

ORIGINAL RESEARCH ARTICLE

Epidemiological characteristics of HIV/AIDS in west China

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Summary: China is facing a major crisis because of the increasing epidemic of HIV/AIDS, especially in the western areas. The purpose of this paper is to enhance understanding of the crisis by analysing the published literature on the epidemiology, demographic features, routes of infection, and risk factors of HIV/AIDS infection in the 12 provinces in the west of China. HIV/AIDS has increased rapidly in recent years. The situation is urgent and requires comprehensive action. China's health care system is decentralized and under-funded, and access to treatment by the poor is seriously limited. There is a lack of knowledge about HIV/AIDS in the general public and health care workers. The HIV/AIDS epidemic emerged initially in western areas of the country by means of intravenous drug use, but sexual risk behaviour and mother-to-child transmissions in the west of China are becoming important for HIV transmission.

Keywords: HIV/AIDS, epidemiological characters, incidence, west of China

Introduction

The distribution of HIV/AIDS in China shows strong local character; the west of China is both the starting place and the most affected area today in China. West China consists of 12 provinces/municipalities or autonomous regions including Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shanxi, Gansu, Qinghai, Ningxia, Xinjiang, Inner Mongolia and Guangxi. They cover 6,850,000 square kilometers, adding up to about 71.4% of China's territory. The population of the west is 364,000,000, accounting for 28.6% of the nation's total population. And the majority of China's ethnic groups live in these areas. From the report of HIV/AIDS prevention and treatment of China released at the end of 2003, we learn that the most severe areas of HIV infection are Yunnan, Tibet, Guangxi, Guandong, and Sichuan, respectively, and four of these belong to the west.¹

Methods

A literature search was undertaken that involved the following steps. First, many electronic databases, such as WANFANG DATA, China National Knowledge Infrastructure (CNKI), VIP DATA, and Medline were searched to find published

and unpublished studies on HIV/AIDS in China. Second, we examined references in the retrieved literature to identify additional studies. Third, we examined Oscar Grusky *et al.*'s review of the literature and other articles for additional English and Chinese publications.^{2,8} The key words used initially included HIV/AIDS, the names of the western 12 provinces, infectious routes, risk factors, health care services and China. Later we did an additional search for articles on intravenous drug use, blood safety and sexual risk taking. Meanwhile, we collected all published data of the HIV sentinel surveillance from the 12 western provinces. Selected newspaper reports and new information about AIDS, especially about the government policies in China on the Internet were also added. Finally, we selected those studies carried out in the 12 western provinces.

Findings and discussion

Severity and incidence trend of HIV/AIDS in west China

The first AIDS case in China was discovered in 1985. But China did not report any HIV-infected case until October 1989, which was found in the remote Yunnan province, and caused by drug use. Before 1993, the reported HIV-infected cases focused mainly in Yunnan province.^{2,3} But a report from Liangshan Yi county in Sichuan in 1995 revealed that 35% of drug users were HIV-positive,

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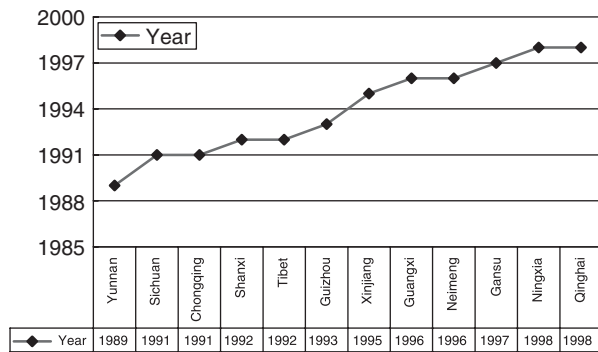


Figure 1 The time of the first AIDS case discovered in the 12 provinces in the west of China (Source: the chronicle surveillance report of HIV/AIDS in the 12 provinces of the west)

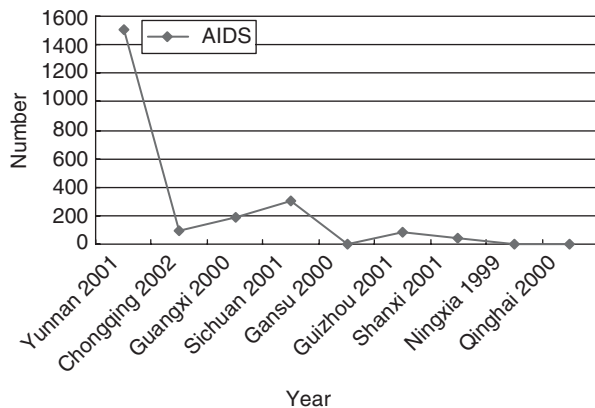


Figure 2 The number of HIV-infected reported recently in the west of China (Source: the chronicle surveillance report of HIV/AIDS in the 12 provinces of the west)

followed by reports of HIV-positive cases from Chongqing, Shanxi, and Tibet⁴⁻⁷ (Figure 1).

The number of HIV cases have increased since the first HIV case was reported. For example, in Yunnan province, the most affected area, the reported cases increased from 148 to 5868, from 1989 to 1998;⁸ in Tibet, HIV sero-prevalence rate derived by sentinel surveillance rose from 8% in 1996 to 20.8% in 1997,⁹ and in Guangxi from 1% in 1997 to 12.8%¹⁰ in 1998. Qinghai province is the last to have an HIV-positive diagnosis where two cases of HIV were discovered in 1998, one in 1999 and four in 2000¹¹ (Figure 2).

Character of AIDS population in different provinces of the west

Among the infected in the west of China, males outnumber females. From the chronicle document released by the Ministry of Health, the ratio of adult male HIV population to female was 4:1 until the end of 2002. The population of HIV-infected persons in China until 2003 was 840,000, of which 50% were young adults aged 20-29. The ratio of male to female in Sichuan province from the surveillance result in 2001 was 7:1. A five-year

surveillance result from 1996 to 2000 in Yining Xinjiang revealed that the ratio of male to female was as high as 27.5:1, and the 20-40 age group taking up 93.3%.^{12,13} Also, the surveillance data from Yunnan, Guangxi, and Guizhou revealed that the 20-40 aged male group was the main group infected with HIV.¹⁴⁻¹⁶ The occupations of these patients were mostly farmers and unemployed as reflected in a report from Shanxi that the majority of patients (68%) were farmers, followed by unemployed.⁶ The HIV-infected farmers in Yunnan in 1990 numbered 93.8%,⁸ and though the figure has dropped gradually, it was still 40%, and unemployed 37%, in 2001 as revealed by Zhang *et al.*;¹⁷ the situation was the same in Sichuan in 2001.¹²

AIDS transmission routes in different provinces in the west of China

The main transmission routes of AIDS were found to be through blood, followed by sex. Besides, there were reports in Yunnan, Sichuan, Shanxi, and Guizhou that mother-to-child transmission is also a transmission route.^{16,18-20} Blood collection and intravenous drug use are the main causes of HIV spread in nine areas in the west. In China, a drug user sentinel surveillance report from 1995 to 1998 revealed that the infection rate rose from 0 to 28.8% in the four years in Wulumuqi, and from 1% in 1997 to 12.8% in 1998 in Guangxi. The highest infection rate, 82.2%,¹⁰ was from the drug user sentinel in Yining Xinjiang. A further example was from Qinghai where three out of four infected cases discovered in 2000 were former intravenous drug users.¹¹ A surveillance report from Chongqing released in 2001 showed that the majority of patients who were infected had a history of intravenous drug use. Eighty percent had both sexual and intravenous drugs use as risk factors, 12% had only sexual risk factors (Figure 3).²¹



Figure 3 Sketch map of the west of China (Source origin: <http://xb8.com/html/2003/08/20030810212849-1.htm>)

Risk factor of HIV epidemic in the west of China

Social-economic-environmental factor The west is an area with vast land, 71.4% of total, but scarce population, approximately 28.6% of total, and an area that is economically under-developed from where a large amount of rural residents are pouring into cities to earn a living. It has already been proven that mobile population is the main factor causing the spread of HIV/AIDS.²²⁻²⁴ Poverty is also an important factor causing needle-sharing among the drug users. An investigation revealed that the proportion of needle-sharing among drug users in the rich areas was significantly lower than that in the deprived areas.²⁵ Infection caused by illegal blood collection was also connected with a poor financial situation, as revealed by a study in Guizhou showing that the majority of the infected are farmers, who were all infected through plasma donation.^{26,27} As for Yunnan, the first and most severe province of HIV infection, can be attributed to its geological location boarding Burma in the west and southwest and Laos and Vietnam in the south. These areas are well known for drug trafficking and drugs smuggled into China must first go through Yunnan.²⁸

High-risk sex behaviour among high-risk population Drug users ranked first among the infected in the west, the majority of them inject drugs and share needles; in Yili Xinjiang, nearly all the drug users had shared needles. The 2000 Guangxi surveillance showed that 87% of the injecting drug users had shared needles.²⁹ Extra-marital and pre-marital sex was more serious among drug users. In addition, most of them do not use condoms and most female drug users had traded sex for drugs. These would easily cause the outbreak of HIV/AIDS among the drug users and casual sex workers.^{27,30} An investigation of the drug users in 1999 in a reformatory in Ningxia showed that as high as 96.8% of them had never used a condom.³¹ The 2003 study in Gansu revealed that over half of the drug users had multiple previous sexual partners, and female drug users who had multiple partners had a history of casual sex work.³² Furthermore, mobile population is another high-risk population whose high-risk behaviour can also cause the spread of HIV/AIDS.^{33,34}

Public's knowledge about HIV/AIDS Due to the economic-cultural situation and isolated geological location of the west, the residents know little about drugs and HIV/AIDS. Among both the high-risk and the general population, there was a lack of HIV knowledge due to inadequate HIV education.³⁵

The 2001 baseline investigation of AIDS knowledge, propaganda and education, programme, launched by the National Family Planning Com-

mission, showed that the proportion of rural residents who knew about HIV was very small. Nearly 20% people had never heard of AIDS, and people were not conscious of self-protection and the coming of the HIV/AIDS crisis. Only 22.7% knew that it is a virus acquired from the people who have HIV.³⁶ In 2003, an investigation by Wang revealed that rural residents generally lack knowledge of HIV/AIDS. About 50% of people did not know the transmission routes of AIDS.³⁷ Another investigation, by Yan, which targets rural women, revealed that rural women were not clear about the transmission routes of HIV/AIDS.³⁸ The investigation into drug users in Yuxi Yunnan showed that many people still did not know that needle-sharing can spread HIV/AIDS. Among those investigated 78.5% had shared needles.³⁹

Public health system The spread of HIV/AIDS in the west of China is closely related to problems in the public health system. A refined health system must have adequate health service resources and good management. But in the current system response is slow, insensitive and decentralized with regard to prevention and treatment, and there is lack of cooperation among different departments.^{28,40,41} The coverage of surveillance sentinels is limited with under-reporting or no reporting of HIV.

An investigation of no reporting cases in Gansu showed the rate to be 80.11%, and the ratio of reported cases to detected cases was about 1:5.⁴² From the nationwide perspective, experts predict that the number of the accumulated HIV-positive patients could reach 1,000,000. But only 40,000 cases were reported, that is to say, 95% of the patients were unknown to us. Furthermore, the health resources in the west are not adequate, particularly in the remote rural areas and minority ethnic groups. Special funding for the health system is lacking. Nationally, though there was increased capital input into the prevention and treatment of HIV/AIDS from government from as early as 1993,¹ the input is still too small. Twenty thousand RMB is needed for the treatment of an AIDS patient yearly, so very considerable funds will be needed each year. The fact is that a large number of HIV/AIDS patients from rural China do not have medical insurance and are in need of medicine and physicians. They live in extreme poverty.⁴³ Health personnel are seriously lacking in the west, too.⁴³ Many township health centres have no special STD doctors, and the available doctors are inadequately trained in HIV/AIDS and STD-related knowledge. Thus they can provide limited services.^{44,45} An evaluative report released by a UN work team claimed HIV in China is a 'huge risk', and appealed to the Chinese government to strengthen its work on HIV control and to put more personnel and capital into the field.⁴⁶

Government policies on HIV/AIDS The ability and willingness of the government to confront the HIV/AIDS epidemic is a key factor influencing its impact. From 1985, when the first AIDS case was reported, the Chinese government has made great efforts in the prevention and treatment of HIV/AIDS. An HIV/AIDS coordination committee under state government was formed in 1995. Coordination meetings have been held annually. And the programme of HIV/AIDS prevention and treatment has been put into national economic and social development plan. The former state commissioner, Pengpeiyun once stressed in an AIDS meeting held in 1996 that: 'we should take work in AIDS as nation salvation'.⁴⁷ In the late 1990s, State Council formed a 'Long Term Plan of HIV/AIDS Prevention and Treatment in China' and 'Action Plan of Control and Treat HIV/AIDS in China'.⁴⁷ At the September 2003 UN high-level AIDS meeting, our government made five commitments. In 2003 world AIDS day, Chinese premier Wen, on behalf of the party Central Committee and state council, went to Beijing Ditan Hospital and visited AIDS patients and medical staff there. He stressed that government at every level should assume full responsibility to the people, further promote the work of HIV prevention and treatment, increase the input, provide free antiretroviral treatment, free anonymous testing, free mother-to-child prevention, and free education for orphans of AIDS families.⁴⁸ At the end of 2003, Vice Premier Wuyi visited Henan for AIDS prevention and treatment work and posed a clear work demand. In 2004, on 26th February, AIDS Treatment and Prevention Work Committee was formed. An AIDS meeting was held again by State Council and declared the strengthening of AIDS prevention and treatment, which is a big event of the public health field, and the milestone of AIDS work in China.⁴⁹ At the 15th AIDS meeting held on the 12th July this year, Vice Minister of Health Wang said that the Chinese government would consolidate the forces of whole society, NGO in particular, to effectively prevent and control the spread of HIV/AIDS in China.⁵⁰ All the above-mentioned show the concern of our government towards people's health and the determination of the central party committee and State Council to control the spread of HIV/AIDS.

Conclusion

This paper reviewed the literature, English and Chinese, on HIV/AIDS in the west of China. A detailed analysis of the social epidemiology of HIV/AIDS was presented based on official reports. The methods and reasons of HIV/AIDS transmission were closely examined. The responses of the Chinese government to these epidemics were described.

Several trends typify the HIV/AIDS epidemic:

- (1) The trend of HIV epidemic in the west will continue. The area of high prevalence will confront exaggerated morbidity and mortality. The area of low prevalence will witness the increase of infection rate based on the analysis of every risk factor and refinement of surveillance institution.⁵¹
- (2) The transmission route is mainly through blood. Sexual and mother-to-child transmission will go up. Prediction from experts is that the number of actual drug users is 5–10 times that registered. No definite data can be obtained concerning the number of casual sexual workers. The infection rate among drug users, casual sexual workers will increase continually. In women who are already married and have a child there will be a potential problem of mother-to-child transmission.^{51,52}
- (3) The proportion of females being infected is increasing. Due to physiological and social factors, females are more vulnerable to HIV than males. In addition, the high rate of birth canal infection among rural women can also contribute to the vulnerability of HIV infection.⁵³
- (4) The number of AIDS orphans is increasing as a direct consequence of the advance of disease and death of AIDS patients. Meanwhile, many AIDS orphans themselves are the victims of HIV infection.⁵⁴

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(Accepted 25 April 2005)