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SEX WORKERS

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Objectives: We examined differences in demographic characteristics, HIV related risk behaviour, prevalence of sexually transmitted infections (STI), and HIV and other health concerns among women with and without a history of sex work.

Methods: A secondary analysis of a population based, cross sectional survey of young, low income women in northern California.

Results: Of the 2543 women interviewed, 8.9% reported a history of sex work. These women reported more lifetime male sexual partners, were more likely to use drugs before sex, and were more likely to have a history of having sex with partners at high risk for HIV (that is, men who have sex with men, inject drugs, or were known to be HIV positive). They were significantly more likely to have positive serology for syphilis, herpes simplex virus type 2 (HSV-2), and hepatitis C regardless of their personal injecting drug use history; however, they were no more likely to have HIV, chlamydia, gonorrhoea, hepatitis A or hepatitis B infection compared to women without a history of sex work. Women with a history of sex work were significantly more likely to have a history of sexual coercion and tobacco use.

Conclusions: These data measure the population prevalence of sex work among low income women and associated STI. Women with a history of sex work have health concerns beyond STI and HIV treatment and prevention.

Female sex workers are considered a population at high risk for acquiring and transmitting HIV infection in all phases of the epidemic in all regions of the world.[1] Numerous studies have sought to estimate the prevalence of sexually transmitted infections (STI), including HIV, among sex workers.[2–19] However, nearly all of these studies have relied on convenience samples, mostly from STI clinics or non-randomly selected sex work venues. The Los Angeles Women Health Risk Study used a rigorous randomised sampling methodology for its cross sectional analysis of street based sex workers in Los Angeles; however, there was no control group against which to compare HIV and STI prevalence.[20] The findings from these studies are, therefore, vulnerable to substantial selection bias and uncertain as to their external validity. Furthermore, few population based studies are available to estimate the true prevalence of sex work among women in the community at large. To our knowledge, this study represents the first population based analysis that examines differences in demographic characteristics, sexual behaviour, drug using behaviour, and HIV and STI prevalence between women with and without a history of sex work.

METHODS

Objectives

The purpose of the present study was to characterise the demographic characteristics, sexual and drug using behaviours, and HIV, STI, and hepatitis A, B, and C prevalence in a population based sample of low income women in northern California with and without a history of sex work. We also sought to compare the prevalence of other health concerns, including tobacco use and violence, and to identify effective approaches to STI, HIV, and hepatitis prevention for this population.

Study population and sample

This study is a secondary analysis of the Young Women's Survey (YWS), a population based, cross sectional survey of 2543 low income women in northern California. The methods have been previously described in detail elsewhere.[21] Briefly, the YWS was a cross sectional, cluster sample, door to door population based study conducted between April 1996 and January 1998 in five counties in northern California (Alameda, Contra Costa, San Francisco, San Joaquin, and San Mateo). Eligible for the study were women between the ages of 18 and 29 who spoke either English or Spanish and resided in a low income neighbourhood in the five northern California county target area. Study target areas were based on 1990 census block groups with median household incomes less than the 10th percentile for each of the five counties. Street blocks were numbered and selected using a simple random sampling technique. At least three attempts were made to enrol eligible women at the selected residences.

Once enrolled, participants underwent a face to face, structured interview that measured demographics, drug use history, sexual history, and HIV related knowledge and attitudes. As part of this history, women were asked about sources of income, whether they had ever exchanged sex for

Abbreviations: EIA, enzyme immunoassay; HSV-2, herpes simplex virus type 2; IDU, injecting drug use; IFA, immunofluorescent antibody; IQR, interquartile range; MH-ATP, microhaemagglutination assay for *Treponema pallidum*; MSM, men who has sex with men; RIBA, recombinant immunoblot assay; STI, sexually transmitted infections; YWS, Young Women's Survey

money or drugs, and whether they had done so in the past 6 months. History of sexual coercion was measured in response to the question, ''Have you ever been in a situation where someone actually used some degree of force to try to make you have sex when you didn't want to?'' After undergoing a client centred HIV/STI counselling session, each participant provided blood and urine specimens.

Blood was tested for HIV antibodies by EIA (enzyme immunoassay, Organon Technika Corporation, Durham, NC, USA; or the Abbott HIVAb HIV-1 EIA, Chicago, IL, USA). All positive antibody tests were confirmed using immunofluorescent antibody (IFA; Waldheim Pharmazeutika GmbH, Vienna, Austria), with a confirmatory western blot (Cambridge Biotech Corporation, Rockville, MD, USA) to resolve any discrepancy. Of note, some HIV antibody testing was performed using Orasure (Organon Teknika) in the last 2 months of the study. Blood was also tested for syphilis using either rapid plasma reagin or VDRL with a confirmatory treponemal antibody test (microhaemagglutination assay for *Treponema pallidum* (MH-ATP)). Four of the five counties also tested for HSV-2 using a strip recombinant immunoblot assay (RIBA, HSV-1, and HSV-2; Chiron, Emeryville, CA, USA) and hepatitis C using EIA (Hepatitis C Encoded Antigen; recombinant c22-3, c200, NS5i, Ortho HCV EIA, Ortho Diagnostic Systems, Raritan, NJ, USA). Positive HCV antibody tests were confirmed by the recombinant immunoblot assay (Chiron; or Ortho Diagnostic Systems). Additionally, three of the five counties tested for hepatitis A antibodies (microparticle EIA, Abbott HAVAb; Abbott Laboratories, Abbott Park, IL, USA), hepatitis B (Hepatitis B core antibody EIA (Abbott Corzyme; Abbott Laboratories), and follow up hepatitis B surface antigen monoclonal EIA (Abbott Auszyme; Abbott Laboratories)), and gonorrhoea and chlamydia using urine based ligase chain reaction (LCX; Abbott Laboratories, Abbott Park, IL, USA). Study participants were followed up at a prearranged site 2 weeks later for results, treatment, and referrals as needed. The research protocol was approved by the institutional review board of the California Department of Health and Human Services.

Statistical analyses

We calculated point prevalences and 95% confidence intervals (CI) for key variables of interest with adjustment for the single stage, cluster sampling design. Weighted analyses were performed using Stata 6.0 (College Station, TX, USA). p Values were calculated to measure differences between non-sex workers and sex workers using χ^2 test for dichotomous variables and Wilcoxon rank sum test for continuous variables, as appropriate. p Values less than 0.05 were considered statistically significant and correspond to all comparisons reported here. Variables noted to be significant in univariate analysis remained so after Bonferroni adjustment was performed. Multivariable analyses were performed using forward stepwise regression and included evaluations of statistical interaction in the multivariable models.

RESULTS

During the study period, 24 223 residences were enumerated within 448 randomly selected blocks in the five counties. Study staff contacted a resident in 19 546 (80.7%) dwellings. Among these residents, 3560 women were identified as eligible, and 2547 women (71.5%) agreed to participate. Of the 2547 participants, four women were excluded from this analysis for being female identified transgender individuals; thus, 2543 women were ultimately included in this analysis. Of these participants, 226 (8.9%) women reported ever engaging in sex in exchange for money or drugs. Nearly half (47.3%) of these women reporting a history of sex work stated that such activity occurred within the 6 months before the interview. For the remainder of this paper, ''sex worker'' will refer to women reporting either a remote (>6 months) or recent (<6 months) history of exchanging sex for money or drugs.

Demographic characteristics

Sex workers were older (median age 26 years old versus 24 years old) and more likely to identify as bisexual (19.3% *v* 2.7%; adjusted odds ratio (OR) 11.7, 95% confidence interval (CI) 6.8 to 20.1) and be US born (92.9% *v* 66.8%; OR 4.8 (95% CI 2.3 to 9.8)) compared to non-sex workers (table 1). Sex

Table 1 Demographic characteristics of young women with and without a history of sex work in low income areas of northern California, 1996–8

Variable	% of sex workers (95% CI)* (n = 226)	% of non-sex workers (95% CI)* (n = 2317)	Adjusted OR (95% CI)*†
Total	8.9 (7.8 to 10.0)	91.1 (90.0 to 92.2)	–
Median age (years) (range)	26 (18 to 30)	24 (18 to 31)	1.2 (1.1 to 1.2)
Ethnicity			
Latina	10.8 (6.5 to 15.1)	36.9 (31.8 to 42.0)	1.0
African-American	66.9 (57.6 to 76.2)	35.5 (29.0 to 41.9)	3.2 (1.8 to 5.6)
White	13.2 (8.3 to 18.0)	15.4 (12.3 to 18.4)	1.3 (0.1 to 2.7)
Asian/Pacific Islander	1.2 (0 to 2.9)	6.2 (4.5 to 7.9)	0.9 (0.2 to 4.2)
Mixed/other	7.9 (3.5 to 12.4)	6.1 (4.8 to 7.4)	2.1 (1.1 to 4.2)
Sexual Identification			
Heterosexual	78.5 (71.1 to 86.0)	96.1 (94.8 to 97.4)	1.0
Lesbian	2.2 (0.3 to 4.2)	1.3 (0.6 to 1.9)	2.1 (0.6 to 6.7)
Bisexual	19.3 (12.1 to 26.3)	2.7 (1.8 to 3.6)	11.7 (6.8 to 20.1)
Country of birth			
USA	92.9 (89.1 to 96.6)	66.8 (61.7 to 72.0)	4.8 (2.3 to 9.8)
Outside USA	7.1 (3.4 to 10.9)	33.2 (28.0 to 38.3)	1.0
Highest grade completed			
Less than high school	47.1 (39.8 to 54.4)	41.1 (37.2 to 45.0)	1.6 (1.2 to 2.3)
High school or more	52.9 (45.6 to 60.2)	58.9 (55.0 to 62.8)	1.0
Employment (past 6 months)			
Unemployed	62.3 (52.8 to 71.7)	45.5 (42.6 to 48.5)	1.8 (1.2 to 2.6)
Employed	37.7 (28.3 to 47.2)	54.5 (51.5 to 57.4)	1.0
Median monthly income			
Less than $1000	75.7 (67.8 to 83.6)	59.8 (56.4 to 63.2)	1.5 (1.0 to 2.2)
More than or equal to $1000	24.3 (16.4 to 32.2)	40.2 (36.8 to 43.6)	1.0

*All prevalence estimates, 95% confidence intervals, and odds ratios adjusted for survey design.
†Odds ratios adjusted for age, ethnicity, sexual identification, country of birth, education, employment, and monthly income.

Table 2 Sexual history and drug use among young women with and without a history of sex work in low income areas of northern California, 1996–8

Variable	% of sex workers (95% CI)* (n = 226)	% of non-sex workers* (95% CI) (n = 2317)	Adjusted OR (95% CI)*†
Self reported history			
Chlamydia	39.6 (33.6 to 46.6)	14.8 (12.5 to 17.3)	2.7 (2.0 to 3.8)
Gonorrhoea	29.2 (23.0 to 35.5)	7.2 (5.6 to 8.8)	2.7 (1.7 to 4.3)
Syphilis	11.3 (5.8 to 16.9)	1.5 (1.0 to 2.0)	4.4 (1.9 to 9.8)
Ever tested for HIV	85.3 (80.6 to 90.0)	64.3 (61.7 to 66.9)	2.1 (1.4 to 3.3)
Median number of lifetime male sexual partners (IQR)	25 (10 to 98)	4 (1 to 7)	1.03 (1.03 to 1.04)
Condom use at last vaginal sex with:			
New partner	65.5 (49.6 to 81.5)	31.9 (20.9 to 42.9)	5.9 (2.4 to 14.1)
Casual partner	55.9 (42.3 to 69.4)	49.2 (39.1 to 59.3)	1.4 (0.6 to 3.0)
Steady partner	25.2 (18.5 to 31.9)	30.4 (26.9 to 33.9)	0.8 (0.5 to 1.1)
Protective behaviour (past 6 months)			
Used condoms more	93.9 (89.5 to 98.2)	82.2 (76.7 to 87.7)	3.4 (1.6 to 7.2)
Washed after sex	63.6 (49.7 to 77.5)	47.0 (38.7 to 55.2)	1.8 (1.1 to 3.2)
Had only one partner	59.0 (46.9 to 71.1)	82.1 (76.4 to 87.8)	0.3 (0.2 to 0.5)
Urinated after sex	56.9 (40.8 to 73.1)	49.9 (42.1 to 57.7)	1.1 (0.6 to 2.1)
Checked partner for sores	52.8 (41.6 to 64.1)	34.5 (28.6 to 40.5)	1.9 (1.1 to 3.3)
Ever had sex with MSM	19.5 (13.4 to 25.5)	3.5 (2.3 to 4.7)	11.1 (5.9 to 20.6)
Ever had sex with IDU	32.8 (26.0 to 39.5)	7.3 (6.0 to 8.7)	6.3 (4.3 to 9.3)
Ever had sex with HIV+ partner	6.9 (3.9 to 9.9)	0.7 (0.3 to 1.0)	7.6 (3.2 to 17.7)
History of sexual coercion	64.3 (57.6 to 70.9)	20.0 (18.3 to 21.8)	6.0 (4.4 to 8.3)
Ever smoked >100 cigarettes	83.6 (76.9 to 90.2)	33.8 (30.9 to 36.7)	6.3 (3.9 to 10.1)
Drug use in past 6 months			
Marijuana	65.3 (59.6 to 71.1)	30.8 (27.3 to 34.4)	3.6 (2.6 to 4.9)
Cocaine	37.3 (27.7 to 46.9)	3.9 (2.9 to 4.9)	8.7 (5.9 to 12.7)
Speed	14.3 (9.7 to 18.9)	3.9 (2.8 to 4.9)	4.9 (2.9 to 8.2)
Heroin	11.3 (6.9 to 15.7)	0.7 (0.3 to 1.2	14.8 (6.5 to 33.6)
Drug use before sex			
Alcohol	57.4 (49.6 to 65.2)	25.0 (22.5 to 27.5)	3.2 (2.1 to 4.9)
Cocaine	31.7 (22.3 to 41.1)	1.4 (0.8 to 2.0)	17.6 (11.4 to 27.2)
Speed	9.1 (5.1 to 13.0)	2.0 (1.4 to 2.6)	4.7 (2.3 to 9.6)
Heroin	7.9 (4.8 to 11.5)	0.4 (0.0 to 0.8)	17.4 (5.4 to 55.5)
History of injecting drugs	19.7 (13.9 to 25.5)	2.4 (1.6 to 3.2)	10.6 (6.4 to 17.7)

*All prevalence estimates, 95% confidence intervals, and odds ratios adjusted for survey design.
†Odds ratios adjusted for age, ethnicity, sexual identification, country of birth, education, employment, and monthly income.

workers were also more likely to be African-American (66.9% *v* 35.5%; OR 3.2 (95% CI 1.8 to 5.6)), have less than a high school education (47.1% *v* 41.1%; OR 1.6 (95% CI 1.2 to 2.3)), be unemployed at the time of the interview (62.3% *v* 45.5%; OR 1.8 (95% CI 1.2 to 2.6)), and report a median monthly income less than $1000 (75.7% *v* 59.8%; OR 1.5 (95% CI 1.0 to 2.2)) compared to women without a history of sex work. These differences remained statistically significant in the multivariable model after adjusting for county of residence, age, ethnicity, sexual identification, country of birth, education employment status, and monthly income.

Sexual and drug using behaviour

Sexual and drug using history was also significantly different between the two groups of women (table 2). Sex workers were more likely to self report previous infection with chlamydia (39.6% *v* 14.8%; OR 2.7 (95% CI 2.0 to 3.8)), gonorrhoea (29.2% *v* 7.2%; OR 2.7 (95% CI 1.7 to 4.3)) and syphilis (11.3% *v* 1.5%; OR 4.4 (95% CI 1.9 to 9.8)). Similarly, sex workers reported more lifetime male sexual partners (median 25 (interquartile range (IQR) 10–98) *v* 4 (IQR 1–7); OR 1.03 (95% CI 1.03 to 1.04) and were more likely to have had sex with a man who has sex with men (MSM) (19.5% *v* 3.5%; OR 11.1 (95% CI 5.9 to 20.6)), an injection drug user (IDU) (32.8% *v* 7.3%; OR 6.3 (95% CI 4.3 to 9.3)), and an HIV infected partner (6.9% *v* 0.7%; OR 7.6 (95% CI 3.2 to 17.7)). Of note, sex workers were more likely to report using a condom during last vaginal sex with a new partner (65.5% *v* 31.9%; OR 5.9 (95% CI 2.4 to 14.1)) and a casual partner (55.9% *v* 49.2%) but not with a steady partner (25.2% *v* 30.4%). Similarly, sex workers were more likely to report increasing use of some protective behaviour over the

Table 3 HIV, sexually transmitted infection, and viral hepatitis prevalence in young women with and without a history of sex work in low income areas of northern California, 1996–8

Variable	% of sex workers (95% CI)* (n = 226)	% of non-sex workers* (95% CI) (n = 2317)	Adjusted OR (95% CI)*†
HIV infection	0.3 (0.0 to 0.9)	0.2 (0.0 to 0.4)	0.5 (0.1 to 5.7)
Syphilis infection	10.9 (6.0 to 15.7)	1.4 (0.8 to 1.9)	3.8 (1.9 to 7.8)
Gonorrhoea infection	0.5 (0.0 to 1.6)	0.8 (0.3 to 1.4)	0.5 (0.1 to 4.9)
Chlamydia infection	3.9 (1.2 to 6.7)	3.2 (2.3 to 4.1)	1.03 (0.9 to 2.4)
HSV-2 infection	72.9 (63.8 to 82.0)	30.3 (26.3 to 34.2)	3.1 (2.0 to 4.9)
Hepatitis A infection	18.1 (12.1 to 24.0)	35.9 (30.3 to 41.4)	0.7 (0.4 to 1.2)
Hepatitis B core antibody positive	14.3 (8.0 to 20.6)	7.9 (6.2 to 9.7)	1.2 (0.7 to 2.2)
Hepatitis C infection	13.0 (8.0 to 18.0)	1.1 (0.4 to 1.7)	2.7 (1.2 to 6.1)‡

*All prevalence estimates, 95% confidence intervals, and odds ratios adjusted for survey design.
†Odds ratios adjusted for age, ethnicity, sexual identification, country of birth, education, employment and monthly income.
‡The odds ratio calculated for hepatitis C infection adjusted for history of IDU in addition to age, ethnicity, sexual identification, country of birth, education, employment, and monthly income.

Table 4 Attitudes towards HIV educational interventions in young women with and without a history of sex work in low income areas of northern California, 1996–8

Variable	% of sex workers (95% CI)* (n = 226)	% of non-sex workers (95% CI)* (n = 2317)	Adjusted OR (95% CI)
Trusted sources of HIV information			
Provider/clinic	82.5 (73.6 to 91.3)	87.6 (83.1 to 92.0)	0.7 (0.4 to 1.2)
AIDS programme/outreach	74.8 (64.3 to 85.2)	71.5 (62.3 to 80.6)	1.2 (0.8 to 2.0)
Television	64.5 (51.1 to 78.0)	68.9 (60.5 to 77.4)	0.8 (0.5 to 1.4)
Most effective HIV education activity			
Street outreach	75.5 (65.6 to 85.5)	56.6 (47.6 to 65.5)	2.5 (1.5 to 4.0)
Individual discussion	74.6 (64.0 to 85.2)	77.2 (69.6 to 84.8)	1.0 (0.6 to 1.6)
Workshop/support group	64.5 (51.3 to 77.7)	67.9 (59.1 to 76.7)	0.9 (0.5 to 1.5)

*All prevalence estimates, 95% confidence intervals, and odds ratios adjusted for survey design.

6 months preceding the interview compared to non-sex workers, including using condoms more often (93.9% *v* 82.2%; OR 3.4 (95% CI 1.6 to 7.2)), washing after sex (63.6% *v* 47.0%; OR 1.8 (95% CI 1.1 to 3.2)), and checking partners for sores (52.8% *v* 34.5%; OR 1.9 (95% CI 1.1 to 3.3)). Moreover, a history of sexual coercion was more frequently reported among sex workers than non-sex workers (64.3% *v* 20.0%; OR 6.0 (95% CI 4.4 to 8.3)). All of these self reported behavioural differences between the two groups remained statistically significant after multivariable analysis adjusting for survey design and demographic variables noted above.

Tobacco and illicit drug use were more prevalent among sex workers than non-sex workers. In particular, sex workers were more likely than non-sex workers to have ever smoked cigarettes (83.6% *v* 33.8%; OR 6.3 (95% CI 3.9 to 10.1)) and used drugs within the preceding 6 months, including marijuana (65.3% *v* 30.8%; OR 3.6 (95% CI 2.6 to 4.9)), cocaine (37.3% *v* 3.9%; OR 8.7 (95% CI 5.9 to 12.7)), methamphetamines (14.3% *v* 3.9%; OR 4.9 (95% CI 2.9 to 8.2)), and heroin (11.3% *v* 0.7%; OR 14.8 (95% CI 6.5 to 33.6)). Similarly, sex workers were more likely to use alcohol (57.4% *v* 25.0%; OR 3.2 (95% CI 2.1 to 4.9)), cocaine (31.7% *v* 1.4%; OR 17.6 (95% CI 11.4 to 27.2)), methamphetamines (9.1% *v* 2.0%; OR 4.7 (95% CI 2.3 to 9.6)), and heroin (7.9% *v* 0.4%; OR 17.4 (95% CI 5.4 to 55.5)) before sexual activity and report a history of IDU (19.7% *v* 2.4%; OR 10.6 (95% CI 6.4 to 17.7)). The differences in drug use remained statistically significant between the two groups of women after adjusting for demographic variables.

The prevalence of syphilis (10.9% *v* 1.4%), HSV-2 (72.9% *v* 30.3%), hepatitis B (14.3% *v* 7.9%), and hepatitis C (13.0% *v* 1.1%) was greater among sex workers (table 3). Adjusting for age, ethnicity, county of residence, and socioeconomic status, sex workers were significantly more likely to have positive serology for syphilis (OR 3.8 (95% CI 1.9 to 7.8)) and HSV-2 (OR 3.1 (95% CI 2.0 to 4.9)). Adjusting for demographic variables and injection drug use, sex workers were also significantly more likely to be infected with hepatitis C (OR 2.7 (95% CI 1.2 to 6.1)). None the less, there was no significant difference in the prevalence of HIV, gonorrhoea, chlamydia, hepatitis A, or hepatitis B between the two groups of women after adjusting for demographic variables. Moreover, history of recent sex work was not associated with current infection with these STI.

Attitudes towards HIV interventions

Both sex workers and non-sex workers listed medical provider or clinic as the most trusted source of information on HIV (82.5% *v* 87.6%) (table 4). Other trusted sources of information included community AIDS programmes/outreach (74.8% *v* 71.5%) and television (64.5% *v* 68.9%). Women reporting sex work were significantly more likely to consider street outreach the most effective HIV educational activity (75.5% *v* 56.6%; OR 2.5 (95% CI 1.5 to 4.0)). Other effective HIV educational activities, according to both women with and without a history of sex work, included individual discussions (74.6% *v* 77.2%) and workshops/support groups (64.5% *v* 67.9%).

DISCUSSION

Few studies measure the prevalence of current and past history of engaging in sex work, or the exchange of sex for money or drugs in population based surveys. In our door to door sample of young women in low income neighbourhoods in northern California, one in 11 women reported sex work, with nearly half reporting engaging in sex work in the past 6 months.

Despite the common notion that sex workers are more likely to harbour STI and HIV, we did not find a significant difference between non-sex workers and sex workers with respect to current infection with gonorrhoea, chlamydia, HIV, hepatitis A or hepatitis B, even among those with a history of sex work within the past 6 months. While sex workers reported significantly more risk behaviour, including more sex partners, IDU sex partners, known HIV infected sex partners, drug use (including IDU and drug use before sex), these women were also more likely to report engaging in recent protective behaviours, including condom use with new partners and examining partners for sores. On the other hand, given the overall low prevalence of chlamydia, gonorrhoea, and HIV found among these women, this finding could be attributed to insufficient power to find a true statistically significant difference between sex workers and non-sex workers. Moreover, by defining sex work as the exchange of sex for money or drugs, the study may have misclassified those women who exchanged sex for other needs of economic value as non-sex workers. This, in turn, may have minimised or eliminated true differences between the two groups of women. In this study, women with a history of sex work were more likely than the non-sex workers to have evidence of previous syphilis, HSV-2, and hepatitis C infection—probably representing past unsafe sex. After adjusting for IDU and selected demographic characteristics, hepatitis C remained significantly associated with sex work, suggesting that hepatitis C may be transmitted sexually or through means other than injection practices.

We recognise limitations to our study. Firstly, the analysis was secondary and relied on a survey with limited details on sexual behaviours by partner type and the nature of engaging in sex for money or drugs. Without information on duration of sex work, type of paying partners, and the nature of sex acts performed with paying partners, we were unable to further stratify sex workers by risk. As with all studies evaluating socially undesirable activities, our survey may underestimate the true levels of sex work, illicit drug use, and sexual risk behaviours. The overall prevalences of HIV, gonorrhoea, and chlamydia were low, affecting the power of the study to detect correlates of infection. None the less, a

particular strength of our study is the inclusion of biological markers to validate self reported sexual behaviours, particularly evidence of past syphilis, HSV-2, and hepatitis C infection. Although our response rate was moderately high overall, 71.5% of known eligible women, it is possible that non-respondents differ substantially with respect to sex work and illicit drug use. As with all cross sectional studies, we are unable to determine timing or the directionality of the associations. Lastly, the data were collected several years ago. None the less, it is unlikely that there have been substantial changes in the behaviour and prevalence of HIV and STIs among sex workers.

The substantial level of sex work in our population based sample underscores the value in specifically asking patients about a history of sex work when eliciting a sexual history. Our survey also identified women's views of trusted sources of HIV educational information, including medical providers, street outreach, and television. In fact, all women, regardless of a history of sex work, characterised medical providers as the most trusted source of HIV information. This finding reinforces the initiative put forth by the Centers for Disease Control and Prevention in 2003 to incorporate HIV prevention and testing into routine medical care.[22] Our data argue for integrating screening for STI, HIV, and viral hepatitis. Lastly, while medical and public health authorities often focus on drug use, sexual behaviours, and risk of STI and HIV among sex workers, it is crucial that clinicians and public health officials alike take a broad view of sex worker health to include tobacco use and violence.

Key messages

- Nearly 9% of low income women reported a history of sex work, with approximately half stating such activity occurred in the past 6 months. The substantial level of sex work in our population based sample underscores the value in specifically asking patients about a history of sex work when eliciting a sexual history.
- Sex workers were significantly more likely to have antibodies against HSV-2 and hepatitis C and evidence of past syphilis infection—probably representing past unsafe sex. Hepatitis C remained significantly associated with sex work after adjusting for injection drug use, suggesting the sexual transmissibility of hepatitis C. While sex workers reported significantly more risk behaviour, including more sex partners, injection drug using sex partners, known HIV infected sex partners, drug use (including injection drug use and drug use before sex), these women were also more likely to report engaging in recent protective behaviours, including condom use with new partners and examining partners for sores. Perhaps this accounts for the lack of differences in prevalent infection with gonorrhoea, chlamydia, HIV, hepatitis A, or hepatitis B among sex workers.
- Both sex workers and non-sex workers reported their medical provider/clinic to be the most trusted source of HIV information. Sex workers were significantly more likely to rank street outreach as the most effective HIV educational activity.
- Health concerns of sex workers reach beyond STIs and HIV. Public health programmes targeting this population must also address tobacco use and sexual violence.

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ECHO

Routine follow up of community needlestick injuries in children is unnecessary

Please visit the *Sexually Transmitted Infections* website [www.stijournal.com] for a link to the full text of this article.

Children sustaining a needlestick injury in the community do not need routine follow up for hepatitis B (HBV) and C (HCV), nor HIV prophylaxis, doctors have concluded from a prospective study in Birmingham, UK. Immunisation against HBV and tetanus is sufficient outside inner London.

The study collected data on all children referred with needlestick injuries in the community to a paediatric infectious diseases clinic of one Birmingham hospital during August 1995-September 2003 from its own accident and emergency department and that at Birmingham Children's Hospital. Both hospitals introduced guidelines for managing such injuries, in 1997 and 1999, respectively.

Three quarters of the 53 children referred had the primary dose of HBV vaccine at presentation, as per the guidelines; HIV PEP was not indicated. Blood was taken from all children for HBV, HVC, and HIV testing. Forty children (75%) attended a later outpatient appointment and 25 of them (63%) had repeat tests at six months at their parents' request; none was positive, and all completed the three dose HBV vaccine regimen. Children lost to follow up were likely to be uninfected because of the low risk in this part of the UK.

The children's median age was 8.4 (range 1.7–16.5) years, and 63% were boys. Most presented directly and got their injuries by playing with needles discarded in public areas or, in the home, needles used in measuring blood sugar concentration.

Needlestick injuries have been growing ever since first reports in 1987 and are a potential hazard for infections from intravenous drug users.

▲ Makwana N, *et al*. *Archives of Disease in Childhood* 2005;*90*:523–524.