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Characteristics, sexual behaviour and risk factors of female, male and transgender sex workers in South Africa

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Background. In South Africa, information on sex workers' characteristics, sexual behaviour and health needs is limited. Current social, legal and institutional factors impede a safe working environment for sex workers and their clients.

Objectives. To describe characteristics and sexual behaviour of female, male and transgender sex workers, and assess their risk factors for unprotected sex.

Methods. Repeat cross-sectional surveys among sex workers were conducted in Hillbrow, Sandton, Rustenburg and Cape Town in 2010. Sex workers were interviewed once; any re-interviews were excluded from analysis. Unprotected sex was defined as any unprotected penetrative vaginal or anal sex with last two clients.

Results. Trained sex worker-research assistants interviewed 1 799 sex workers. Sex work was a full-time profession for most participants. About 8% (126/1 594) of women, 33% (22/75) of men, and 25% (12/50) of transgender people had unprotected sex. A quarter of anal sex was unprotected. Unprotected sex was 2.1 times (adjusted odds ratio (AOR), 95% CI 1.2 - 3.7; $p=0.011$) more likely in participants reporting daily or weekly binge drinking than non-binge drinkers. Male sex workers were 2.9 times (AOR, 95% CI 1.6 - 5.3; $p<0.001$) more likely, and transgender people 2.4 times (AOR, 95% CI 1.1 - 4.9; $p=0.021$) more likely, than females to have unprotected sex. Sex workers in Hillbrow, where the only sex work-specific clinic was operational, were less likely to have unprotected sex than those in other sites.

Conclusion. Tailored sex work interventions should explicitly include male and transgender sex workers, sex work-specific clinics, focus on the risks of unprotected anal sex, and include interventions to reduce harm caused by alcohol abuse.

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There is no estimate of sex worker numbers in South Africa (SA),^[1] and little is known about the characteristics and health needs of sex workers in the country. Mathematical modelling has estimated that approximately 20% of new HIV infections in SA are attributable to sex work (sex workers, their clients, and the partners of their clients contribute 5.5%, 11.5% and 2.8% to new infections, respectively).^[2] Even though these figures should be treated with caution because they were based on limited data and a number of assumptions,^[2] they point to the significance of sex workers as a key population. Recently, attention and funding has shifted to HIV prevention and treatment within this population, and their occupational health and safety. While some studies have focused on female sex workers (FSWs) in urban centres along major transport routes and in mining areas in SA, these studies are mostly a decade old.^[3,4] Moreover, besides

research among male sex workers in Kenya and other smaller studies on transgender and male sex workers elsewhere, limited information is available on these populations in Africa.^[5]

Sex work and risk behaviour

In 1998, HIV prevalence among different FSW groups in SA ranged between 46% and 69%.^[3,4,6] In a 2004 - 2005 Durban study, 775 women at high risk for HIV infection - 78.8% of whom self-identified as sex workers - were screened, and 59.6% were found to be HIV-positive.^[7] More recent estimates are not available. A recent meta-analysis emphasised the considerable risk that HIV poses to FSWs. They have an almost 13 times higher risk of acquiring HIV infection than other women of reproductive age in low- and middle-income countries.⁸ Some clients, forcefully, insist on sex without

protection, refuse to use condoms, or offer higher fees for sex without condoms.^[9] Given the nature of their work, sex workers are often involved in several concurrent sexual partnerships and exposed to a number of risk factors for STIs. Anal sex – a risk factor for HIV – often attracts a higher fee than other sex acts.^[5] Excessive alcohol use, often associated with sex work, is a risk factor for unprotected sex.^[10]

Promotion of consistent condom use is the core prevention strategy for sexually transmitted infections (STIs) among sex workers and their partners. Female condoms are one of the few female-controlled HIV prevention technologies available, with some FSWs even using them without clients' knowledge.^[11] Sex workers have advocated for greater availability of female condoms in sex work settings, with little success. The National Department of Health distributed around 5 million female condoms in 2010 - 2011 (target: 6 million) – which is 1% of the half-a-billion male condoms distributed (target: 1 billion) during the same period.^[12]

Much of what we know about sex work and STI risk in SA relies on international literature and outdated data. Research gaps compound misunderstandings of sex workers and their marginalisation within health and policy structures. Updated information on sex worker characteristics, sexual behaviour and risk factors for unprotected sex could provide insights for policymakers about the needs of these populations, and guide the formulation of appropriate and sensitive health, social and legal responses.

Methods

Self-identified female, male and transgender sex workers in Hillbrow, Sandton, Rustenburg and Cape Town were interviewed by trained sex worker-research assistants in May - September 2010. University-based researchers collaborated with two non-governmental organisations – the Sex Worker Education and Advocacy Taskforce (SWEAT) and Sisonke Sex Worker Movement. Research sites were chosen according to 2010 Soccer World Cup host cities.^[13] Johannesburg, the largest city in SA, had two sites: Hillbrow and Sandton. The inner-city area of Hillbrow was selected as it has an active, long-established sex trade. Sandton, a wealthy suburb and business district in Johannesburg, has a visible sex work industry. The Rustenburg site – in a predominantly rural province – comprises informal settlements within a platinum mining area about 15 kilometres outside the city, where its sex work industry mainly serves the local mining community. The coastal city of Cape Town is a popular international tourist destination, with a visible sex work industry.

Female, male and transgender sex workers (defined as 'having exchange of sexual services for financial reward') who were 18 years and older were eligible. In sex work venues, sex worker research assistants approached every third individual known to them as a sex worker and invited her/him to participate. Each assistant administered a 43-item semi-structured questionnaire to around 60 sex workers. Questionnaires were adapted from studies with sex workers in Mombasa, Kenya,^[14] and research on migration and access to health care in Johannesburg.^[15] Questionnaires were translated from English into isiZulu, isiXhosa, Afrikaans and Setswana. More detailed study methods are described in a paper on the 2010 Soccer World Cup and its impact on the sex industry, which documented few changes in FSW demographics over that time.^[13]

The study was approved by the University of the Witwatersrand Human Research Ethics Committee (Protocol number H100304). Participants provided written informed consent and were offered a cell phone airtime or grocery voucher of 20 South African Rands (~US\$3) for their interview time. Research assistants referred participants to local counselling, health and legal assistance organisations, as required. Participants were given female condoms

and information about a toll-free sex worker helpline. As all aspects of sex work are criminalised in SA, no identifying information was collected.

Study measures and statistical analysis

Socio-demographics, sexual behaviour and condom use are described for the three study groups: females, males and transgender sex workers. Participants were asked if they had other income-generating activities aside from sex work and to specify such activities. Current weekly income from sex work was calculated by multiplying the total number of clients seen in the preceding week by the mean monetary payments from the last two clients. Participants provided information on their last two commercial sex interactions, including type of sex, condom use and whether the sex workers perceived themselves to be drunk during intercourse. We assessed factors associated with unprotected penetrative sex, defined as any unprotected vaginal or anal sex with the last two clients. Questions about female condom use and their acceptability were included. Participants reported their frequency of binge drinking (having five or more alcoholic drinks on one occasion).

Data were double-entered by separate clerks and analysed using Intercooled Stata 11.0 (Stata Corporation, College Station, USA). Descriptive analysis of the population characteristics assessed the distribution of continuous variables and the frequency distribution of categorical variables in contingency tables. Data from repeat interviews with participants who had more than one interview were excluded from analysis. Multivariate logistic regression assessed associations between unprotected sex, and socio-demographics, binge drinking and use of female condoms, controlling for measured confounders. Variables associated with the primary outcome in bivariate analysis ($p < 0.1$) or in similar studies were forced into the initial model and retained if their removal markedly altered model fit.

Results

Socio-demographics and occupational setting

Participants were a mean of 30 years old: females 29.7 (SD 6.5), males 30.7 (SD 6.3), and transgender 28.7 years (SD 5.6) (Table 1). Just over half (53.7%; 878/1 636) of female and male (55.3%; 48/87) participants, and just over a third (37.9%; 22/58) of transgender subjects, were born in SA. A third (555/1 626) of females, 25% (21/87) of males, and 15.8% (9/57) of transgender participants noted that they had a permanent partner ($p = 0.003$). Females were responsible for a median of 4 adult and/or child dependants – twice that of male or transgender participants ($p < 0.001$). Age of sex work debut was similar across the genders: an average of about 24 years. More than 40% of all participants had been doing sex work for more than 5 years. Among female (44.8%; 698/1 558) and transgender (36.8%; 21/57) participants, indoor venues such as hotels, brothels and massage parlours were the most common locations for soliciting clients. Just over a third of males (36.6%; 30/82) and transgender people (35.1%; 20/57), and a quarter of females (24.6%; 383/1 558) worked at a combination of venues that included a mix of street work and/or some indoor venues.

Sex work was a full-time profession for as many as two-thirds of each group. Hairdressing was the most popular other occupation for women (26.3%; 118/449) and transgender people (50%; 8/16) who were part-time. For males, 25% (7/27) reported hawking or selling goods to supplement their income. One in 5 women (20.3%; 91/449) noted that their partner or spouse provided financial support, in contrast with 3.7% (1/27) of men and none of the transgender group. A substantial number reported never having had a job before sex

Table 1. Characteristics of female, male and transgender sex workers at 4 sites in South Africa (N=1 799)

Variables	Female (N=1 653)	Male (N=87)	Transgender (N=59)
Age, mean (SD)	29.7 (6.5)	30.7 (6.3)	28.7 (5.6)
Education, <i>n</i> (%)	N=1 587	N=79	N=54
Incomplete primary school	299 (18.8)	12 (15.2)	6 (11.1)
Completed primary school	812 (51.2)	25 (31.7)	26 (48.2)
Completed secondary school	373 (23.5)	34 (43.0)	18 (33.3)
Received tertiary training	103 (6.5)	8 (10.1)	4 (7.4)
Site, <i>n</i> (%)	N=1 653	N=87	N=59
Hillbrow	584 (35.3)	4 (4.6)	0 (0)
Sandton	271 (16.4)	3 (3.5)	19 (32.2)
Cape Town	360 (21.8)	64 (73.6)	22 (37.3)
Rustenburg	438 (26.5)	16 (18.4)	18 (30.5)
Migration status, <i>n</i> (%)	N=1 636	N=87	N=58
Cross-border migrant	758 (46.3)	22 (25.3)	19 (32.8)
Internal migrant (migration between provinces)	638 (39.0)	48 (55.2)	22 (37.9)
Non-migrant	240 (14.7)	17 (19.5)	17 (29.3)
Relationship status, <i>n</i> (%)	N=1 626	N=87	N=57
Single	1 071 (65.9)	66 (75.9)	48 (84.2)
Regular partner	555 (34.1)	21 (24.1)	9 (15.8)
Lives with regular partner, <i>n/N</i> (%)	221/555 (39.8)	9/21 (42.9)	2/9 (22.2)
Number of dependants, median (IQR; range)	4 (2 - 6; 0 - 37)	2 (1 - 4; 0 - 12)	2 (0 - 3; 0 - 8)
Age at sex work debut (years), mean (\pm SD)	24.2 (\pm 5.3)	23.6 (\pm 4.5)	24.3 (\pm 5.0)
Duration in sex work (years), <i>n</i> (%)	N=1 503	N=69	N=50
<1	246 (16.4)	11 (15.9)	5 (10.0)
1 - 5	597 (39.7)	27 (39.1)	21 (42.0)
>5	660 (43.9)	31 (44.9)	24 (48.0)
Main venue solicits clients, <i>n</i> (%)	N=1 558	N=82	N=57
Indoors*	698 (44.8)	21 (25.6)	21 (36.8)
Outdoors [†]	477 (30.6)	31 (37.8)	16 (28.1)
Combination of venues [‡]	383 (24.6)	30 (36.6)	20 (35.1)
Part-time sex worker, <i>n/N</i> (%)	449/1 556 (28.9)	27/83 (32.5)	16/55 (29.1)
Other part-time work, [§] <i>n</i> (%)	N=449	N=27	N=16
Waiting tables/dancer	62 (13.8)	4 (14.8)	2 (12.5)
Tailor/seamstress/fashion	29 (6.5)	1 (3.7)	2 (12.5)
Hairdresser/barber	125 (27.8)	5 (18.5)	8 (50)
Partner/spouse provides income	91 (20.3)	1 (3.7)	0 (0)**
Hawking/selling goods	66 (14.7)	7 (25.9)	0 (0)
Work before sex work, [§] <i>n</i> (%)	N=1 653	N=87	N=59
Waiting tables/dancer	191 (11.6)	7 (8.1)	5 (8.5)
Tailor/seamstress/fashion	67 (4.1)	3 (3.5)	4 (6.8)
Hairdresser/barber	182 (11.0)	15 (17.2)	15 (25.4)**
Hawking/selling goods/cashier	180 (10.9)	14 (16.1)	6 (10.2)
No previous work	738 (44.7)	28 (32.2)	19 (32.2)
Binge drinking, <i>n</i> (%)	N=1 566	N=82	N=54
Daily	284 (18.1)	34 (41.5)	16 (29.6)
Weekly	408 (26.1)	19 (23.2)	20 (37.0)

Continued...

Table 1 (continued). Characteristics of female, male and transgender sex workers at 4 sites in South Africa (N=1 799)

Variables	Female (N=1 653)	Male (N=87)	Transgender (N=59)
Never	380 (24.3)	10 (12.2)	4 (7.4)
Full-time weekly income (Rands), median (IQR; range) [§]	1 500 (665 - 3 740; 0 - 64 000)	2 000 (1 000 - 5 850; 0 - 56 250)	2 750 (1 275 - 4 200; 0 - 25 650)

SD = standard deviation; IQR = interquartile range.

* Indoors includes working from brothels, bars or massage parlours.

[†] Outdoors includes street-based sex workers.

[‡] Indoor and/or outdoor venues.

[§] Multiple-response question.

^{||} US\$1=7.5 South African Rands.

^{||} $p < 0.05$, testing distribution of variables with mutually-exclusive categories.

** $p < 0.05$, testing distribution of each category of variables with multiple responses (may have >1 significant finding per variable).

Table 2. Sexual behaviour and condom use of female, male and transgender sex workers at 4 South African sites (N=1 799)

Variables	Female (N=1 653)	Male (N=87)	Transgender (N=59)
Number of clients, median in last week, <i>n</i> (IQR)	12 (6 - 20)	10 (5 - 20)	8 (4 - 15)
Penetrative sex with last client, <i>n/N</i> (%)	1 522/1 653 (92.1)	71/87 (81.6)	48/59 (81.4)
Any penetrative sex with last two clients, <i>n/N</i> (%)	1 614/1 653 (97.6)	77/87 (88.5)	53/59 (89.8)
Type of intercourse with last client, <i>n</i> (%)	N=1 653	N=87	N=59
Vaginal	1 456 (88.1)	8 (9.2)	9 (15.3)
Anal	87 (5.3)	61 (70.1)	39 (66.1)
Oral	207 (12.5)	20 (23.0)	8 (13.6)
Masturbation	49 (3.0)	12 (13.8)	4 (6.8)
Drunk during last paid sex, <i>n/N</i> (%)	651/1 603 (40.6)	49/82 (59.8)	37/56 (66.1)
Unprotected penetrative sex with last client, <i>n/N</i> (%) [*]	82/1 498 (5.5)	19/69 (27.5)	9/45 (20.0)
Any unprotected penetrative sex with last two clients, <i>n/N</i> (%) [*]	126/1 594 (7.9)	22/75 (29.3)	12/50 (24.0)
Ever used female condoms, <i>n/N</i> (%)	446/1 006 (44.3)	4/46 (8.7)	8/39 (20.5)

IQR = interquartile range.

^{*}Information is unavailable for condom use for 20 women, 2 men and 3 transgenders.

All *p*-values <0.05.

work: 33% (28/87) of men and of transgender people (19/59), and 44.7% (738/1 653) of women. Median weekly income from full-time sex work differed across the genders: R1 500 (~US\$200) for females (IQR 665 - 3 740, range 0 - 64 000), R2 000 (~US\$266) for males (IQR 1 000 - 5 850, range 0 - 56 250) and R2 750 (~US\$366) for transgender people (IQR 1 275 - 4 200, range 0 - 25 650; $p < 0.001$).

About 20% (284/1 566) of females, 33% (16/54) of transgenders and >40% (34/82) of males reported daily binge drinking. Only 25% (380/1566) of females, 12.2% (10/82) of males, and 7.4% (4/54) of transgenders said they never did any binge drinking.

Sexual behaviour, condom use and alcohol use

The median number of clients in the week preceding study enrolment was 12, 10 and 8 for females, males and transgender persons respectively (Table 2). More women had penetrative sex with last client (92.1%; 1 522/1 653) than males (81.6%; 71/87; $p < 0.001$) or transgenders (81.4%; 48/59; $p < 0.001$), while women were less likely to have unprotected sex: 5.5% (82/1 498) of women had unprotected sex with last client in contrast with 27.5% (19/69; $p = 0.01$) of men, and 20.0% (9/45; $p < 0.001$) of transgenders.

Close to 8% (126/1 594) of women, 33% (22/75) of men and 25% (12/50) of transgenders reported any unprotected sexual intercourse with last 2 clients. In multivariate analysis, males were 2.9 times (AOR 95% CI 1.6 - 5.3; $p < 0.001$; data not shown) more likely, and transgender people 2.4 times (AOR, 95% CI 1.1 - 4.9; $p = 0.021$)

more likely, than females to have unprotected anal/vaginal sex with last clients. In univariate analysis, having fewer dependants was associated with unprotected sex, but this association did not persist in multivariate analysis. Cape Town sex workers were 5.5 times (AOR 95% CI 3.0 - 10.0; $p < 0.001$), those in Rustenburg 2.9 times (AOR 95% CI 1.6 - 5.3; $p < 0.001$) and those in Sandton 2.7 times (AOR 95% CI 1.4 - 5.1; $p = 0.04$) more likely to engage in unprotected sex than those in Hillbrow. Women soliciting clients outdoors were 0.59 times less likely to have unprotected sex than those working indoors (AOR 95% CI 0.3 - 0.8), who had similar levels to those working at a combination of venues.

Nine out of 10 (1 456/1 653) female sex workers had vaginal, and 5.3% (87/1 653) had anal, sex with their last client. Seventy per cent of males (61/87) had anal sex with last client – as did 66.1% (39/59) of transgenders. Of all sexual encounters with last clients, 73.0% (149/204) of participants who had anal sex used condoms; 94.0% used them (1 419/1 508) with vaginal sex, 76.9% (186/242) with oral sex, and 65.2% (45/69) during masturbation (data not shown).

More than 40.0% of females (651/1 603) were drunk during sex with last client, in comparison with 59.7% (49/82) of males and 66.1% (37/56) of transgenders. Feeling drunk during sex with any of their last two clients was reported by 13.2% (113/858) of all participants. In univariate analysis, women who reported being drunk with any of their last two clients, were 2.6 times (95% CI 1.7 - 3.8; $p < 0.001$) more likely to have unprotected sex than those women who were

not drunk. Participants who reported daily or weekly binge drinking were 2.1 times (AOR 95% CI 1.2 - 3.7; $p=0.011$) more likely than those who never engaged in binge drinking, to have unprotected sex.

Slightly less than half (446/1 006) of female participants had ever used a female condom. Of these, close to a third (116/413) 'liked' them, and almost half (189/413) 'liked them a lot' (data not shown). Only 7.5% (31/413) disliked female condoms, with 77/413 (18.6%) being neutral. Among those female participants who did not use female condoms and provided reasons for non-use, about a fifth (99/560) each noted that they had never been given female condoms, did not know how to use them (111/560) or did not like them (129/560). A further approximate tenth (66/560) noted either that they were unfamiliar with female condoms or that clients precluded their use (47/560).

Discussion

Sex work was the major livelihood strategy adopted by the study populations: more than 40% had been in the industry for more than 5 years; approximately two-thirds worked full-time, while over a third had no prior work experience. When comparing full-time sex workers' income with data from *Statistics South Africa* (national statistics board) on monthly earnings by occupation, sex workers in this study, though most had never completed secondary schooling, were earning more than clerks, sales and services, crafts and related trades, and up to 6 times more than domestic workers.¹⁶ This echoes a previous study, which found that Cape Town-based sex workers' earning capacity was 2.6 - 4 times higher in sex work than their previous employment.¹⁷ This is pertinent for some ideology-based health and social interventions aiming to 'rehabilitate' sex workers or focus solely on 'exit programmes'.

The high levels of binge drinking found among all gender groups in our study support findings in a Pretoria study where sex workers had high levels of alcohol consumption and alcohol dependency.¹⁸ Daily or weekly binge drinking was linked with unprotected sex. Other studies confirmed that alcohol interventions with this population are vital for improving the safety of this occupation.¹⁹

Under half (44.3%) of female participants had ever used a female condom. Of these, 75% favoured such condoms. Studies in SA have demonstrated acceptability of female condoms²⁰ and their re-use²¹ and cost-effectiveness.²² As a female-controlled infection prevention strategy, this should be a vital component of sex work interventions.

It is of concern that males were 2.9 times more likely, and transgenders 2.4 times more likely, than female sex workers to engage in unprotected sex. This could reflect the dearth of programmes focusing on males and transgender sex workers or the general lack of information on anal sex,²³ and is an area needing action. Of all participants, 27% had unprotected sex for anal intercourse with last client – the most risky sex act for acquiring HIV. Public health interventions with female, male and transgender sex workers and their clients should emphasise the risks associated with anal sex and ensure that condoms and lubrication are accessible and freely available within the sex industry.

Sex workers in the Sandton, Rustenburg and Cape Town sites were significantly more likely to engage in unprotected sex than those in Hillbrow. Hillbrow had the only sex work-specific clinic and mobile outreach clinical services for sex workers at the time of the study. A cadre of sex work peer educators disseminate information and condoms within hotels and clubs from where sex workers operate, while male community health workers provide HIV/STI education and referrals to clients in bars and nightclubs. This model should be replicated in other areas of sex work concentration in SA.

The study included self-reported data only and was based on a non-random sampling design. Surveys were, however, conducted by trained peer interviewers, which may have reduced the social-desirability bias in respondents' answers. Though trained, some interviewers omitted noting data on some key questions. Almost all peer interviewers were female, which may have affected the number of male and transgender subjects who were approached for participation. Selected research sites included 2 urban centres and 1 semi-rural site adjacent to a mine and were purposively selected, based on the presence of sex worker advocacy groups and peer education work. Although we aimed to obtain data on diverse sex work settings, these findings may not apply to other sex work areas in SA.

In conclusion: sex workers in SA remain at high risk of HIV and other STIs. This risk has been acknowledged by SA AIDS policies and sex work-specific programmes proposed since the first National AIDS Plan in 1994, yet little action has been taken. The National Strategic Plan for HIV and AIDS, STIs and TB, 2012-2016 contains a number of sex work-specific health and non-discrimination provisions, and should be implemented as a matter of urgency.

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