

Sex Work and Risky Sexual Behaviors among Foreign Entertainment Workers in Urban Singapore: Findings from Mystery Client Survey

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ABSTRACT *Globalization has led to a rapid influx of female workers from Asian countries with high prevalence of HIV to Singapore, with many entering the entertainment industry. We assessed the prevalence of sexual services, condom use, and self-initiated screening for sexually transmitted infections (STIs) and associated variables among foreign female entertainment workers in Singapore. A cross-sectional survey of 317 female entertainment workers, using mystery clients, was conducted on a two-stage proportional cluster sample of 93 entertainment establishments stratified by geographical zone in Singapore. We found a high prevalence (71 %) of sexual services in entertainment establishments with 53 % of the female entertainment workers reporting selling sex. Consistent condom use for sex with paying clients in a usual week in the past 3 months was low, ranging from 37.9 % for oral sex, 46.9 % for anal sex, to 51.9 % for vaginal sex. On multivariate logistic regression, consistent condom use for vaginal sex with clients showed a significant independent association with the entertainment worker's behavior of asking clients to use condoms and a borderline association with entertainment worker being a Chinese national. Less than half (48.9 %) of the sex workers had ever been screened for STIs either locally or in their home country. The only independent factor significantly associated with STI screening was having to support one's family. In summary, a high percentage of foreign female entertainment workers in Singapore reported selling sex. Condom use and STI screening were low among them. Access to STI screening, treatment, and education services should be enhanced for foreign female entertainment workers in Singapore.*

KEYWORDS *Selling sex, Foreign entertainment workers, Mystery clients, Condom use, Screening*

INTRODUCTION

Asia is now the second most HIV-affected region after Africa, with 4.87 million people living with the infection.¹ Of the 7,000 new HIV infections worldwide, 6,000 are in adults of whom 51 % are among women.¹ South and Southeast Asia bear the

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highest burden of curable sexually transmitted infection (STIs) in the world with the main mode of transmission to be male patronage of female sex workers (FSWs).² The sex and entertainment industries in Asia have been growing rapidly due to the booming economy, increase travel, globalization, and demand for entertainment.³ The wide income disparities across the region and forces of poverty have led to an influx of women from poorer countries to work in entertainment establishments in wealthier countries. Entertainment establishments are often associated with sex work,³⁻⁶ where women employed as beer promoters, exotic dancers, or singers often sell sex to men patronizing such places to supplement their income. In addition, research has shown that immigrant sex workers were more likely to work in entertainment establishments such as bars and cabarets rather than from the streets because of their preference for an environment with more anonymity and less exposure to immigrant officials.^{6,7}

Asian countries have recently witnessed a major shift in sex work from traditional brothel settings to entertainment establishments such as bars, clubs, and hotels.³ Sex workers in brothels in most Asian countries⁸⁻¹¹ have good access to condoms and STI/HIV screening and treatment services due to national 100 % condom use policies targeting these establishments. In contrast, sex work in non-brothel entertainment establishments is mostly hidden and illegal with lack of access to STI/HIV prevention, screening, and treatment programs, and often occurs under the influence of alcohol, hence raising concerns about their risky sexual behaviors and potential for spread of STIs. A recent study in Vietnam found that female bar and karaoke workers engaging in sex work reported lower condom use with customers than massage parlor and street-based sex workers.⁴

Studies on STI risk-related behaviors of Asian FSWs based in entertainment establishments have been conducted mostly in their own countries.¹²⁻¹⁸ Some studies have been conducted on Asian FSWs who worked abroad in Western countries, but these were conducted mostly in massage parlours¹⁹ or brothels.²⁰ There is very little research on the risky sexual behaviors of foreign Asian FSWs who engaged in selling sex in nonbrothel entertainment establishments abroad.

Singapore, an island city state in Southeast Asia with a population of 4,987,600²¹ has, in recent years, experienced a rapid growth in entertainment establishments such as karaoke lounges, night clubs, discotheques, and bars. The women employed in these entertainment establishments as beer promoters, dancers, or hostesses are mainly foreigners from nearby countries, such as Thailand, Philippines, Indonesia, Vietnam, and China.²² Earlier studies showed that some of these women engaged in selling sex.^{23,24}

In Singapore, FSWs exist in many forms. They either work from the streets, entertainment establishments, or registered brothels. Brothel-based FSWs are required under the Medical Surveillance Scheme to attend the only public STI clinic and designated general practice clinics in Singapore for regular screening for STIs.¹⁰ Prostitution outside of the medical surveillance scheme is illegal, and persons soliciting for sex on the streets or in entertainment establishments can be jailed and fined if convicted. Antivice raids are conducted routinely in entertainment establishments.^{25,26} Monitoring of HIV and STIs among FSWs arrested for illegal prostitution found their HIV and STI rates to be consistently higher than those of brothel-based sex workers and to be increasing over the years.²⁷⁻²⁹ Medical records of a random sample of 56 foreign female workers arrested from entertainment establishments for engaging in prostitution between 2007 and 2009 showed an STI rate of 20.7 %.²² This was significantly higher than that (<5 %)

found among registered brothel-based sex workers who mostly (>95 %) ^{10,11} used condoms with clients.

The high STI rates among these foreign female entertainment workers raise concerns, but little is known about their risky sexual behaviors. We conducted this study to determine the prevalence of sex work, condom use with clients, and self-initiated STI screening among foreign female workers based in entertainment establishments in Singapore. The findings would help provide the rationale for policy attention and resource allocation to prevent and control STIs at the national and regional levels in Asia.

METHODS

The survey was conducted between May 2008 and April 2009 on foreign female workers in entertainment establishments in Singapore. Entertainment establishments in our study were defined as places providing entertainment activities, such as singing, dancing, and drinking to consumers. We included karaoke lounges, bars, pubs, night clubs, and discothèques. Massage parlors and brothels were excluded because these places are currently under the medical surveillance scheme, which requires masseuses and sex workers to undergo regular screening for STIs and HIV.

Since little is known about this population of foreign female entertainment workers in Singapore, we pilot-tested the feasibility of using two approaches to gather information from them. In the first approach, interviewers approached the women with identification cards and asked them to participate in a survey on sex work. The entertainment workers looked fearful and suspicious and immediately declined the interview and walked away. They probably knew that sex work in entertainment outlets is illegal. In the second approach, interviewers posing as mystery clients entered the entertainment establishments as tourists or patrons pretending to seek sex from entertainment workers in the establishments. The female entertainment workers were friendly, and they proceeded to the table where the mystery clients were seated to persuade them to buy “lady” drinks for them. The mystery clients could easily engage them to talk, and the conversation flowed smoothly and naturally to the topic of paid sex. In fact, we came across situations where the women themselves would suggest selling sex to the mystery clients. We interviewed five key informants comprising former managers and entertainment workers of entertainment establishments and community outreach workers, and they opined that the “mystery client approach” would cause less harm (maleficence) to the entertainment workers because some of them are employed by management of the entertainment establishments to sell sex—an illegal act punishable by law. The sex workers might be harmed by their employers should they know that they declare their illegal activity openly to researchers.

We thus decided to use the “mystery client” approach because the research could not practicably be carried out otherwise due to the illegality of sex work in entertainment establishments in Singapore. The study protocol was approved by the Institutional Review Board of the National University of Singapore.

Sample Size and Sampling. The sample size was determined by both logistical and statistical considerations. A sample size of 150 FSWs in entertainment establishments was required to determine a prevalence of noncondom use of 50 % at the 95 % confidence level and with a maximum acceptable difference (margin of error) of 8 % between sample and true prevalence. The estimated prevalence was based on

our pilot study of 30 FSWs, which found that 50 % did not use condoms. Based on an estimation that 60 % of entertainment workers engaged in selling sex, a sample size of at least 250 entertainment workers was required. This sample size would also yield a sufficient sample size of at least 50 noncondom users for meaningful analysis.

As it was not feasible to get a sampling frame of entertainment workers, we took a sampling frame of entertainment establishments. These were identified from geographic mapping and from a list of licensed entertainment establishments provided by the Singapore Police Force. The final list of all 270 licensed entertainment establishments in Singapore was stratified into five geographic zones according to the predominant nationality of the foreign entertainment workers: Chinese nationals, Thais, Filipinos, Indonesians, and Vietnamese.

A two-stage sampling strategy was used with a proportional stratified cluster sample of 100 entertainment establishments drawn randomly from the sampling frame of entertainment establishments in the first stage, followed by a random sample of three entertainment workers from each establishment, interviewed on different days over a 6-month period to reduce seasonal bias. The within-establishment sampling allowed for the assessment of the influence of the work environment on their risk behaviors.

Data Collection. We screened and recruited 41 interviewers aged between 21 and 39 years from diverse occupational and ethnic backgrounds. They were matched as closely as possible to the language proficiency of the entertainment workers, using the stratified geographic zone as a guide. The majority ($n=30$) of the interviewers were males because they had to pose as mystery clients. Eleven of the interviewers were females to enable us to assess inter-rater reliability between pairs of male and female interviewers who asked the same questions on condom use.

All interviewers attended a training session in which a standardized questionnaire was used to reduce interviewer bias. They were also trained on standardized procedures on how to initiate conversation with the entertainment worker. A training manual was provided to all interviewers, and this was followed by on-the-ground training led by experienced interviewers in small groups of two to three persons. Interviewers were also briefed on ethical and safety issues such as showing respect for the entertainment workers, restricting their alcohol intake, and not going out with the women alone. They were also trained on “exit strategies” so that their conversation would not end abruptly and their “deception” exposed.

The mystery clients working in teams of threes, with two men and one woman, entered the entertainment establishment and sat at the same table. Each person took on specific roles for the survey. While the “mystery” client waited for the entertainment worker to approach him to buy her a “lady” drink, which was the usual practice in the entertainment establishment, the other male partner conducted unobtrusive observations of the entertainment workers pertaining to their number and to how they solicited for sex. He also watched out for the safety of his team. The female partner, acting as the mystery client’s colleague, asked the entertainment worker about her family and work.

The interviews were administered in a conversational manner by the mystery client with the entertainment worker. As the questionnaire could not be displayed openly, the following steps were taken to reduce recall bias. The questionnaire was kept very short and categorized by themes into three main groups to facilitate recall namely: (1) sociodemographic characteristics and work history; (2) type of sexual intercourse, i.e., vaginal, oral, and anal, consistent condom use for each; and (3)

screening for STIs. The questions were also entered into hand phones, and interviewers could refer to their hand phones if needed to aid recall. The appropriate responses were entered into a hard copy of the questionnaire immediately after leaving the premise to facilitate recall.

The survey was conducted on weekdays and weekends and at varying operational hours of the establishments to reduce seasonal variation and selection bias. To ensure the safety of the interviewers, a sufficient number of teams ($n=40$) with different composition of interviewers in each team were formed, so that the teams would not visit the same outlet more than once during the survey period. Sometimes, the teams did not include a female partner to avoid suspicion by the entertainment management.

Variables in Questionnaire. Entertainment workers were asked by the mystery client what they worked as in the entertainment venue—three non-mutually exclusive options were given: beer promoter, dancer/singer/musician/mamasan, or sex worker. The latter option was asked in a “casual” manner as to whether they would engage in sex with the interviewer and how much they would charge. If they responded “yes” to selling sex, they were further asked of their frequency of using condoms for vaginal, oral, and anal sex in a usual week in the past 3 months. They were also asked who their sex partner was for the last sexual intercourse (husband, casual boyfriend, steady boyfriend, or client) and whether they used condoms. Finally, we included a question “Did you ask your clients to use a condom in a usual week?” We assessed this communication behavior because our pilot study of 30 sex workers found that almost all their clients did not use condoms spontaneously if the sex workers did not ask them to use condoms. Our earlier studies^{9,10} on brothel-based sex workers found that developing their skills in negotiating condom use with clients led to a significant increase in condom use with them. The last section of the questionnaire asked whether they had ever gone for check up for STIs and where in the past 3 months. Three months was used as the time period because the majority (83 %) did not work in Singapore for more than 3 months. They were not asked specifically about HIV/AIDS screening because foreign HIV cases are deported in Singapore, and hence, we were unlikely to elicit truthful responses to this question.

The first author also conducted in-depth interviews with 20 sex workers. Qualitative data gathered were used to add an extra dimension to the quantitative analysis and to better understand possible reasons for any significant findings that could form the basis for recommendations and further studies.

Data Analysis

Quantitative data were analyzed using the Stata 10 software. Chi-square test was used to compare proportions across groups. Chi-square trend was used for categorical variables ranked on an ordinal scale. We used multivariate logistic regression to estimate the adjusted odds ratio and the 95 % confidence intervals to identify independent factors significantly associated with our primary outcomes of interest: consistent condom use with clients and screening for STIs (yes or no). All independent variables yielding $p < 0.10$ in the bivariate analyses were entered into a forward stepwise logistic regression model.

RESULTS

The survey was conducted on 93 out of the 100 establishments in the sample. The mystery clients could not enter seven establishments because they appeared to be

exclusive for “club members.” About three quarters (70.9 %) of entertainment establishments were found to have FSWs. The number of entertainment workers in the establishments ranged from two in small pubs to 70 in high-end night clubs, with a median of 18 per establishment.

Sex Work

Three hundred seventeen female entertainment workers were interviewed; of these, 167 (52.7 %) reported selling sex. All those who reported selling sex were Asian foreigners. As shown in Table 1, almost all were below the age of 31 (mean age, 25.2 years; range, 19–45). The majority were single and well-educated with about two thirds with secondary or high school education and slightly more than one tenth with tertiary education. Filipinos (24.5 %) and Indonesians (40 %) were more likely to have tertiary education. The Vietnamese were the least educated with 40.8 % having <7 years of schooling as compared with 27.8 % among the Thais and <12 % for other nationalities (not in Table). About half were supporting their families; 5.1 % had previously worked as an entertainment or sex worker. Their previous occupations ranged from being a factory worker, supermarket worker or sales girl to hairdresser/beautician to teacher, nurse, or executive. About one third were students or unemployed.

On comparing entertainment workers who reported and did not report selling sex (Table 1), those selling sex had significantly higher proportions of Vietnamese. Almost all of the Vietnamese entertainment workers (90 %) reported sex work compared with 60 % among Indonesians, about half among Filipinos (47.7 %) and Thais (46.3 %), and 36.9 % among Chinese nationals (row percentages—not shown in Table). Sex workers were also significantly lower educated than nonsex workers. Both groups did not differ significantly on age, marital status, having a family to support, previous occupation, and the type of entertainment establishment they worked in.

Sexual Behavioral Characteristics of the Sex Workers

The median duration of sex work in Singapore was 1 month (range, 1 week to 20 years with 77 % having worked here for up to 2 months, 83 % for up to 3 months, and only 7.4 % for at least 1 year). They reported a median of three clients per week (range, 1–15), and most (79.3 %) charged between US \$70 and US \$150 per client. Almost three fourths (75.5 %) reported that they worked independently, and only one fourth were employed by establishment owners to sell sex. Slightly more than a quarter of entertainment workers engaged in sex with male casual partners (22.7 %) or husbands (2.8 %) at the last sexual intercourse, with only one third (33 %) reporting condom use.

All the 167 sex workers engaged in vaginal sex, 74 % engaged in oral sex, and 20 % anal sex with paying clients. About half (51.9 %) practiced consistent condom use in a usual week in the past 3 months for vaginal sex, 37.9 % for oral sex, and 46.9 % for anal sex with clients. About two thirds (62.4 %) reported that they always asked their clients to use condoms with 8 out of 10 (79.6 %) reporting success in getting them to do so. Among those who did not succeed, 51.4 % still engaged in unprotected sex with them.

Table 2 shows consistent condom use for vaginal sex and self-initiated STI screening in the past 3 months among the sex workers by sociodemographic, work, and communication behavioral factors. It increased significantly with increasing educational level and the sex workers' practice of requesting clients to use condoms.

TABLE 1 Comparison of entertainment workers who engaged and did not engage in selling sex by sociodemographic and environmental characteristics, 2008–2009

Independent variables	Entertainment workers		<i>p</i> value
	Sex workers <i>N</i> =167, number (% of <i>N</i>)	Non-sex workers <i>N</i> =150, number (% of <i>N</i>)	
Nationality			
Chinese national	31 (18.6)	53 (35.3)	<0.001
Thai	19 (11.4)	22 (14.7)	
Filipino	53 (31.7)	58 (38.7)	
Indonesian	3 (1.8)	2 (1.3)	
Vietnamese	52 (31.1)	6 (4.0)	
Others(Cambodian, Laotians, Koreans, Malaysian)	8 (4.8) 1 (0.6)	0 (0) 9 (6.0)	
Age (years) ^a			
<21	10 (6.0)	14 (9.5)	0.691 ^b
21–25	100 (59.9)	80 (54.4)	
26–30	45 (26.9)	38 (25.9)	
31–35	8 (4.8)	8 (5.4)	
>36	4 (2.4)	7 (4.8)	
Marital status ^a			
Single	131 (79.4)	125 (85.0)	0.642
Married/cohabit	4 (2.4)	3 (2.1)	
Separated	14 (8.5)	10 (6.8)	
Divorced/widowed	16 (9.7)	9 (6.1)	
Educational level ^a			
No formal education	7 (4.3)	4 (2.8)	0.009
Primary (1–6 years)	28 (17.3)	12 (8.3)	
Secondary (7–12 years)	104 (64.2)	96 (66.7)	
University	23 (14.2)	32 (22.2)	
Supporting family ^a			
Yes	77 (47.0)	71 (49.3)	0.680
No	87 (53.0)	73 (50.7)	
Previous occupation ^a			
Professional/executive ^c	6 (3.8)	14 (9.7)	0.353
Office/non-manual	17(10.8)	23(15.9)	
Skilled operator/technician ^d	20(12.7)	19(13.1)	
Unskilled operator	52 (32.9)	32 (22.1)	
Housewife	4 (2.5)	3 (2.1)	
Unemployed	25 (15.8)	19 (13.1)	
Student	25 (15.8)	25 (17.2)	
Entertainment/sex worker	8 (5.1)	8 (5.5)	
Others	1 (0.6)	2 (1.4)	
Type of establishments ^a			
KTV lounge ^e	54 (34.0)	53 (37.3)	0.810
Nightclub	5 (3.1)	4 (2.8)	
Discothèques	13 (8.2)	8 (5.6)	
Bar/pub	87 (54.7)	77 (54.2)	

^aExcludes missing values^bChi-square trend test^cIncludes teachers, nurses and executives^dIncludes hairdresser, beautician^eBar/Pub - Establishment, usually a small shophouse, with counter-tables and cocktail tables for customers to drink

KTV lounge establishment with a common lounge area and private room for customers who wish to drink and/or sing; *Disco* establishment with tables and chairs for customers to drink and also a dance area for customers; *Nightclub* Establishment with the above and also include a stage for performances by bands or singers and dancers

TABLE 2 Consistent condom use for vaginal sex and self-initiated STI screening among sex workers in entertainment establishments by sociodemographic, work, and behavioral factors, 2008–2009

	Number (%) who reported condom use	<i>p</i> value	Number (%) who go for STI screening	<i>p</i> value
Sociodemographic factors				
Age (years)				
< 21	5 (55.6)	0.602 ^c	2 (11.1)	0.049 ^c
21–25	47 (56.6)		37 (40.2)	
26–30	23 (56.1)		24 (53.3)	
>31	7 (70.0)		4 (33.3)	
Marital status ^a				
Single	59 (53.6)	0.257	49 (37.4)	0.482
Married/cohabit	2 (50.0)		2 (50.0)	
Separated	11 (78.6)		9 (64.3)	
Divorced/widowed	9 (69.2)		6 (37.5)	
Nationality				
Chinese national	22 (75.9)	0.095	10 (32.3)	0.498
Thai	10 (58.8)		7 (36.8)	
Filipino	18 (41.9)		24 (45.3)	
Indonesian	1 (50.0)		0 (0.0)	
Vietnamese	25 (56.8)		20 (38.5)	
Others (Cambodian, Koreans, Laotians, Koreans, Malaysian)	6 (75.0)		6 (66.7)	
Educational level ^a				
No formal education	2 (28.6)	0.007 ^c	1 (14.3)	0.479 ^c
Primary (1–6 years)	12 (46.2)		13 (46.4)	
Secondary (7–12 years)	50 (56.8)		39 (37.5)	
Tertiary (>12 years)	16 (80.0)		14 (60.9)	
Supporting family ^a				
Yes	42 (64.6)	0.128	38 (49.4)	0.003
No	40 (52.0)		29 (33.3)	
Previous occupation ^a				
Professional/Executive	2 (50.0)	0.541	1 (16.7)	0.039
Office/non-manual	12 (70.6)		8 (47.1)	
Skilled operator/technician	9 (47.4)		14 (70.0)	
Unskilled operator	25 (58.1)		25 (48.1)	
Housewife	2 (50.0)		1 (25.0)	
Unemployed	8 (38.1)		7 (28.0)	
Student	14 (63.6)		10 (40.0)	
Entertainment/sex worker	5 (71.4)		1 (12.5)	
Work factors				
Type of workplace/establishments ^a				
KTV lounge	29 (61.7)	0.552	16 (29.6)	0.104
Nightclub	3 (75.00)		3 (60.0)	
Discothèques	7 (63.6)		9 (69.2)	
Bar/pub	38 (51.4)		33 (37.9)	
Duration of sex work in Singapore (months) ^a				
<1	56 (60.2)	0.091 ^c	47 (43.5)	0.944
1–6	18 (52.9)		12 (30.8)	
>6	5 (41.7)		6 (40.0)	
Length of stay (weeks) ^a				
<4	46 (62.2)	0.798 ^c	30 (34.1)	0.468 ^c
4–8	12 (52.2)		16 (59.3)	
>8–12	6 (54.6)		5 (45.5)	
>12	10 (62.5)		6 (33.3)	
Work for someone ^a				
Yes	13 (56.5)	0.712	13 (46.4)	0.248
No	63 (58.3)		47 (38.2)	

TABLE 2 (Continued)

	Number (%) who reported condom use	<i>p</i> value	Number (%) who go for STI screening	<i>p</i> value
Both	5 (45.5)		6 (50.0)	
Average number of clients (per week) ^a				
<3	34 (64.2)	0.168 ^c	30 (50.8)	0.133 ^c
3–5	13 (68.4)		12 (57.1)	
>5	6 (40.0)		2 (33.3)	
Average charges per client ^{ad}				
<\$100	2 (22.2)	0.251 ^c	6 (42.9)	0.276 ^c
\$100–199	40 (61.5)		28 (38.4)	
\$200–299	24 (68.6)		21 (53.8)	
\$300–399	8 (44.4)		8 (42.1)	
>\$400	4 (100.0)		0 (0.0)	
Communication behavior				
Ask client to use condom (yes vs no)	78 (87.6) 3 (5.7)	<0.0001	43 (43.9) 22 (36.7)	0.547

^aExcludes missing values

^bRefers to consistent condom use during vaginal sex

^cChi-square trend test

^dSingapore dollars (US \$1=SGD 1.3)

Among the 89 sex workers who asked their clients to use condoms, 87.6 % reported consistent condom use compared with only 5.7 % of the remaining 53 sex workers who did not request condom use. Consistent condom use showed a borderline association with duration of sex work in Singapore and nationality with the highest percentage reported among Chinese nationals. It was not associated with age, marital status, having to support one's family, previous occupation, type of establishment, length of stay in Singapore, being employed by someone to engage in selling sex, number of clients, and charge per client.

Less than half (48.9 %) of the FSWs had ever gone for screening for STIs either locally or abroad in the past 3 months. Of the 67 who had been screened, the majority (55 %) had it done in their home country citing costs, convenience, and familiarity with the health services. Only 21.9 % of all the FSWs had been screened in Singapore. STI self-initiated screening was significantly associated with age, having to support one's family and previous occupation (Table 2). A very low proportion (12.5 %) of those who had worked previously as an entertainment worker had ever gone for screening for STIs. STI screening was not associated with marital status, nationality, length of stay in Singapore, being employed by someone to engage in selling sex, number of clients, charge per client, and the practice of requesting clients to use condoms.

In the multivariate logistic regression (Table 3), consistent condom use showed a significant independent association with asking clients to use condoms and a borderline association with being a Chinese national. Asking clients to use condoms markedly increased the odds of condoms use. Having to support one's family was the only variable found to be significantly associated with self-initiated STI screening after controlling for sociodemographic variables (Table 4).

All 20 sex workers from the in-depth interviews were keen to be screened for STIs but were reluctant to go to a centre where their personal particulars will be recorded.

Reasons for engaging in selling sex ranged widely from financial need to support their families or education to sexual pleasure and a good lifestyle with the financial means to buy "brand name" clothes and bags.

TABLE 3 Forward stepwise multivariate logistic regression model indicating significant odds ratios for consistent condom use for vaginal sex among 133 sex workers in entertainment establishments, 2008

Independent variable	Crude odds ratio 95%CI	Adjusted ^a odds ratio 95%CI
Chinese national (yes vs no)	2.83 (1.12–7.14)	6.31 (0.97–40.87)
Ask clients to use condom (yes vs no)	118.2 (31.4–444.6)	152.45 (31.70–733.24)
Education level	3.48 (0.65–18.60)	3.05 (0.28–33.75)
Formal education (yes vs no)		
Work duration in Singapore <1 month vs ≥1 month	0.66 (0.32–1.35)	0.99 (0.27–3.70)

Excluded 34 missing responses

^aAdjusted for all other variables in table

DISCUSSION

There was a high prevalence (71 %) of sexual services in entertainment establishments in Singapore with one in two entertainment workers reporting selling sex. All of them were from Asian countries in the region. Only about half used condoms consistently and less than one out of five had ever been screened for STIs in Singapore. In the multivariate analysis, the entertainment worker's practice of requesting clients to use condoms showed a significant independent association with condom use with clients. Only a minority (<6 %) of clients used condoms spontaneously if the entertainment workers did not ask them to do so.

The prevalence of illegal sex work among female entertainment workers in Singapore falls into the range found in China where 50–80 % female entertainment workers also engaged in selling sex.^{13–16} The prevalence of consistent condom use with clients among Chinese national entertainment workers in our study (76 %) was also quite similar to that (84 %) reported from a study in China on 737 FSWs of which 62 % were from entertainment establishments.³⁰ It was however higher among Vietnamese entertainment workers in our study (52 %) compared to their counterparts (15 %) back home.⁴ The latter findings could be due to differences in survey methodology and sociodemographic characteristics of the clients.

TABLE 4 Forward stepwise multivariate logistic regression model indicating significant odds ratios for self-initiated screening for sexually transmitted infections among 134 sex workers in entertainment establishments, 2008

Independent variable	Crude odds ratio 95%CI	Adjusted odds ratio 95%CI
Supporting family		
Yes vs no	2.9 (1.4–5.8)	3.23 (1.53–6.81)
Age group		
<21 vs ≥21	8.52 (1.04–70.07)	7.08 (0.79–63.41)
Education level		
Formal education	5.07 (0.58–44.65)	4.88 (0.48–49.86)
Yes vs no		
Previous occupation		
Entertainment/sex worker	0.15 (0.02–1.32)	0.18 (0.02–1.72)
Yes vs no		

Excluded 33 missing responses

^aAdjusted for all other variables in Table

This study has some limitations. There is possible bias from data collected using mystery clients. We provided rigorous training to standardize the interviews and used a short questionnaire to reduce recall bias. There may also be interviewer gender bias. However, we did not find any significant difference between data collected by male and female interviewers in the 20 interviewer-pairs—the findings on consistent condom use with clients in a usual week were similar for 18 out of the 20 pairs. Sex workers might falsely report that they used condoms or had been screened for STIs to assure their clients. Our findings of low proportions reporting having been screened or using condoms suggest that these biases are unlikely to be gross. Nonetheless, it is possible that condom use and STI screening might be over-reported. As our mystery clients could not display the questionnaire openly, we were not able to ask for more detailed information about the sex workers' sexual and health behaviors because they might not be able to recall all the questions. Besides, it might arouse the suspicion of the sex workers. There may also be some intracluster bias because we interviewed three entertainment workers per establishment. However, this bias is unlikely to be high because the mean number of sex worker per entertainment establishment was only 1.5.

The use of mystery clients to collect data from entertainment workers in our survey without getting informed consent may be perceived as covert, deceptive, and not consistent with ethics guidelines on informed consent, autonomy, and beneficence in research. However, we have to consider other ethical aspects such as not causing harm to research participants. Soliciting for sex is illegal in entertainment establishments in Singapore and both the sex workers and entertainment establishment owners can be prosecuted. If the entertainment workers selling sex were to give consent for the survey and then openly acknowledged their illegal sexual activity, we would have violated their confidentiality, and this might lead to harmful repercussions such as reprimand or reprisals by their employers or even arrest with deportation by the authorities. Their ability to protect their own interests through informed consent can therefore be impaired. The safety of the interviewers would also have been compromised if establishment owners realized that the intent of the study was to find out if there were any sex workers operating in their establishments. It should be noted that our “deception” did not lead to physical, psychological, or financial harm to our research participants. No personal identifiers were recorded, and those who engaged in selling sex were not reported to the authorities.

The choice of research method has to take into account the sensitivity of the topic and the illegality of sex work in entertainment establishments in Singapore. If we were to use the open survey method with informed consent, the sex workers will be afraid to participate in the study, hence leading to poor response. Those who are willing to participate may not tell the truth, thus compromising the validity of the data. In fact, we found from our pilot study that it was not feasible to conduct the survey with informed consent. The mystery client approach was the most feasible and reliable method to get valid information from this hard-to-reach and ill-defined population without causing harm to them. The mystery client approach was used in a study in Malawi to assess condom negotiation among women who solicited sex in bars³¹ and in homosexual encounters.³² Smith³³ in her research on vulnerable groups such as drug-using postnatal mothers supported the decision of not getting informed consent to increase access to this vulnerable group, after giving due consideration to the principles of autonomy, beneficence, non-maleficence, and justice.

The strength of this study is that it allows us to determine the prevalence of sex work among Asian foreign female workers in a representative sample of entertainment establishments. Most studies were conducted using convenience samples^{13,16,17} due to the difficulty in reaching this hidden population. The use of mystery clients to gather data on selling sex is likely to be more valid than that obtained from a situation where illegal foreign sex workers, being aware of their participation in a survey, may not report selling sex for fear of reprisals.

IMPLICATIONS

Foreign FSWs in entertainment establishments pose a higher risk than registered brothel-based sex workers^{10,11} in transmitting STIs to their clients and casual partners in Singapore because of their lower levels of condom use and STI screening, higher STI rates, and bigger numbers (estimated 2,561 versus 680) locally.²⁹ Additionally, they come mostly from countries with high HIV/STI prevalence such as China, Indonesia, and Vietnam. Given the wide income disparities that have driven foreign Asian women to sell sex in Singapore, their clandestine nature and the demand for sexual services by patrons of entertainment establishments, it will be difficult to eradicate the practice of entertainment workers selling sex. A holistic and pragmatic approach to promote condom use and increase their access to STI screening and treatment services through outreach services is needed. Based on our findings, condom use should be promoted by empowering them to request clients to use condoms. STI screening could be increased by emphasizing on the need to remain healthy so as to work and support one's family and by providing anonymous STI testing.

Decriminalization of sex work^{34,35} coupled with provision of culturally appropriate STI prevention education and referral services to Asian immigrant massage parlor workers in the USA³⁴ and Asian female brothel-based sex workers in Australia³⁵ have increased condom use among them. Similar policies should be considered in Singapore where condoms and STI screening and treatment services are not provided in entertainment establishments. In the long term, the problem should be addressed upstream by preventing the influx of foreign sex workers to Singapore through coordinated efforts among relevant organizations at national and regional levels.

In conclusion, a high percentage of foreign female entertainment workers in Singapore reported selling sex. They should be provided with access to STI screening, treatment services, and education programs.

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REFERENCES

1. UNAIDS. UNAIDS Global Report on the AIDS epidemic 2010. http://www.unaids.org/globalreport/Epi_slides.htm. Accessed 18 Jan 2011.

2. World Health Organization. WHO Global strategy for the prevention and control of sexually transmitted infections: 2006–2015: breaking the chain of transmission 2007. <http://www.who.int/reproductivehealth/publications/rtis/9789241563475/en/index.html>. Accessed 20 Mar 2010
3. WHO Regional Office for the Western Pacific. Sex Work In Asia 2001. Accessed 25 November 2009. Available from: www.wpro.who.int/themes_focuses/theme1/focus4/pub_doc.asp.
4. Nemoto T, Iwamoto M, Colby D, Witt S, Pishori A, Le MN, et al. HIV-related risk behaviors among female sex workers in Ho Chi Minh City, Vietnam. *AIDS Educ Prev*. 2008; 20(5): 435–453.
5. Morisky DE, Pena M, Tiglaio TV, Liu KY. The impact of the work environment on condom use among female bar workers in the Philippines. *Health Educ Behav*. 2002; 29(4): 461–472.
6. Reuben J, Serio-Chapman C, Welsh C, Matens R, Sherman SG. Correlates of current transactional sex among a sample of female exotic dancers in Baltimore, MD. *J Urban Health*. 2011; 88(2): 342–351.
7. Bautista CT, Pando MA, Reynaga E, Marone R, Saterén WB, Montano SM, et al. Sexual practices, drug use behaviors, and prevalence of HIV, syphilis, hepatitis B and C, and HTLV-1/2 in immigrant and non-immigrant female sex workers in Argentina. *J Immigr Minor Health*. 2009; 11: 99–104.
8. Rojanapithayakorn W, Hanenberg R. The 100 % condom program in Thailand. *AIDS*. 1996; 10: 1–7.
9. Hanenberg RS, Rojanapithayakorn W, Kunasol P, Sokal DC. Impact of Thailand's HIV control program as indicated by the decline of sexually transmitted diseases. *Lancet*. 1994; 344: 243–245.
10. Wong ML, Roy Chan KW, Koh D. A sustainable behavioral intervention to increase condom use and reduce gonorrhoea among sex workers in Singapore: 2-year follow-up. *Prev Med*. 1998; 27(6): 891–900.
11. Wong ML, Chan RKW, Koh D. The long term effects of condom promotion programmes for vaginal and oral sex on sexually transmitted infections among sex workers in Singapore, 1990–2002. *AIDS*. 2004; 18: 1195–1199.
12. Rekart ML. Sex in the city: sexual behaviour, societal change, and STDs in Saigon. *Sex Transm Infect*. 2002; 78(Suppl 1): i47–i54.
13. Wei SB, Chen ZD, Zhou W, Wu FB, Li SP, Shan JG. A study of commercial sex and HIV/STI-related risk factors among hospitality girls in entertainment establishments in Wuhan, China. *Sex Health*. 2004; 1(3): 141–144.
14. Xu SL, Yan JS, Chen L, Yan PP, Chen HH, Liu JX, et al. Epidemiological study of HIV-related risk behaviors in high risk population in Fuzhou city. *Chin J STD/AIDS Control Prev*. 2001; 7: 220–222.
15. Ding Y, Detels R, Zhao Z, Zhu Y, Zhu G, Zhang B, et al. HIV infection and sexually transmitted diseases in female commercial sex workers in China. *J Acquir Immune Defic Syndr*. 2005; 38(3): 314–319.
16. Rogers SJ, Ying L, Xin YT, Fung K, Kaufman J. Reaching and identifying the STD/HIV risk of sex workers in Beijing. *AIDS Educ Prev*. 2002; 14(3): 217–227.
17. Yang X, Xia G. Gender, work, and HIV risk: determinants of risky sexual behavior among female entertainment workers in China. *AIDS Educ Prev*. 2006; 18(4): 333–347.
18. Morisky DE, Stein JA, Chiao C, et al. Impact of a social influence intervention on condom use and sexually transmitted infections among establishment-based female sex workers in the Philippines: a multilevel analysis. *Health Psychol*. 2006; 25: 595–603.
19. Nemoto T, Iwamoto M, Oh HJ, Wong S, Nguyen H. Risk behaviors among Asian women who work at massage parlors in San Francisco: perspectives from masseuses and owners/managers. *AIDS Educ Prev*. 2005; 17(5): 444–456.
20. O'Connor CC, Berry G, Rohrsheim R, Donovan B. Sexual health and use of condoms among local and international sex workers in Sydney. *Genitourin Med*. 1996; 72(1): 47–51.

21. Department of Statistics. Monthly digest of statistics 2009, Singapore: Department of Statistics. www.singstat.gov.sg/pubn/catalogue.html. Accessed 12 Jan 2010.
22. Wong ML, Chan RKW, Tan HH, Koh D, Cutter J, Lee L et al. HIV risks, condom use and health-seeking behaviour among indirect sex workers (IDSW) based in non-brothel entertainment establishments in Singapore. Technical Report Prepared for the Department of STI Control and Ministry of Health, Singapore, 28 February 2010.
23. Chan R, Goh CH. STD/AIDS knowledge and risk behaviour among masseuses and bar hostesses in Singapore. *Int J STD AIDS*. 1997; 8: 373–377.
24. Wong ML, Chan RKW, Koh D, Mark B, Chew SK, Wee S. A comparative study of condom use and self-reported sexually transmitted infections between foreign Asian and local clients of sex workers in Singapore. *Sex Transm Dis*. 2005; 32: 439–445.
25. Singapore Police Force. SPF annual report 2005. http://www.spf.gov.sg/prints/annual/2005/05spfa_gdiv.htm. Accessed 22 May 2007.
26. Elizabeth Soh. Singapore Straits Times, Saturday, June 25, 2011.
27. Department of STD Control annual report 2003, Singapore: Department of STD Control; 2004.
28. Department of STD Control annual report 2004, Singapore: Department of STD Control; 2005.
29. Department of STI Control annual report 2007. Singapore: Department of STD Control; 2008.
30. Wang H, Wang N, Bi A, Wang G, et al. Application of cumulative odds logistic model on risk factors analysis for sexually transmitted infections among female sex workers in Kaiyuan city, Yunnan province, China. *Sex Transm Infect*. 2009; 85: 290–295.
31. Van den Borne F. Using mystery clients to assess condom negotiation in Malawi: some ethical concerns. *Stud Fam Plann*. 2007; 38(4): 322–330.
32. Bolton R. Mapping terra Cognisa: sex research for AIDS Prevention—an urgent agenda for the 1990s. In: Herds G, Baum SL, eds. *The time of AIDS: social analysis theory and method*. Newbury Park: Sage; 1992: 124–158.
33. Smith LJ. Recruiting marginalized, vulnerable groups into health services research. *J Adv Nurs*. 2008; 62(2): 248–257.
34. Nemoto T, Operario D, Takenaka M, Iwamoto M, Le MN. HIV risk among Asian women working at massage parlors in San Francisco. *AIDS Educ Prev*. 2003; 15(3): 245–256.
35. Pell C, Dabhadatta J, Harcourt C, Tribe K, O'Connor C. Demographic, migration status, and work-related changes in Asian female sex workers surveyed in Sydney, 1993 and 2003. *Aust N Z J Public Health*. 2005; 30(2): 157–162.