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Evaluation of a targeted HIV prevention programme among female commercial sex workers in the south of Thailand

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Objective: To evaluate a targeted HIV prevention programme among female commercial sex workers (CSWs) in the south of Thailand.

Subjects and methods: A pretest-post-test comparison group study was carried out in Sungai Kolok and Betong between June and December 1994. In June 408 CSWs were entered in Sungai Kolok (the intervention area) and 343 CSWs were enrolled in Betong (the comparison area). In December 1994, 416 women were enrolled in Sungai Kolok and 342 in Betong. Of these women 37% (n=283) also participated in the June survey. All women completed an oral interview and blood samples were collected for HIV serology. The intervention programme consisted of an informational and educational campaign and peer educator training.

Results: Increase in knowledge and perceived vulnerability was more pronounced in the intervention area but did not translate into a greater increase in condom use. Refusal of customers unwilling to use a condom and manager support in doing so were the only factors independently related to positive changes in condom use. HIV prevalence ($\approx 20\%$) and incidence (≈ 4.2 per 100 women years) were the same in both study locations. Women in the intervention area reported significantly fewer customers and income from sex work, possibly as a result of a coincidental police campaign to suppress (child) prostitution.

Conclusions: HIV incidence among CSWs in the south of Thailand is still high. Prevention programmes should focus on improvement of negotiation and refusal skills and manager support in using condoms.

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Keywords: HIV; sex behaviour; commercial sex workers; Thailand

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Introduction

Thailand currently experiences one of the most severe human immunodeficiency virus (HIV) epidemics in the world. It is estimated that by the year 2000 more than 1.5 million Thais will have acquired HIV infection.¹ In Thailand heterosexual contact is the route of transmission fuelling the epidemic.² Visiting commercial sex workers (CSWs) is common among Thai men and is the main risk factor for male acquisition of HIV infection.^{3,4} Shortly after its implementation in 1989 the national HIV sentinel surveillance system denoted the upper north as the epicentre of HIV infection. Prevalence rates as high as 65% were reported among certain groups of CSWs,⁵ while the HIV prevalence among young military conscripts peaked at 12.4% in 1992.⁶ Recently, HIV prevalence rates in the upper north have been on the decline⁶ which is probably the result of prevention efforts^{7,8} and an elimination of those at the highest risk from the susceptible population. Although these results are encouraging, other areas of Thailand have not remained unaffected by the HIV epidemic. In 1992 a study among CSWs in Sungai Kolok District on the Malaysian border showed that HIV prevalence among brothel based CSWs had already risen to 21% while the use of condoms always was still low (14%).^{9,10} These results suggested that HIV prevention programmes were urgently needed and from June to December 1994 such a

programme was implemented in Sungai Kolok. To evaluate the programme, pretest and post-test data were collected and compared with the same type of data gathered in Betong, another Thai-Malaysian border town. No specific programme was implemented in Betong, but both locations were subject to regular HIV prevention activities among CSWs conducted by the Royal Thai Ministry of Public Health, including the distribution of condoms free of charge as part of the 100% condom policy. This report describes the results of our comparison between Sungai Kolok and Betong.

Materials and methods

STUDY POPULATION AND DATA COLLECTION

In June and December 1994 pretest and post-test surveys were conducted among CSWs in Sungai Kolok, Narathiwat Province, and Betong, Yala Province. Both are Thai-Malaysian border towns and the majority of CSWs customers are Malaysian men. In Thailand the Ministry of Public Health conducts biannual sentinel surveillance surveys of the prevalence of HIV infection among high risk groups such as CSWs, drug users, and STD clinic patients. Blood samples are collected on a voluntary basis and tested anonymously for the presence of HIV antibodies. In order to avoid unnecessary blood drawing we conducted our study concurrently with the HIV surveillance survey. In Sungai Kolok women were enrolled in our

Table 1 Number of commercial sex workers enrolled in pretest and post-test surveys in Sungai Kolok and Betong in June and December 1994 (women enrolled in both rounds in parenthesis)

	Cross sectional		Longitudinal
	Pretest (June)	Post-test (December)	Both (Jun-Dec)
Sungai Kolok (intervention area)	408	419	39% (159)
Betong (comparison area)	343	320	36% (124)
Total sample	741	739	38% (283)

study during their visit to the government run sexually transmitted disease (STD) clinic. In Betong the majority of women visit private clinics for STD control which makes enrolment of women at these sites difficult. However, the district hospital visits all sex establishments every 6 months to collect blood samples for HIV surveillance purposes. During these visits women were asked to participate in the study. After informed consent was obtained blood samples were taken and an oral interview was completed using a standardised questionnaire with questions about sociodemographic and behavioural characteristics and knowledge, perceived vulnerability, social support, and preventive practices in relation to HIV/AIDS during the preceding 6 months. Refusal among women to participate was rare. In June and December 1994, 408 and 416 CSWs were enrolled in Sungai Kolok and 343 and 342 in Betong (cross sectional sample) (table 1). Thirty seven per cent of the women were enrolled in both surveys—159 in Sungai Kolok and 124 in Betong (longitudinal sample). In Thailand CSW establishments were commonly categorised as *direct* (providing sex only, predominantly brothels) or *indirect* (providing a variety of services, including sex, such as massage parlours and hotels). However, owing to changes in the Thai prostitution law *direct* establishments have become illegal and changed the format to that of the *indirect* type. Therefore we could not apply this distinction in our analysis. Blood samples were tested for HIV antibody with an enzyme linked immunosorbent assay (ELISA) (Organon Teknika, Oss, Netherlands) and confirmed by western blot. Women were not informed about their HIV serostatus as part of this study. If women wanted to know their HIV antibody test result routine pretest and post-test counselling was provided according to the local protocol.

INTERVENTION PROGRAMME

Since drug use (both injectable and non-injectable) was extremely rare in our study population, emphasis was given to the prevention of sexual transmission of HIV. Following AIDS risk reduction models,¹¹⁻¹³ our programme first aimed to increase correct knowledge regarding HIV and its prevention, followed by activities to increase women's perceived vulnerability and peer social and manager support. Firstly, "walkman" (n=100) and cassette tapes (n=600; six different versions) with music and informative messages were circulated among women and leaflets and comic books regarding HIV were handed out at the STD clinic. Video tapes were shown at the

STD centre and provided for play in sexual service establishments. Emphasis was put on the use of audio and video materials because of illiteracy among women. Next, in each CSW establishment two peer leaders were identified who were trained as peer educators during three 1 day sessions. Sessions were conducted according to peer education materials developed by AIDSTECH, Family Health International, Durham, NC, USA.^{14 15} Meetings with sex establishment owners and managers were organised to encourage them to support their workers in using condoms. Subsequently, establishments were visited every 2 weeks by a nurse to reinforce their commitment and to discuss problems with workers. An informative leaflet in four languages (Malay, Chinese, Arabic, and Thai) containing two condoms was put in hotel rooms and posters and stickers were put up at sexual service establishments and hotels. In agreement with the Thai 100% condom policy, condoms were distributed to CSW establishments and were available at the STD clinic free of charge. However, 1 month after the start of our programme the Thai government deployed a special police task force from Bangkok to suppress (child) prostitution in the region, which included Sungai Kolok, our intervention area. This police disruption hindered the execution of the programme because women and sexual service establishments moved underground, making them difficult to reach. After 2 months the situation returned more or less to "normal" and our programme was continued.

STATISTICAL ANALYSIS

Pretest and post-test surveys were compared cross sectionally using χ^2 tests for categorical variables and *t* tests for continuous variables. Longitudinal analysis was performed among those enrolled in both surveys by computing difference scores for use in analysis of variance.¹⁶ Incidence of HIV infection was calculated using the number of person years of observation as the denominator. Principal components analysis was used to create scales of knowledge (10 items, three scales: (1) human transmission (such as through sex), (2) non-human transmission (such as through insect bites), and (3) prevention of transmission (such as through condom use)); perceived personal vulnerability (five items (for example, I am healthy, so I am not likely to get AIDS) which comprised one dimension) and social support (eight items, two dimensions: one referring to AIDS (for example, you discuss how to convince customers to use condoms) and one referring to sex work conditions (for example, you discuss how you can quit the job)). Scale scores were computed for each individual by dividing the number of positive answers by the total number of questions.¹⁷

BASELINE DIFFERENCES AND DIFFERENTIAL ATTRITION

At baseline, CSWs in Sungai Kolok were slightly older, less educated, and less likely to originate from the northern part of the country (table 2). Also they had a higher average

Table 2 Baseline characteristics of commercial sex workers (CSWs) in Sungai Kolok and Betong in June 1994

Characteristic	Sungai Kolok (n=408)	Betong (n=343)	p Value
Place of birth north (%)	74	84	<0.02
Mean age (years)	25	24	<0.001
Start CSW <18 years (%)	21	29	<0.02
Education <4 years (%)	37	25	<0.001

number of customers per day, worked in smaller establishments, and more often had a history of STDs. Since none of these factors was independently related to the dependent variables in our study (knowledge, perceived vulnerability, social support, and sexual behaviour), we assumed that these differences would not significantly confound the results of our analysis. Approximately 60% of the women who were enrolled in the pretest were not available for re-interview in the post-test because they were serving clients or had moved away from the area. These women were significantly more likely to work in smaller establishments (20 employees or less) (56 v 41%, $p < 0.001$), worked in the area less than 6 months at the time of the first interview (54% v 38%, $p < 0.0001$), and were more often HIV positive than those who were interviewed twice (22% v 15%, $p < 0.05$). Since those who were lost to follow up in Sungai Kolok did not differ significantly from those lost in Betong in these respects, we assumed that the effect of differential attrition on the results of our study would be minimal.

Results

CROSS SECTIONAL ANALYSIS

Knowledge about HIV/AIDS, perceived vulnerability, and social support

Table 3 shows cross sectional levels of knowledge and perceived vulnerability during pretest and post-test surveys in Sungai Kolok and Betong. Knowledge with regard to human transmission was already high at the start of the study (average scale value 0.95) and no further increase was observed. With respect to non-human transmission the value of 0.65 shows that the majority knows that AIDS is not transmitted through insect bites or sharing the toilet. However, correct knowledge regarding prevention of transmission was low—average values vary around 0.40. An increase in knowledge of the prevention of transmission significantly occurred in both locations but was more pronounced in Sungai Kolok, the intervention area. The average pretest value regarding

perceived vulnerability to AIDS was approximately 0.50 in both locations and this figure significantly increased to 0.54 in Sungai Kolok only. To get an indication of the proximity of HIV a question was asked whether women knew a colleague with HIV or AIDS. Only 7% said they knew such a colleague but few had ever seen a person with AIDS (PWA). These figures did not differ by study site or pretest or post-test of survey. No differences were present in levels of peer social support regarding sex work (average scale value 0.56) and receiving support from the manager in refusing an unwilling customer (50% of the women received such support). Peer support regarding AIDS increased slightly, but significantly, in Betong only (from 0.38 to 0.44, $p < 0.03$).

Preventive practices and HIV prevalence

The proportion of CSWs using condoms with the last three customers increased significantly from approximately 70% to 80% in both locations (table 3). In concurrence with the police intervention the average number of clients per day decreased significantly in Sungai Kolok from 1.8 to 1.5 ($p < 0.001$) but remained the same (1.1) in Betong. Moreover, in Sungai Kolok the average monthly income from sex work significantly declined from 12 500 baht (US\$1=25 baht) to 8880 baht 6 months later ($p < 0.001$). In Betong the average income remained approximately the same ($\approx 12 000$ baht). The percentage of women reporting to have refused a customer unwilling to use condoms increased in both locations but this increase was significant in Betong only. Several multivariate analyses of variance and multiple regression analyses were performed to explain post-test condom use with the last three customers. The only variables independently related to condom use were refusing an unwilling customer ($\beta=0.10$, $p < 0.002$) and receiving support of the manager in doing so ($\beta=0.48$, $p < 0.001$).

With regard to HIV, the pretest prevalence was around 20% in both locations. While a slight decrease was observed (to 18%) in Sungai Kolok, the HIV prevalence in Betong increased to 23%, but this was not significant.

LONGITUDINAL ANALYSIS

Knowledge about AIDS, perceived vulnerability, and social support

In our longitudinal sample no changes were seen with respect to knowledge of human

Table 3 Cross sectional characteristics of commercial sex workers in Sungai Kolok and Betong in June and December 1994

	Sungai Kolok			Betong		
	June (n=408)	December (n=419)	p Value	June (n=343)	December (n=320)	p Value
Knowledge:						
Human transmission	0.94	0.95	NS*	0.95	0.96	NS
Non-human transmission	0.64	0.76	NS	0.64	0.73	NS
Prevention of transmission	0.37	0.47	<0.001	0.39	0.45	<0.02
Perceived vulnerability	0.49	0.54	<0.008	0.52	0.53	NS
Condom use† (%)	68	77	<0.001	73	84	<0.001
Refuse customer (%)	41	47	NS	27	60	<0.001
HIV prevalence (%)	20	18	NS	19	23	NS

*NS=not significant.

†Condom use with all three last customers.

Table 4 Longitudinal characteristics of commercial sex workers in Sungai Kolok and Betong in June and December 1994

	Sungai Kolok (n=159)		Betong (n=124)		p Value
	June	December	June	December	
Knowledge:					
Human transmission	0.94	0.93	0.96	0.97	NS*
Non-human transmission	0.66	0.81	0.66	0.73	<0.04
Prevention of transmission	0.36	0.52	0.35	0.44	<0.02
Perceived vulnerability	0.51	0.54	0.52	0.55	NS
Condom use† (%)	72	75	72	80	NS
Refuse customer (%)	42	48	25	47	<0.002
HIV prevalence (%)	11	12	20	22	NS
Incidence/100 person years		4.3		4.2	NS

*NS=not significant.

†Condom use with all three last customers.

transmission (stable around 0.95), perceived vulnerability (stable around 0.53), and proximity of HIV/AIDS (approximately 7% reports knowing a colleague with HIV). With regard to non-human transmission and prevention of transmission analysis of variance shows that positive changes of a greater magnitude had occurred in Sungai Kolok than in Betong (table 4). No changes occurred in levels of peer support regarding sex work (stable \approx 0.60) and receiving support from the manager in refusing an unwilling customer (\approx 50%). Peer support regarding AIDS showed a greater increase in Betong (from 0.39 to 0.50) than in Sungai Kolok (stable \approx 0.42; $p < 0.03$).

PREVENTIVE PRACTICES AND HIV PREVALENCE AND INCIDENCE

The proportion of women using condoms with the last three customers increased in both locations but no differences in change were present between Sungai Kolok and Betong (table 4). In Sungai Kolok the decrease in the average number of customers per day (from 1.9 to 1.6) was significantly greater than in Betong (stable at 1.1; $p < 0.02$). Also, women in Sungai Kolok reported a greater decrease in income from sex work during the last month (an average of 4300 baht less) than women in Betong (an average of 1400 baht less; $p < 0.05$). The percentage of women refusing an unwilling customer increased in both locations, but the increase in Betong was of a greater magnitude ($p < 0.002$). Several multivariate analyses of variance and multiple regression analyses were performed to explain changes in condom use but only refusing a customer unwilling to use condoms ($\beta=0.17$, $p < 0.01$) and receiving support from the manager in doing so ($\beta=0.13$, $p < 0.05$) were independently related. Demographic factors, knowledge of transmission, perceived vulnerability, social support, income from sex work, and mean number of clients were not independently related to changes in condom use.

Pretest HIV prevalence in Sungai Kolok (11%) was lower than in Betong (20%) but in both locations the seroconversion rate was just over four per 100 person years of follow up.

Discussion

In this study positive changes were observed in knowledge of HIV transmission, perceived vulnerability and condom use among CSWs in

Sungai Kolok and Betong. Whereas the increase in knowledge and perceived vulnerability was more pronounced in the intervention area (Sungai Kolok) this did not translate into a greater increase in condom use in comparison with Betong where no specific prevention programme was carried out. It should be noted however that the percentage of women reporting condom use (\approx 70%) was already high at the start of the programme, leaving limited room for additional change. Several studies have shown positive changes in condom use among CSWs upon intervention,^{18 19} but these studies lacked adequate control groups. When a control group was present in one study, the investigation failed to assess behavioural change upon intervention.²⁰ Meeting the requirements of an experimental design was also a problem in our study since women could not be randomised among groups and many other sources of information regarding HIV were available to them. On the other hand, contamination between the two study areas was not likely because the geographical barriers between Sungai Kolok and Betong make travel between them troublesome and time consuming.

Lack of confrontation with the severity of the consequences of unprotected sex might be one of the factors explaining the absence of a substantial increase in perceived vulnerability and condom use.^{13 21} Only 7% of the women indicated they knew a colleague with HIV while only a few had ever seen a PWA in person. Although large numbers of women know their HIV status they are reluctant to reveal this because of fear of rejection and loss of income and job. Also, many women will migrate back to their residence of origin when they discover they have AIDS.

One factor that is likely to have had a negative impact on the effect of our programme is the police interference shortly after the start of our programme in Sungai Kolok. As part of a campaign of the Thai government to suppress (child) prostitution police frequently invaded sex establishments and arrested women for questioning. As a result commercial sex activities moved underground making women and clients difficult to reach and owners and managers hesitant to cooperate. Our programme was temporarily suspended and continued 2 months later upon withdrawal of the police force. Another probable side effect of the police involvement is the decrease in customers and income from sex work among women in Sungai Kolok. Although these factors could not be directly related to changes in condom use it is likely that this impaired the bargaining power of women and caused increased competition for customers. In relation to the decrease in customers it is no surprise that no increase was observed in manager support in refusing unwilling customers as this has a negative impact on their income. Next to the fee that managers charge to each customer, women are often in debt with the manager as a result of money forwarded to the parents of the CSW when she entered the profession. Failure to pay back the debt results in loss of income for the

manager who in turn adds additional interest to the amount. In our previous study, being in debt with the manager was an independent risk factor for HIV infection.¹⁰ It should be emphasised in this respect that women as well as managers are in this profession for economic reasons and any measure that leads to loss of income is likely to be counterproductive with respect to HIV prevention.

Support from the manager and refusal of unwilling customers were the only variables related to positive changes in condom use in multivariate analysis. According to recent behavioural models, subjective norms (for example, manager support) and negotiation skills²² (for example, refusing a customer) are important factors to translate knowledge and perceived vulnerability into safer sex behaviour. The assumptions of these theoretical models are confirmed in our study and we conclude that negotiation and refusal skills in combination with manager support should be a crucial factor in future prevention programmes among CSWs.

The HIV prevalence in Sungai Kolok and Betong (approximately 20%) and the observed incidence rate of HIV infection of four per 100 person years in both areas is reason for concern. Since the majority of women worked in the area only for a few months, they are likely to have acquired their HIV infection elsewhere, most likely in the northern part of the country from where most of them migrated. This means that the HIV prevalence among their predominantly Malaysian clientele might still be low. If these men do not consistently use condoms with CSWs they are at high risk of acquiring HIV infection and bringing the virus into Malaysia.

In summary, our study shows that future prevention activities among CSWs should focus on improvement of negotiation and refusal skills and creating manager support in using condoms. These activities need to take in account the economics of commercial sex work and are likely to be counter effective if they simultaneously lead to an unacceptable decrease in customers and income by sex workers and managers. Finally, the high incidence of HIV infection of four per 100 person years, despite high levels of condom use, points at the urgent need to further develop and employ female controlled barrier methods. These should include female condoms, microbicides, and possibly the vaginal diaphragm in combination with spermicides as has been recently advocated. Indeed, when these alter-

natives are available it might be possible to further balance the inequity between sex workers and their clients.²³

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