

HIV knowledge and risk behaviour of female sex workers in Yunnan Province, China: Potential as bridging groups to the general population

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Abstract

There is growing evidence about the importance of female sex workers (FSWs) and their clients as bridging groups for the HIV epidemic. In China the role of FSWs is key to the future trajectory of the epidemic. This study was carried out to explore factors which may increase the potential for FSWs to act as vectors for HIV transmission. Semi-structured interviews were carried out with 84 sex workers in two types of brothel in Yingjiang County of Yunnan Province, where sex work and injecting drug use are common.

The key findings are that the FSWs are young, (median age 17.8 years), their engagement in sex work is short term (69% plan to work for less than one year) and the throughput of clients is low (23% only 1–2 clients per week, 71% less than seven). Awareness of HIV, STIs and condom use was generally good, but only 32% always used condoms and 18% never did. Fifty-five percent had had a health check. FSWs at the cheaper, higher throughput brothels where condom use is uncommon are a potential bridge to the general population. Interventions must focus on these FSWs and their clients to prevent them from becoming drivers of the epidemic.

Introduction

There is growing evidence about the importance of female sex workers (FSWs) and their clients as bridging groups and drivers of the HIV epidemic (Alary & Lowndes, 2004). This applies across countries in Africa and Asia where the epidemic is at different stages of maturity (Day, 1988; Cote et al., 2004; Ryan, 1998). In China there is much speculation about the role of FSWs in the HIV epidemic. The degree to which they are acting as a bridge to the general population is probably the key question for the future trajectory of the epidemic. Currently there are around 1 million HIV-infected individuals in China, accounting for 0.07% of the population, but mostly in injecting drug users (IDUs) and commercial blood donors (UNAIDS, 2002). Predictions of 10 million cases by 2010 assume significant spread outside high risk groups, and among the sexually active population, but there is little evidence that this is yet occurring (Hesketh et al., 2003).

As in many settings where commercial sex work is illegal, estimates for numbers of FSWs in China are unreliable. Various reports put the numbers of FSWs at between 2 and 4 million, representing a very substantial rise over the past decade (UNAIDS, 2002; Human Rights Watch, 2003; Ministry of Public Health, 2002). This rise is mainly the result of

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increased rural poverty, lack of employment opportunity, increased rural-to-urban migration and greater tolerance by the authorities (Gil, 1996). HIV sentinel surveillance is carried-out among FSWs in re-education facilities. For 2001 the mean HIV prevalence was 1.32%, up from 0.02% in 1995 with a range of 0% to 10% across different sites (Ministry of Health, 2002).

Apart from their numbers and HIV prevalence other factors which may increase the potential for FSWs to act as vectors for HIV transmission include: their risk awareness, the frequency of sex with clients, their use of condoms, their STI prevalence and their involvement in injecting drug use (McKeganey, 1994; Jackson, 1992). This study was carried out to explore these factors among FSWs in Yingjiang County of Yunnan Province. Yunnan has the highest cumulative total of HIV cases in China, with 70% in IDUs (UNAIDS, 2002). Yingjiang is located on the Myanmar border, in Derhong Prefecture, close to the Golden Triangle and on the major drug trafficking route across China. It is an area where both injecting drug use and commercial sex work (both officially illegal) are known to be common. Sentinel surveillance for 2001 reports an HIV prevalence in pregnant women in Yingjiang of 0.6% ($n=800$). There are no data for FSWs.

The local health bureau estimates there are 200–300 FSWs in Yingjiang at any one time. Most work in one of two types of brothel: the first in the red light district, consisting of 20 small brothels of five to eight girls: the second are large brothels like cheap hotels where 20–30 girls work. The former are regarded as 'higher class' and the costs for services are four- to ten-fold higher than in the hotel brothels. For the purposes of this article these brothels will be referred to as red light brothels and hotel brothels respectively.

Methods

We conducted semi-structured interviews with 84 FSWs between November and December 2003. A detailed interview protocol with a combination of open and closed questions was developed by the research team, which included the authors and staff from the local Centre for Disease Control. Questions covered a broad range of issues including socio-demographic background, motivation, perceptions of the work, knowledge of HIV, numbers of partners, condom use, duration of employment and client numbers and type. Only results relevant to the study aims are reported on here. Knowledge questions were drawn from standardised tools. (Centre for Disease Control, 2000) The remainder were developed specifically for the study by the research team. Interviews were conducted by three female research assistants, who worked for a local NGO and had experience of conducting research interviews.

For sampling purposes half the brothels in the red light district were randomly selected for inclusion in the study. Four to six girls from each of ten brothels were selected opportunistically, that is, the girls present at the time the interviewer arrived were asked to participate. Three hotel brothels were included with ten girls from each asked to participate. All but three girls agreed. Interviews were carried out in the early evening when girls are ready to receive clients, but before most clients actually arrive. The interviews took place in a private room usually provided by the brothel owners. Anonymity and confidentiality were assured. Approvals for the study were obtained from the Ethics Committee of the Institute of Child Health, University College London and Yingjiang Bureau of Public Health.

Analysis

Comparisons were carried out using cross-tabulations and Pearson Chi-Squared where appropriate. Analysis was carried out on SPSS 11.5.

Results

Socio-demographic profile

This is shown in Table I. Of the 84 girls interviewed, 54 (64%) were from the red light district and 30 (36%) from the hotel brothels. There are marked differences in socio-demographic profile between the girls from the red light district and those from the hotel brothel. The latter are younger, more likely to be local, from poorer backgrounds and of lower educational level. All the girls were from Yunnan Province, with none from across the border in Myanmar, only 20 km away. The educational level and literacy rates were roughly equivalent to the expected in this part of Yunnan

Table I. Sociodemographic breakdown of sample.

	Total n = 84 n (%)	Red light brothels n = 54 n (%)	Hotel brothels n = 30 n (%)
Age (years)			
15–16	9 (11)	2 (6)	4 (20)
17–18	52 (63)	21 (58)	14 (70)
19–20	15 (18)	8 (22)	2 (10)
20–21	6 (7)	4 (11)	0
22–23	2 (2)	1 (3)	0
Years of education			
<3	5 (6)	0	3 (15)
4–6	9 (11)	2 (6)	4 (12)
7–8	24 (28)	6 (18)	10 (50)
9	43 (52)	26 (72)	3 (15)
>9	3 (4)	2 (6)	0
Literacy			
Illiterate	6 (7)	1 (3)	3 (15)
Read only	14 (16)	3 (9)	6 (30)
Read and Write	24 (77)	32 (88)	11 (55)
Location of home			
Yinjiang	10 (12)	5 (14)	2 (10)
Derhong Prefecture	57 (68)	21 (58)	17 (85)
Other parts of Yunnan	17 (20)	10 (28)	1 (5)
Ethnicity			
Han	22 (27)	12 (33)	3 (15)
Dai	27 (32)	12 (33)	4 (20)
Jingpo	18 (21)	4 (11)	10 (50)
Other	17 (20)	8 (22)	3 (15)
Annual family income in Chinese Yuan* (n = 61)			
≤2000	15 (26)	4 (10)	11 (50)
3–5000	30 (49)	22 (56)	8 (36)
6–9000	7 (11)	4 (10)	3 (14)
≥10000	9 (15)	9 (23)	0

Note: \$US1 = 8 Chinese Yuan.

Province (personal communication, Derhong Director of Education). All but six girls were from peasant families, but only eight were from very deprived backgrounds. Those with incomes above 10,000 Yuan per year (1US\$ = 8 Chinese Yuan) are wealthy by local standards.

Knowledge of HIV/STIs

Results are shown in Table II. Nearly all had heard of HIV and the most important modes of transmission (sexual, needles) were identified by the majority, with 84% aware of the protective effects of condoms. Most misinformation was in over-assuming transmission through kissing, hand-shaking, mosquitoes, toilets and chopsticks. The mean number of correct answers recorded was 8.5 of a total of 15 (range 0–15 SD 3.2). There was no association between score achieved and educational level, ($P=0.6$) or brothel type ($P=0.07$). Asked to name some STIs seven girls (8%) had no idea, eleven (13%) had heard of STIs but couldn't name any, 56 (66%) named syphilis and/or gonorrhoea, seven (8%) listed three or four and one girl correctly named seven.

Risk behaviours

Exposure to and potential transmission of HIV is influenced by duration of employment, throughput of clients and condom use. Responses to these questions are shown in Table III. Girls had worked for a short time, a median of 3.5 months (range 2 days to 18 months). None planned to engage in sex work in the long term, many stating they planned to work for 'as short as possible', or until they had 'enough money'. The throughput of clients was much higher in cheap hotel brothels than the red light district. Nearly one-third of girls in the red light district had only 1–2 clients per week, whereas half the girls in the hotel brothels had at least ten. There was also a difference in the origin of the clientele between the two types of brothel. Men from 'elsewhere' (tourists and business-

Table II. Knowledge of HIV (n = 84).

	Y n (%)	N n (%)	DK n (%)
Have you heard of a condition called HIV	77 (91)	7 (9)	0
Is HIV a fatal disease?	55 (67)	9 (11)	20 (22)
If one family member is HIV+ other family members will get it	43 (51)	19 (22)	22 (27)
Condoms protect against HIV	70 (84)	4 (5)	10 (11)
You can tell someone with HIV from their appearance	7 (9)	71 (84)	6 (7)
You can acquire HIV from:	Correct	Incorrect	DK
Shaking hands	9 (11)	25 (30)	50 (60)
Toilets	18 (22)	21 (25)	45 (54)
Sharing food	18 (22)	15 (30)	41 (49)
Chopsticks	11 (13)	37 (44)	36 (43)
Sexual intercourse	77 (91)	0	7 (9)
Kissing	12 (14)	38 (46)	34 (40)
Needles	76 (90)	0	8 (10)
Mosquitoes	6 (7)	37 (44)	41 (49)
Mother to baby across placenta	50 (59)	0	34 (40)
Breast milk	48 (57)	0	36 (44)

Table III. Risk behaviours of FSWs.

	All n = 84 n (%)	Red light n = 54 n (%)	Hotel n = 30 n (%)
No of clients/week			
1-2	19 (23)	16 (29)	2 (10)
3-4	23 (27)	18 (37)	2 (10)
5-6	18 (21)	14 (26)	3 (15)
7-10	7 (9)	3 (5)	3 (15)
11-19	9 (11)	2 (3)	5 (25)
20-25	8 (9)	0	5 (25)
Length of employment to date			
<1 week	6 (7)	3 (5)	2 (10)
1 week to <1 month	9 (11)	6 (11)	2 (10)
1 month to <6 months	48 (57)	33 (61)	10 (50)
6- <12 months	18 (21)	9 (17)	6 (30)
>12 months	3 (4)	3 (5)	0
Length of employment planned			
<1 month	9 (11)	5 (9)	4 (20)
1-3 months	37 (45)	29 (53)	8 (40)
4 months to <1 year	11 (13)	5 (9)	3 (15)
1 to <3 years	5 (6)	4 (8)	1 (5)
>3 years	1 (1)	1 (2)	0
Don't know	21 (25)	10 (19)	7 (35)
Condom use			
Always	27 (32)	27 (50)	0
Sometimes	36 (43)	24 (44)	12 (40)
Rarely	6 (7)	3 (6)	0
Never	15 (18)	0	15 (60)
Clients			
Mostly local	17 (20)	5 (9)	12 (40)
Mostly elsewhere	30 (36)	23 (42)	7 (23)
Both equally	22 (27)	20 (37)	2 (6)
Don't know	15 (18)	6 (11)	9 (30)
Health check ever			
Yes	46 (55)	37 (69)	9 (30)

men) mostly frequent the red light brothels, whereas local men more often frequent the hotel brothel.

All the girls knew how to obtain condoms. In the red light district girls pointed to the same shop. Clinics were also mentioned as a source and nine girls (11%) said brothel owners provided them. But utilization varied, especially between the two types of brothel. All the 'always users' were from red light brothels and all the 'never users' from the hotel brothel. Eight girls (10%) mentioned that it was sufficient to wash properly after sex. One girl said 'nowadays modern medicine can cure anything, so I don't worry'. Most of the 'sometimes' users described making an apparent risk assessment, that is, if the client was familiar, 'a regular', or looked 'clean' they wouldn't use condoms. However, if he came 'from the mountains' or was 'dirty' they would insist on condoms. If he then refused fourteen (17%) said they would refuse sex, while ten (12%) said they would agree because they 'need the money'.

Eleven girls (13%) admitted to having had an STI, (seven gonorrhoea, four unknown). Eight of these were from the hotel brothel and all were girls who admitted to rarely using

condoms. But 40 (47%) knew of a fellow sex worker who had acquired an STI. The discrepancy is explained by the fact that the same girls were known to many of them. However, *none* knew of another FSW who had acquired HIV.

Forty-six (55%) had undergone at least one health check. Thirty-seven (80%) of these were from the red light brothels and nine (11%) underwent a monthly check. Seven volunteered that this was something that their brothel owners insisted upon. (The routine check at the time of this study consisted of a pelvic examination and smear, sometimes syphilis serology, but an HIV test was not included, unless specifically requested.) Three girls had been tested for HIV.

Finally, we asked if they knew of any FSWs who were also IDUs. Two did: one who 'worked for a short time, but she's not around any more', another in the neighbouring border town of Ruili.

Discussion

There are clearly limitations with a study relying on self-reporting on sensitive topics. First, although interviews were carried-out in private and with guarantees of anonymity and confidentiality, the girls may have been suspicious of these assurances. Second, interviewers were unwilling to ask some highly relevant questions, for example about the frequency of risk behaviours, such as anal intercourse, and we naturally respected their wishes on this. Third, the sample size is small, and sampling was of necessity opportunistic; only girls who happened to be available at the time were asked to participate, so it is possible that the girls who made themselves available were untypical of the total (more confident, less fearful, more knowledgeable). However, the interviewers know the area very well and felt that the girls were typical of the range of FSWs with whom they had contact in the past.

Despite these limitations the findings provide some insight into the potential for FSWs to be conduits for HIV into the general population in this part of China. The main findings are the young age of these girls, high turnover, good awareness of HIV and STIs, low throughput of clients and highly variable use of condoms. In addition, infection with STIs appears to be common, while the use of injecting drugs is rare. Finally, there are differences in behaviours and exposures between girls in the two types of brothel.

First, in this population sex work is carried-out for a short period of time in the late teens and early twenties. The high turnover was confirmed through informal conversations with the brothel owners. Both the youth and high turnover were also identified by Wong in his study of FSWs in neighbouring Ruili (Wong et al., 2003a; Wong et al., 2003b) but is in contrast with studies from other provinces, where the median age is higher (20.5 and 22.7 with a range of 15 to 41 years (Gil, 1996; Liao, 2003; Lau, 2002).

Second, the low number of FSW-client encounters reduces the potential bridging to the general population (Cote et al., 2004). (The low numbers of clients would suggest insufficient income, but one client per week will be more lucrative than the likely alternatives: working as maids, in restaurants or in factories.) The combination of low throughput for short periods of time means that working lifetime exposure to HIV is low for the majority of these girls and may be a major factor in protecting them from acquiring and transmitting HIV to clients.

Third, risk awareness of HIV was good, knowledge of the important modes of transmission (sex and needles) and the protective effects of condoms being high. In this context misinformation about the role of chopsticks, kissing or mosquitoes is probably of minor consequence. We used identical questions to assess knowledge among

pregnant women in Yingjiang and the FSWs compared favourably with them ($P < 0.0001$) (Duo et al., 2003).

Fourth, although access to condoms was excellent, utilization was poor, especially in the hotel brothel. This is despite good knowledge of the protective effects of condoms, demonstrating the weak association between knowledge and behaviour. The fact that all the 'always' condom-users were from the red light district and clustered in certain establishments suggests the influence of brothel owners or perhaps peer pressure and solidarity. Our figures for condom use compare favourably with the national averages determined from sentinel surveillance: in 2001 40% of FSWs never used condoms and 15% always did, up from 70% and 8% respectively in 1995 (Ministry of Health, 2002). There are two possible reasons for the discrepancy: the HIV epidemic in Yingjiang is more established and hence FSWs are more aware than elsewhere in China, and sentinel surveillance is carried out among incarcerated FSWs who are often street FSWs (not working from the protection of brothels) and may be less likely to insist on condom use (Gil, 1996). The process of risk assessment described by many of the girls suggests that the whole issue of condom use and negotiation is more complicated than the always/never questions asked on questionnaires.

Fifth, results from our questions about STIs can only be indicative in the absence of clinical testing, but the admission by 11 girls of previous STI infection and the fact that half knew girls who had STIs suggests they may well be common. This is of great importance for the HIV epidemic: eliminating STIs is known to reduce the efficiency of HIV transmission in commercial sex contact where condoms are not used (Steen & Dallabetta, 2003). Levels of STIs are also often used as a crude indicator of the frequency of unprotected sex with increased risk of HIV transmission (Jackson, 1992) and this has been a major concern in China (Van den Hoek et al., 2001).

Finally, none of the girls we interviewed were also injecting drugs. We did not expect girls to necessarily admit to drug use, but the interviewers were skilled at identifying drug users and they recorded no cases. In neighbouring Vietnam (Ho Chi Minh City) the overlap between sex workers and drug users has recently been identified as an important bridge from high risk drug users to the general population (Nguyen et al., 2004). A reason often quoted for the slow growth of the epidemic in the early 1990s was that the two major high-risk groups were separated with drug users mainly in remote rural areas and FSWs in the cities (Yu et al., 1996). This is changing and there is evidence from Guangxi province that up to 50% of female drug-users are involved in commercial sex work. (Van den Hoek, 2001) The overlap does not seem to be present yet in Yingjiang. Here drug-users are still predominantly (over 90%) male. (Personal communication, Yingjiang Director of Public Health.)

The implications for the potential of FSWs to be a driving force of the HIV epidemic are mixed. Each individual sex worker is exposed for a relatively short time and (for the most part) to relatively few clients, but the corollary is that large numbers of girls are at risk at some point in their life. In the red light district the risks of HIV transmission appear to be low, but in the hotel brothels the high throughput of clients, low condom use and high STI prevalence combine to create a high potential for HIV transmission. It is perhaps surprising then that sentinel surveillance of FSWs detained in Derhong re-education centre shows only a marginal increase over the past four years since testing started: from 2.7% in 1997 to 2.9% in 2000 (11). But these figures will overestimate the HIV prevalence in Yingjiang, where there are few street FSWs. Street FSWs are more likely to be arrested, are probably lower condom users and more likely to be IDUs (Gil, 1996).

Evidence from other countries shows that HIV prevalence in FSWs can be altered substantially by well-planned public health interventions (Alary & Lowndes, 2004). This study points to a number of specific interventions. First, prevention efforts should particularly target the hotel brothels. We identified two red light brothels where condom use was compulsory, so it should be possible to disseminate this more widely. Second, the high turnover of young girls emphasizes the importance of repeating education messages frequently in order to ensure that new arrivals are not missed. The brothel owners appear to assume a protective and educational role in some instances, and this could be encouraged and widened. Third, regular health checks with the aim of prompt and effective treatment of STIs, should be made compulsory. This is achievable in a Chinese setting and again brothel owners could be made to comply with such a regulation or risk closure. Finally, it has been shown elsewhere that clients of sex workers are a reachable population (albeit in African settings) (Cote et al., 2004; Gomes et al., 2002). Because of the illegality and persisting taboos around the sex industry in many parts of China, this has been a difficult area in which to intervene. However, Derhong prefecture with its more tolerant culture may be a good place to pilot interventions among clients, such as increasing condom use and decreasing rates of STIs, which have been proven effective elsewhere (Lowndes et al., 2001). Given the current low population prevalence of HIV in China, now is the time to act before the bridge between FSWs and their clients to the general population becomes a major driver of the epidemic.

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