



Recruiting an Emerging High-Risk Hidden Population - Male Clients of Female Sex Workers in Bangkok, Thailand

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Abstract

Background: Through 2007, Thailand had an estimated 590,000 persons living with HIV/AIDS and 21,000 AIDS-related deaths. Clients of female sex workers (FSWs) may be at high risk for HIV infection because of risky sexual behaviors and can be a potential transmission source to the general population. A system to monitor HIV prevalence in this population needs to be developed; however, clients are a difficult to access population.

Methods: We piloted a novel variation of respondent-driven sampling (RDS) among FSWs to recruit their clients in Bangkok. RDS, a probability-based sampling method, uses a coupon system for clients to recruit their peers. Initial FSWs, identified through community organizations, recruited peers who referred one of their clients and three other FSWs. After providing informed consent, clients completed a standardized questionnaire using a handheld PC, provided an oral sample for HIV testing, and were asked to return for results after 2 weeks. Since there are no standardized data analysis techniques for surveys that utilize RDS to recruit sexual partners of participants, two weighted analysis methods were developed based on FSWs self-reported social network sizes and were calculated using RDS Analytic Tool (RDSAT). All analyses incorporated RDSAT-generated weights for the dependent variable and were adjusted for survey design.

Results: Among 549 FSW participants, 188 (34%) recruited one client. The median age was 38 years (interquartile range: 30-50 years). HIV prevalence ranged 17-23% depending on data analysis method, but did not vary significantly by demographic, age at first sex, STD symptoms, number of partners and sex with males. Among HIV-positive clients, 26% were married, 69% used condoms with their regular partners and 66% with FSWs. There were 59 serodiscordant client-FSW couples and 81% reported condom use during the last sexual encounter.

Conclusions: High HIV prevalence observed in clients and inconsistent condom use among serodiscordant couples can promote transmission of HIV infection to the general population. Though prevention programs for FSWs are ongoing in Bangkok, these findings highlight the importance of initiating surveillance and targeted programs for clients of FSWs and demonstrates a recruitment method for hard-to-reach populations.

Background

- Thailand adult HIV prevalence estimated 1.4% with highest prevalence among injection drug users and female sex workers (FSWs)
- Clients of FSWs
 - 20% Thai men visited FSWs*
 - Likely have other sexual partners besides FSWs therefore serve as a potential bridge for transmission of HIV from a high prevalence population – that of the FSWs – to the general population
 - Clients are difficult to identify because they are a hidden population
 - All previous studies of clients have relied on investigator-recruited samples of clients
 - Currently there are no data on clients of FSWs in Bangkok

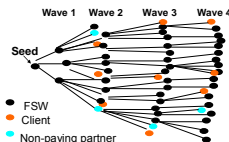
* Monitoring the AIDS Pandemic. Sex Work and HIV/AIDS in Asia: 2005

Objectives

- Primary objective: test the feasibility of using a modified version of respondent-driven sampling (RDS) to obtain a representative sample of male clients of street-based FSWs in Bangkok
- Secondary objectives
 - To understand socio-demographic characteristics, estimate HIV prevalence and assess HIV risk behaviors in clients of FSWs in Bangkok
 - Identify method for data analysis of partner studies using modified RDS for recruitment

Study Methods

- Client study was embedded in larger standard FSW RDS study that took place from August - November 2007 in three sites around Bangkok
- In addition to 3 other FSW peers, FSWs were asked to recruit 1 paying male client and 1 non-paying male partner



- Incentive for participation: 11 USD
- All participants offered HIV testing and results
- Partners were not asked to recruit other partners

Analysis Methods

- Since there is no standardized data analysis technique for partner studies using a modification of RDS, a weighted method incorporating RDSAT was developed for this analysis
 - RDSAT: statistical software specifically designed for RDS studies that adjusts proportion estimates based on the size and recruitment patterns of a participant's peer network
- A weight for each FSW's social network was generated in RDSAT and inputted into the following formula as the W_{sn}

$$W_c = W_{SN} \times \left(\frac{N}{Q} \right)$$

- To compensate for under-sampling of clients, the weight (W_{sn}) was adjusted by each FSW's number clients in 1 month (N) over the total number of clients recruited (equal to $Q = 1$ for this study)
- Analysis was done in SAS and SUDAAN

The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

Results

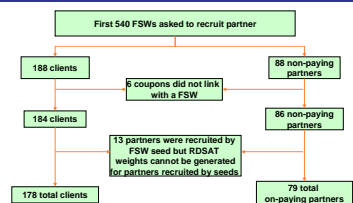
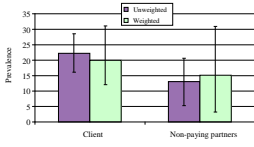


Table 1: Weighted Socio-demographic Characteristics and Risk Behaviors of Partners of FSWs – Bangkok, Thailand, 2007

Characteristic	Clients n = 178		Non-paying partners n = 79	
	n/total*	% (95% CI)	n/total*	% (95% CI)
Age in years				
≤ 19	94/178	51.3 (39.2 – 63.3)	50/79	75.0 (62.9 – 84.1)
≥ 20	84/178	48.7 (36.7 – 60.8)	29/79	25.0 (15.9 – 37.1)
Education				
None/Primary	12/172	72.9 (60.4 – 82.3)	17/76	18.3 (10.6 – 29.7)
Secondary/University	51/172	27.2 (17.7 – 39.3)	59/76	81.7 (70.3 – 89.4)
Age at first intercourse in years				
≤ 19	12/178	67.3 (54.6 – 77.5)	61/79	80.3 (65.8 – 89.7)
≥ 20	57/178	32.7 (22.1 – 45.4)	18/79	19.7 (10.3 – 34.2)
Currently married	60/178	41.2 (29.8 – 53.7)	51/79	56.4 (40.8 – 71.0)
Number of sexual partners in last month				
0-1	17/155	6.5 (2.8 – 14.4)	25/61	41.9 (26.3 – 59.4)
2 or more	138/155	93.5 (85.6 – 97.2)	36/61	58.1 (40.6 – 73.7)
Ever had sex with a man	19/178	10.1 (4.7 – 20.4)	6/79	16.2 (6.4 – 35.5)
Condom use during last sexual encounter				
Regular partner	70/105	75.6 (59.7 – 86.6)	32/66	37.7 (23.8 – 54.0)
Regular partner	100/119	82.3 (66.9 – 91.4)	30/36	87.1 (71.2 – 94.8)
Casual partner	136/160	90.5 (80.8 – 95.6)	31/36	88.2 (71.8 – 95.7)
Injecting drugs last 12 months	8/178	4.2 (1.0 – 15.6)	4/79	8.3 (2.9 – 21.7)
Drank alcohol in last month	115/177	60.6 (48.2 – 71.8)	48/79	70.1 (56.9 – 80.6)
Had any STD symptoms in last month	48/178	27.5 (17.9 – 39.7)	57/79	39.1 (25.2 – 55.2)

* unweighted

Figure 1: HIV prevalence among clients and non-paying partners of FSWs, unweighted and weighted analysis, Bangkok, Thailand, 2007



Confidence intervals are illustrated by black vertical line.

- 1 clients and 0 non-paying partner refused HIV testing
- 39 (23%, weighted) clients and 9 (6.9%, weighted) returned for HIV results.

Table 2: Behavioral characteristics Associated with HIV Infection in Clients of FSWs – Bangkok, Thailand 2007

Characteristic	RR	95% CI
Age at first intercourse in years		
≤ 19	3.10	1.16 - 8.24*
≥ 20	Referent	Referent
Number of sexual partners in last month		
0-1	2.08	0.74 - 5.86
2 or more	Referent	Referent
Condom use during last sexual encounter with regular partner		
Yes	3.97	1.09 - 14.61*
No	Referent	Referent
Condom use during last sexual encounter with casual partner		
Yes	0.76	0.22 - 2.64
No	Referent	Referent
Condom use during last sexual encounter with FSW partner		
Yes	0.79	0.25 - 2.45
No	Referent	Referent
Drank alcohol in last month		
Yes	1.65	0.63 - 4.31
No	Referent	Referent
Had any STD symptoms in last month		
Yes	0.98	0.36 - 2.68
No	Referent	Referent

* Statistically significant

Serodiscordant Relationships

- 56 (31%) serodiscordant FSW-client relationships and 14 (18%) FSW non-paying partners relationships (Figure 3)
- Condom use during the last sexual encounter with a FSW 90% (weighted) among serodiscordant FSW-client relationships

Figure 3: HIV serostatus among recruited FSWs and partners, Bangkok Thailand 2007*

FSW: HIV - □ HIV + ■
 Client: HIV - ○ HIV + ●
 Non-paying partner: HIV - ◇ HIV + ◆



*Recruitment pattern based on one seed only

Discussion

- Only known study of clients of FSWs using modified RDS to recruit partners of FSWs.
- Results show FSW-initiated recruitment to be a feasible method of partner sampling
- Regardless of analysis method, partners of FSWs have a high HIV prevalence with poor return for results
- Despite targeted condom prevention messages, there continues to be inconsistent condom among serodiscordant client-FSW couples
- Many partners who tested positive for HIV were married or had other sexual partners who are also at increased risk for HIV acquisition due to inconsistent condom use

Limitations

- Selection bias as only a select proportion of FSWs were asked to recruit a partner
- No data on partners who refused to be recruited by a FSW
- Though we tried to minimize the inclusion of non-paying partners into the client population by allowing them to be recruited separately, there may have been participants who were not truly clients enrolled into the client study due to incentives and remuneration.
- Data analyses were based on FSW's self-reported peer network size and number of clients which cannot be validated for accuracy.

Conclusions

- The preferred analytic method for analyzing partner data generated from modified RDS design is a weighted method as the confidence intervals are the most conservative
- Improved surveillance for partners of FSW should be developed
- Prevention programs targeting partners of FSWs are urgently needed and should include important condom use messages and promotion of HIV testing

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