Systematic review examining differences in HIV, sexually transmitted infections and health-related harms between migrant and non-migrant female sex workers

Lucy Platt,[1] Pippa Grenfell,[1] Adam Fletcher,[1] Annik Sorhaindo,[2] Emma Jolley,[1] Tim Rhodes,[1] Chris Bonell[3]

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[1]Department of Social and Environmental Health Research, London School of Hygiene and Tropical Medicine, London, UK
[2]Population Council, Mexico City, Mexico
[3]Department of Social Policy and Intervention, Centre for Evidence Based Intervention, University of Oxford, Oxford, UK

Correspondence to
Dr Lucy Platt, Department of Social and Environmental Health Research, London School of Hygiene and Tropical Medicine, 15–17 Tavistock Place, London WC1H 9SH, UK; lucy.platt@lshtm.ac.uk.

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ABSTRACT

Objectives To assess the evidence of differences in the risk of HIV, sexually transmitted infections (STI) and health-related behaviours between migrant and non-migrant female sex workers (FSWs).

Methods Systematic review of published peer-reviewed articles that reported data on HIV, STIs or health-related harms among migrant compared with non-migrant FSWs. Studies were mapped to describe their methods and focus, with a narrative synthesis undertaken to describe the differences in outcomes by migration status overall and stratified by country of origin. Unadjusted ORs are presented graphically to describe differences in HIV and acute STIs among FSWs by migration and income of destination country.

Results In general, migrant FSWs working in lower-income countries are more at risk of HIV than non-migrants, but migrants working in higher-income countries are at less risk. HIV prevalence was higher among migrant FSWs from Africa in high-income countries. Migrant FSWs in all countries are at an increased risk of acute STIs. Study designs, definitions of FSWs and recruitment methods are diverse. Behavioural data focussed on sexual risks.

Discussion The lack of consistent differences in risk between migrants and non-migrants highlights the importance of the local context in mediating risk among migrant FSWs. The higher prevalence of HIV among some FSWs originating from African countries is likely to be due to infection at home where HIV prevalence is high. There is a need for ongoing monitoring and research to understand the nature of risk among migrants, how it differs from that of local FSWs and changes over time to inform the delivery of services.

INTRODUCTION

Migration is a key defining characteristic of the 21st century.[1] Approximately 3.1% of the global population—or one out of every 33 persons—are migrants. Reasons for migration are multiple and complex, and can include labour, family reunification, health, security and economic disparities between high-income and low income countries.[2] It is projected that during the course of this century, movement of people will become even more significant due to demographic changes as well as economic liberalisation and decline.[1] Just under half (49%) of migrants are women.[3] Income opportunities for migrant women are often limited to the informal sector such as child care, domestic work or sex work, as language or legal barriers may prevent work in the formal economy.[4] Increasing numbers of migrant women globally are thought to be involved in sex work.[5–8]

Migrants experience increased health risks and inequities in health service access,[9] and this may be particularly acute among migrant women.[10] Evidence has shown that women in sex work may face abuse and exploitation,[11 12] and studies of migrant sex workers suggest this may be exacerbated by insecure immigration status,[13] ethnic discrimination,[14] ghettoised work conditions,[15] reduced access to medical and legal assistance[10 16] and higher rates of sexually transmitted infections (STIs).[5] Research also suggests that migrants are more vulnerable to mental health problems[1] and this may be particularly acute among female sex workers (FSWs).[17] Research also highlights differences in risk faced by migrants according to whether they are migrating internationally or internally. International migrants travel further, incur greater financial costs migrating, have greater socio-cultural adjustments to make and are more likely to face problems regarding their legal status and access to health and other welfare services.[18]

Emerging evidence suggests that the size of the FSW population is correlated with countrywide prevalence of HIV.[19] Evidence also shows that population mobility is an important determinant in the global epidemiology of HIV and STIs,[20] yet little is known about the role of migrant FSWs in the transmission of HIV and STIs. It is unclear whether migrant FSWs experience worse health outcomes and/or engage in more high-risk behaviours than non-migrant FSWs, or whether this differs by type of migration, income of destination or originating country. In the absence of a systematically reviewed and synthesised evidence base directly comparing risk between migrant and non-migrant FSWs, we undertook a systematic review to examine the differences in risk regarding health-related outcomes and risk behaviours. The objectives of the review were threefold: (1) to assess the scope and nature of research examining the effect of migration on adverse health outcomes and health-related risk among FSWs; (2) to assess whether HIV, STIs and health harms vary among FSWs according to migrant status; and (3) to assess whether this variation in HIV and STIs differ according to: (a) country of origin; and (b) income level of the country of destination.

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METHODS

The following databases were searched: MEDLINE (1950–2008), Embase, Social Science Citation Index, Popline, CINAHL, Global Health, African Healthline, Index Medicus for the Eastern European Region, Latin American and Caribbean Centre on Health Sciences Information, Index Medicus of the South-East Asian Region and Western Pacific Region of the Index Medicus using a search combining terms for 'sex work' and 'migrant', drawing on thesaurus and non-thesaurus terms as appropriate. We included reports written in English published from 1990 onwards that reported rates among migrant FSWs compared with non-migrant FSWs of any of the following: HIV; acute STIs (defined as current infection with syphilis, gonorrhoea or chlamydia) and other risk behaviours and health harms. A migrant was defined as someone who had travelled either internally within a country or across an international border. A sex worker was defined as someone who had ever exchanged sex for money, drugs or other goods. The review followed guidelines for systematic reviews of observational studies.[21]

Studies were mapped, describing their quality and focus in terms of geography, outcomes and form of migration. We undertook a narrative synthesis and described differences in prevalence of HIV and STIs by migration status and country of origin, as well as the income level of the destination country. The prevalence of HIV and STIs were stratified to observe variation by country of origin. We present unadjusted ORs of HIV, as well as STIs among migrant groups compared to non-migrant groups in order to describe variation in risk by income of the destination country. The definition of income was assigned according to 2008 gross national income per capita, calculated using the World Bank Atlas method.[22] We focus on unadjusted associations because we judged that adjustment for socioeconomic status is inappropriate, as these factors may lie on the causal pathway between migration, sex work and risk, and thus potentially mediate any associations with our outcomes, and potential confounders would not be measured or controlled for consistently.[23 24] All analyses used Stata 12 (Stata Corp, College Station, Texas, USA). A full description of the methods and findings on behavioural outcomes are summarised in the web appendix.

RESULTS

Methodological characteristics and focus

Data were extracted from 26 papers that met the inclusion criteria (see web appendix). All papers that reported the results of cross-sectional analyses, although three included longitudinal data.[25–27] In total, nine studies were conducted in Europe,[28–36] two in Australia,[23 37] seven in Southeast Asia,[38–43] five in sub-Saharan Africa[25–27 44 45] and four in Central and South America.[24 46–48] Overall, less than half of the studies (11/26) were designed explicitly to explore the effect of migration on the outcome (table 1).[23 24 30 33 35 37 38 42 46–48]

All studies except one[32] described the countries of origin and destination of their migrant sample. Six studies recruited internal migrants (within their country of origin, but working and living away from their home town).[24 26 38 39 41 44] These studies were conducted in low-income (Ethiopia) or middle-income countries (Cameroon, China, Mexico and Thailand). Three studies included intracontinental migrants who had migrated from low-income countries to other low-income countries: Benin,[25] Kenya[27] and Mali.[45] Three studies recruited intracontinental migrants moving from low-income to middle-income countries (Bolivia, Ecuador, Argentina, Uruguay[46 47] and Mexico.[48]) The remaining 13 studies focussed on international or intracontinental migration moving from low-income or middle-income to high-income countries. Destination countries included Australia,[23 37] Spain,[29 30] Portugal,[31] Italy,[34 35] the Netherlands,[36] UK,[33] Hong Kong[42 43] and Turkey.[28]

Type of migration was closely linked to the income of the destination country. All intercontinental migrants moved to high-income countries.[30–37] The majority of intracontinental migrants moved to low-income[25 27 45] or lower-middle income[41 46] and upper-middle income countries.[46–48] The majority of internal migrants worked in lower-middle income countries,[26 39 40] with three studies of internal migrants in upper-middle income,[24] high-income[42] and low-income countries.[44]

Seven studies recruited participants from specialist clinics for FSWs providing STI services,[23 25 33 37 42–44] eight through HIV/STI testing services,[26–30 32 34 35] five from sex work locations[38 45–48] and 10 from a combination of workplaces and clinics.[24 31 36 39–41]

Just over a third of studies did not give a definition of sex workers (11/26). Some studies specified eligibility criteria to include women who self-identified as FSWs[23 32 38] or used a standardised Joint United Nations Programme on HIV/AIDS definition.[46 47 49 50] Three studies relied on the staff of STI clinics,[44] bar managers, health service providers[48] or other FSWs to identify participants.[26] One study differentiated between FSWs who injected drugs and those who did not.[35] Time frames defining recent sex work varied from 4 weeks,[33] 2 months and[32] 6 months[36] to 1 year.[48]

Sex work locations were diverse and 10 studies do not specify the place of sex work.[25 27–30 34 35 37 46 48] Only one study involved a total sample of fewer than 100 participants,[31] and five studies reported findings where either the migrant or the non-migrant sample was considerably smaller than their comparison group.[25 27 39 41 42]

Outcomes

Nineteen studies examined HIV as an outcome (table 2).[24–27 29–32 34–37 39–41 44–48] Overall, prevalence was not consistently higher among migrants compared to non-migrants. Six studies examined acute STIs,[24 25 37 38 48 51] reporting 23 outcomes across five countries. Prevalence of an acute STI was consistently higher among migrants compared to non-migrants. The most frequently measured risk behaviour was condom use.[23 25 33 37 42 43 46 47] Other outcomes relating to sexual behaviours included: practising of anal sex with clients[47] and accepting of extra money for unprotected sex.[47] Three studies measured broader sexual and reproductive health-related outcomes, including vaginal douching with an over-the-counter medication,[42 43] undergoing a cervical smear test,[42 43] termination and use of contraceptives.[33] Four studies examined use of alcohol or illegal drugs[33 42 46 47] but just one examined experience of violence.[33] Socio-structural outcomes included the location of sex work[46 47] and any history of incarceration or arrest.[33]

Variation in HIV and STI prevalence by country of origin/transit

In just under half of European-based studies, the prevalence of HIV was less than 1.5% among migrants and non-migrants alike.[29 30 33 36] In all these studies, the prevalence of injecting drug use was low. In four studies, a higher prevalence of HIV

Table 1 Characteristics of included studies

Income	Country	Data collected	Outcome	Recruitment site	Location	Definition	Migrants	Non-migrants	Age (all)	Primary aim	Reference
High	UK	2008–2009	HIV STI* behavioural	Specialist sexual health services, flats, saunas, social networks	Flats, saunas	Exchanged sex for drugs, good or money in last 4 weeks	163	105	26 (IQR: 22–35)	Yes	33
	Spain	2000	HIV	HIV/STI clinic	No information	No information	1797	331	29.2	Yes	30
	Spain	1989–1991	HIV	Collaborating centre and snowball sample	Brothels, bar, street	Self-identified sex work for money at least once in last year	404	663	29.8 (14–74)	No	32
	Spain	2000–2001	HIV	STI clinics	No information	No information	2607	523	29.2 (SD=7.6)	No	29
	Italy	1988–1994	HIV	HIV testing clinic	No information	Professional defined as non-IDU	136	593	No information	Yes	35
	Italy	1991–1995	HIV	STI and infectious disease clinic	No information	Professional defined as non-IDU, but includes IDUs	176	223	Median=37 (21–55)	No	34
	Portugal	2000–2001	HIV	Clinic and street	Street	No information	54	42	No info	No	31
	The Netherlands	1991	HIV	STI clinics brothels, hotels	Indoor	Received money or goods in exchange for sex at least once in past 6 months	129	72	29 (SD=7)	No	36
	Australia	1991–1993	HIV STI† Behavioural	Specialist sexual health clinic for sex workers	No information	No information	123	91	Migrant=25.3 Non-migrant=25.5	Yes	37
	Australia	1990–2005	Behavioural	Sexual health care centre and primary health care centre for sex workers	Parlour, private arrangement, escorts, workers	Self-identification and assessment by staff	148	141	16–25 years migrant=46% non-migrant=50%	Yes	23
	Hong Kong	2004–5	Behavioural	Specialist sexual health clinic	Street and indoor	No information	75	170	35.8 (SD=6.04)	No	43
	Hong Kong	2005–2007	Behavioural STI‡	Specialist sexual health clinic	Street and indoor	No information	406	97	26–30 years 11%	Yes	42
Upper-middle	Argentina	2000–2002	HIV/STI§ Behavioural	Work	Street, bar and cabaret	UNAIDS definition	169	456	18–24 yrs Mig=18.4% Non=24.3%	Yes	47
	Argentina, Bolivia, Ecuador, Uruguay	1999–2002	HIV, STI¶ Behavioural	Work	No information	UNAIDS definition	185	1660	No data	Yes	46
	Mexico	1998	HIV, STI**	Bars	No information	Identified by bar managers and health authorities	363	121	25.5	Yes	48
	Mexico	2004–2005	HIV STI††	Municipal and community health clinics, via street outreach, and by referrals from other FSWs	Street, clubs, bars	Sex work and unprotected vaginal sex with client once in last 2 months	370	101	60% (18–34)	Yes	24
	Turkey	1993	Syphilis markers‡‡	STI clinic	No information	Registered sex workers and women arrested for not being registered	96	88	No data	Unclear	28
Lower-middle	Cameroon	1995–1996	HIV	Outreach workers in community referred women to three clinics (family	Bars, home	Having at least four different sex partners per month	1453	808	25.5	No	26

Continued

Table 1 Continued

Income	Country	Data collected	Outcome	Recruitment site	Location	Definition	Migrants	Non-migrants	Age (all)	Primary aim	Reference
				planning clinic, STI and community clinic)							
	China	2004	Any STI§§ Behavioural	Work	Indoors	Self-identified	151	264	23.5 (SD=5.1)	Yes	38
	China	1998–1999	HIV	Hospital and via outreach to working locations	Bars, hotels, hair dressing salons, beauty parlours	No information	135	831	25 (SD=5)	No	40
	Thailand	1992	HIV	STI clinic and work places	Indoors	Brothels (direct workers) bars, massage parlours, karaoke clubs (indirect)	51	672	48% (383) <20 years	No	41
	Thailand	1991–1994	HIV	STI clinic and work places	Indoors	No information	37	463	23.6 (mean)	No	39
	Kenya	1985	HIV	STI clinic	Missing	No information	399	19	29.2 (SD=6.5)	No	27
Low	Ethiopia	1998	HIV	STI clinic set up for research	Individual, shared rooms, bars, street	Known to health staff as being sex workers	290	82	57% <24 years	No	44
	Mali	1995	HIV	Work	Street	No info	94	82	28.8 (15–50)	No	45
	Benin	1993, 1995, 1999	HIV STI¶¶ Behavioural	Specialist STI clinic for sex workers	No information	No information	461	130	28.4	No	25

The UNAIDS definition of a female sex worker is a woman who receives 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.
*Antibodies to *T. pallidum*, chlamydia and/or Gonorrhoea.
†Chlamydia, pelvic inflammatory disease, clinical genital herpes, chronic hepatitis B virus and syphilis (all stages).
‡Syphilis, gonorrhoea and chlamydia.
§Syphilis, and hepatitis B and C.
¶*Treponema pallidum*, gonorrhoea, chlamydia, herpes simplex virus 2 and hepatitis B.
***Treponema pallidum*, gonorrhoea, chlamydia, herpes simplex virus 2 and hepatitis B.
††Chlamydia, gonorrhoea, HIV, syphilis or any STI.
‡‡Includes past infection, early latent, late latent syphilis.
§§Gonorrhoea, chlamydia, trichomoniasis, syphilis and genital warts.
¶¶Syphilis, gonorrhoea and chlamydia.
EIA, enzyme immunoassay; FSW, female sex worker(s); IDU, injecting drug user; STI, sexually transmitted infections; UNAIDS, Joint United Nations Programme on HIV/AIDS.

was observed among migrants from Sub-Saharan Africa at 8% in the Netherlands,[36] 54% and 34% in Italy[34 35] and 5.4% in Spain[29] compared to migrants from other countries and non-migrants. HIV prevalence was higher in both Italian studies, with a corresponding higher prevalence of injecting drug use at 31% and 39%.[34 35] In Portugal, HIV prevalence was higher among non-migrants (21%) than migrants from Africa (7%), and injecting drug use was reported by 60% of the sample.[31]

In Southeast Asia, HIV prevalence was higher, at 30% or above in two studies (both in Thailand),[39 41] while one study suggested higher prevalence among migrants from China or internal migrants from hill tribes than non-migrants.[41] Another study in Thailand suggested lower prevalence among internal migrants from the upper north province compared to non-migrants in Chiang Rai. The sample of migrants was small (n=37) relative to non-migrants.[39] In South and Central American countries, HIV prevalence was lower (less than 5%), with a higher prevalence among non-migrants in Argentina and Ecuador than intracontinental migrants, but a lower prevalence among non-migrants in Uruguay.[46] In Mexico, prevalence was higher among non-migrants, at 11%, than among internal migrant FSWs at 7%.[24]

Prevalence of active syphilis was higher among intracontinental migrants from Romania working in Turkey, at 39%, and in Benin (table 3).[25 28] In Mexico, the prevalence of syphilis was higher among non-migrants compared to internal migrants (18% vs 13%).[24] Gonorrhoea was higher among international migrants in Australia, and among intracontinental migrants in Mexico and Benin, but not among internal migrants in Mexico.[24 25 37 48] Chlamydia was considerably higher among international migrants in Australia, marginally higher among intracontinental migrants in Mexico, but no higher among migrants in Benin and internal migrants in Mexico.[24 25 37 48] In two studies of internal migrants in China and Mexico, an aggregated measure of STI was no higher in migrants than among non-migrants.[24 38]

Variation in HIV and STI prevalence by income of destination country

Taking a weighted average of HIV prevalence by income of the destination countries showed that overall HIV prevalence did not differ by migration in high-income or upper-middle income countries, and that there was a greater difference across lower-middle income countries and a marked difference in low-income countries. Taking a weighted prevalence of STIs suggested that the overall prevalence of any STI was higher among migrants than non-migrants, irrespective of country income, with the exception of chlamydia, which was higher among non-migrants in high-income countries. These findings are presented graphically by country in figures 1 and 2.

DISCUSSION

This systematic review suggests that migrants working in lower income countries are more at risk of HIV than non-migrants, but migrants working in higher-income countries are at less risk

Table 2 Summary of HIV prevalence by migration status

Destination			Migrants		Non-migrants			
Income level	Country	Country/region of origin	*n*/total	%	*n*/total	%	IDU (%)	Reference
High	UK	Eastern Europe	2/168	1.2	1/105	0.9	5	33
	Spain	All (LA, Western Europe, Central and Eastern Europe, North Africa and SSA)	1/1797	0.6	3/331	0.4	N/A	30
	Spain	Not specified	12/404	3	25/663	4.0	0	32
	Spain	All migrants	193/2607	7.4	9/523	1.8	0	29
		SSA		5.0				
		LA		0.6				
		Eastern Europe		0.4				
	Italy	All migrants	17/136	12.5	94/593	15.8	29	35
		South America*	3/107	3				
		SSA*	12/22	54.5				
		Eastern Europe*	2/7	28.5				
	Italy	All migrants	29/136	16	72/2233	32	40	34
		Europe†	6/18	33				
		South America†	4/109	4				
		Africa†	18/48	38				
		Asia	1/1	100				
	Portugal	Africa	4/54	7	9/42	21	60	31
	The Netherlands	All migrants	3/129	2	0/72	0	0	36
		SSA‡	2/26	8				
		LA‡	1/79	1				
		Other‡	0/24	0				
	Australia	Thailand, Malaysia, China	1/93	1	0/121	0	7§	37
	Hong Kong	Chinese (newly arrived and illegal migrants)	1/412	0.2	0/97	0	N/A	42
Weighted average for high income countries			262/5936	4	213/4780	4.5		
Upper-middle	Mexico	All migrants	4/519	0.7	1/121	1	0.8	48
		Guatemala	4/357	1				
		El Salvador	0/76	0				
		Honduras	0/86	0				
	Mexico	Internal	26/370	7	11/101	11	N/A	24
	Argentina	South American countries§	2/169	4	18/456	1	N/A	47
	Argentina	Dominican Republic, Paraguay, Uruguay	1/84	1	8/211	4	N/A	46
Weighted average for upper-middle countries			33/1142	3	38/889	4		
Lower-middle	Bolivia	Ecuador, Brazil	0/6	0	0/189	0		46
	Ecuador	Columbia	0/28	0	20/1019	2		46
	Uruguay	Brazil	2/67	3	2/241	1		46
	Thailand	All migrants	40/119	34	134/672	20	N/A	41
		Hill tribes	18/51	35				
		Burmese/Chinese	22/68	32				
	Thailand	Internal	3/37	8	157/463	34	N/A	39
	Cameroon	Internal	319/1453	22	91/808	11	N/A	26
	Kenya	All migrants	250/399	63	9/19	50	N/A	27
		Tanzania	229/358	60				
		Uganda	18/37	50				
		Other	3/4	80				
	China	Internal	7/831	0.8	6/135	0.7	7	40
Weighted average for lower-middle countries			373/2541	15	410/3527	11		
Low	Ethiopia	Internal	235/290	81	40/82	49	N/A	44
	Mali	All migrants	55/140	39	24/36	67	N/A	45
		Ghana	34/56	61				
		Nigeria	12/58	21				
		Other**	9/26	38				
	Benin††	All migrants	158/329	48	25/130	19	N/A	25
		Ghana	74/128	58				
		Nigeria	83/225	37				
		Togo	46/87	53				
		Other‡‡	1/21	4				
Weighted average for low-income countries			698/1158	60	98/267	37		

*Countries not specified for total tested, but among those testing HIV-positive, countries included Brazil, Columbia, Senegal, Nigeria, Ghana, Zaire and ex-Yugoslavia.
†Europe includes ex-Yugoslavia, France, Switzerland and Spain; Africa includes Nigeria, Ghana, Zaire, Senegal, Tanzania, Burkino Faso and Liberia, South America includes Brazil and Columbia; Asian countries were not specified.
‡SSA=Ghana (16) and not specified (10); Latin America=Colombia (27) Dominican Republic (28), Surinam (16) and four others (6); 12 other countries (24).
§All local, no migrants were reported to be IDUs.
¶Includes Dominican Republic, Paraguay, Peru, Uruguay and Bolivia.
**Senegal (15), Cameroon (1), Côte d'Ivoire (1), Guinea (2), Liberia (2), Niger (1), Togo (1) and unknown (2).
††Data taken from only the 1999 phase of study as only small samples of non-migrants were available in 1993 and 1995 (n=7 and 37 respectively).
‡‡Countries not specified.
IDU, Injecting drug user; LA, Latin America; SSA, Sub-Saharan Africa.

Table 3 Summary of STI prevalence by migration status and country of origin

Income level	Country	STI outcome	Country of origin/migration status	Migrant STI positive/total	Migrant %	Non-migrant STI positive/total	Non-migrant %	Reference
High	UK	Chlamydia	Eastern Europe	7/140	5	3/92	3	33
		Gonorrhoea		5/150	4	0/92	0	
	Australia	Gonorrhoea (all sites)	Thailand, Malaysia, China	17/123	14	0/91	0	37
		Gonorrhoea (urogenital)		14/123	11	0/91	0	
		Chlamydia		18/123	15	0/91	0	
		Trichomonias		1/123	1	0/91	0	
	Hong Kong	Gonorrhoea	Legal migrants	3/361	0.8	3/97	3.1	42
			Illegal migrants	3/45	7	3/97	3.1	
		Chlamydia	Legal migrants	12/361	3.3	8/97	8.2	
			Illegal migrants	3/45	7	8/97	8.2	
Weighted average		All STIs		83/1594	5	25/742	3	
		Chlamydia		31/669	5	19/280	7	
		Gonorrhoea		28/679	4	6/280	2	
Upper-middle	Turkey	Early latent syphilis (EIA reactivity)	Romania	12/96	13	7/88	8	28
		All Syphilis# (IgG.TPA)	Romania	37/96	39	15/88	17	
	Mexico	Gonorrhoea	All migrants	39/288	14	14/212	7	48
			Guatemala	24/162	15	6/88	7	
			El Salvador	8/62	13	4/62	6	
			Honduras	7/64	11	4/64	6	
	Mexico	Chlamydia	All migrants	43/289	15	29/226	13	48
			Guatemala	24/162	15	13/99	13	
			El Salvador	10/63	16	8/63	13	
			Honduras	9/64	14	8/64	12.5%	
	Mexico	Syphilis*	Internal	48/370	13	18/101	18	24
		Chlamydia		59/370	16	19/101	19	
		Gonorrhoea		30/370	8	13/101	13	
		Any STI		115/370	31	47/101	47	
Weighted average		All STIs		246/1139	22	112/715	16	
Lower-middle	China	Any STI infection†	Internal	49/147	33	124/264	47	38
Low	Benin‡	Syphilis§	Ghana	4/128	3	1/130	1	25
			Nigeria	2/225	1	1/130	1	
			Togo	3/87	3	1/130	1	
			Other¶	1/21	4	1/130	1	
			All migrants	10/461	5	1/130	1	
	Benin	Gonorrhoea	Ghana	35/128	27	14/130	11	25
			Nigeria	50/225	22	14/130	11	
			Togo	22/87	25	14/130	11	
			Other¶	1/21	4	14/130	11	
			All migrants	108/461	23	14/130	11	
	Benin	Chlamydia	Ghana	6/128	5	10/130	8	25
			Nigeria	11/225	5	10/130	8	
			Togo	3/87	4	10/130	8	
			Other¶	1/21	3	10/130	8	
			All migrants	21/461	5	10/130	8	
Weighted average		All STIs		139/1383	10	25/390	6	

*Rapid plasma reagin titres ≥1 : 8 were considered to be reflective of active infection.
†Testing positive at the time of survey for either syphilis, gonorrhoea, chlamydia, genital warts or trichomonias.
‡Data are taken from only the 1999 phase of study as only small samples of non-migrants were available in 1993 and 1995 (n=7 and 37) respectively.
§Active syphilis was diagnosed when both the rapid plasma reagin and *T. pallidum* haemagglutination (or *T. pallidum* particle agglutination) tests were positive.
¶Not specified.
#All syphilis includes past infection, early latent and late latent syphilis.
EIA, enzyme immunoassay.

of HIV. Migrant FSWs in both low-income and high-income countries are at a greater risk of acute STIs than non-migrants.

HIV prevalence was higher among migrant FSWs from Africa in high-income countries (where there was no injecting drug use) than among non-migrant and other migrant FSWs. This is more likely to reflect the higher prevalence in countries of origin than reflecting more risk among African migrants compared to other migrants in destination countries. It is also likely that pre-migration factors contribute to risk. And increased risk of non-acute STIs has been documented among migrants from Central and Eastern Europe,[28 52] suggesting that country of origin may reflect past sexual behaviour as well as the prevalence of STIs in country of origin. Some studies suggest that HIV prevalence was lower among emigrant FSWs than among their counterparts at home.[23 29 36 41] Multiple factors may explain this, including the lower prevalence of HIV among heterosexual men in the destination countries, better organisation of local sex work or access to sexual health services, or a tendency for the healthiest populations to migrate.[20]

An increased risk of acute STIs was more frequently reported among migrant FSWs than among non-migrants, supporting evidence elsewhere that migrant communities engage in higher risk

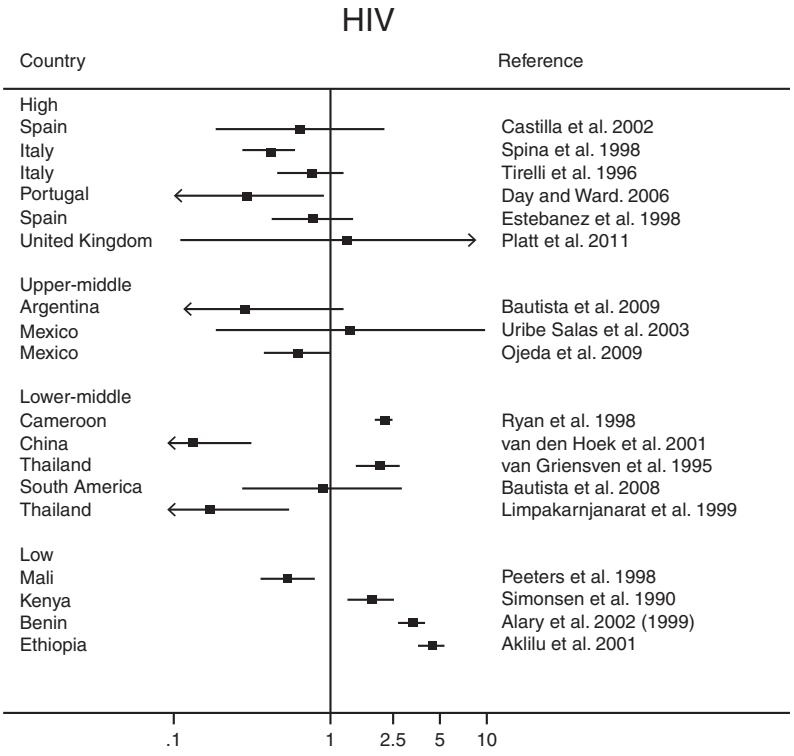

Figure 1 Odds ratio of HIV against migrant versus non-migrant sex workers by income of destination country.

sexual activities immediately after arrival.[10 16] This difference was not entirely consistent, suggesting that community-level factors shaping the local organisation of sex work in turn shape health behaviours.[6] In some contexts, street sex work carries more risk than indoor venues, while the reverse has also been shown.[11 53] Structural policies in the country of destination are key to shaping risk behaviours among migrants. In Hong Kong, for example, migrants without residency permits had fewer options for their working locations and were subject to a fee for medical services—factors that might contribute to their higher prevalence of syphilis and gonorrhoea compared to their migrant counterparts with residency status.[42] Similarly, an increased risk of STIs has been shown in Germany among FSWs without health insurance.[54] Evidence points to the role of gender in shaping risk among migrant populations, as indicated by the reduced prevalence of HIV among South American FSWs migrating internally and internationally[29 34 35] but an elevated prevalence among transgender migrants from South America working in the Netherlands and Italy.[53 55] As in other studies, our findings illustrate the importance of injecting drug use in increasing the risk of HIV among FSWs[31 34 35 53] and higher levels of drug use among non-migrants than among migrant populations.[37 46]

Methodological focus and scope

Behavioural data predominantly focussed on sexual risk behaviours, specifically condom use with clients. There was a lack of research on other harm associated with sex work and migration,

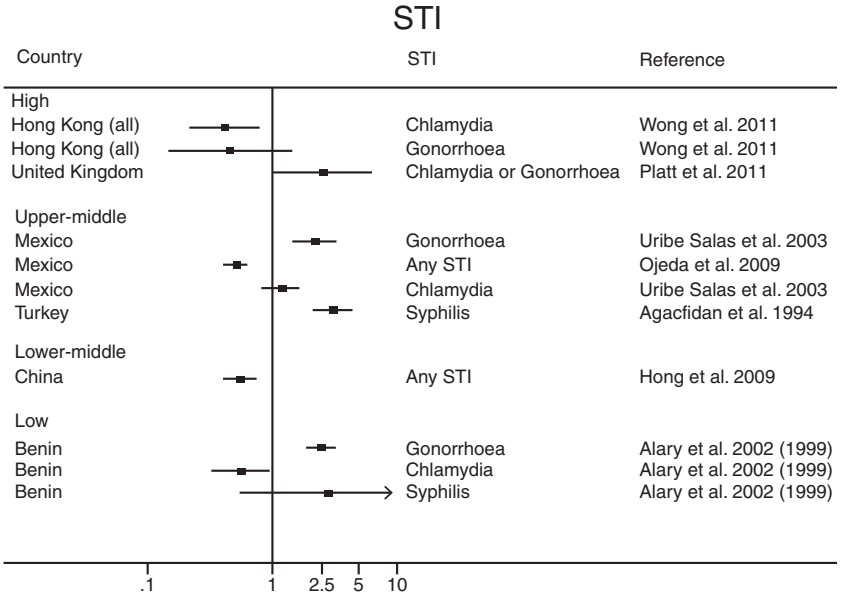

Figure 2 Odds ratio of STI against migrant versus non-migrant sex workers by income of destination country.

with just one study measuring violence and none addressing mental health, although these have been explored elsewhere.[17 56] This may, in part, result from excluding qualitative literature from the review, and therefore there is scope for a synthesis of published qualitative and mixed-methods research in this area, and for future quantitative work to be informed by existing qualitative data on broader health issues.[57] A focus on sexual risk behaviours makes sense in countries with a high prevalence of HIV/STI but not in low prevalence countries where measures of sexual health should encompass the use of contraceptives, pregnancies and violence. The narrower focus on STIs may be dictated by historical approaches to health interventions that viewed FSWs as transmission bridges between high-risk and low-risk populations and emphasised the need to protect the health of the general public rather than the health needs of women.[3] Our review found no studies conducted in North America, which was surprising, considering the high levels of migration and the wealth of research on risk associated with sex work in the region.[12]

Only a third of studies explicitly set out to examine the effect of migration on the risks associated with sex work as the primary hypothesis, with the majority examining the effect of migration as a secondary hypothesis. This may have led to an under-powering in the sample size to determine an effect, as well as lack of clarity in definitions of a migrant.[31 39 41 43 45] All the studies included are observational and so fail to establish the causality of the mechanisms by which migration influences HIV risk, with the exception of one study that investigated illegal residency status as a barrier.[42] Other studies of migrant workers, such as mine workers in South Africa, have established ways in which risky working conditions, a lack of social support and separation from family can lead to unprotected sex with FSWs.[58] There is a need to map the causal pathways through which migration influences risk of HIV among migrant FSWs more clearly.[59]

Limitations

By limiting the search to literature written in English only, we may have missed key studies. It was not possible to impose a standardised definition of sex work as an inclusion criterion in the review, since the definition varied widely, and the possibility that some studies sampled women no longer engaging in sex work cannot be excluded. Similarly, inconsistency in the behavioural outcomes and the wide range of STI outcomes reported prevented any meta-analysis. In many cases, it was not possible to aggregate the STI data to create a composite measure of an STI outcome; either the overall prevalence or a measure of co-infection was not reported, limiting any comparison in risk of STIs by country of origin. A meta-analysis focussed on HIV was precluded because any analysis likely to be confounded by geographical location. Additionally, study definitions of migrancy often failed to capture the heterogeneity of migration among the groups or other aspects of mobility such as temporal or seasonal work. In respect to internal migration, we failed to accommodate differences between rural-to-urban or urban-to-urban migration or reasons for migration.

Implications for research and policy

The findings presented here focus on univariate associations of risk associated with migration status. Research which adjusts for pre-migration measures of risk such as age of sexual debut and pre-migration sex work is needed to help isolate the effect of migration on HIV, STIs and risk behaviours. Other known confounders associated with sex work and HIV such as injecting drug use and location of sex work should be considered. Only two studies adjusted for the language abilities of migrant women,[23 24] which is an important measure of FSWs' ability to negotiate safe sex with clients and navigate health systems.[54] There is a need for ongoing monitoring in risk behaviours, STIs and uptake of service by health and social services working with SWs as well as on-going qualitative and quantitative research to help understand the extent and nature of risk among migrants, how it may differ from that of local FSWs and how it changes over time. This will enable services to cater for the specific needs of the local population. In the short term, migration policies restricting migrants' use of health services need to be removed to increase access to services, alongside the provision of translated materials and interpreters to facilitate communication.

Key messages

- Migrant female sex workers (FSWs) in lower-income countries are more at risk of HIV than non-migrants and at less risk in higher-income countries. The risk of acute sexually transmitted infections is higher among migrants in all countries.
- The higher prevalence of HIV among some FSWs originating from African countries is likely to be due to infection at home, where HIV prevalence is high.
- The lack of a consistent difference in risk between migrants and non-migrants highlights the importance of the local context in mediating risk among migrant FSWs.
- There is a need for ongoing monitoring and research to understand the nature of risk among migrants, how it differs from that of local FSWs and changes over time to inform the delivery of services.

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Systematic review examining differences in HIV, sexually transmitted infections and health-related harms between migrant and non-migrant female sex workers

Lucy Platt, Pippa Grenfell, Adam Fletcher, et al.

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Notes