

## SEX WORK

## HIV, syphilis infection, and sexual practices among transgenders, male sex workers, and other men who have sex with men in Jakarta, Indonesia

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**Objectives:** To establish the prevalence of HIV, syphilis, and sexual risk behaviour among three groups of men who have sex with men in Jakarta, Indonesia, and to investigate sexual links between these men and broader heterosexual populations.

**Methods:** Anonymous, cross sectional surveys among community recruited transgender and male sex workers and self recognised men who have sex with men (MSM) were undertaken in mid-2002 in Jakarta, Indonesia. Places where transgender and male sex workers sell sex and where men go to meet non-commercial male sex partners were mapped. Probability samples were selected for the sex worker populations, while a mixed probability and convenience sample was drawn for self recognised MSM. Blood was drawn for HIV and syphilis serology and community interviewers administered a standardised questionnaire.

**Results:** HIV prevalence was 22% among transgender sex workers, 3.6% among male sex workers, and 2.5% among self recognised MSM, and syphilis prevalence was 19.3%, 2.0% and 1.1% respectively. 59.3% of transgender sex workers and 64.8% of male sex workers reported recent unprotected anal intercourse with clients, and 53.1% of other MSM reported unprotected anal sex with male partners. Some 54.4% of male sex workers and 18.3% of other MSM reported female partners in the preceding year.

**Conclusion:** HIV has reached substantial levels among transgender sex workers, and is not negligible in other MSM groups. Risk behaviour is high in all subpopulations, and bisexual behaviour is common, meaning the threat of a wider epidemic is substantial. Prevention programmes targeting male-male sex are needed to reduce this threat.

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Indonesia, the world's fourth most populous nation, recorded very low levels of HIV infection throughout the 1990s, even in populations at high risk for HIV such as female sex workers and injecting drug users.<sup>1</sup> The exception was among transgender sex workers, or *waria*, who were monitored between 1991 and 1995. No HIV was detected in this population until November 1993. By July 1995 prevalence had risen to 7.9%,<sup>2,3</sup> but no data have been available since that time.

HIV began to rise significantly in several sentinel populations in Indonesia at the beginning of this century. In 2001, the government estimated that 110 000 Indonesians were infected with HIV, most of them people with high risk behaviours such as female sex workers and their clients, and injecting drug users. No recent data were available to inform reliable estimates of infection acquired in sex between men.<sup>1,4</sup> The Indonesian Ministry of Health therefore collaborated in cross sectional surveys of HIV and syphilis seroprevalence and sexual behaviour among these groups in the capital city, Jakarta.

There is evidence that sexual identities among those who engage in male-male sex are more fluid in Asia than in many industrialised countries, and a high proportion of men who have sex with men (MSM) also have sex with women.<sup>5–14</sup> This paper reports on quantitative surveys of HIV antibody, syphilis, and sexual risk with both men and women in three subpopulations of MSM in Jakarta.

## METHODS

## Mapping and sampling

In early 2002, formative research identified a variety of subpopulations of MSM in Jakarta. These included *waria* and

male identified sex workers and their clients, as well as men who have sex with other men out of sexual preference. Many *waria* identify themselves as females; none of the other groups necessarily identified themselves as homosexual or bisexual.

Community organisations mapped the locations where these populations gathered to meet new partners and where commercial sex transactions took place. A qualitative study was conducted among *waria*, male sex workers, their clients, and other MSM, and it was decided that quantitative surveys should be conducted among three subpopulations: *waria* sex workers, massage parlour based male sex workers, and self recognised men who have sex with men (referred to in this paper as the MSM group). Sample frames were drawn up of locations weighted for peak cruising times.

For *waria*, commercial sex locations were randomly selected from the sample frame, and all sex workers were approached at each location by trained field workers, including *waria*, who explained the study purposes and procedures. The overall refusal rate was 26%, and 241 *waria* were included in analysis.

Sixty nine massage parlours supporting male sex workers (MSW) were identified throughout Jakarta. After explaining the study to all massage parlour managers, study teams visited every establishment to invite participation of all sex workers. Some 9% of sex workers refused, and managers denied access to 10 establishments, bringing the overall non-participation rate to 24%. A total of 250 MSW were included in analysis.

**Abbreviations:** EIA, enzyme immunoassay; MSM, men who have sex with men; MSW, male sex workers; RPR, rapid plasma reagin

The MSM community were invited to participate by trained field staff—mostly homosexual men—who visited all gay bars, nightclubs, and cruising locations in Jakarta at peak times. Overall refusal was high, at 45%. Sixteen men contacted in gay internet chat rooms by study staff also enrolled after being given appointments at data collection points; 279 MSM were included in analysis.

### Data collection procedures

At the data collection point, the supervisor explained the study procedures more fully, answered questions, and sought informed consent before enrolling participants. The study was anonymous; biological specimens and questionnaires were linked by unique number, which participants could use to access test results. Blood was drawn and trained interviewers administered a pretested, structured questionnaire with sections on demographics, sexual behaviour, HIV/AIDS knowledge, risk perception and testing history, STI knowledge and treatment seeking, exposure to HIV prevention interventions, alcohol and drug use. The questionnaire differed slightly for the three groups in accordance with group characteristics.

### Laboratory procedures

Immediately after collection, blood samples were transferred to a cooler, and processed daily at the National HIV Reference Laboratory in Jakarta. Serum samples were tested for antibodies to HIV using the Vitas Duo test (Organon Technika, Boxtel, NL). Enzyme immunoassay (EIA) positive samples were confirmed by western blot (Cambridge Biotech, Caltype Biomedical, CA, USA). For syphilis testing, sera were screened using a rapid reagin test (MacroView RPR, Becton Dickenson, Meylan, France). Samples found to be RPR (rapid plasma reagin) positive had serial twofold titres performed using the same test. RPR results were confirmed with a *Treponema pallidum* particle agglutination test (SeroDia-TP.PA, Fujirebio, Tokyo, Japan).

In this study, more recently acquired syphilis ("early syphilis") was defined as TPPA confirmed RPR+ ( $\geq 1:16$ ).

### Data analysis

Data were double entered using Epi-Info 6 and analysed using Stata 7 software. Weighted analysis was only possible for the waria group, but the difference between weighted and unweighted results was negligible, and this paper presents

unweighted results for all groups. HIV-1/2 antibody prevalence and syphilis seroprevalence were calculated using simple proportions. Differences in proportions were tested using the Pearson  $\chi^2$  statistic. Differences in means were tested using the adjusted Wald test. Maximum likelihood estimates of the odds ratios were calculated and compared using the Mantel-Haenszel test for the homogeneity of the odds.

### Ethical and other issues

Test results for HIV and syphilis were available to participants who presented their study referral card at a counselling centre. The centre provided counselling on male sexual health, test results, and free syphilis treatment. Presenting individuals who tested HIV positive were referred to a non-governmental organisation (NGO) for care and support.

The study received ethical approval from the institutional review boards of Family Health International, the University of California San Francisco and the Indonesian Ministry of Health.

## RESULTS

### Demographics, HIV related knowledge, and risk perception

Waria were significantly older than MSM (mean age 29.3 v 24.8,  $p < 0.0001$ ) and had been selling sex for much longer—an average of 10.2 years, compared with 2.9 years for MSW ( $p < 0.0001$ ). MSM fell between the two, with an average age of 27.4. Waria were also the least educated, with under two thirds having any secondary education, compared with over 90% of MSM and MSW.

Some 98% of all respondents had heard of AIDS, and between 80% and 90% said HIV could be prevented through condom use. Over 85% of MSM and MSW, but just 78% of waria, knew that a healthy looking person could be infected with the virus.

### Sexual behaviour and condom use

As table 1 shows, waria had higher rates of sexual activity than the other groups but were significantly less likely than other groups to report sex with women.

Anal sex was reported by all groups, but was highest in non-commercial relations within the MSM group. The majority of all sex workers had both anal and oral clients. Waria reported a mean of 2.6 anal clients a week, compared

**Table 1** Sexual behaviour

	Waria (n = 241)	MSW (n = 250)	MSM (n = 279)
<b>Partner types reported in month preceding survey (%)</b>			
Male client (anal)	168* (69.7)	192 (76.8)	NR
Male client (oral)	175* (72.6)	176 (70.4)	NR
Non-paying male partner (anal)	147 (61.0)	80 (32.0)	240 (86.0)
Waria partner (paid or unpaid anal)	3 (1.2)	5 (2.0)	0
Male sex worker (paid anal)	26 (10.8)	12 (4.8)	17 (6.1)
Female client	NR	36 (14.4)	NR
Non-paying female partner	3 (1.2)	78 (31.2)	25 (9.0)
Female sex worker	NR	23 (9.2)	1 (0.4)
Male and female partners last month	3 (1.2)	95 (38.0)	26 (9.3)
Male and female partners last year	13 (5.4)	136 (54.4)	51 (18.3)
<b>Any unprotected anal or vaginal sex with different partner types last month (%)</b>			
Male clients	143* (59.3)	162 (64.8)	NR
Non-paying male partners	80* (33.6)	52 (20.8)	148 (53.1)
Non-paying female partners	NR	72 (28.8)	25 (9.0)
Female client	NR	25 (10.0)	NR
Female sex workers	NR	21 (8.4)	0
Both male and female partners	NR	53 (21.2)	16 (5.7)
<b>Lubricant use</b>			
Ever used water based lubricant	32 (13.3)	38 (15.2)	87 (31.2)

\*Last week; NR, not recorded.

with 6.9 a month for MSW. MSW reported significantly fewer unpaid male partners on average than MSM or waria (0.60 per month compared with 1.7 and 1.4 respectively,  $p < 0.0001$ ). Behaviourally bisexual MSW reported sex with an average of 2.8 women in the previous month, compared with 1.9 for MSM ( $p = 0.15$ ).

Condom use varied by population group and partner type. Some 56.5% of MSW used a condom with their most recent client, compared with 42.6% of waria ( $p = 0.03$ ). Both groups were significantly less likely to use condoms with non-paying partners (25.4% and 30.2% respectively). However, because paying partners were more frequent than non-paying partners and consistency of condom use is low, overall levels of unprotected anal sex were highest between sex workers and male clients, as table 1 shows.

Two thirds of all respondents said they could easily get condoms any time they needed them. Less than a third of any group used of a water based lubricant—those who didn't said high price, embarrassment, and poor distribution acted as barriers.

Knowledge had little effect on behaviour—respondents were equally likely to report recent unprotected anal sex whether or not they knew that HIV can be prevented by using condoms in anal sex.

### HIV and syphilis prevalence, STI history, and treatment seeking

As table 2 shows, HIV and syphilis seroprevalence were significantly higher in waria than in the other groups. MSW and MSM did not differ significantly in terms of either HIV or syphilis seroprevalence.

Respondents were asked whether they had experienced urethral or anal discharge or genital ulcers in the 12 months preceding the survey. Of those with early syphilis, 20% of MSW and 28% of waria reported symptoms. There was no significant correlation between self reported genital ulcers and the measured rates of early syphilis shown in table 2.

A strong relation between early syphilis and HIV infection was found. After controlling for subpopulation, the odds having early syphilis was 3.8 times higher in HIV positive individuals than in the HIV negative ( $p < 0.0001$ ). Conversely, those with early syphilis were 4.7 times as likely to be HIV infected as those without such infection ( $p = 0.005$ ).

Of the respondents who reported STI symptoms, 42% sought treatment at medical services. Close to half self treated, and the others sought no treatment at all, with no significant difference between groups.

### HIV testing and counselling history, and programme exposure

Less than 3% of any group had ever previously had a voluntary HIV test, although 48.5% of waria, 28.0% of MSW, and 11.1% of MSM reported contact with a prevention programme in the past year. Such contact was associated with a marginal rise in effective prevention knowledge

among waria (78.6 v 67.7,  $p 0.06$ ), but was not associated with any differences in unprotected anal sex for any group.

### Relation between sexual behaviour and HIV infection

Table 3 shows the odds ratios for HIV seropositivity according to various behavioural and biological variables. There was no significant association between HIV seropositivity and age, education, or income group for any of the subpopulations (data not shown). Effective prevention knowledge did not reduce the odds of HIV or syphilis seroprevalence for any group.

Total number of anal partners over the reference period and length of time in sex work were not associated with HIV seropositivity. Specific risky sexual behaviours were, however, correlated with HIV. Those who had recent unprotected anal sex with either commercial or non-commercial male partners were significantly more likely to test positive for HIV than those who had no unprotected anal sex. Unprotected vaginal sex with a female partner (including with female sex workers) did not increase the odds of HIV infection. Men who only have sex with other men for commercial reasons were significantly less likely to be HIV seropositive than men who had consensual, non-commercial sex with other men.

There was a strong association between HIV seropositivity and serological measures of early syphilis. There was no significant association between HIV and low titre syphilis (confirmed RPR with titre  $< 1:16$ ), suggestive of more remote infection.

### Limitations

Despite extensive mapping undertaken by members of the surveyed communities, high population mobility meant it was not possible to draw a truly random sample of the populations. It is therefore difficult to extrapolate the results of this study to all people engaging in male-male sex in Jakarta.

The waria sample was drawn at random from street based sex workers, and is likely to be representative of the broader population of transgendered sex workers in Jakarta. Access to some massage parlour based sex workers was denied by managers—we have no reason to believe that these men differed in behaviour from those included in the sample, but the possibility of selection bias cannot be ruled out. The representativeness of the sample is most problematic in the MSM population, where the refusal rates were high. While a few respondents were accessed through internet chat rooms, most MSM respondents were recruited at cruising locations. They may be more likely than other MSM to engage in high risk behaviour; if so, survey results would overestimate risk behaviour in this population.

In addition, it was not feasible to include in the quantitative survey men who are clients of male sex workers and waria. These men may represent a significant proportion of the male-male related sexual risk in Jakarta; the qualitative study results suggest the majority of them also

**Table 2** HIV and syphilis prevalence, self reported STIs and treatment seeking behaviour

	Waria (n=241)	MSW (n=250)	MSM (n=279)	p Value*
HIV antibody positive	53 (22.0)	9 (3.6)	7 (2.5)	<0.001
Syphilis seroreactive (RPR $\geq 1:1$ and RPR $< 1:16$ , TPA+) <sup>†</sup>	68 (28.2)	5 (1.8)	4 (1.6)	<0.001
Syphilis seroreactive (RPR $\geq 1:16$ , TPA+) <sup>†</sup>	46 (19.3)	5 (2.0)	3 (1.1)	<0.001
<b>Self reported STIs and treatment seeking behaviour</b>				
Reports symptom of any STI, last 12 months	66 (27.4)	72 (28.9)	54 (19.4)	0.03
Self treated STI symptom <sup>‡</sup>	33 (54.1)	26 (48.2)	29 (42.0)	0.39
Sought medical treatment <sup>‡</sup>	23 (37.7)	31 (44.9)	23 (42.6)	0.70

\*Probability that there is no significant difference between groups, Pearson  $\chi^2$  statistic.

<sup>†</sup>RPR results were missing for 2 waria and 1 MSW.

<sup>‡</sup>Of those reporting symptoms, with complete data.

**Table 3** Mantel-Haenszel odds ratios of HIV infection by various behavioural and biological characteristics. (All odds ratios are for "yes" on the variable in question, with "no" = 1, unless otherwise stated)

	Waria (n = 241) OR (95% CI, p value)	MSW (n = 249*) OR (95% CI, p value)	MSM (n = 279) OR (95% CI, p value)	All* OR (95% CI, p value)
<b>Length of time in sex work</b>				
1 year or less	1	1		1
2–4 years	1.4 (0.3 to 7.4, p=0.7)	1.8 (0.4 to 7.6, p=0.5)		2.3 (0.8 to 6.5, p=0.13)
5–9 years	2.6 (0.5 to 12.4, p=0.2)	0.85 (0.1 to 8.4, p=0.9)		4.8 (1.7 to 13.3, p=0.003)
10 years or more	2.1 (0.4 to 10.1, p=0.3)	–		5.5 (1.2 to 14.9, p=0.001)
<b>Total number of recent anal partners†</b>				
0	0.55 (0.2 to 1.8, p=0.3)	0	0.75 (0.1 to 4.6, p=0.8)	
1	1	1	1	
2–4	1.4 (0.5 to 3.9, p=0.5)	1.7 (0.2 to 15.6, p=0.7)	0.82 (0.8 to 8.0, p=0.9)	
5–9	1.4 (0.4 to 3.1, p=0.9)	0.6 (0.4 to 9.9, p=0.7)	0	
10 or more	1.3 (0.3 to 5.1, p=0.7)	1.8 (0.2 to 18.0, p=0.6)	12.8 (1.0 to 161.5 p=0.05)	
Sufficient knowledge to protect against HIV‡	1.04 (0.52 to 2.07, p=0.92)	0.58 (0.11 to 3.07, p=0.51)	0.76 (0.15 to 3.82, p=0.74)	0.93 (0.52 to 1.69, p=0.82)
Any unprotected anal sex with client last month¶	3.21 (1.53 to 6.75, p=0.001)	1.90 (0.38 to 9.39, p=0.42)		2.93 (1.50 to 5.73, p=0.001)
Any unprotected anal sex with a non-paying partner last month	1.62 (0.86 to 3.06, p=0.13)	5.11 (1.29 to 20.19, p=0.01)	2.22 (0.42 to 11.71, p=0.33)	1.98 (1.16 to 3.38, p=0.01)
Unprotected anal sex with any male partner last month	3.43 (1.50 to 7.84, p=0.002)	NC	2.19 (0.42 to 11.54, p=0.34)	3.73 (1.78 to 7.79, p=0.0002)
Any unprotected sex with a female last month		0.24 (0.03 to 1.95, p=0.14)	1.72 (0.20 to 15.0, p=0.62)	0.48 (0.12 to 1.96, p=0.16)
Heterosexual (only has sex with men for money)		0.25 (0.06 to 1.05, p=0.04)		
Syphilis seroreactive (RPR ≥1:1 and <16, TPA+)§	1.27 (0.65 to 2.46, p=0.48)	0 (p=0.72)	0 (p=0.7)	3.16 (1.66 to 6.02, p=0.0002)
Syphilis seroreactive (RPR ≥= 1:16, TPA+)§	3.73 (1.82 to 7.64, p=0.0001)	0 (p=0.66)	22.50 (1.68 to 300.8, p=0.0006)	3.76 (1.90–7.46, p=<0.0001)

\*One MSW had indeterminate western blot results and was dropped from analysis.

†For MSW and MSM, time reference period is 1 month. For waria, time reference period is 1 week for clients and 1 month for other male partner types. It is not possible to calculate a total for all groups.

‡Defined for sex worker groups as knowing condoms prevent HIV and healthy looking people can be infected, and for MSM as knowing condoms, abstinence or mutual monogamy can prevent against HIV and healthy looking people can be infected.

¶Waria: last week.

NR, not recorded; NC, no cases. There were no positive cases among the baseline group, so it is not possible to calculate an odds ratio.

§RPR results were missing for 2 waria and 1 MSW.

have sex with women, possibly contributing significantly to the interaction between male-male and heterosexual transmission of HIV in Jakarta.

## DISCUSSION

These surveys found significant levels of HIV, syphilis infection, and risky sex. Over half of waria, MSW, and MSM in Jakarta had unprotected anal sex in the year preceding the survey, although almost all knew that the behaviour carries the risk of HIV infection. Respondents with early syphilis were nearly four times as likely to be HIV positive as respondents without current syphilis. In this cross sectional study we are not able to determine the sequence of these infections, but these results suggest that risk behaviour continues even among those already infected with HIV.

These data show the diversity of sexual networks in these subpopulations. Males who have sex with other men are not isolated from other sexual networks in the Indonesian context. Over half of MSW and 18% of self recognised MSM also had sex with women over the previous 12 months. Nearly one MSW in 10 had sex with a female sex worker in the previous month, and 14% served female clients. In addition, none of the MSM group reported sex with waria. This, together with information from the qualitative part of this study, suggests that the majority of clients of waria are heterosexually identified men who also have sex with women, including female sex workers. HIV seropositivity among all three subpopulations in this study was higher than

it is among female sex workers in Jakarta.<sup>1</sup> The bisexual behaviour of these subpopulations implies that HIV infection spread through risky male-male sex will also be passed on into heterosexual networks, contributing to a wider HIV epidemic in Indonesia.

The information on previous voluntary counselling and testing experience and on intervention exposure confirms that very few services are available for these populations. The majority of respondents who reported STI symptoms did not seek medical assistance, preferring to self treat. Among waria and MSW, there is very little correlation between self reported genital ulcers and serological markers of recently acquired syphilis, suggesting that many of the infections are rectal, and/or that symptoms have become "normalised" in this population.

These data have important implications for HIV prevention programming in Indonesia. High levels of prevention knowledge and easy availability of condoms are clearly not enough to prevent risky behaviour and consequent infections among groups who engage in male-male sex.

HIV prevention programmes for waria, MSW and other MSM should focus on motivating community members to engage in safer behaviour, and access to lubricants must be improved. Given the strong relation between syphilis and HIV, there is a critical need for improved information on symptom recognition and STI screening and treatment services, especially for waria. These groups interact extensively with heterosexual populations and should not be

### Key messages

- Close to a quarter of transgender sex workers in the Indonesian capital Jakarta are infected with HIV, and most continue to have unprotected anal sex with large numbers of partners
- HIV and syphilis infection among MSW and other MSM in Jakarta—measured for the first time in this study—have reached significant levels, and unprotected sex with multiple partners is a norm in these communities
- A significant proportion of MSM also have sex with women, including female sex workers, with the potential consequence that a rise in HIV infection driven by risky sex between men will be reflected in an increase in infection in a wider heterosexual population
- Provision of appropriate HIV prevention and care services for waria, MSW, and other MSM is inadequate. Access to condoms and lubricants must be improved in locations where men gather to meet potential sex partners, and there is a critical need for improved information on STI symptom recognition and STI screening and treatment services, especially for waria.

ignored in national prevention efforts. In addition, with over one in five waria already infected with HIV, the waria community will need to engage with the government and NGOs to plan adequately for care and support needs.

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### CONTRIBUTORS

EP contributed to the study protocol, oversaw the fieldwork, did the data analysis, and drafted the paper; PG acted as field coordinator and made a major contribution to writing the paper; MG oversaw training of the field workers and supervised fieldwork; NS and JK performed the laboratory testing; SJ oversaw the Ministry of Health contribution to the study, specifically the participation of government staff as specimen takers; ED contributed to the study protocol, trained laboratory staff and specimen takers, and contributed to the writing of the paper.

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