

Disclosure of HIV-positive serostatus to sexual partners and associated factors in southern China

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Summary: In light of an increased push for disclosure of HIV-positive serostatus to sexual partners (partner disclosure, PD) in China as reflected by national and local policies, the objective of this study was to determine the proportion and evaluate associated factors of PD among people living with HIV/AIDS (PLWHA) in HIV/AIDS high-risk areas in southern China. Of the 946 HIV-positive individuals, the proportion of those who disclosed positive serostatus results to their sexual partners was 90.2% (625/693). Variables independently associated with non-disclosure included testing in Guangxi province (adjusted relative ratio [ARR] = 0.33), becoming infected with HIV via injecting drug use (IDU) transmission (ARR = 0.32), having not reported discussing disclosure with health department staff during post-test counselling (ARR = 0.41) and having a sexual relationship of ≤ 2 years' duration (ARR = 0.31). This study also identified a relatively larger differential between the proportion of disclosure to regular partners and the proportion of disclosure to casual partners (94.8% versus 13.0%) in comparison with other studies. Findings from this study may aid policies for future consideration.

Keywords: HIV, partner disclosure, secondary transmission, China

INTRODUCTION

Partner disclosure (PD), where an HIV-infected patient discloses to sexual partners his or her HIV-positive status, has been a controversial way to prevent secondary transmission of HIV/AIDS for the last 20 years.^{1–4} Some studies have found that the process of PD proved to be a therapeutic outlet, and that disclosure resulted in increased emotional support and safer sex practices as well as acceptance of one's condition.^{5,6} HIV-positive serostatus disclosure may also improve an index patient's adherence to antiretroviral drugs (ARVs), and encourage the notified partner to pursue HIV testing, leading to earlier diagnosis and management.^{7–11} However, other studies have found that PD exposes seropositive people and their sexual partners to heightened stigma and emotional distress,^{12,13} and may have an adverse effect on psychological functioning.^{14,15} There have also been some studies that suggest that serostatus disclosure of HIV infection may not lead to safer sex behaviour,^{16–18} and may even lead to domestic violence and the break down of family relationships.^{19–21}

In Iceland, Finland, Malawi and Singapore, it is compulsory by law for an infected patient to disclose to his or her partner,

whereas in Bangladesh, Denmark, Norway and Tanzania, HIV serostatus disclosure is viewed as a purely personal matter.²² The UK National Guidelines for HIV Testing 2008 encourages a discussion of HIV serostatus disclosure in post-test counselling, stating: 'Partner disclosure should be voluntary and not punitive in any way. Index patients should have full access to available services whether or not they are willing to cooperate in disclosure activities'.

In the USA, it is encouraged on a federal level for a patient to notify his or her partners of their HIV-positive status, but is only written into the law on a the state level.^{23–25}

Although the Joint Assessment of HIV/AIDS Prevention, Treatment and Care in China reported that there were 700,000 HIV-infected people in China in 2007, there may be as many as 420,000 who were unaware that they had been infected. Whether it is the responsibility of an infected patient to disclose his or her serostatus to a sexual partner or partners remains controversial worldwide, but it is clear that the Chinese government has foreseen an increasing role for PD in reducing secondary transmission as a way to fight the HIV epidemic. In 1999, China's Ministry of Health issued a general recommendation that HIV-infected persons should notify their spouse and other sexual partners upon receiving their HIV status.²⁶ The general recommendation became national policy when China's State Council made HIV-positive serostatus disclosure to sexual partners compulsory in 2006.²⁷ In light of the national policy, local jurisdictions responded by drafting their own

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policies to address their respective HIV epidemics. In September 2007, the local Yunnan Province Chinese Center of Disease Control & Prevention (CDC) issued a mandate that all HIV-infected persons were required to tell all their past and present sexual partners that could be found within reason, within one month of being informed of their infection status.²⁸ Additionally, in October 2009, the local Gansu Province CDC issued its own mandate that index patients were not only responsible for informing their sexual partners, but were also responsible for prompting their sexual partners to go to the local CDC for HIV testing.²⁹

Although there have been an increasing number of new HIV-positive serostatus disclosure policies in China, to our knowledge there have yet to be any published studies on the actual proportions of PD in China. The objectives of this study were to explore the proportion and risk factors associated with PD in HIV high-risk areas of China, as well as how they compare with proportions found in other similar studies.

METHODS

Study population

After approval from the China CDC, Yunnan CDC and Guangxi CDC institutional review boards, we conducted a cross-sectional study in the four sites from July 2008 to January 2009: Luxi and Yingjiang Counties of Yunnan province, and Babu and Liuzhou Counties of Guangxi province. Luxi and Yingjiang Counties are two rural counties, situated 74 km apart from each other in Yunnan province. Babu and Luzhai Counties, located in northern Guangxi province, are two rural counties that are 218 km apart from each other. All four counties are located within 100 km north of Myanmar. The total population and number of reported HIV/AIDS cases of the four counties were 1,380,000 and 7750, respectively. For all

four counties, heterosexual transmission accounted for the majority of reported HIV/AIDS cases (Figure 1). These counties were selected as study sites because they were identified as HIV/AIDS high-risk areas, reporting the highest number of patients in the HIV/AIDS national case-reporting system from January 2006 to January 2009. In addition, these were areas where the local CDCs had the infrastructure and capacity to conduct a large-scale epidemiological study.

All participants enrolled in the study met the following inclusion criteria: (1) 18–49 years old, (2) had local residence (included those that had lived in the locality for ≥ 3 months) and (3) had tested HIV-positive, as confirmed by Western blot or two positive ELISA tests (enzyme-linked immunosorbent assay; Vironostika HIV Uni-Form plus O, bioMerieux, Holland). All participants had been notified of their HIV-positive status, and were entered into the national case-reporting system between January 2006 and June 2008.

Data collection

Participants in the study were currently participating in China's standard protocol of services for HIV-positive patients, which included their voluntary agreement to participate in routine biannual check-ups by the local CDC. Once every six months, routine check-ups were performed by a total of 42 local CDC outreach workers who provided free counselling and wellness services (such as distribution of information pamphlets, condoms, etc.). During one of their follow-up sessions, participants were presented the option to take part in this study, and it was made clear that their decision to participate or not would not affect their quality of, or access to, services.

After providing written informed consent, face-to-face interviews were carried out between the period of July 2008 and January 2009 by staff from the local CDC, hospitals and other

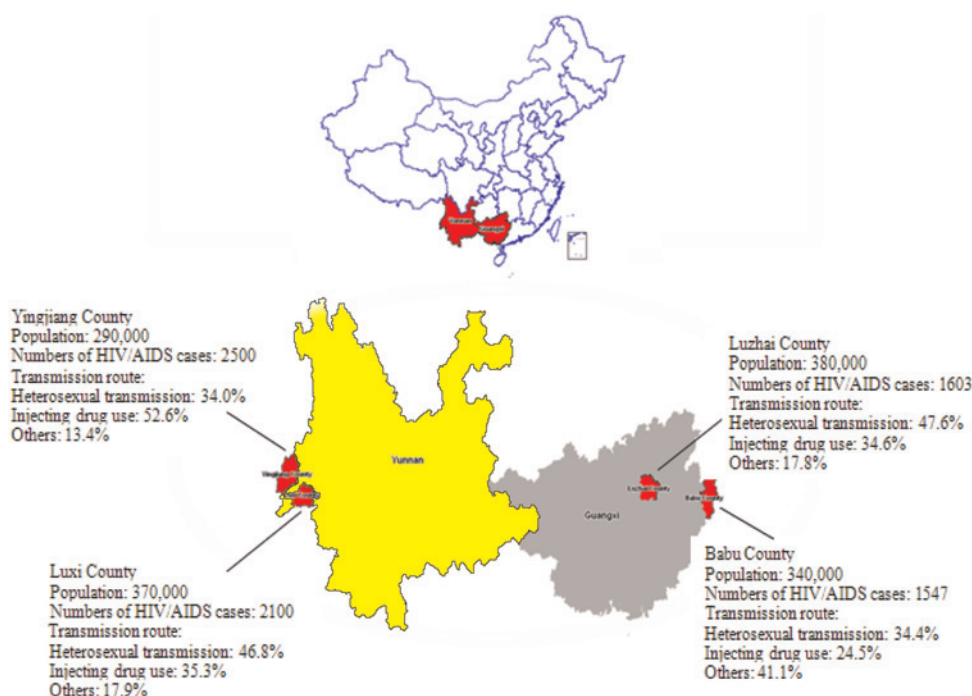


Figure 1 Map of the investigation sites. Data source: 2008 China HIV/AIDS Comprehensive Prevention & Control Information System from the national online database

medical clinics, who attended a week of training in survey methods and study background. The staff followed a structured questionnaire to gather information about the subject's sociodemographic background, HIV serostatus disclosure behaviour, utilization of medical and health services, family and social support, as well as sexual and drug use behaviours. Interviews were conducted at the location where participant went to receive follow-up services, which varied from hospital, home or a separate location as suggested by the participant.

Data management and statistical analysis

Statistical analysis was carried out using SPSS 13.0 (SPSS Inc, Chicago, IL, USA). Independent risk factors of PD were assessed using χ^2 analysis and logistic regression analysis. Univariate and multivariate logistic regression were used to estimate relative risk (RR) and 95% confidence intervals (CI) for associations between HIV/sexually transmitted infection and variables of interest. For multivariate analysis, variables were retained if they were statistically significant in the univariate analysis. In addition, factors from a priori hypotheses from published literature were also included in a multivariate model: educational level,³⁰ whether patient had received voluntary counselling and treatment (VCT),^{31,32} self-efficacy,³³ whether patient had ever discussed PD with a health-care professional,³⁴ type of sexual partner,³⁵ number of sexual partners³² and HIV status of sexual partners.³⁶

RESULTS

Sociodemographic characteristics

A total of 1636 HIV-positive patients were available to be contacted regarding participation in the study. Of this number, 1016 patients were successfully approached and of those approached, 946 agreed to participate in the face-to-face interviews, while 70 declined to participate. Of the 620 who could not be contacted, 244 could not be reached, 236 were away traveling for work, 72 had been arrested and 72 had died.

Of the 946 patients who participated in the study, 623 (65.9%) were tested in Yunnan and 323 (34.1%) were tested in Guangxi. The median age of the study participants was 33 years (range: 18–49 years; interquartile range: 27–37), slightly more than half were men (52.2%) and of Han ethnicity (51.3%). At the time of the study, most patients reported that they were married or co-habiting with a partner (74.5%). The majority (61.2%) reported a cumulative of less than or equal to six years of education, which is equivalent to completion of primary school in China.

For occupation, most participants identified themselves as manual labourers (71.4%) and reported being from a rural area (68.7%). In addition, 89.2% reported a family income of less than 1000 RMB (equivalent to 147 US\$) per month. The complete demographic characteristics are presented in Table 1.

HIV-positive serostatus disclosure of participants who had a sexual partner in the last six months

Of the total 946 study participants, 72.3% (693/946) reported having had a sexual partner in the past six months prior to taking the survey (Table 2). The remaining 253, who did not

Table 1 Demographic characteristics of study participants and non-participants

Characteristics	946 participants, n (%)	690 non-participants, n (%)	70 declined to participate, n (%)
Gender			
Male	494 (52.2)	370 (53.6)	36 (51.4)
Female	452 (47.8)	320 (46.4)	34 (48.6)
Age (years)			
<30	391 (41.3)	261 (37.8)	27 (38.6)
31–40	422 (44.6)	337 (48.8)	29 (41.4)
>41	133 (14.1)	92 (13.3)	14 (20.0)
Occupation			
Manual labourer	675 (71.3)	462 (66.9)	43 (61.4)
Unemployed	133 (14.1)	124 (18.0)	21 (30.0)
Other	138 (14.6)	104 (15.1)	6 (8.6)
Ethnicity			
Han	485 (51.3)	366 (53.0)	37 (52.9)
Other	461 (48.7)	324 (47.0)	33 (47.1)
Education (years)*			
≤6	576 (61.2)	393 (57.0)	38 (54.3)
>6	365 (38.8)	297 (43.0)	32 (45.7)
Marital status*			
Married/co-habiting	703 (74.5)	434 (62.9)	47 (67.1)
Single (unmarried)	137 (14.5)	191 (27.7)	14 (20.0)
Separated/divorced/widowed	104 (11.0)	65 (9.4)	9 (12.9)
Residency*			
Rural	643 (68.7)	486 (70.4)	51 (72.9)
Urban	293 (31.3)	204 (29.6)	19 (27.1)
Monthly family income (Chinese yuan)*			
≤1000	830 (89.2)	624 (90.4)	59 (84.3)
>1000	101 (10.8)	66 (9.6)	11 (15.7)
Receiving medical care or ARVs			
Yes	551 (58.2)	436 (63.2)	49 (70.0)
No	395 (41.8)	254 (36.8)	21 (30.0)
Total	946 (57.8)	690 (42.2)	

ARV = antiretroviral drug

*Because some of the participants did not or chose not to answer these questions, the total number of respondents is <946

Table 2 PD status of participants who had a sexual partner in the past six months (n = 693)

	Participants who were sexually active within last six months (n)	Participants who notified his/her sexual partner of HIV-positive status (n)	Proportion of PD (%)
Had a regular sexual partner*	654	620	94.8
Had a casual sexual partner†	54	7	13.0
Had a regular or casual partner	693‡	625§	90.2

PD = partner disclosure

*Regular sexual partner was defined as a spouse, boyfriend/girlfriend or a co-habiting partner

†Casual sexual partner was defined as a commercial sex worker, drug partner or an anonymous sexual partner

‡Of 693 participants, 15 had both regular and casual sexual partners

§Two participants notified both their regular and casual sexual partners

report having a sexual partner in the past six months, were not questioned about their disclosure status.

Of the 693 respondents who reported having a sexual partner in the past six months, 654 identified having a regular sexual partner, and 54 identified having had at least one casual sexual partner. Regular sexual partner was defined as a spouse, boyfriend/girlfriend or a co-habiting partner. Casual sexual partner was defined as a commercial sex worker, drug partner or an anonymous sex partner.

The proportion of PD to regular sexual partners was very high at 94.8% (620/654), whereas the proportion of PD to casual sexual partners was significantly lower, at 13.0% (7/54). Overall, the proportion of those who reported having disclosed his or her HIV-positive status to any sexual partner was 90.2% (625/693). Of this sample population, 2.2% (15/693) had both regular and casual sexual partners in the past six months, of which only two out of the 15 notified both their regular and casual sexual partners.

Univariate analysis

Factors found to be associated with HIV-positive serostatus disclosure to regular sexual partners included: location of testing ($\chi^2 = 9.02$, $P = 0.002$), CD4 count (cells/ μ L) ($\chi^2 = 5.42$, $P = 0.02$), transmission route ($\chi^2 = 8.12$, $P = 0.002$), whether disclosure was discussed during post-test counselling ($\chi^2 = 5.30$, $P = 0.02$), good HIV knowledge ($\chi^2 = 5.30$, $P = 0.02$) and length of sexual relationship ($\chi^2 = 10.61$, $P = 0.001$). Factors not found to be associated with PD to regular sexual partners were: gender ($\chi^2 = 3.13$, $P = 0.08$), age ($\chi^2 = 0.74$, $P = 0.69$), ethnicity ($\chi^2 = 0.93$, $P = 0.34$), education ($\chi^2 = 0.03$, $P = 0.98$), residency ($\chi^2 = 0.45$, $P = 0.50$), HIV viral load (copies/mL) ($\chi^2 = 0.14$, $P = 0.71$), time elapsed since diagnosis ($\chi^2 = 0.89$, $P = 0.35$) and whether a condom was used during last vaginal sexual intercourse ($\chi^2 = 0.38$, $P = 0.54$).

Multivariate analysis: PD and associated factors

Factors associated with HIV infection in multivariate analysis are shown in Table 3. In multivariate analysis, the following factors were found to be significantly associated with HIV-positive serostatus disclosure: location of testing, transmission route, whether disclosure was discussed during post-test counselling and length of sexual relationship.

DISCUSSION

Hypothesized cultural influence on PD: collectivism versus individualism

In comparison with other studies around the globe, our study found a very high overall proportion of PD within our population of interest. Previous studies indicate that the proportion of PD among HIV-positive patients ranged from 24% to 86% (24% in Nigeria, $n = 187$; 47.4% in USA, $n = 208$; 58% in South Africa, $n = 1054$; 86% in England, $n = 100$).^{37–40} In comparison, our study results showed that the proportion of patients who reported disclosure to regular sexual partners was around 90% in both Yunnan (92.3%) and Guangxi (85.4%), with an overall PD proportion of 90.2%.

Our study identified a relatively large differential between the proportions of disclosure to regular and casual sexual partners (94.8% versus 13.0%) in comparison with other similar studies. Kalichman *et al.*¹⁸ reported 78% regular (serodiscordant partnerships) versus 54% casual in 2006 in the USA. Landau *et al.*²⁴ reported 52% regular versus 29% casual in 2004 in Israel.

There were differences between this study and the aforementioned studies, including the mix of partner types (definition of casual, regular, etc.) and time difference. Excluding these differences, we hypothesize that the primary difference between our study and these studies may be a product of different cultural relationship norms. For instance, Israel and the USA are considered individualistic countries, whereas China is considered a collectivistic country.⁴¹ Collectivism, in comparison with individualism, tends to create a greater polarization on interactions between in-groups, such as a family unit, and out-groups, such as strangers or outsiders. In collectivistic societies where individuals view their place as within an in-group, most often the family unit, there may be less of a feeling of responsibility to those outside that group (which, in this case, would include casual sexual partners).^{42–44}

Risk factors in multivariate analysis

Our study results showed that testing location in Guangxi province, in comparison with Yunnan province, was independently associated with a lower proportion of disclosure to a regular sexual partner. We hypothesized that this is due, at least in part, to the mandate issued by the local Yunnan Province Health Department in 2007. In addition, since the

Table 3 Factors associated with regular partner disclosure of HIV status in multivariate analysis ($n = 654$)

Variables	Non-disclosing proportion of those who were sexually active within past six months	P value	RR (95% CI)	ARR (95% CI)
Location of testing				
Yunnan	9.2 (18/195)	0.002	1.0	1.0
Guangxi	3.5 (16/459)		0.36 (0.18–0.71)	0.33 (0.16–0.69)
Transmission route				
Heterosexual transmission	10.4 (15/145)	0.002	1.0	1.0
Injecting drug use	3.7 (19/509)		0.34 (0.17–0.68)	0.32 (0.15–0.67)
Health provider discussed PN during post-test counselling				
Yes	8.1 (16/199)	0.034	1.0	1.0
No	4.0 (18/455)		0.47 (0.24–0.94)	0.41 (0.20–0.87)
Length of sexual relationship (years)*				
>2	9.9 (17/172)	0.002	1.0	1.0
≤2	3.4 (16/465)		0.33 (0.16–0.66)	0.31 (0.65–0.15)

RR = relative risk; CI = confidence interval; ARR = adjusted relative risk; PN = partner notification

*Because some of the participants did not or chose not to answer these questions, the total number of responses is <654

1990s, Yunnan has been the epicentre of the most severe HIV epidemic in China, largely because of its location along the drug trafficking route and its close proximity to the Golden Triangle. One possible explanation for the higher level of HIV knowledge in Yunnan is that Yunnan's HIV epidemic has attracted a considerable level of attention, both domestically and internationally. Another possibility might be that because of the strong presence of local and international HIV/AIDS organizations in Yunnan, local outreach workers may be better trained and/or possess greater HIV knowledge compared with their CDC colleagues in other provinces. As a result, there may be a wider and more comprehensive network of HIV information available and disseminated throughout the province. These factors combined, coupled with a more aggressive policy on HIV serostatus disclosure, may be the reason for higher proportion of disclosure in Yunnan province.

Furthermore, other studies have shown that patients who reported having a discussion with health department staff about PD were more likely to report notifying their sexual partners following their HIV diagnosis than patients who did not have this discussion.^{42,45} Our results were consistent with them and demonstrated that there was a higher proportion of PD when health providers discussed PD (96.0% versus 91.9%).

Study biases

One of the limitations of our study included selection bias. The study respondents were enrolled participants who were already willing to participate in routine health check-ups. These participants may be more accepting of their HIV status, and therefore more likely to disclose. In addition, our results on PD excluded casual partners because only seven index patients had disclosed to their casual partner, which was too small of a sample size to perform multivariate analysis. In addition, this study did not include same-sex partners, as the objective of the study was to focus on heterosexual PD.

Since our study was only conducted at four HIV/AIDS high-risk areas, results should not be extrapolated to all high-risk populations in China due to important regional differences in terms of demographics, economic conditions, illicit drug and commercial sex availability and use.

An additional limitation of our study included social desirability bias, such that study respondents may have overreported disclosure or condom use behaviours, because of the desire to respond in a way that would be viewed favourably by others.

Future work

As the results of this study indicate that there was a higher proportion of PD when health providers discussed PD-related information with study participants, we suggest that PD becomes a part of VCT, and that there be a more robust discussion about how to relay this information to one's sexual partners within an appropriate cultural context. We recommend continuing education for society-at-large in order to minimize discrimination and stigma, as well as to continue to raise HIV awareness and knowledge.

One system which may be worth consideration is an online e-card PD system, which allows users to send a personal or anonymous e-card to sexual partners alerting them to get

checked for sexually transmitted diseases.⁴⁶ This could be a way to encourage disclosure to casual partners, especially in China where much of communication is increasingly done over the worldwide web, with the most populous Internet population (384 million) in the world.⁴⁷

More assessment of the prevalence and efficacy of PD is also needed to help inform China's policy which will allow for a more thorough understanding of the transmission route of the HIV epidemic and how it spreads from high- to low-risk populations. Future studies should focus on adherence to ARVs, domestic violence and other issues that may also be related to disclosure.

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