship of HIV/AIDS knowledge with sources of information and the socio-demographic characteristics of the respondents

This study examines the relationship of HIV/AIDS knowledge with sources of information and the socio-demographic characteristics of the respondents through multiple regression analyses. All variables in the bivariate analyses were entered into the multiple regression model.

Table 4.6 shows the result of multiple regression analyses in two models. Model 1 includes only selected background variables such as age, place of residence,

ethnicity, proximity to HIV/AIDS and education, in order to show how much socio-demographic characteristics can explain variation in HIV/AIDS knowledge. Model 2 adds information sources to see how much more information sources can explain variation on HIV/AIDS knowledge, and how these information sources and socio-demographic characteristics affect HIV/AIDS knowledge.

The results show that model 1 significantly explains 11 percent of the variation in HIV/AIDS knowledge and model 2 significantly explains 19 percent of the variation. Therefore the ability to predict the knowledge of HIV/AIDS increases by 8 percentage points when exposure to information sources is added. The $R^2$ significantly changes from model 1 to model 2. For most variables, the coefficients of socio-demographic variables decline by almost 50 percent after controlling for sources of information, i.e., coefficient of age, place of residence, and education changes from –0.05 to –0.03, from 1.253 to 0.856, from 1.375 to 0.766, respectively. Ethnicity has no significant effect on HIV/AIDS knowledge in model 2.

We can see from model 2 that after controlling for socio-demographic characteristics, all information sources significantly affected HIV/AIDS knowledge. Women who received information from a combination of two sources or three sources had higher mean knowledge scores than women who received information from only one source. The combination of 2 sources, i.e. broadcast media and interpersonal channel, printed media and interpersonal channel, broadcast media and printed media, and the combination of 3 sources increases the mean knowledge scores by 1.0, 1.1, 1.7 and 2.0 scores, respectively. Among women who obtained HIV/AIDS information from single source, women who received information from printed media had highest mean knowledge score, whereas women who received information from interpersonal channels had lowest knowledge score.

Age, marital status, place of residence, proximity to HIV/AIDS, and education had significant effects on HIV/AIDS knowledge. Older women had lower knowledge than younger women. Ever married women had 0.4 mean knowledge score higher than that of single women. Urban women had 0.9 mean knowledge score higher than their rural counterparts. More educated women had 0.8 mean knowledge score higher than less educated women. Women who were less proximate to HIV/AIDS had 0.2 mean knowledge score lower than those who were more proximate to HIV/AIDS.

**Table 4.6 Unstandardized regression coefficients of determinants of knowledge of HIV/AIDS**

| Variables | Model 1 | | Model 2 | |
|---|---|---|---|---|
| | b | Std Error | b | Std Error |
| **Age** (in years) | -0.05*** | 0.003 | -0.03*** | 0.003 |
| **Marital status** | | | | |
| Single (RC) | | | | |
| Ever married | 0.454*** | 0.062 | 0.39*** | 0.059 |
| **Ethnicity** | | | | |
| Han (RC) | | | | |
| Minority | -0.213* | 0.071 | -0.114 | 0.068 |
| **Residence** | | | | |
| Rural (RC) | | | | |
| Urban | 1.253*** | 0.041 | 0.856*** | 0.041 |
| **Proximity to HIV/AIDS** | | | | |
| More proximity to HIV/AIDS (RC) | | | | |
| Less proximity to HIV/AIDS | -0.298*** | 0.041 | -0.205*** | 0.040 |
| **Education** | | | | |
| Lower education (RC) | | | | |
| Higher education | 1.375*** | 0.042 | 0.766*** | 0.043 |
| **Information sources** | | | | |
| Broadcast media only (RC) | | | | |
| Interpersonal channel only | | | -0.745*** | 0.060 |
| Printed media only | | | 0.838*** | 0.094 |
| Broadcast + Interpersonal | | | 1.028*** | 0.058 |
| Print + Interpersonal | | | 1.062*** | 0.129 |
| Broadcast + Print | | | 1.743*** | 0.049 |
| Broadcast + Print + Interpersonal | | | 2.038*** | 0.058 |
| Constant | 7.470*** | 0.083 | 7.144*** | 0.111 |
| $R^2$ | 0.114 | | 0.188 | |
| $R^2$ change between two models | 0.075*** | | | |

RC = Reference category, *P<0.05, ***P<0.01

# CHAPTER 5

# DISCUSSION, CONCLUSIONS AND RECOMMENDENTIONS

## 5.1 Discussion

### 5.1.1 HIV/AIDS awareness and knowledge

This study sheds light on the situation of HIV/AIDS awareness and knowledge among reproductive aged women in China at a relatively early epidemic stage. Although this study shows that the percentage of women who had ever heard of HIV/AIDS increased from 63 percent in the 1997 National Reproductive Health/Family Planning survey (Gao, et al., 1997), by 10 percentage points in 2001, in this study, only 73 percent of reproductive aged women had ever heard of HIV/AIDS. The awareness of HIV/AIDS was very low among those women from rural areas, who were less educated and members of minority groups. Thirty four percent of rural women, 48 percent of less educated women and 49 percent of minority women had never heard of HIV/AIDS. This is probably because of social inequality, such as education inequality between rural and urban areas, and between Han and non-Han ethnic groups. The illiteracy rate among rural women and non-Han ethnic women is much higher than that among urban and Han women (Rong, 2001; Zhang, 2003). Another reason is probably because of the timing of implementation and staggered coverage areas of HIV/AIDS IEC programs. Most publicity activities are held on or around 1$^{st}$ December, World AIDS Day, in medium and large cities only. Rural areas have been largely ignored during the process. The frequency of activities is insufficient. Furthermore, there has been also a lack of considered approaches targeting minority populations and those living in more remote, poverty stricken areas (China Ministry of Health, 2003).

The result is supported by a recent study (Chen, et al., 2004) that HIV/AIDS awareness is improving in China, but it is still very low among less educated and rural persons. The results highlight the enormous challenges lying ahead in the HIV/AIDS prevention. The results indicate that IEC program should focus on those women from rural areas, who are less educated and members of minority groups, to increase their HIV/AIDS awareness. However, the HIV/AIDS awareness is lower among women who have more proximity to HIV/AIDS compared to those who have less proximity to HIV/AIDS. This is probably because that women who are more proximate to HIV/AIDS live in provinces with less economic development and fewer HIV/AIDS prevention and education programs which hinder them from accessing to HIV/AIDS information. Another reason maybe because when proximity to HIV/AIDS was measured, only new HIV infection cases were considered without taking into account the size of provincial populations. If the size of population in province A is higher than that of province B, even though HIV infection cases are more in province A, HIV/AIDS prevalence rate of province A may be lower than that of province B. Therefore, women in province A may be less proximate to HIV/AIDS. So in future study, the measurement of this variable should be improved.

Among those who had ever heard of HIV/AIDS, while women appeared to understand the four major HIV/AIDS transmission routes: blood transfusion, sexual contacts, needle sharing, and mother to fetus, misperceptions about HIV/AIDS widely existed among those women. For example, 82 percent of the sample believed that there was some chance of contacting HIV/AIDS by mosquito bite, or did not know if they were at risk in such a situation. 74 percent felt that sharing toilet carries a risk of exposure. This finding supports the general conclusions of previous research (Gao, et al., 1997; Chen, et al., 2002). Since the responses to misconceptions rather than transmission routes made a greater contribution to discrimination against PLWHA (Maswanya, 2000; Ting, et al., 2002; Chinese Ministry of Health, 2003), special attention should be given to implement effective AIDS prevention campaigns and interventions to reduce women’s inaccurate beliefs about HIV transmission..

### 5.1.2 HIV/AIDS related information sources

This research offers useful information regarding the role of information sources in HIV/AIDS information diffusion. Most of the respondents mentioned that they obtained HIV/AIDS related information from broadcast media or printed media (81 percent and 50 percent, respectively) (Table 4.4). This finding is consistent with findings in India (Chatterjee, 1999) and Nepal (Thapa, 2003), where they also found that mass media are the most common sources of HIV/AIDS information. Table 4.4 also shows that 38 percent of women received information from colleagues, friends and neighbors. This finding is consistent with previous findings in 10 African countries that half of female respondents had heard of AIDS from friends or relatives (United Nations, 2002). The sources of information associated with the highest levels of knowledge are the combination of broadcast media, printed media and interpersonal media, which is consistent with previous study by Lahiri (1995). The result shows the importance of using as many channels as possible in providing HIV/AIDS information. Consistent with previous findings (McCaig, et al., 1991), printed media is effective in the accurate dissemination of HIV/AIDS information among the single information sources. This is probably because that printed media has more flexibility and can convey all sorts of culturally sensitive information. However, in contrast to previous findings (Cash, 1993; Wolitski, et al., 1996; Bhattacharya, et al., 2000; Masatu, et al., 2003), the research found that interpersonal channels were associated with the lowest score of HIV/AIDS knowledge. A possible explanation is the cultural taboo in Chinese society about discussing issues related to sex, this may mean that interpersonal communication, especially in relation to a stigmatized disease such as HIV/AIDS, may be less effective in spreading HIV/AIDS information in China at present. Another explanation may be that those women who received information from interpersonal channels were more likely to get HIV/AIDS information from relatives, colleagues and neighbors who might not know much about HIV either (38 percent). Given the limited knowledge, HIV/AIDS information may be changed and spread with inaccurate messages. Only 5 percent got information from health workers, which is considered to be an effective channel to diffuse accurate information (UNAIDS, 1998; Cash, 1993; Terin, et al., 1999; Norr, et al., 2004). The result

indicates that in future HIV/AIDS prevention program, health workers should be strengthened to diffuse HIV/AIDS information.

### 5.1.3 Relationship between socio-economic characteristics, exposure to information sources and HIV/AIDS knowledge

The main focus of this paper is on the relationship between socio-demographic characteristics, information sources and HIV/AIDS knowledge. In bivariate analyses (Table 4.3), HIV/AIDS knowledge was significantly related with all selected socio-demographic characteristics. In multivariate analyses, all socio-demographic factors are significant in model 1, and although all of them are still significant (except ethnicity) in model 2 where sources of information were introduced, their effects decline substantially. The results support hypotheses 3 that sources of information mediate some of the effects of socio-economic variables on knowledge. The results suggest that HIV/AIDS knowledge variation within different socio-demographic groups are partly due to information sources.

The findings also demonstrate the role of the socio-economic context on affecting transmission of HIV/AIDS knowledge. Those women who are younger, ever married, more educated, more proximate to HIV/AIDS and live in urban areas have higher HIV/AIDS knowledge compared to other women. The findings support hypotheses 1 of this study that socio-demographic factors affect HIV/AIDS knowledge.

Age was found to have a negative influence on knowledge of HIV/AIDS. Increasing age was related with decreasing knowledge. This finding is different from findings of research conducted by Sonenstein, et al. (1989) and Anderson (1990), which stated that an increase in age also is associated with an increase in HIV/AIDS related knowledge. In China, HIV/AIDS prevention IEC programs normally do not target the older population, because they are not supposed to be as vulnerable as sex workers or migrants. So very little attention has been paid to the older women.

The results show a significant relationship between the place of residence and HIV/AIDS knowledge. HIV/AIDS related knowledge was higher among those women who live in urban areas than those living in rural areas. In general, urban areas have more facilities than rural areas, and most of the AIDS prevention campaigns and

media are hold in urban areas. Thus urban women have more opportunities to access HIV/AIDS information. Another reason is that Chinese rural women lack economic and social power to protect their rights of acquiring HIV/AIDS information. The results are consistent with the findings of Chen, et al. (2002) and Chen, et al. (2004).

The study found that marital status significantly affects HIV/AIDS knowledge. Unmarried women have less HIV/AIDS knowledge than married women. This is probably because in China, Confucian thinking is still deeply rooted in people's minds and directs ordinary Chinese's behaviors. While premarital sex has been on the rise, cultural norms emphasize premarital chastity and unmarried women do not receive education about their bodies, their reproductive system, or HIV/AIDS. There are few sexual health information services available for young people. Women, especially unmarried women, are not expected to discuss or make decisions about sexuality (Chen, et al., 2002; Yang, 2004).

HIV/AIDS proximity significantly affects HIV/AIDS knowledge. The probable explanation is that women with more HIV/AIDS proximity may have more perceived risk of HIV/AIDS infection, which makes them more motivated to acquire HIV/AIDS information (Wolitski, 1996**)**. This suggests that HIV/AIDS interventions designed to make women more aware that HIV/AIDS is close to them will have impacts on increasing their knowledge. This finding is consistent with the previous study in the U.S. (Ettema, 1983) and in Thailand (Im-Em & Suwanarat, 2002).

Education is an important determinant of HIV/AIDS knowledge among Chinese women. Even after controlling for information sources, higher educated women have significantly higher HIV/AIDS knowledge in comparison to those with lower education. The first reason is because women with more formal education would be more capable on reading and comprehension that are necessary to acquire detailed and accurate HIV/AIDS information. Secondly, more educated women have more voluntary exposure to HIV/AIDS information sources, especially printed media which is more effective in terms of diffusing accurate information about HIV/AIDS. The results presented above are similar to the findings of Tichenor, et al.(1970), McCaig et al. (1991), Shah (1991), Badhan (1999).

Information sources significantly affect HIV/AIDS knowledge. This result supports hypothesis 2. The results clearly indicate that knowledge is most likely to be

increased by combining a variety of channels of communication. If resources are limited, and only one channel of information can be promoted, the results suggest that providing printed media is the most likely to result in the highest levels of knowledge.

This study found that women with lower education, live in rural areas, who are older or ever married were more likely to use interpersonal channel only and broadcast media only than other women. This is probably because of their more limited access to printed media. So they prefer broadcast media and face-to-face communication methods that provide them with the opportunities for questions, discussion and feedback. These results indicate the importance of broadcast media and face-to-face contact in providing HIV/AIDS information to older women, ever married women, rural women or lower educated women. Women who live in urban areas and women with higher education were more likely to use a combination of information sources, i.e. broadcast and printed media, or the combination of all information sources. This is consistent with Rogers (1983) findings that those of high socioeconomic status have greater exposure to virtually all information channels.

## 5.2 Conclusions

In conclusion, this research provides evidence that Chinese women of reproductive age are not equipped with a satisfactory level of HIV/AIDS knowledge to combat the quickly spreading HIV/AIDS epidemic. HIV/AIDS knowledge is very low among those more vulnerable groups: lower educated women, rural women and member of minority groups. Therefore, the effectiveness of HIV/AIDS education and communication program in reaching disadvantaged population groups remains a challenge. There still is a long way to go to meet the targets and goals in the Chinese 5-year Action Plan: “by 2005, 45 percent of rural population and 75 of urban population have basic knowledge on HIV/AIDS” (China Ministry of Health, 2003).

The study also concludes that individuals’ socio-economic characteristics as well as exposure to information sources affect their HIV/AIDS knowledge. Sources of information mediate a large proportion of the effects of socio-demographic variables on knowledge. Broadcast media plus printed media is the effective multichannel mass media, not only because it covers the majority of reproductive aged women in China,

but it also offers accurate information to women. Interpersonal channels are least effective, even though it is one of the main HIV/AIDS information sources of those disadvantaged women.

## 5.3 Recommendations

### 5.3.1 Recommendations for Policy

The following recommendations are suggested to increase HIV/AIDS knowledge among reproductive aged women in China.

1. HIV/AIDS prevention campaigns that solely aim to promote understanding of the modes of HIV/AIDS transmission are not likely to be sufficient. Direct efforts must be made to reduce inaccurate conceptions and beliefs about transmission. Future AIDS education should explain clearly why HIV/AIDS transmission does not occur from routine activities such as shaking hands, using public facilities, eating together, etc.
2. Since more information sources can increase HIV/AIDS knowledge, the future HIV/AIDS IEC programs should provide HIV/AIDS information to reproductive aged women through as many information channels as possible to increase women's HIV/AIDS knowledge.
3. This study finds that only very small proportion (5 percent) women get information from health workers who are considered to be the effective channel to disseminate accurate information. The future HIV/AIDS prevention program should strengthen health workers' roles to diffuse HIV/AIDS information. In China, family planning network reaches down to the village level. Family planning workers are well versed in dealing with sensitive topics related with sex. Through this network, it is possible to disseminate HIV/AIDS information. So it would be efficient if integrate HIV/AIDS information diffusion into family planning routine work.
4. Based on the results of the multivariate analyses, there are still significantly lower levels of HIV/AIDS knowledge for rural women and those with less education, after controlling for information sources and other socio-demographic factors. Therefore future IEC programs need to target more on these women using all possible methods of dissemination.

5. The results of multivariate analyses indicate that the coefficients of most socio-demographic variables decline obviously after controlling for sources of information. Therefore, future intervention design should pay more attention to provide HIV/AIDS information through as many sources of information as possible to all groups of women in order to increase knowledge and reduce disparities among women from different backgrounds in their levels of knowledge.

### 5.3.2 Recommendations for Further research

1. Since all the selected socio-demographic variables and information source can only explain 19 percent variation in HIV/AIDS knowledge (model 2), more research is required to identify other factors, i.e. quality of IEC materials, women's motivation of acquiring HIV/AIDS information, etc., that affects HIV/AIDS knowledge among groups of women. It is only when these other factors are identified and appropriate interventions are designed and implemented, HIV/AIDS knowledge among reproductive aged women can be substantially increased.
2. In the survey, only some questions about HIV transmission routes were asked to measure the basic knowledge level among reproductive aged women. With the spread of HIV in China, only the knowledge of HIV transmission routes is not enough for women to protect them from HIV infection. Therefore, the future survey should include more questions on HIV/AIDS, i.e. HIV prevention methods (use of condoms, only one partner, avoid sharing injecting equipment, etc.) to measure the knowledge level among reproductive aged women more accurately.

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