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Original article

Title

STIs among sex workers and their clients: variation in prevalence between sectors of the industry.

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Short summary

An Australian study of commercial sex workers and their clients found little difference in lifetime STI prevalence between licensed brothel, private and illegal sex workers although clients accessing illegal services reported higher infections than those accessing legal services.

Abstract

Objectives: Risk of sexually transmitted infections (STIs) among sex workers and their clients may be higher than the general population. However, many studies have categorised workers or clients into homogenous groups for the purposes of analysis. The aim of this study was to assess variations in self-reported STI rates among licensed brothel, private and illegal sex workers and their clients.

Methods: In 2003, self-report data were collected from female sex workers and their male commercial clients residing in the state of Queensland, Australia. Overall, 247 sex workers (aged 19 to 57) and 185 of their respective clients (aged between 19 and 72 years) completed anonymous questionnaires.

Results: There was little variation in self-reported lifetime STI prevalence of licensed brothel, private and illegal (predominantly street-based) sex workers, though licensed brothel workers were less likely to report ever being diagnosed with gonorrhoea or pubic lice in the past ($p = 0.035$ and 0.004 respectively). In contrast, clients accessing illegal services reported higher lifetime STIs (36.0%, 95% CI 20.2 to 55.6) than men recruited through private sex workers (20.0%, 95% CI 11.4 to 32.5) and clients from licensed brothels (7.6% 95% CI 3.7 to 14.5).

Conclusions: This study found high lifetime prevalence of infection among sex workers and their clients. It is notable however, that lower STI rates were reported by clients and sex workers from licensed brothels. This would suggest that risk of infection is not equivalent across industry sectors and highlights some of the inherent risks associated with generalization in this population.

Key words: sex work; sex industry; commercial clients; sexually transmitted infections; legislation.

Introduction

The role of commercial sex in facilitating the transmission of sexually transmitted infections (STIs) among sex workers and their clients is a subject of ongoing empirical enquiry (1). However, much of the literature has focused on those who sell sex, rather than those who purchase sexual services (2, 3). Whether sex workers and their clients experience higher rates of STIs is likely to vary by place, time and the sector in which sexual services are provided (4). In Queensland, Australia aspects of the sex industry were legalized following a government enquiry in 1989-90 which revealed widespread corruption (5). Legislation was enacted in 1992 and 1999 allowing for private sex workers to operate from private premises (also known as sole operators) and licensed brothels respectively. Private sex workers are able to advertise their services in news papers and on the internet and are not subject to a formal regulatory process while licensed brothels (but not sex workers working therein) are subject to formal regulation. All other forms of sex work including street-based sex work, unlicensed brothels (defined as two or more sex workers operating out of the same premises) and escort agencies remain illegal. While some sex workers continue to provide services outside legal sectors of the sex industry, many service providers and clients now patronize licensed brothels or private sex workers.

There is a body of research documenting variations in the prevalence of STIs and the frequency of condom use among different populations of sex workers (6-9). In Australia, the United Kingdom, the United States of America and other developed Western countries, STI rates amongst sex workers remain low (6-10). In the UK, the proportion of sex workers reporting previous STIs and acute infection decreased significantly between 1985 and 2002 (9). An Australian study found similar rates of cervical human papillomavirus (HPV) among commercial sex workers and 'non-working' controls attending the same sexual health clinic (11). This relatively low risk of STIs has been attributed to high rates of condom use by sex

workers with their clients (8, 12, 13) and to a reduction in risky sexual practices in commercial sexual services (14).

Fewer studies have focused on men who pay for sex. A comprehensive review of empirical studies suggested that much of this research has focussed on the psychological profile and motivations of men who visit sex workers (1). More recently a number of studies have examined the sexual behaviour and STI rates of clients of sex workers. In representative samples of European populations, an association between having ever paid for sex and having ever been diagnosed with an STI was identified (15). An Australian study of men attending a sexual health clinic observed that those who reported being clients of sex workers were less likely to present to the clinic with an STI but more likely to report having ever been diagnosed with an infection (3). Similarly, in another study of Australian men, those who had paid for sex were three times more likely to have been diagnosed with an STI at some time in the past (16).

Apparent low risk of infection among sex workers and high risk among clients may not be equivalent across industry sectors. Previous studies have combined many client samples and some sex worker samples without considering the context and location in which the sex is sold. The purpose of this study was to examine whether there are differences between sectors, by focusing on STI self-reports by both sex workers and clients across three different work sectors (both legal and illegal).

Methods

Participants

Sex workers

Sex workers with more than 3 months experience were recruited in 2003 through convenience sampling. Several recruitment strategies were used and these have been described in detail elsewhere (17). Many sex workers were recruited directly from licensed brothels and whilst soliciting on the streets, yielding response rates of 98% and 93% respectively. Private sex workers were contacted by the research team via advertisements in newspapers and on an adult escort website. This yielded a much lower response rate (16 and 24% respectively). A number of sex workers were also referred to the study by other sex workers or health and welfare agencies (n=106).

The mode of administration of the survey instrument depended on the location of the interview and preference of the participant with data were collected through both self-completed (in the presence of the researcher) or interviewer administered (face-to-face and telephone) questionnaires. The final sample included private (n=103), licensed brothel (n=102) and illegal (and predominantly street-based) sex workers (n=42).

Clients

Convenience sampling was used to collect data from a cross section of men who had recently paid for sex. Men were recruited in 2003 by researchers, individual sex workers and brothel staff when they attended venues for commercial sex. Where sex workers and brothel staff recruited clients on behalf of the research team they were instructed to invite the client to participate in the study and provide them with an information sheet. Clients who agreed to participate were provided a questionnaire, envelope and a pen and were instructed to return completed questionnaires sealed in the envelope to the person who had recruited them.

Brothel staff recruited 51 men (100% response rate) and a further 66 men were invited to participate by research staff in licensed brothels (77% response rate). Five private sex workers invited 57 clients to complete the questionnaire, 2 clients refused the invitation (96% response rate) and several illegal sex workers recruited 25 clients (100% response rate). Overall, 185 male clients from licensed brothels, illegal services (illegal brothels and street-based sex workers) and private sex workers self-completed the questionnaire.

Measures

In 2003, funding was provided by the Prostitution Licensing Authority to examine the impact of brothel licensing on the Queensland sex industry with particular attention to the health of sex workers and their clients. The survey instrument for sex workers included 333 pre-validated items related to demographics, past and current sex work sectors, sexual services provided, self-reported lifetime and recent STI diagnoses (Chlamydia, gonorrhoea, general wart, genital herpes, HIV, HBV, trichomoniasis, syphilis, LGV) and a history of other conditions (HCV, oral herpes, bacterial vaginosis, candidiasis). The items related to STIs and other conditions were also used in a population-based random survey of Australian men and women thereby allowing comparison of the sex worker sample and population norms (18). Completion of questionnaires took between 20 minutes to more than one hour (average time to completion was 45 minutes).

Data were collected from clients of sex workers using a structured 165 item self-completed questionnaire. The survey instrument included pre-validated items about sexual health, substance use, marital status and socio-demographic information. The questionnaire took an average of 15 minutes to complete.

A small honorarium was paid to participants with female sex workers and their clients being reimbursed \$A25 and \$A15 respectively. Ethical approval was obtained from

University of Queensland ethics committee for both surveys prior to commencing data collection.

Statistical analysis

Data analysis was performed using SPSS 12.0 statistical package (19). The chi-squared test was used to examine the relationship between discrete variables while comparisons between normally distributed continuous variables used one-way ANOVA.

Results of self-reported lifetime STI diagnosis were compared with population data from a previously conducted large household study of sexual behaviour (18). Population data were obtained from telephone interviews of a representative sample of Australian men (n=10173) and women (n=9134) from all States and Territories of Australia. Identical items were used in the population-based, sex worker and client surveys.

Results

In total, 247 female sex workers (aged 18 to 57) and 185 male clients (aged 19 to 72) from Queensland, Australia completed interviews. The majority (83%) of the sex workers and all of the male clients were recruited from services operating in the Southeast corner of the state, i.e., Brisbane, the Gold and Sunshine Coast. This follows the likely distribution of Queensland sex workers and is a reflection of the major metropolitan centres of the state.

Private sex workers were older (35, sd=8) than licensed brothel (30, sd=6) and illegal sex workers (30, sd=8, $p < 0.001$) and about two-thirds (69%) of the total sample were Australian born ($p = 0.146$). Illegal sex workers were more likely than private and licensed brothel workers to be single (66.7%, 39.8% and 49.0% respectively) and around half of all sex workers sampled reported having at least one child. Half (50%) of the sample had regular private non-paying partners who were likely to be male (94%) and with whom condoms were unlikely to be used. Overall, three-quarters (74%) of sex workers rarely or never used condoms with their private sexual partner. Over three-quarters (83.3%) of illegal sex workers

reported injecting drug use in the past compared with one-quarter (25.2%) of private sex workers and a lesser proportion (15.7%) of licensed brothel workers ($p < 0.001$). Details of the demographic characteristics, private sexual relationships and injecting drug use are shown in Table 1.

INSERT TABLE 1

There were few differences in the proportion of sex workers in the three work settings who reported having ever been diagnosed with an STI (Table 2). Significantly, all three groups of sex workers were more likely to report having ever been diagnosed with an STI than women from the general population (18). About one in four women reported having ever been diagnosed with chlamydia and over one third (36.4%, 20/53) of these infections had reportedly occurred in the two years preceding the interview. No licensed brothel workers reported having ever been diagnosed with gonorrhoea compared with 5.8% (95% CI: 2.4% to 12.4%) of private sex workers and 7.1% (95% CI: 1.7% to 19.7%) of illegal sex workers ($p = 0.035$). Overall, 22.2% of women who reported being diagnosed with gonorrhoea, claimed it was within the previous two years. Women working in licensed brothels were also less likely to report having ever been diagnosed with pubic lice (4.9%, 95% CI: 1.8% to 11.2%) compared with both private (19.4%, 95% CI: 12.9% to 28.2%) and illegal sex workers (14.3%, 95% CI: 6.3% to 28.2%) although only about one in seven had recently been diagnosed with pubic lice.

INSERT TABLE 2

Over three-quarters (77.2%) of the male clients were Australian born, almost one-quarter were married (22.7%) and about half reported being single (50.8%). Clients of private sex workers were older (40, $sd = 10$) than men recruited via licensed brothels (33, $sd = 10$) or illegal services (30, $sd = 8$, $p < 0.001$). There were some differences in the current occupation of men in this sample. The most common occupations of men accessing licensed brothels and

private sex workers were managers or professionals (20.9% and 30.9% respectively), tradesmen (21.9% and 20.5% respectively) or elementary service workers or labourers (22.8% and 23.6% respectively). Men frequenting illegal services were more likely to be employed as tradesmen (32.0%), intermediate or advanced service workers (20.0%) or elementary service workers or labourers (32.0%).

Men accessing illegal services were substantially more likely than men in other groups to report having been diagnosed with an STI at some time in the past. This group also self-reported higher chlamydia and gonorrhoea diagnoses than men accessing other sectors of the sex industry ($p < 0.001$ for both). In contrast, licensed brothel clients were significantly less likely than clients of illegal services or private sex workers to report ever being diagnosed with genital warts (Table 3). Though not statistically significant, clients of licensed brothels also self-reported lower rates for all other STIs when compared with clients accessing other sectors of the sex industry. Further, clients of licensed brothels reported lifetime infection comparable to, or lower than, a general population sample.

INSERT TABLE 3

Discussion

Our findings confirm prior research showing that, overall, sex workers and their clients have higher self-reported lifetime prevalence of STIs than the general population (18). This pattern was fairly consistent for sex workers in each of the three sectors. However, among clients who were recruited in licensed brothels, the risk of infection appears either lower than or equivalent to the general male population, depending on the specific infection.

Previous research has suggested low infection rates among Australian sex workers (7, 8, 11). In contrast, our study found that the lifetime STI prevalence was higher among sex workers than a representative sample of Australian women (18). Specifically, we found that about one-quarter of sex workers had reported being diagnosed with chlamydia ever and one-

third of these women reported a diagnosis in the 2 years preceding the survey. However, in this study it was not possible to elicit the source of infection or whether they had been acquired through professional or personal situations. Other studies have suggested that sex workers were most likely to acquire STIs from private relationships (7). In this study, the low rates of condom use with private partners suggest that private sexual contacts may be a possible source of infection.

The higher self-reported STI prevalence among sex workers may be explained by health seeking behaviour (and subsequent screening of asymptomatic women). For example, even among street-based sex workers (who may be less likely than sex workers in other work sectors to have been screened for infections) only about one in ten reported never having been tested for STIs (6). Moreover, brothel-based sex workers in Queensland and some other parts of Australia are required to have certification of regular sexual health screening. Such testing may reveal pathology in cases that would normally go undetected given the asymptomatic nature of many of these infections. Therefore, it could be expected that sex workers, undergoing a higher level of “medical scrutiny” will report higher levels of diagnosis compared with the general population who only rarely access sexual health checks. It may also be that sex workers are better able than the general population to recall past infections because of their broad knowledge of sexual health. Indeed, within Queensland sex workers are encouraged (and licensed brothel workers are required) to complete a ‘sexual health workshop’ that presents information about STIs, safer sexual practices and how to check clients for visible signs of infection (20).

Licensed brothel workers reported relatively low rates of gonorrhoea, pubic lice and hepatitis B (HBV) compared with other sectors of the sex industry. There were also lower self-reported rates for chlamydia and herpes though this was not statistically significant. There may be several explanations for these differences. Licensed brothel workers were

younger than private sex workers and may therefore have a lower cumulative risk. They may also have been less likely to engage in ‘risky’ behaviour like injection drug use which may be associated with increased infection rates (particularly HBV). The low prevalence of pubic lice infestations may reflect the decreasing rate of infestation in the general population in recent years (21). Decreased risk of pubic lice may be associated with changing hygiene practices (22); or it may be related to changing hair depilation practices (21). Indeed, anecdotal evidence suggests that ‘Brazilians’, or extensive pubic hair depilation, have become increasingly popular among some women.

One novel aspect of this study is the concurrent analysis of STIs among men who paid for sex. Overall, clients reported a higher lifetime risk of having been diagnosed with a sexually transmitted infection than the general population (18). However, it is notable that there were lower rates of self-reported infections amongst men accessing legal sexual services. Indeed, self-reported STI diagnosis among clients of licensed brothels was lower than the self-reported rates of the general Australian male population (18) and not different from a representative sample of British men (23). These results however, may reflect “social desirability” bias given that data were collected whilst men attended brothels for commercial services.

From our study it was not possible to determine if the overall higher self-reported infection rate in male clients (other than licensed brothel clients) could be attributed to a commercial sexual contact or from a partner external to the sex industry. Previous studies have indicated that men who have purchased sex are more likely to identify as bisexual, have had more lifetime partners, drink excess alcohol or use illicit drugs (16), all of which are risk indicators for STIs. Moreover, men who seek commercial sexual services from illegal service providers may do so because they are attracted to the illicit and risky nature of the encounter

(24, 25) and therefore may be more likely engage in a range of unsafe sexual behaviours both within, and external to, commercial sex .

Several limitations of this study should be emphasised. First, data were not obtained from probability sampling but by convenience sampling and, therefore, it is not possible to determine if the samples are representative of the populations at that time. Second, estimates based on self-report may not be a very sensitive marker of workplace risk as infection may have occurred before entering the sex industry. Indeed, data collected over a 10 year period from one large inner city public sexual health clinic (unpublished) showed a low number of STI notifications for current sex workers, certainly much lower than indicated in this study by self-reporting. Finally, this study did not conduct pathology testing to confirm any current infection. Despite the ease of non-invasive, PCR based diagnostics, the methodology for establishing contact with sex workers and clients, and the physical context in which they were asked to complete questionnaires restricted the use of testing at that time.

It is also possible that there are a number of unmeasured variables which are both correlated with sex work, and risk of STI e.g. multiple sexual partners in the lifetime (26), limited economic resources, traumatic personal histories and drug and alcohol use (27). In this sample, sex workers reported substantially higher injection drug use than women from the general population (28) and the elevated risk of STIs might be explained by the influence of drug use, rather than a direct effect of sex work per se. Self-reporting bias must also be considered as an alternative explanation for the prevalence rates, although social acceptability bias is likely to result in under-estimated STI prevalence rather than exaggeration (29). This might explain the low rate of self-reported STIs amongst clients of licensed brothels, who were interviewed within brothels and therefore may have been less inclined to admit to any previous infection.

Despite these limitations, this study is novel because it compares STI prevalence among private sex workers, brothel-based sex workers and illegal sex workers. However, this study also presents information from men who had paid for sex and were accessing service providers from different sectors of the sex industry.

Though this study appears to contradict findings from previous authors about low STI rates among sex workers, we cannot discount the fact that the high self-reported STI prevalence may in fact be evidence that sex workers and their clients are more likely to access screening services and therefore have asymptomatic infection detected. Overall, this study confirms high lifetime STI prevalence among female sex workers and their male clients when these groups are considered as homogeneous units. However, there are clear differences between industry sectors with substantially higher risk of infection among clients of illegal sex workers. Moreover, men who are clients of licensed brothels appear to have equivalent or lower rates of lifetime STIs than the general population. This research draws attention to the heterogeneous nature of the sex industry and highlights the dangers of generalization in this population.

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Table 1. Background characteristics from private, legal brothel and street-based sex workers

Variable	Licensed brothel worker	Private sex worker	Illegal sex worker	p value
	(n=102)	(n=103)	(n=42)	
	%	%	%	
Country of birth				
Australia	65.3	68.9	78.6	0.146
New Zealand	11.9	6.8	4.7	
Europe	12.8	8.7	7.1	
Asia	3.9	12.6	9.5	
Other country	5.9	2.9	0.0	
Marital status				
Single	49.0	39.8	66.7	0.037
Married	25.5	23.3	14.3	
Divorced or separated	25.5	36.9	19.0	
Children	52.9	54.4	66.7	0.296
Regular private partner ¹	55.9	47.6	42.8	0.285
Condom use with regular partner				
All the time (100%)	10.5	12.5	0	0.748
Most of the time (80%)	8.8	6.2	5.6	
Sometimes (50%)	7.0	8.3	16.7	
Not often (20%)	5.3	4.2	11.1	
Never (0%)	68.4	68.8	66.7	
Injecting drug use ever	15.7	25.2	83.3	<0.001

¹ Overall, 94% of the sample reported that their partner was male.

Table 2. Self-reported lifetime and recent diagnosis among female sex workers among private, licensed brothel and street-based sex workers

Variable	Licensed brothel worker (n=102)	Private sex worker (n=103)	Illegal sex worker (n=42)	Diagnosed in the past 2 years ¹	Population norm (18) (n=9578)
	% (95% CI)	% (95% CI)	% (95% CI)	%	%
STI					
Chlamydia	19.6 (12.9 to 28.4)	21.3 (14.5 to 30.3)	35.7 (22.9 to 50.8)	36.4	3.1
Trichomoniasis	3.9 (1.2 to 9.7)	4.8 (1.8 to 11.1)	2.4 (<0.01 to 13.4)	20.0	0.8
Gonorrhoea	0 (0 to 4.3)	5.8 (2.4 to 12.4)	7.1 (1.7 to 19.7)*	22.2	0.6
Vaginal herpes	0.9 (0.01 to 5.8)	5.8 (2.4 to 12.4)	2.4 (<0.01 to 13.4)	44.4	2.5
Vaginal warts	10.8 (5.9 to 18.4)	16.5 (10.5 to 24.9)	7.1 (1.7 to 19.7)	31.0	4.4
Pubic Lice	4.9 (1.8 to 11.2)	19.4 (12.9 to 28.2)	14.3 (6.3 to 28.2)*	13.8	4.2
Other conditions					
Hepatitis B	0.9 (0.01 to 5.8)	3.8 (1.2 to 9.9)	9.5 (3.2 to 22.6)*	12.5	0.7
Oral herpes	8.8 (4.5 to 16.1)	15.5 (9.7 to 23.9)	16.7 (8.0 to 30.9)	75.8	-

* denotes a p value = <0.05 for the different groups of sex workers

¹ Percentage of sex workers who reported having ever diagnosed with infection

Table 3. Self-reported lifetime STI diagnosis among male clients of female sex workers

Variable	Clients of licensed brothels (n=105)	Clients of private workers (n=55)	Clients of illegal services (n=25)	Population norm (18) (n=9729)
	% (95% CI)	% (95% CI)	% (95% CI)	%
STI ever	7.6 (3.7 to 14.5)	20.0 (11.4 to 32.5)	36.0 (20.2 to 55.6)*	20.2
Chlamydia	0.9 (<0.01 to 5.7)	1.8 (<0.01 to 10.5)	16.0 (5.8 to 35.3)*	1.7
Gonorrhoea	3.6 (0.29 to 13.0)	3.8 (1.2 to 9.7)	24.0 (11.2 to 43.8)*	2.2
Genital herpes	1.8 (<0.01 to 10.5)	2.9 (0.62 to 8.4)	8.0 (1.1 to 26.1)	2.1
Genital warts	1.9 (0.10 to 7.1)	17.4 (8.6 to 28.5)	16.0 (5.8 to 35.3)*	4.0

* denotes a p value = <0.05 for the different groups of clients