

## SEX WORK

## HIV in female sex workers in five border provinces of Vietnam

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**Objectives:** To determine the prevalence of HIV and associated risk factors among female sex workers (FSWs) in border provinces of Vietnam.

**Methods:** 911 FSWs in five border provinces of Vietnam (Lai Chau, Quang Tri, Dong Thap, An Giang, and Kien Giang) were enrolled in a cross sectional study. Subjects were interviewed using a standardised questionnaire about selected sociodemographic and behavioural characteristics, history of STIs, and information about their cohabiting partners (husbands or live-in partners). Serological tests were done for HIV and syphilis (TPHA+RPR) and urine tests (PCR) for chlamydia and gonorrhoea. Associations between HIV and selected features of FSWs and their partners were examined using univariate and multivariate logistic regression analysis.

**Results:** Overall, the prevalence of HIV among FSWs in the five provinces of Vietnam was 4.5%. The prevalence of HIV was higher in the southern border regions (4.0%–7.0%) than the northern (2%) and central (1%) regions. In multivariate analysis between HIV and selected features of FSWs, income  $\leq$  \$33/month (OR 2.36,  $p=0.04$ ), age of first sex  $\leq$  15 (OR=5.48,  $p=0.005$ ), and  $\geq$  9 clients per week (OR 2.80,  $p=0.018$ ) were associated with HIV infection. Positive syphilis serology achieved a borderline significant association with HIV (OR 2.30,  $p=0.095$ ). Having a regular non-paying partner (OR=0.35,  $p=0.060$ ) was a borderline protective factor for HIV.

**Conclusion:** Interventions to limit HIV transmission among FSWs in Vietnam should be implemented early and focus on young poor populations in these border areas.

Action for Preventing HIV/AIDS project (JFPR-9006) was designed to target selected border provinces in three Mekong countries, Vietnam, Cambodia, and Laos, with an extensive HIV prevention package involving information, education and communication, condom promotion, and improved STI control both in the general population and FSW.<sup>3</sup> In Vietnam five provinces were selected and this study was undertaken to determine both the prevalence of HIV in FSWs and risk factors for infection in order to inform future HIV prevention interventions.

## METHODS

In all, 911 FSWs in five border provinces—Lai Chau in the north, Quang Tri in the centre, and An Giang, Dong Thap, and Kien Giang in the south participated in a cross sectional study between December 2002 and February 2003, using available mapping information obtained from the project baseline survey.<sup>4</sup> Informed verbal consent was obtained from all subjects. FSWs who requested HIV test results were referred to the Department of Preventive Medicine for voluntary counselling and testing.

Using a standard interview schedule in Vietnamese, subjects were identified in their place of work and interviewed by a healthcare worker about selected socio-demographic characteristics, sexual behaviour, healthcare seeking behaviour, history of STIs, and selected features regarding cohabiting partners (husbands or live-in partners) as reported elsewhere.<sup>5,6</sup> Study subjects were classified into direct female sex workers (DFSWS) selling sex from streets, parks, bus stops, boats, ferry pier, brothels and guesthouses, and indirect female sex workers, working and selling sex in hotels, restaurants, massage parlours, cafés, karaoke lounges, bars, and barbershops. The sample size was assessed assuming a 5% prevalence of HIV using the estimated numbers of FSWs in each province obtained for the baseline survey<sup>4</sup> plus 10%.

HIV infection was determined by positive reactions with all of the following: SFD (SFD HIV 1/2 PA, Bio-Rad, 2002, Tokyo, Japan) and two ELISA tests (Murex HIV 1.2.0, Abbott, 2002, Dartford, UK; Genscreen HIV 1/2 V.2, Bio-Rad, 2002, Marnes La Coquette, France). Urine specimens were tested for gonorrhoea and chlamydia by polymerase chain reaction (PCR) (Amplicor, Roche, 2002, Branchburg, USA). Tests for syphilis were done with rapid plasma reagin (RPR) and *Treponema pallidum* haemagglutination assay (TPHA) both made by Bio-Rad 2002 (Kentford, UK). Positive cases of syphilis were defined by positive reactions in both tests. All tests were unlinked and anonymous.

Data were entered into Epi-info version 6.04d (CDC, USA, 2001). Odds ratios (with 95% confidence intervals) were used

National HIV serosurveillance data for Vietnam have indicated a steady increase in the prevalence of HIV. This trend has been particularly noticeable among injecting drug users (10.1% in 1996 to 32% in 2002) and female sex workers (FSWs) (0.6% in 1994 to 6.6% in 2002).<sup>1</sup> These surveillance data also report widespread variation in the HIV seroprevalence among FSWs in the various provinces with high rates in Hai Phong in the north west and Can Tho, Ho Chi Minh City, and An Giang in the south but low levels in other areas.

In many parts of South East Asia, FSWs are at increased risk of HIV and merit targeted HIV prevention activities. Although sex work is officially illegal in Vietnam, many diverse venues exist where sex is exchanged for money. However, FSWs are often reluctant to identify themselves as such to healthcare providers for fear of being detained in re-education camps.<sup>2</sup>

Mobile sexually active populations are a recognised risk group for HIV and border areas appear to be particularly vulnerable to high rates of STIs and HIV. The Community

**Abbreviations:** DFSWS, direct female sex workers; FSWs, female sex workers; IDU, injecting drug use; PCR, polymerase chain reaction; RPR, rapid plasma reagin; STI, sexually transmitted diseases; TPHA, *Treponema pallidum* haemagglutination assay

**Table 1** Univariate association between HIV and selected sociodemographic, behavioural variables, STI related factors, and selected features of cohabiting partners of FSWs

Characteristics	No	%	Prevalence of HIV (%)	OR (95% CI)	p Value
Kinh ethnicity	899	91.1	4.4	0.87 (0.33 to 2.95)	0.774 <sup>F</sup>
Age 14–20 (reference)	903	23.5	4.7	NA	
21–30	903	50.4	4.0	0.83 (0.38 to 1.91)	0.65
>30	903	26.1	5.5	1.18 (0.50 to 2.83)	0.70
Having cohabiting partner	903	26.2	6.8	1.85 (0.95 to 3.53)	0.057
Having a non-paying regular partner	879	34.4	2.3	0.40 (0.16 to 0.89)	0.027
None/primary school only	900	60.1	6.1	2.85 (1.34 to 6.65)	0.006
Income ≤\$33 (\$/month)	820	28.4	6.9	1.99 (1.00 to 3.89)	0.041
Working duration ≤6 months	872	19.7	2.3	0.48 (0.14 to 1.28)	0.164
Worked outside Vietnam	891	3.9	11.4	3.02 (0.87 to 8.49)	0.062 <sup>F</sup>
Direct sex work	903	44.9	5.2	1.31 (0.69 to 2.47)	0.401
Age of first sex ≤15	855	3.7	15.6	4.56 (1.48 to 12.11)	0.009 <sup>F</sup>
No of clients/week ≥9	900	23.2	7.2	2.15 (1.08 to 4.16)	0.021
100% condom use in the last month with					
Non-regular customer(s)	884	45.1	4.3	0.89 (0.46 to 1.70)	0.731
Regular customer(s)	515	34.0	4.0	0.75 (0.29 to 1.79)	0.517
Cohabiting partner(s)	236	9.3	0.0	NA	
History of STIs	845	21.5	7.1	1.88 (0.92 to 3.72)	0.066
NG/CT	900	19.9	6.7	1.78 (0.86 to 3.53)	0.101
Positive syphilis serology	903	10.7	8.2	2.10 (0.89 to 4.57)	0.071 <sup>F</sup>
Vaginal douching in the last month	894	64.1	4.5	1.04 (0.54 to 2.08)	0.902
Visited women's clinics	898	33.6	5.0	1.19 (0.61 to 2.29)	0.596
Selected features of FSWs' cohabiting partners					
Age <30	248	29.0	9.7	1.99 (0.68 to 5.68)	0.252 <sup>F</sup>
Occupation involving mobility	247	72.9	7.2	1.66 (0.49 to 7.48)	0.568 <sup>F</sup>
Ever drug use	220	9.5	4.8	0.66 (0.03 to 4.06)	1.0 <sup>F</sup>

n, Number of responses/sample size; NG/CT, *Neisseria gonorrhoeae* and/or *Chlamydia trachomatis*; Cohabiting partners, husbands/live-in partners. \$1 = \$VN15.000; F, Fisher's exact test; NA, not applicable.

to measure the magnitude of the association between HIV and selected sociodemographic and behavioural factors. In the univariate analysis,  $\chi^2$ , and Fisher's exact tests were used to identify potential candidates for inclusion in the multivariate logistic regression analysis. Multivariate logistic regression analysis was done using Stata version 6.0 (Stata Corporation, TX, USA 1999). The study protocol and questionnaire were reviewed and approved by the AIDS Division, Ministry of Health, the Vietnam Commission for Population, Family and Children, Population and Family Health, and the Pasteur Institute, Ho Chi Minh City.

## RESULTS

The respective prevalences of HIV, 95% confidence intervals (CI) and number (n) of FSW in the five provinces were, overall 4.5% (CI 3.3% to 6.2%), n = 903; Lai Chau 2.0% (CI 0.2% to 7.0%), n = 100; Quang Tri 1% (CI 0.0% to 5.4%), n = 101; Dong Thap 4.7% (CI 1.9% to 9.4%), n = 149; An Giang 7% (CI 4.4% to 10.5%) n = 300; and Kien Giang 4% (CI 1.9% to 7.1%), n = 253. Four per cent of FSWs had used opiates, none of whom were HIV positive.

In univariate analysis, the prevalence of HIV was significantly higher in those with low educational attainment, low income (≤\$33/month), age of first sex ≤15, nine clients or more per week, and those without a non-paying regular

partner (p<0.05). The prevalence of HIV was marginally significantly higher in those having a cohabiting partner, ever having worked outside Vietnam, history of STI, and having a positive test for syphilis (0.05<p<0.1) (table 1).

In multivariate analysis (table 2), age of first sex ≤15, low income (≤\$33/month), and ≥9 clients per week were significantly associated with a higher prevalence of HIV than the corresponding reference groups (p<0.05). Positive syphilis serology was marginally associated with a higher prevalence of HIV (p = 0.095), while having a non-paying regular partner was marginally associated with a lower prevalence of HIV (p = 0.06).

## DISCUSSION

We found a variation in HIV prevalence between the five provinces. Variation in HIV prevalence has also been noted within a single province, An Giang, where HIV prevalence in FSWs in recent national sentinel surveys ranged between 16% and 24%.<sup>7</sup> Much of this variation in An Giang, a province that shares a border with Cambodia, is thought to be related to both the numbers sampled from detention camps and temporary migration of Vietnamese FSWs both inside Vietnam and from Cambodia—a STI prevalence survey in Cambodia found that one third of direct sex workers had Vietnamese as their first language.<sup>8</sup>

**Table 2** Multivariate association between HIV and selected features of FSWs

Variable	OR (95% CI)	p Value
Income ≤\$33/month	2.36 (1.03 to 5.37)	0.04
Age of first sex ≤15	5.48 (1.67 to 18.00)	0.005
≥9 clients/week	2.80 (1.19 to 6.59)	0.018
Having a non-paying regular partner	0.35 (0.12 to 1.04)	0.060
Positive syphilis serology	2.30 (0.86 to 6.12)	0.095

Variables in the full model: duration of work, income, clients/week, having a cohabiting partner, having a non-paying regular partner, education, ever worked outside Vietnam, age of first sex, 100% condom use with clients, past history of STIs, direct sex work, positive syphilis serology and NG/CT. CI, confidence interval; NG/CT, *Neisseria gonorrhoeae* and/or *Chlamydia trachomatis*.

Although injecting drug use (IDU) is an important mode of HIV transmission in Vietnam, only 4% of FSWs in our overall study population had used opiates<sup>6</sup> compared with 13% in Ho Chi Minh where 16% were HIV positive.<sup>9</sup> While significant rates of opiate use in FSWs were found in Lai Chau (6%) and Kien Giang (9%),<sup>6</sup> our study found low HIV prevalences in FSWs in these provinces. Clearly, sex work and opiate use vary throughout the country but the potential for further spread of HIV appears to be high, given current patterns of sexual mixing patterns and low levels of condom use.<sup>10</sup>

FSWs with a low income and  $\geq 9$  clients per week were at increased risk of HIV. These variables were also associated with a higher rate of chlamydia/gonorrhoea in the same population of FSW that had a cohabiting partner<sup>6</sup> and may reflect poverty and the financial need to sell sex to many low paying customers. These FSWs may not be able to access STI and HIV prevention programmes easily because of pressures of work. Clearly, mobile clinics and outreach programmes are likely to offer these women a more user friendly service than the traditional STI clinic model.

FSWs with earlier sexual debut were also at increased risk of HIV. Commencing sex work at an early age has been associated with HIV in Thailand and may reflect poor awareness of safer sex practices.<sup>11</sup> It may also reflect the vulnerability of the immature cervix to HIV despite limited numbers of sexual partners.<sup>12</sup>

The borderline association with syphilis should serve as a reminder that this condition is prevalent in Vietnam with Kien Giang having higher levels than the other four provinces.<sup>6</sup>

Having a non-paying regular partner as a protective factor for HIV could reflect fewer opportunities to have sex with other clients or partners. The high levels of HIV reported previously in FSWs in An Giang<sup>7</sup> reinforce the need for health agencies to adapt rapidly to local changes in HIV epidemiology. Our data suggest this may have started to happen and offers some optimism for the future.

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