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Human papillomavirus infection in female sex workers in Lima, Peru

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Abstract

Objectives—To determine the prevalence and risk factors for human papillomavirus (HPV) infection in female sex workers (FSW) in Lima, Peru.

Methods—Cross-sectional study of 87 FSW. Information regarding demographics, sex work practices, and genital and blood specimens was collected.

Results—Forty-four (50.6%) of 87 FSW had HPV detected in cervical swabs. The prevalence of coinfection by two or more HPV types was 39.1%. Thirty-one (35.6%) were infected by at least one high-risk HPV type, representing 70.5% of women with HPV infection. HPV infection was associated with younger age but not with any demographic or sexual characteristics.

Conclusions—Our study confirms the high prevalence of HPV infection in FSW reported by other groups and suggests that brothel-based FSW may be at lower risk for acquiring high-risk HPV infection.

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Contributors SMM was Project Director, oversaw data collection and analysis, and took part in writing and editing the paper. EJH was co-Principal Investigator on the project, helped conceptualise and write the proposal for the project, and assisted with writing and editing this paper. MC was Field Director on the project and took part in the writing and editing of the paper. TGNT was data analyst on the project, conducted the computer analyses reported here, and assisted in the writing and editing of the paper. EQ served as consultant on sexually transmitted diseases, performed study examinations and took part in writing and editing the paper. VS was the social worker on the project, interviewed subjects and helped edit the paper. JRZ was Principal Investigator on the project, conceived this paper and took primary responsibility in writing it.

Competing interests None.

Ethics approval Ethics approval was obtained from the Institutional Review Boards of the University of Washington and Universidad Nacional Mayor de San Marcos, Lima, Perú.

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INTRODUCTION

Cervical cancer is the leading cancer-related cause of death for Peruvian women.¹ In Lima, Peru, the most common human papillomavirus (HPV) types associated with cervical cancer in the general population were 16, 18, 31, 35 and 52.² The prevalence of HPV among Peruvian female sex workers (FSW) has not been reported, but a study of Mexican FSW detected HPV in 48.9%, of whom 43% were infected with one high-risk HPV type, and 28.5% were infected with two or more HPV types.³ Risk for HPV infection was highest in younger FSW and in FSW who did not use condoms. In Lima, Peru, approximately 15 000 women work as FSW. Under a national programme organised by the Peruvian Ministry of Health's Program for the Control of STI and AIDS (PROCETSS), Centers of Reference for STI (CERITS) provide medical attention for FSW and other groups at high risk for acquiring STI and HIV. The objective of this study was to examine the prevalence and associated risk factors for infection by non-carcinogenic and carcinogenic (high risk) types of HPV among FSW in Peru.

METHODS

FSW seeking medical attention at the Centro de Salud 'Alberto Barton' (CSAB) were invited to participate. After obtaining informed consent, a questionnaire was administered in a face-to-face interview by study personnel to obtain information about socio-demographic characteristics and sexual practices. During the routine examination, participants allowed collection of additional genital and blood specimens for HPV and STI testing. We classified high-risk strains according to the International Agency for Research on Cancer.¹

Blood was tested for syphilis using Rapid Plasma Reagin (Randox Laboratories, Antrim, UK) and for HSV-2 with an IgG Elisa Test (Focus Technologies, Cypress, California, USA). Cervical and vaginal samples were tested for *Trichomonas vaginalis* infection using a wet mount examination of vaginal fluid, for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* using Amplicor CT/NG PCR (Roche, Pleasanton, California, USA), for *Mycoplasma genitalium* using a Microwell-Plate-Based PCR Reaction Assay⁴ and for HPV using line-blot assay.⁵

RESULTS

HPV was detected in 44 (50.6%) of 87 FSW (table 1). HPV types 6 and 16 were the most common, followed by types 51, 53 and 62. Thirty-one (35.6%) women were infected with a high-risk HPV strain, and 34 (39.1%) were coinfecting with two or more HPV types, representing 70.5% and 77.3% of HPV-infected women, respectively. The greatest number of coinfections was 11. HPV infection was associated with younger age ($p=0.02$) but was not associated any demographic characteristic, sexual behaviour or any STI. Compared with women without HPV infection, women infected by types 16 or 18 were more likely to recruit clients in sites other than legal brothels. Of the women infected with types 16 and 18, 61% worked in legal brothels, 17% in clandestine brothels, 11% in streets and 11% in bars; for women not infected with HPV, 83% recruited clients in legal brothels, 0% in clandestine brothels, 13% in streets and 5% in bars ($p=0.04$) (data not shown).

DISCUSSION

The prevalence of HPV infection in FSW working in Peru was similar to prevalences reported in FSW living in other parts of the world, but the prevalence of infection with high-risk types was nearly double in our group (70.5% vs 43%) and more than three times higher

than in Peruvian women in the general population. FSW working outside legal brothels were at higher risk for infection with HPV types most often associated with cervical cancer—types 16 and 18—suggesting that the risk of acquiring high-risk HPV infection varies between male clientele seeking sex services from brothel-based FSW and those seeking sex services from bars or street-based FSW.

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Key messages

- ▶ HPV is a common infection in female sex workers (FSW)—more common than in the general population.
- ▶ FSW with HPV infection are most often infected with multiple high risk HPV types—placing them at higher risk for developing cervical cancer.
- ▶ Site of work may be an important risk factor for acquiring high risk HPV—which may reflect higher prevalence of high risk HPV type infections in male clientele seeking sex services in places other than registered brothels.

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Table 1

Prevalence of specific strains among all female sex workers in Peru, and among female sex workers with human papillomavirus (HPV) infection

	<u>Among entire population</u>		<u>Among HPV-infected women</u>
	n=87	Percentage	n=44 (%)
HPV infection and no of strains			
Not infected	43	49.4	
Infected	44	50.6	100.0
1 strain only	10	11.5	22.7
2 or more strains*	34	39.1	77.3
Five most common HPV strains [†]			
HPV 16	14	16.1	31.8
HPV 6	10	11.5	22.7
HPV 51	9	10.3	20.5
HPV 53	8	9.2	18.2
HPV 62	7	8.1	15.9
Women with high-risk strains [‡]			
Non-carcinogenic strains	13	14.9	29.6
Carcinogenic strains	31	35.6	70.5

* Range of number of strains present in any one woman: 1 to 11.

[†] Strains present in study population: 6, 8, 11, 16, 18, 26, 31, 33, 35, 39, 40, 42, 45, 51, 52, 53, 54, 55, 56, 58, 59, 61, 62, 66, 67, 68, 69, 71, 72, 73, 81, 83, 84, cp6108, is39.

[‡] High-risk strains: 16, 18, 31, 33, 45, 52, 58.