AIDS Behav (2008) 12:195–201
DOI 10.1007/s10461-007-9270-3

ORIGINAL PAPER

Immigration Status and HIV-risk Related Behaviors among Female Sex Workers in South America

Christian T. Bautista · Carlos Mosquera · Margarita Serra · Alberto Gianella · Maria M. Avila · Victor Laguna-Torres · Jean K. Carr · Silvia M. Montano · José L. Sanchez

Published online: 21 June 2007

Abstract This study compares immigrant (i.e., foreigner) with non-immigrant (i.e., local/native) HIV-related risk behaviors among female sex workers (FSW) in South America. A total of 1,845 FSW were enrolled in Argentina, Bolivia, Ecuador, and Uruguay. According to their nationality, 10.1% of participants were immigrant FSW. Immigrant FSW were more likely to be younger in Argentina; to work in a disco/bar in Bolivia; to be single and use illegal drugs in Ecuador; and to work in a brothel, consume alcohol, and have sex with foreign clients in Uruguay. HIV-related sexual and drug use behaviors were more common among immigrant FSW in Bolivia, Ecuador, and Uruguay. Country-specific HIV/STI prevention and control programs should be developed for immigrant FSW populations in South America.

Keywords Female · Immigrant · Migrant · Behavior · FSW · HIV

C. T. Bautista (✉)
U.S. Military HIV Research Program at the Walter Reed Army Institute of Research, 1 Taft Court, Suite 250, Rockville, MD 20850, USA
e-mail: cbautista@hivresearch.org

C. T. Bautista · V. Laguna-Torres · S. M. Montano
U.S. Naval Medical Research Center Detachment, Lima, Peru

C. Mosquera
Instituto Nacional de Higiene y Medicina Tropical "Leopoldo Izquieta Perez", Guayaquil, Ecuador

M. Serra
Programa Nacional de Prevención y Control del VIH/SIDA, Ministerio de Salud, Montevideo, Uruguay

A. Gianella
Centro Nacional de Enfermedades Tropicales (CENETROP), Santa Cruz, Bolivia

M. M. Avila
Centro Nacional de Referencia de SIDA (CNRS), Universidad de Buenos Aires, Buenos Aires, Argentina

J. K. Carr
Institute of Human Virology, Baltimore, MD, USA

J. L. Sanchez
Department of Defense Global Emerging Infections Surveillance and Response System (DoD-GEIS), Silver Spring, MD, USA

C. T. Bautista · J. L. Sanchez
The Henry M. Jackson Foundation for the Advancement Military Medicine, Inc., Rockville, MD, USA

Introduction

In the recent years there has been increasing international attention on the relationship between migration and HIV/AIDS. Human mobility has constituted a general vehicle facilitating the global spread of HIV infection especially in Southeast Asia and sub-Saharan Africa (Beesey 2000; Day and Ward 1997). Poverty, anonymity, unemployment, lack of resources, social stigma, political and economic instability constitute factors leading to female sex work (FSW) worldwide, as well as migration (Ghys et al. 2001; McKeganey 1994). Immigrant FSW are vulnerable in their new environments for many reasons, including lack of familiarity/contact with legal systems, health regulations, immigration officers, and unfavorable workplaces (Duckett 2000). In addition, immigrant FSW may have higher rates of HIV/STI infection in comparison with local FSW, because they are often excluded or missed in prevention and medical care programs (Duckett 2000; Harcourt and Donovan 2005). Therefore, this mobile population

represents a potential conduit for HIV/STI transmission and a bridge population between communities and countries (Ghys et al. 2001; Harcourt and Donovan 2005; McKeganey 1994).

The study of HIV and other STI-risk related factors has not been undertaken in immigrant FSW population to any great extent. Recently, limited studies in immigrant FSW populations have revealed positive behavioral changes in condom use for vaginal and anal sex among Asian FSW in Sydney (Pell et al. 2006) and consistent condom use among Latin American FSW in Madrid (Belza et al. 2004). However, HIV sexual risk behaviors and lack of knowledge regarding HIV/AIDS and its route of transmission were observed among migrant workers in Central America and Mexico (Bronfman et al. 2002), China (Bandyopadhyay and Thomas 2002) as well as in northeastern Brazil (Kerr-Pontes et al. 2004).

In South American countries, HIV infection levels among FSW populations varies very widely; higher rates of infection have been reported in Brazil, Argentina, Paraguay, and Ecuador, and to a lesser degree in Peru, Bolivia, Uruguay, and Chile (Montano et al. 2005; WHO/UNAIDS 2006). Data regarding the HIV-related risk behaviors among FSW in this region, especially as it relates to immigrant FSW are limited or do not exist. Therefore, we studied such epidemiologic risk factors by comparing immigrant (i.e., foreigner) with non-immigrant (i.e., local/native) FSW populations in Argentina, Bolivia, Ecuador, and Uruguay.

Methods

Participants and Procedures

HIV cross-sectional studies were conducted among FSW populations in the cities of Guayaquil in Ecuador, Santa Cruz in Bolivia, Buenos Aires in Argentina, and in six northeastern Uruguayan border cities with Brazil (Rivera, Chuy, Rio Branco, Bella Union, Melo, Artigas) during the years 1999–2002. details of the enrollment process, laboratory analysis, and preliminary results of the HIV epidemic have been described elsewhere (Bautista et al. 2006; Montano et al. 2005). Briefly, FSW who were at least 18 years of age were invited to participate by trained social workers and peer-risk group counselors at their working locations such as brothels, saunas, massage houses, parks, discos/bars, and on the streets. FSW were eligible for inclusion if they meet the UNAIDS definition of sex worker (UNAIDS 2002): women who receive money or goods in exchange for sexual services, either regularly or occasionally, and who may or may not consciously define those activities as income generating. The study sites were selected because of accessibility to FSW working locations and involvement by local NGOs and governmental agencies from each local Ministry of Health (MoH). The sampling performed was not based on a statistically-representative sampling of high versus low HIV prevalence areas in each country.

Participants were recruited after being given an explanation of study procedures, risks, and benefits of participants. After documentation of written informed consent, participants were asked to participate in a confidential face-to-face interview at their workplace, and then to provide a venous blood sample for HIV testing. No information on potential (i.e., participants approached) versus actual participants was collected.

Measures

A questionnaire in Spanish was developed to collect sociodemographic and epidemiologic data on sexual and drug-related risk behaviors. Participants were queried regarding their marital status, number of sex contacts a week, previous STI history, condom use with clients, time in sex work, main work place, illegal drug use habits, alcohol consumption, sex with foreign clients, and blood transfusion history. Participants received pre- and post-test counseling, and were referred to appropriate medical and social services for follow-up in accordance with local MoH guidelines. Following questionnaire completion, serum samples were collected and tested for antibodies against HIV-1 by ELISA screening (Bio-Rad, Hercules, CA). Repeatedly reactive samples were confirmed by Western blot assay (Calypte Biomedical, Alameda, CA).

Data Analyses

Chi-square and Fisher's exact test were utilized to compare frequencies. The Mann–Whitney *U* test was used to compare means. Odds ratios were estimated to evaluate the association of risk factors for immigrant compared to non-immigrant FSW groups (i.e., local/native); age, number of sex contacts a week, condom use with clients, and illegal drug use were used in the adjusted multiple logistic regression analyses. All reported *P*-values were two-sided; *P*-values $<.05$ were considered statistically significant.

Results

Study Population

A total of 1,845 FSW participants were enrolled. Of these, 185 (10.1%) were immigrant FSW. A higher percentage of immigrant FSW was enrolled in Argentina (28.5%) and

Uruguay (21.8%) (see Table 1). Most immigrant FSW in Argentina were from the Dominican Republic (39.3%), Paraguay (17.8%), and Uruguay (13.1%); in Bolivia most were from Ecuador (50.0%) and Brazil (33.3%); in Ecuador most were from Colombia (89.3%); and in Uruguay most were of Brazilian origin (97.0%).

Statistically significant differences of demographic and risk behavior characteristics between non-immigrant and immigrant FSW were found for age group, previous STI history, time in sex work, use of illegal drugs, use of cocaine, and sex with foreign clients in Argentina (see Table 2); sex with foreign clients in Bolivia; age group, marital status, number of sex contacts a week, consistent condom use with clients, street as main work place, use of illegal drugs (marijuana and cocaine), use of alcohol, and sex with foreign clients in Ecuador; and time in sex work, use of alcohol and sex with foreign clients in Uruguay. In addition, time in sex work was significantly higher among non-immigrant Argentinean (10.0 vs. 5.1 years, Mann–Whitney U test = 4995.5, $P < .01$) and Ecuadorian FSW (4.3 vs. 2.4 years, Mann–Whitney U test = 8227.0, $P < .05$) in comparison with immigrant FSW.

HIV Prevalence

Thirty-seven FSW participants were diagnosed with HIV infection. Of these, 34 were non-immigrant FSW (22 from Ecuador, 9 from Argentina, 2 from Uruguay, and 1 from Bolivia), and three were immigrant FSW (2 from Uruguay and 1 from Argentina). The overall HIV prevalence among immigrant FSW was 1.6% (95% CI = 0.3%–4.7%). The three immigrant HIV-infected FSW were of Brazilian origin, who worked in the cities of Buenos Aires, Rivera, and Chuy.

Risk Factor Analysis

Associations were estimated for immigrant (outcome) compared to non-immigrant (i.e., local/native) FSW (Table 3). Immigrant status was associated with younger age group (18–24 years old, [adjusted odds ratio] AOR = 10.81, 95% CI = 2.46–47.54) in Argentina; disco/bar as main work place (AOR = 7.70, 95% CI = 1.05–56.53) in Bolivia; single marital status (AOR = 5.40, 95% CI = 1.40–20.76) and use of illegal drugs (any, AOR = 20.81, 95% CI = 6.95–62.37; marijuana, AOR = 25.61, 95% CI = 7.73–84.87; and cocaine, AOR = 12.71, 95% CI = 1.61–100.29) in Ecuador; and brothel as main work place (AOR = 2.72, 95% CI = 1.05–7.02), use of alcohol (AOR = 2.25, 95% CI = 1.05–4.83), and sex with foreign clients (AOR = 109.07, 95% CI = 13.61–873.91) in Uruguay. On the other hand, higher time in sex work (≥6 years, AOR = 0.21, 95% CI = 0.12–0.38), use of illegal drugs (any, AOR = 0.32, 95% CI = 0.10–0.98), and sex with foreign clients (AOR = 0.37, 95% CI = 0.20–0.71) in Argentina, and a higher number of sex contacts a week (≥5, AOR = 0.16, 95% CI = 0.05–0.54) and consistent condom use (always, AOR = 0.07, 95% CI = 0.01–0.54) in Ecuador were inversely associated with immigrant status.

Discussion

This study provides insight into HIV-risk related sexual and drug use behaviors among immigrant (i.e., foreigner) and non-immigrant (i.e., local/native) FSW groups in South America. Our findings suggest that illegal drug use patterns were more common among immigrant FSW in Ecuador and Uruguay, and among non-immigrant FSW in Argentina.

In Argentina, commercial sex worker is illegal; therefore, those convicted may receive a jail sentence (of a few days), a fine, or both (Penal Code 1984). The high proportion of immigrant FSW enrolled in Buenos Aires possibly reflects the increase in sex tourism in this country and the opportunities for inexpensive sexual services afforded by Argentina's depressed economy. Interestingly, illegal drug use was associated with Argentinean FSW. This association may be explained by the fact that this group of FSW might have high-risk sexual practices with IDU clients or with their IDU sexual partners.

In Bolivia, the number of immigrant FSW was insufficient to be able to conduct statistically-valid comparisons. The reason for the lower number of immigrant FSW is unclear. It is possible that this country does not constitute a sex tourism destination. On the other hand, disco was the

Table 1 Distribution of FSW participants by country and immigration status in South America

Country	City	Total participants	Non-immigrant		Immigrant	
		N	No.	%	No.	%
Argentina	Buenos Aires	295	211	71.5	84	28.5
Bolivia	Santa Cruz	195	189	96.9	6	3.1
Ecuador	Guayaquil	1,047	1,019	97.3	28	2.7
Uruguay	Borders cities with Brazil	308	241	78.2	67	21.8
Total		1,845	1,660	89.9	185	10.1

Note: FSW, female sex workers; non-immigrant, local/native FSW; immigrant, foreign FSW

Table 2 Demographic and risk behavior characteristics of FSW participants by country and immigration status in South America

Feature	Argentina				Bolivia				Ecuador				Uruguay			
	Non-immigrant (n = 211)		Immigrant (n = 84)		Non-immigrant (n = 189)		Immigrant (n = 6)		Non-immigrant (n = 1,019)		Immigrant (n = 28)		Non-immigrant (n = 241)		Immigrant (n = 67)	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
18–24 years old	28	13.5*	2	2.4	66	34.9	0	0.0	452	44.5	17	65.4*	67	27.8	18	26.9
χ^2 (df) Test statistic	(1) 6.81				–				(1) 4.45				–			
Single marital status	102	48.6	44	52.4	135	71.8	7	66.7	467	46.1	25	89.3*	91	37.8	32	47.8
χ^2 (df) Test statistic	–				–				(1) 18.73				–			
≥ 5 sex contacts per week	166	80.6	68	81.9	94	52.2	3	60.0	696	71.2*	6	22.2	136	56.4	35	52.2
χ^2 (df) Test statistic	–				–				(1) 27.61				–			
Previous STI history	35	16.7*	4	4.8	55	31.8	0	0.0	359	35.6	7	25.9	34	14.1	8	11.9
χ^2 (df) Test statistic	(1) 6.39				–				–				–			
Consistent condom use[a]	176	83.8	71	84.5	95	51.9	4	80.0	552	57.1	25	96.2*	221	91.7	64	95.5
χ^2 (df) Test statistic	–				–				(1) 13.67				–			
≥6 years in sex work	128	61.0*	22	26.2	22	11.6	1	16.7	256	26.9	3	12.0	123	51.0*	24	35.8
χ^2 (df) Test statistic	(1) 27.64				–				–				(5) 4.28			
Main work place																
Street	209	100.0	84	100.0	41	21.7	1	16.7	293	28.8	7	25.0*	9	3.7	1	1.5
Brothel	0	0.0	0	0.0	43	22.8	1	16.7	175	17.2	3	10.7	13	5.4	8	11.9
Disco/bar	0	0.0	0	0.0	60	31.7	4	66.7	393	38.6	1	3.6	218	90.5	58	86.6
Other	0	0.0	0	0.0	45	23.8	0	0.0	158	15.5	17	60.7	1	0.4	0	0.0
χ^2 (df) Test statistic	–				–				(3) 42.99				–			
Use of illegal drug	29	13.7*	4	4.8	29	17.2	1	16.7	41	4.1	9	33.3*	17	7.1	5	7.5
χ^2 (df) Test statistic	(1) 4.02				–				(1) 42.19				–			
Use of marijuana	13	5	3	3.6	12	6.3	1	16.7	26	2.6	8	29.6*	9	3.7	4	6.0
χ^2 (df) Test statistic	–				–				(1) 52.22				–			
Use of cocaine	22	10.4*	2	2.4	16	8.5	1	16.7	9	0.9	2	7.4*	13	5.4	4	6.0
χ^2 (df) Test statistic	(1) 4.18				–				(1) 5.25				–			
Use of alcohol	0	0.0	0	0.0	148	84.6	3	75.0	731	72.4	27	96.4*	177	73.4	58	86.6*
χ^2 (df) Test statistic	–				–				(1) 6.79				(1) 4.29			
Sex with foreign clients	85	40.5*	17	20.5	100	57.1	6	100*	367	36.2	17	60.7*	107	44.4	66	98.5*
χ^2 (df) Test statistic	(1) 9.62				(1) 4.39				(1) 6.00				(1) 60.17			
Blood transfusion history	49	23.3	13	15.5	27	14.4	1	16.7	145	14.5	3	10.7	50	20.7	8	11.9
χ^2 (df) Test statistic																
Positive HIV status	9	4.3	1	1.2	1	0.5	0	0.0	22	2.2	0	0.0	2	0.8	2	3.0
χ^2 (df) Test statistic	–				–				–				–			

Note: FSW, female sex workers; non-immigrant, local/native FSW; immigrant, foreign FSW; STI, sexually transmitted infections; HIV, human immunodeficiency virus

*P-value < .05 by Chi-square or Fisher's exact test

[a] Consistent (always) condom use with clients

main work place associated with immigrant FSW, which may suggests that this group prefers an environment with less exposure and more anonymity in order to avoid health inspectors and immigration officers.

In Ecuador, sex work is legal, and in recent years, this country has become a new destination in the Andean region for immigrant FSW. This has been stimulated by the so-called "dollarization" of its economy; the local currency (Sucre) is not longer accepted as a means of payment except for coinage, only US dollars are permitted as currency. Most immigrant FSW in this country were from the two neighbouring countries of Colombia and Peru, and most were in Guayaquil city (the main port of Ecuador, and a frequent commercial/tourist destination) (Carrion et al. 2003). According to MoH policies, FSW are required to have periodic check-ups for STI (every 2 months for syphilis and every 4 months for chlamydia) and HIV infections (every 6 months) (IBERB 2005). Most FSW are enrolled during their visits to clinic health centers, however, street sex workers, who are usually poorer and older, are less likely to be part of this enrollment. In our population, a significant proportion in both non-immigrant and immigrant FSW indicated the streets as their main workplace. However, non-immigrant FSW reported more sexual contacts per week and low rate of condom use with clients, putting them at a high risk for HIV/STI infection. A recent study reported that local FSW had more clients than international (i.e., immigrant) FSW in Sydney, Australia

Table 3 Risk factors analyses for immigrant compared with local/native non-immigrant FSW participants by country in South America

Feature	Argentina		Bolivia		Ecuador		Uruguay	
	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)
18–24 years old (≥ 25)	10.81	(2.46–47.54)**	–	–	1.09	(0.41–2.90)	1.56	(0.80–3.02)
Single marital status (other)	1.43	(0.81–2.44)	0.48	(0.07–3.47)	5.40	(1.40–20.76)*	1.44	(0.82–2.53)
Five or more sex contacts a week (≤ 4)	1.21	(0.58–2.50)	1.36	(0.20–9.25)	0.16	(0.05–0.54)**	0.79	(0.45–1.39)
Previous STI history (no)	0.63	(0.20–2.01)	–	–	2.81	(0.89–8.82)	0.89	(0.38–2.07)
Always use condom with clients (other)	1.02	(0.48–2.16)	0.25	(0.02–2.70)	0.07	(0.01–0.54)*	0.49	(0.14–1.74)
Six or more years in sex work (≤ 5)	0.21	(0.12–0.38)**	2.74	(0.20–37.99)	0.42	(0.09–2.03)	0.57	(0.31–1.06)
Street as main work place (other)	–	–	1.58	(0.15–16.50)	0.38	(0.13–1.11)	0.43	(0.05–3.53)
Brothel as main work place (other)	–	–	0.31	(0.02–5.23)	1.32	(0.27–6.41)	2.72*	(1.05–7.02)*
Disco/bar as main work place (other)	–	–	7.70	(1.05–56.53)*	0.47	(0.05–4.46)	0.59	(0.25–1.37)
Use of illegal drug (no)	0.32	(0.10–0.98)*	0.79	(0.07–9.09)	20.81	(6.95–62.37)**	1.13	(0.39–3.22)
Use of marijuana (no)	0.58	(0.15–2.23)	2.04	(0.16–26.42)	25.61	(7.73–84.87)**	1.62	(0.47–5.54)
Use of cocaine (no)	0.23	(0.05–1.04)	1.71	(0.12–23.55)	12.71	(1.61–100.29)*	1.26	(0.39–4.11)
Use of alcohol (no)	–	–	0.28	(0.02–4.43)	4.01	(0.51–31.34)	2.25	(1.05–4.83)*
Sex with foreign clients (no)	0.37	(0.20–0.71)**	–	–	1.26	(0.45–3.52)	109.07	(13.61–873.91)**
Blood transfusion history (no)	0.65	(0.31–1.35)	1.43	(0.13–15.71)	1.16	(0.29–4.58)	0.56	(0.25–1.27)

Note: FSW, female sex workers; immigrant, foreign FSW; STI, sexually–transmitted infections; AOR, adjusted odds ratio by age, number of sex contacts a week, condom use with clients and use of illegal drug use; CI, confidence interval; categories in parentheses describe the reference group for odds calculation

* *P*-value < .05, ** *P*-value < .01 by Logistic regression analysis

(Fox et al. 2006). On the other hand, illegal drug use was higher among immigrant compared to non-immigrant FSW, despite the small number in this group (2.7%, 28 of 1,047). A complex and mutually reinforcing relationship between drug use and prostitution has been previously reported (Miller 1995; Potterat et al. 1998).

In Uruguay, most immigrant FSW were of Brazilian origin and reported a high number of sexual contacts with foreign clients. This may be explained by the geographic location where participants were enrolled (in eastern border cities with Brazil). The relatively short geographic distances and the ease of travel between these countries contributes to the migration of Brazilians FSW to Uruguay and Argentina. In addition, immigrant FSW also reported higher alcohol consumption, which coincides with predominantly poorer working locations. A recent study conducted in the cities of Beijing and Nanjing in China among 1,543 female migrant sex workers indicated that employment conditions were associated with HIV risk (Yang et al. 2005).

Among immigrant FSW in Ecuador and Uruguay, condom use with clients was higher and a previous STI history was lower compared to non-immigrant FSW. These findings suggest that immigrant women were healthy when they arrived in Ecuador and Uruguay and condom use, one of the most important preventive measures to reduce HIV/STI transmission (Foss et al. 2004; NIAID 2002) is highly practiced among immigrants. Similar findings have also been reported among Colombian and Dominican FSW in Catania, Italy (Nigro et al. 2006). In addition, in our study population, few non-immigrant FSW reported ever having used injecting drugs. The low rate of injecting drug use was also reported among 579 Latin American FSW in Madrid (Belza et al. 2004).

Positive relationships with use of illegal drugs (any, marijuana or cocaine) as well as sex with foreigners were observed among immigrant FSW in Ecuador and Uruguay. However, these factors were found to be inversely associated with immigrant status among FSW in Argentina. In addition, younger age group (18–24 years old) and single marital status were observed to have a positive association with immigrant status among FSW in Argentina, Ecuador, and Uruguay. The role that these different risk factors play in terms of association with immigrant status among FSW in the region is unclear at this point.

We recognize that our study has some limitations. First, it is possible that more established immigrants FSW were underrepresented because of our data collection methods; the non-representativeness of the sample population might narrow the external validity of the study findings. Second, we could not objectively assess the role of other unmeasured risk sexual behaviors (e.g., fee per sexual contact or receptive anal intercourse) for HIV/STI acquisition or transmission. Third, the size of the observed effects (odds ratios) could be reduced with some true associations undetected because of the small number of immigrant participants in our study. Further work with adequate

sample size is required to determine more reliably the size of effect as well as to clarify the presence and direction of the relationships in order to compare differences between immigrant and local/native FSW. Nonetheless, we believe these data have important implications for HIV/STI prevention efforts, among marginalized FSW in South America. The present study needs to be expanded to more objectively evaluate associated risk factors for STI, including HIV infection.

In conclusion, use of illegal drugs (especially marijuana and cocaine) were associated with Argentinean FSW and with immigrant FSW in Ecuador. Harm-reduction intervention programs may be necessary to address this problem in these high-risk groups/countries and must be tailored to local conditions. In Uruguay, immigrant FSW were observed to have higher alcohol consumption, which coincides with predominantly poor working locations (discos/bars). On the other hand, inconsistent condom use with clients among non-immigrant FSW in Bolivia, Ecuador, and Uruguay suggest additional avenues for public health interventions. Finally, immigrant FSW groups have specific local country needs with respect to STI and HIV/AIDS prevention and care. Therefore, interventions should take into account their cultural, social, and economic backgrounds.

Acknowledgments We would like to thank all of the volunteers for their contribution to the better understanding of the HIV epidemic and to the many staff and scientists at the HIV/AIDS control programmes in each country for their continued efforts in improving public health in this region as well as Sebastian A. for this technical assistance. Lastly, we thank the anonymous reviewers and journal Editor for their useful comments.Disclaimer: The opinions and assertions expressed herein are those of the authors and do not necessarily reflect the official position of the U.S. departments of the Army or Navy, or any other organization listed.Financial support: This study was supported by the U.S. Military HIV Research Program at the Walter Reed Army Institute of Research, and by the U.S. Naval Medical Research Center, Silver Spring, MD (Work Unit Number No. 62787A S17 H B0002).Human Use Statement: The study was approved by the Naval Medical Research Center's Institutional Review Board and the Walter Reed Army Institute of Researcher under Protocol # NMRCD.1999.0002 (DoD 30590, WRAIR # 908), Protocol # (DoD 30583, WRAIR # 914) and Protocol # NMRCD.1999.0001 (DoD 30587, WRAIR # 916).*Copyright statement*: Christian T. Bautista, Silvia M. Montano, Victor A. Laguna-Torres, Jean K. Carr, and Jose L. Sanchez participated in this work as United States Government (USG) employees. This work was prepared as part of their official duties. Title 17 U.S.C 105 provides that Copyright protection under this title is not available for any work of the USG. Title 17 U.S.C 101 further defines USG work as work which is prepared by a USG employee as part of that person's official duties.

References

Bandyopadhyay, M., & Thomas, J. (2002). Women migrant workers' vulnerability to HIV infection in Hong Kong. *AIDS Care, 14*, 509–521.

Bautista, C. T., Sanchez, J. L., Montano, S. M., Laguna-Torres, A., Suarez, L., & Sanchez, J. et al. (2006). Seroprevalence of and risk factors for HIV-1 infection among female commercial sex workers in South America. *Sexually Transmitted Infections, 82*, 311–316.

Beesey, A. (2000). HIV vulnerability and mobile populations: Thailand and its borders. *development bulletin, 52*, 38–41.

Belza, M. J., Clavo, P., Ballesteros, J., Menendez, B., Castilla, J., & Sanz, S. et al. (2004). Social and work conditions, risk behavior and prevalence of sexually transmitted diseases among female immigrant prostitutes in Madrid (Spain). *Gaceta Sanitaria, 18*, 177–183.

Bronfman, M. N., Leyva, R., Negroni, M. J., & Rueda, C. M. (2002). Mobile populations and HIV/AIDS in Central America and Mexico: Research for action. *AIDS, 16*(Suppl 3), S42–S49.

Carrion, G., Hierholzer, J., Montano, S., Alava, A., Perez, J., & Guevara, A. et al. (2003). Circulating recombinant form CRF02_AG in South America. *AIDS Research and Human Retroviruses, 19*, 329–332.

Day, S., & Ward, H. (1997). Sex workers and the control of sexually transmitted disease. *Genitourinary Medicine, 73*, 161–168.

Duckett, M. (2000). Migrants and HIV/AIDS. *development bulletin, 52*, 18–20.

Foss, A. M., Watts, C. H., Vickerman, P., & Heise, L. (2004). Condoms and prevention of HIV. *BMJ, 329*, 185–186.

Fox, J., Tideman, R. L., Gilmour, S., Marks, C., van Beek, I., & Mindel, A. (2006). Sex work practices and condom use in female sex workers in Sydney. *International Journal of STD and AIDS, 17*, 319–323.

Ghys, P., Jenkins, C., & Pisani, E. (2001). HIV surveillance among female sex workers. *AIDS, 15*(Suppl 3), S33–S40.

Harcourt, C., & Donovan, B. (2005). The many faces of sex work. *Sexually Transmitted Infections,* 81, 201–206.

IBERB, Institute of Business and Economic Research Bulletin. (2005). University of California, Berkerly. Retrieved April 17, 2007, from http://are.berkeley.edu/~shah/Research/May05bul.pdf#search = %22sex%20workers%20%26%20Ecuador%22.

Kerr-Pontes, L. R., Gonzalez, F., Kendall, C., Leao, E. M., Tavora, F. R., & Caminha, I. et al. (2004). Prevention of HIV infection among migrant population groups in Northeast Brazil. *Cadernos de Saúde Pública, 20*, 320–328.

McKeganey, N. P. (1994). Prostitution and HIV: What do we know and where might research be targeted in the future? *AIDS, 8*, 1215–1226.

Miller, J. (1995). Gender and power on the streets: Street prostitution in the era of crack cocaine. *Journal of Contemporary Ethnography, 23*, 427–452.

Montano, S. M., Sanchez, J. L., Laguna-Torres, A., Cuchi, P., Avila, M. M., & Weissenbacher, M. et al. (2005). Prevalences, genotypes, and risk factors for HIV transmission in South America. *Journal of Acquired Immune deficiency Syndromes, 40*, 57–64.

NIAID (National Institute of Allergy and Infectious Diseases). (2002). *Scientific evidence on condom effectiveness for sexually transmitted disease* (*STD*) *prevention*. Summary of a workshop sponsored by the National Institute of Allergy and Infectious Diseases in Herndon, Virginia, June 2000. Retrieved April 17, 2007, from www.niaid.nih.gov/dmid/stds/condomreport.pdf. .

Nigro, L., Larocca, L., Celesia, B. M., Montineri, A., Sjoberg, J., & Caltabiano, E. et al. (2006). Prevalence of HIV and other sexually transmitted diseases among Colombian and Dominican female sex workers living in Catania, Eastern Sicily. *Journal of immigrant and minority health/Center for Minority Public Health, 8*, 319–323.

Pell, C., Dabbhadatta, J., Harcourt, C., Tribe, K., & O'Connor, C. (2006). Demographic, migration status, and work-related

changes in Asian female sex workers surveyed in Sydney, 1993 and 2003. *Australian and New Zealand Journal of public health, 30*, 157–162.

Penal Code (1984/1995). *Title III crimes against the uprightness, No 32*. Buenos Aires: A–Z Editora; 1984.

Potterat, J. J., Rothenberg, R. B., Muth, S. Q., Darrow, W. W., & Phillips-Plummer, L. (1998). Pathways to prostitution: The chronology of sexual and drug abuse milestones. *Journal of Sex Research, 35*, 333–340.

UNAIDS (2002). *UNAIDS Technical Update: Sex work and HIV/AIDS*. Retrieved April 17, 2007, from http://data.unaids.org/Publications/IRC-pub02/JC705-SexWork-TU_en.pdf.

WHO/UNAIDS (2006). *2006 Report on the global AIDS epidemic, UNAIDS, May 2006*. Retrieved April 17, 2007, from http://www.unaids.org/en/HIV_data/2006GlobalReport/default.asp.

Yang, H., Li, X., Stanton, B., Fang, X., Lin, D., & Mao, R. et al. (2005). Workplace and HIV-related sexual behaviours and perceptions among female migrant workers. *AIDS Care, 17*, 819–833.