



Sexual IPV and non-partner rape of female sex workers: Findings of a cross-sectional community-centric national study in South Africa



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ABSTRACT

Background: Globally female sex workers (FSWs) are vulnerable to violence from intimate partners, police and clients due to stigma and criminalisation. In this paper we describe South African FSWs' exposure to violence and factors associated with having been raped in the past year.

Methods: We conducted a multi-stage, community-centric, cross-sectional survey of 3005 FSWs linked to sex worker programmes in 12 sites across all nine provinces that had a SW programme. Adult women who sold sex in the preceding six months were recruited for interviews via sex worker networks. Survey tools were developed in consultation with peer educators and FSWs.

Results: In the past year, 70.4% of FSWs experienced physical violence and 57.9% were raped: by policemen (14.0%), clients (48.3%), other men (30.2%) and/or intimate partner (31.9%). Sexual IPV was associated with food insecurity, entering sex work as a child, childhood trauma exposure, post-traumatic stress disorder (PTSD), drinking alcohol to cope with sex work, working more days, partner controlling behaviour, having an excellent partner, and having no current partner to protect from ex-partners. Rape by a client, other men or policemen was associated with food insecurity, childhood trauma, PTSD, depression, using alcohol and drugs, being homeless or staying in a sex work venue, selling sex on the streets, working more days and having entered sex work as a child and been in sex work for longer.

Conclusion: South African FSWs are very vulnerable to rape. Within the social climate of gender inequality, sex work stigma, criminalisation, and repeated victimisation, the key drivers are structural factors, childhood and other trauma exposure, mental ill-health, circumstances of sex work and, for SIPV, partner characteristics. Mostly these are amenable to intervention, with legislative change being foundational for ending abuse by policemen, enhancing safety of indoor venues and providing greater economic options for women.

1. Introduction

Female sex workers (FSWs), globally, experience high levels of violence from clients, policemen, male intimate partners and other men, which causes significant psychological and physical harm (Deering et al., 2014; Platt et al., 2018). For many FSWs, abuse starts in childhood, often driving entry into sex work, and continues with physical, sexual, economic and emotional violence experienced across their adult years

(Coetzee, Gray, & Jewkes, 2017; Farley & Barkan, 1998; Hom & Woods, 2013; Romero-Daza, Weeks, & Singer, 2003). Research among FSWs in Johannesburg, using a respondent driven sampling (RDS) methodology, found that in the previous year 71% of FSWs had experienced physical or sexual intimate partner violence (IPV) or violence from police or clients, and 62.4% had ever been raped (Coetzee, Gray, & Jewkes, 2017). The criminalisation of sex work in South Africa increases FSWs' exposure to violence, as perpetrators know that they can mostly act with impunity,

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and police officers themselves are often violent (Coetzee, Gray, & Jewkes, 2017; Pyett & Warr, 1997).

Non-partner rape and sexual IPV have been less researched generally than women's experiences of physical intimate partner violence (IPV), although the risks intersect and overlap. Previous multi-country study research on sexual IPV experienced by women from the general population has shown the importance of structural risk factors, exposure to abuse in childhood, and relationship dynamics and male partner characteristics. Risk was increased with age, poverty, and among married women her husband's drinking and drug use, unfaithfulness, unemployment, controlling behaviour, more frequent quarrelling and her resisting his domination (Jewkes et al., 2017). These risk factor groups have been confirmed by research from other studies (Naved et al., 2017). The multi-country study did not assess women's mental health, but other research has generally shown the importance of women's mental health in their IPV risk (Machisa et al., 2017).

Rape is a particular problem for FSWs, driven by societal gender inequality and men's sexual entitlement (Gavey, 2005). Previous research in South Africa has highlighted the structural and social vulnerability of FSWs to violence, but it has not elucidated the factors that increase the risk of FSWs being raped (Coetzee et al., 2018; Coetzee, Gray, & Jewkes, 2017; Coetzee, Hunt, et al., 2017; Gould & Fick, 2008). Other occupation-specific risks for FSWs also need to be considered, including the use of alcohol or drugs to cope with doing sex work (Wechsberg et al., 2005).

In order to deepen our understanding of risk factors for rape exposure among FSWs, we analysed data from a large national survey conducted in South Africa in 2019. The study was community-centric and we worked through peer education programmes that provided outreach services at the venues where sex was sold (i.e. open spaces including streets, bushes, or beaches, and indoor venues including brothels, taverns or hostels) and our research assistants were themselves FSW peers, further details are provided in our methods paper (Milovanovic et al., 2021). Our approach enabled access to sex workers, which is a challenge in research since sex work is illegal and it was more empowering for participants and reduced research-related risks. The aim of this paper is to describe prevalence and patterns of exposure of FSWs to violence from intimate partners and other men (clients, police and others), and to describe the factors associated with rape by intimate partners and other men. Drawing on literature cited above, we developed a conceptual model for anticipated drivers of rape among FSWs based on the literature and this is shown in Fig. 1. We hypothesise that the drivers of sexual IPV and non-partner rape lie within the risk factor groups shown in Fig. 1, with partner characteristics being important in risk of sexual IPV. In this paper we use the terms 'rape' and 'sexual IPV' and the defining questions are shown in the table of key measures below.

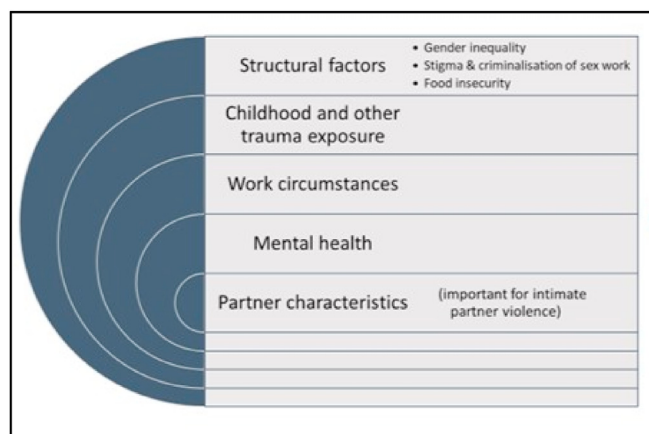


Fig. 1. Conceptual model of drivers of sexual IPV and non-partner rape of female sex workers.

2. Materials and methods

A multi-stage sampling procedure was used to derive a self-weighting sample stratified by province. The recruitment phase drew on elements of RDS methods for hard-to-reach populations, which we had previously used in research with FSWs (Coetzee, Jewkes, & Gray, 2017). We stratified the sample by province and for most provinces one district was selected randomly. In the Northern Cape, we worked with a small outreach team based in one district. In KwaZulu-Natal and Gauteng Provinces, with larger numbers of SWs, we spread recruitment across two and three districts, respectively. The sample of FSWs to be interviewed per province was determined based on a 2013 SW population size estimation (Konstant et al., 2015). Seeds were invited to participate in the study, enrolled, and after data collection given three coupons to pass onto other FSWs in the district. We capped each referral chain at a maximum of 30 FSW. The average recruitment chain was 9–10 women per venue. A full account of the methods and sample size calculation is available elsewhere (Milovanovic et al., 2021).

For inclusion in the study, participants needed to be assigned female at birth and currently identify as female, be 18 years or older, work within the site's district and to have voluntarily sold or transacted in sex for financial gain (not necessarily paid in cash) in the past six months. For ethical reasons, individuals who were <18 years, or who self-reported being a victim of human trafficking were excluded from the study, but otherwise assisted.

2.1. Questionnaires, interviews and measures

Interview guides and questionnaires were developed in collaboration with SWs and SW peer educators and tested in cognitive interviews. The questionnaire was professionally translated into ten local languages. Each partner organisation's sex work programme was asked to brief the FSW community (brothel owners and FSWs alike) in their district about the study to help ensure access and buy-in from key stakeholders. FSW peer educators were trained as interviewers. Data were collected from January to July 2019. Screening and informed consent was undertaken by a peer interviewer. Thereafter, participants completed a 40-min interviewer-administered survey. Participants were reimbursed for their time, to the value of about USD\$15.

We collected demographic information and the measures shown in Table 1. Women were asked where they mostly slept in the previous week (for four or more nights) and the question had 11 response options that were post-coded into a private house, flat or home (belonging to self or family or another person), homeless or staying in a sex work venue (of any type). Women were asked if they were currently partnered; and those who were not, were asked to respond to questions framed for a 'current partner' (Did he know she sold sex? Was he a former client? etc.) with reference to their most recent former partner. To determine whether women sold sex outdoors ('on the street'), we asked a question that had 26 response options, any number of which could be chosen. We coded all women choosing any outdoor option (under a bridge, veld/field/bush, road/street, beach) as 'selling on the street'.

2.2. Data analysis

Statistical analysis was conducted using Stata 16.0. Data were cleaned and assessed for outliers. Data completeness was high with less than 2.5% having missing data for the variables used, thus we conducted a complete case analysis. Categorical variables were described with frequencies and proportions, and means and standard deviations for continuous variables. The relationships control scale was summed and the scale divided into high, medium and low control along tertiles of the distribution of responses. The data analysis took the study sample into account, with the dataset stratified by the 12 provincial sites and within each site data were viewed as clustered by recruitment seed. Taylor linearisation was used to adjust for correlated errors within recruitment chains. Despite the

Table 1
Key measures.

Variable Name	Alpha	Measure	Details
Sexual IPV and non-partner rape (asked separately for partner, police, clients [paying partners], other men)		WHO violence against women (Jewkes, Sen, & Garcia-Moreno, 2002) adapted for non-partner violence against FSWs (Coetzee, Gray, & Jewkes, 2017)	Three items asking about being physically forced to have sex when she did not want to agreeing to sex when she did not want to because she was threatened or afraid of what he might do, or otherwise being forced to have sex.
Physical violence (asked separately for partner, police, clients [paying partners], other men)		WHO violence against women (Jewkes et al., 2002) adapted for non-partner violence against FSWs (Coetzee, Gray, & Jewkes, 2017)	Five items asking about: slapped, pushed, something thrown; hit with a fist or other object; kicked, dragged, beaten, choked or burnt; threaten to use or used a gun, knife or other weapon; feeling she may or would be killed.
Food security	0.90	Three items	Asking about having no food, sleeping hungry and going a whole day and night without eating.
Childhood Experiences	0.81	Childhood Trauma Questionnaire (short version) (CTQ) (Bernstein et al., 1994)	Five dimensions: neglect (physical and emotional) and abuse (emotional, physical and sexual); 12 items.
Alcohol and Drug Use	0.91	Alcohol Use Disorder Identification Test (AUDIT) C version (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). Self-report drug use.	Measures binge drinking with volumes adjusted for the population. Drug use asked about locally relevant drugs.
Depression	0.90	CES-D 20 item scale (Radloff, 1977)	CES-D scores over 20 were considered to indicate depression (i.e. a 20/21 cut point).
Post-Traumatic Stress Disorder	0.92	A short inventory (PTSD-8) (Hansen et al., 2010) based upon the Harvard Trauma Questionnaire	Eight items directly linked to the DSM-IV PTSD criteria with 4 point Likert scale. A score ≥ 3 for each of the three sub-scales (intrusion, avoidance or hypervigilance) indicated PTSD.
Relationship control scale	0.83	Locally developed from the South African adaptation of the SRPS (Dunkle et al., 2004; Pulerwitz, Gortmaker, & DeJong, 2000)	Six items designed with the community for use among FSWs. Typical item: my partner worries when I dress up that I am going to sell sex;

referral chain recruitment, we did not use RDS weighting because there were no overlapping networks between sites.

Bayesian multilevel mixed effects Poisson generalised linear models with robust standard errors were used to determine factors associated with exposure to past year rape by an intimate partner and by a male who was not an intimate partner and the relative risk ratios there of, taking into account the relatively frequently reported nature of the outcome. The variables considered for the models were indicators of the groups of factors shown in Fig. 1. Variables were entered into the model and the complete results are presented (no elimination was used). We used the partner variables for the partner rape model. We had intended to adjust the models of past year non-partner rape for prior rape experience but

found almost all women who had been previously raped reported rape in the last year (1560/1593) so we chose to present a model without this variable.

2.3. Ethics approval

This study received approval from the University of the Witwatersrand Human Research Ethics Committee (HREC) (Medical) (Ref number: 180809).

3. Results

The majority of the 3005 SWs interviewed were younger women, 13.3% were aged 18–24, 46.5% were aged 25–34, 30.8% were 35–44 and 9.5% were over 45 years. Of all participants, 17.1% had migrated to South Africa from other countries, and 65.2% of these were undocumented. A minority of FSWs had completed high school (22.3%) and many were food insecure or living in food insecure households (45.2%). The majority had a main intimate partner (79.3%) but were not married, and most did not live with their intimate partner (only 18.6% did so). About half (49.5%) of the FSWs lived with their family or in a flat or private home, and the rest were homeless or stayed in brothels or other sex work venues.

Most of the women had been FSWs for more than two years (94.7%) and frequently for much longer. Few, however, had entered sex work as children (11.1%). Most concealed their work from their families (65.7%), and 47.3% had intimate partners who did not know they sold sex. About a third (35.4%) only worked in indoor venues. Most FSWs did not work every day, and 10% worked seven or fewer days in the past month. Nearly two-fifths (39%) worked between 21 days and every day of the month.

Table 2 shows the experience of violence reported by FSWs in the previous year. Overall, 31.9% (site range 8.8%–84.2%) had been raped by an intimate partner in the past year (sexual IPV) and 37.5% had experienced physical IPV (site range 17.5%–76.9%). Reports of client rape and physical violence were higher. Overall 48.3% of women had been raped (site range 21.3%–91.5%) and 40.3% had experience physical assault from a client in the past year (site range 18.8%–81.5%). The proportion of FSWs reporting rape (14%) and physical assault (15.7%) from police in the past year also varied quite widely, with the site range for rape 2.7%–65.3%, and for physical assault 2.4%–76.5%. Rape by the police was reported by more than 10% of FSWs in two sites where it was disclosed by 41.7% and 65.3% of FSWs, respectively. Women were also subject to sexual abuse from other men. Overall, 32.2% of FSWs reported this in the past year (site range 7.7%–91.1%). For most of these types of violence experience, the site with the lowest prevalence varied by violence type but consistently the site with the highest prevalence was Vhembe district.

Overall 54.9% of FSWs (site range 27.5%–95.6%) had been raped in the past year by a client, policeman or other man, and in three of the 12 sites more than two thirds of FSWs had been raped in the past year. Overall 70.4% of FSWs had experienced physical violence in the past year from a client or the police (site range 28.7%–94.6%). Table 2 also shows the pattern of rape by different perpetrators. Overall 10.1% of FSWs had been raped by their partner, and one or more clients and policemen in the past 12 months, but at one site this was reported by over a third of FSWs (37.5%) and in another by nearly two-thirds (60.4%). In all settings, rape by a non-partner was more common than rape by an intimate partner alone. Overall 23.4% of FSWs had ever been raped by multiple perpetrators at the same time (gang rape).

Table 3 presents the risk factors associated with sexual IPV in the past 12 months. SIPV was more common among FSWs who were partnered or formerly partnered than those who were married, with the likelihood increased two-fold among those formerly partnered (RR 1.49; 95%CI 1.01, 2.20). SIPV was more often reported by undocumented migrants than documented ones or local FSWs, but after adjusting for other

Table 2
Prevalence of violence experiences of female sex workers by district.

Variable	Overall (n = 3005)	Bojanala (n = 272)	Buffalo (n = 261)	Cape Town (n = 377)	Ehlanzeni (n = 267)	Ekurhuleni (n = 168)	EThekweni (n = 351)	Francis Baard (n = 82)	Johannesburg (n = 540)	Thabo (n = 190)	Tshwane (n = 157)	Ugu (n = 80)	Vhembe (n = 260)
Sexual IPV in the past 12 months	958 (31.9)	61 (22.4)	38 (14.6)	127 (33.7)	125 (46.8)	88 (52.4)	110 (31.6)	14 (17.1)	78 (14.4)	35 (18.4)	56 (35.7)	7 (8.8)	219 (84.2)
Physical IPV in the past 12 months	1127 (37.5)	70 (25.7)	100 (38.3)	152 (40.3)	84 (31.5)	60 (35.7)	184 (52.8)	24 (29.3)	123 (22.8)	48 (25.3)	68 (43.3)	14 (17.5)	200 (76.9)
Client rape in the past 12 months	1448 (48.3)	141 (51.8)	73 (28.0)	106 (28.1)	174 (65.4)	118 (70.2)	231 (66.4)	33 (40.2)	224 (41.5)	56 (29.5)	38 (24.2)	17 (21.3)	237 (91.5)
Client physical assault in the past 12 months	1228 (40.9)	101 (37.1)	69 (26.4)	102 (27.1)	122 (45.9)	84 (50.0)	213 (61.2)	45 (54.9)	180 (33.3)	36 (19.0)	50 (31.9)	15 (18.8)	211 (81.5)
Police rape in the past 12 months	421 (14.0)	25 (9.2)	14 (5.4)	10 (2.7)	111 (41.7)	5 (3.0)	31 (8.9)	4 (4.9)	15 (2.8)	16 (8.4)	15 (9.6)	6 (7.5)	169 (65.3)
Police physical assault in the past 12 months	471 (15.7)	35 (12.9)	20 (7.7)	54 (14.3)	37 (13.9)	4 (2.4)	33 (9.5)	3 (3.7)	33 (6.1)	20 (10.5)	23 (14.7)	11 (13.8)	198 (76.5)
Rape by other men in the past 12 months	964 (32.15)	58 (21.32)	53 (20.31)	82 (21.87)	154 (57.89)	13 (7.74)	194 (55.75)	30 (36.59)	64 (11.85)	42 (22.11)	24 (15.29)	14 (17.50)	236 (91.12)
Rape by client, police and other men in the past 12 months	1645 (54.9)	154 (56.6)	96 (36.8)	141 (37.6)	188 (70.7)	121 (72.0)	250 (71.8)	46 (56.1)	250 (46.3)	77 (40.5)	52 (33.1)	22 (27.5)	248 (95.6)
Any physical violence in the past 12 months	2115 (70.4)	182 (66.9)	168 (64.4)	227 (60.2)	211 (59.0)	144 (85.7)	287 (82.5)	56 (69.3)	336 (62.2)	120 (63.2)	107 (68.1)	31 (28.7)	246 (94.6)
Rape by an intimate partner, client and policeman in the past 12 months	1727 (57.4)	162 (59.6)	95 (36.4)	181 (48.0)	185 (69.3)	130 (77.4)	252 (71.5)	43 (52.4)	257 (47.6)	78 (41.0)	77 (49.0)	20 (25.0)	247 (95.0)

variables there was no increased risk associated with this. There was no significant difference in risk by educational level of the FSW. Food insecurity was significantly associated with increased reports of SIPV (RR 1.19; 95%CI 1.06, 1.34). The risk of SIPV did not differ by place of accommodation. SIPV was much more commonly reported by FSWs who had experienced abuse or neglect in childhood (RR 1.69; 95%CI 1.28, 2.22). It was also more common amongst FSWs who entered sex work when still a child (before the age of 18) (RR 1.16; 95%CI 1.02, 1.22). SIPV was reported more frequently by FSWs who had been selling sex for more than two years (22% v. 32.5%) but the difference was not significant after adjusting for other factors. FSWs who sold on the streets did not experience more SIPV than those only selling indoors. The risk of SIPV increased significantly with numbers of days worked beyond about seven days in the past month. About a third of FSWs (37.1%) reported taking drugs and/or alcohol to help them do sex work, and using alcohol in particular increased their risk for SIPV (for alcohol use alone: RR 1.24; 95%CI 1.10, 1.40). The level of depression among FSWs was very high, and found among 52.7% of FSWs. FSWs who were depressed reported more SIPV, but this was not significant in the adjusted model. However, having PTSD was significantly associated with experiencing more SIPV (RR 1.41; 95%CI 1.25, 1.59). FSWs whose partner had been a client reported substantially more SIPV (RR 1.22; 95%CI 1.08, 1.37), as did FSWs whose partner knows she sells sex, although the latter was not significant in the adjusted model. FSWs who experienced more controlling behaviour from their partner in respect of their occupation were much more likely to report SIPV and the risk elevated for those in the middle control category compared to the low one (RR 1.45; 95%CI 1.19, 1.77) and two-fold for those experiencing the most controlling behaviour (RR 1.92; 95% CI 1.57, 2.35).

Table 4 shows that rape by a client, policeman or other men (non-partner rape) in the past year was more often experienced by undocumented migrants than other FSWs, but the association was not significant after adjusting for other factors. Rape experiences did not differ by education of the FSW. It was much more frequently reported by food insecure FSWs (RR 1.11; 95%CI 1.02, 1.21). The risk of rape was elevated for those who were homeless (RR 1.19; 95%CI 1.09, 1.31) or stayed in sex work venues (RR 1.090; 95%CI 1.01, 1.18) compared to private accommodation. Past year rape was reported three times as often by FSWs who had experienced child abuse (18.5% v. 59.6%) and this was reflected in the adjusted odds ratio (RR 2.37; 95%CI 1.85, 3.04). It was more commonly experienced by FSWs who had entered sex work as a child (RR 1.10; 95%CI 1.00, 1.21). Most women interviewed had been in sex work for more than two years (94.5%), and there was an increased risk of rape among those who had been FSWs for longer (RR 1.11; 95%CI 1.01, 1.23). FSWs who sold on the streets were at a substantially increased risk of being raped (RR 1.09; 95%CI 1.01, 1.18). As seen for SIPV, the risk of rape was greater for FSWs who worked more days in a month. Using drugs and/or alcohol to cope with sex work was associated with an increased likelihood of rape, and this was significant for all combinations of use of drugs and alcohol. FSWs who were depressed and had PTSD were more likely to report having been raped in the past year (depression: RR 1.207; 95%CI 1.09, 1.31; PTSD:RR 1.42; 95%CI 1.30, 1.55).

When the variable indicating non-partner rape prior to the past year was included in the multivariable model for past year non-partner rape, we found prior rape very strongly predicted past year rape (RR15.90; 95%CI 11.30, 22.38; $p < 0.001$), and the only other risk factors associated with this were having depression (RR 1.06; 95%CI 1.02, 1.10; $p = 0.006$) and having experienced childhood trauma (RR1.21; 95%CI 1.09, 1.35; $p < 0.001$).

4. Discussion

We have shown that FSWs are particularly vulnerable to being subjected to physical and rape by a range of male perpetrators including intimate partners, police, clients, and other men. We have demonstrated

Table 3
Risk factors associated with sexual IPV in the past 12 months (n = 2929).

Variable	Total	No past year SIPV	Past year SIPV	RR (95% CI)	P-Value
	n (column %)/mean (SD)	n (row %)/mean (SD)	n (row %)/mean (SD)		
Structural factors					
Age (in years)	33.3 (7.95)	33.2 (7.8)	33.4 (8.16)	1.00 (1.00, 1.01)	0.182
Relationship status					
Married	71 (2.4)	53 (74.7)	18 (25.4)	Ref	–
Partnered	237 (79.3)	1636 (68.8)	742 (31.2)	1.21 (0.83, 1.77)	0.325
No current partner	551 (18.4)	354 (64.3)	197 (35.8)	1.49 (1.01, 2.20)	0.047
Migration status					
Local	2492 (82.9)	1736 (69.8)	753 (30.3)	Ref	–
Documented migrant	334 (11.2)	226 (67.7)	108 (32.3)	0.99 (0.83, 1.17)	0.880
Undocumented migrant	178 (5.9)	81 (45.5)	97 (54.5)	0.97 (0.84, 1.11)	0.649
Education level					
None/Incomplete High School	668 (22.3)	1610 (69.0)	722 (31.0)	Ref	–
Complete High School/Post	2334 (77.8)	432 (64.7)	236 (35.3)	1.08 (0.97, 1.20)	0.155
Food security					
Secure	1643 (54.8)	1230 (75.0)	411 (25.0)	Ref	–
Insecure	1355 (45.2)	810 (59.8)	545 (40.2)	1.19 (1.06, 1.34)	0.004
Childhood and other trauma					
Childhood abuse					
None	347 (11.6)	305 (87.9)	42 (12.1)	Ref	–
Some	2654 (88.4)	1738 (65.5)	916 (34.5)	1.69 (1.28, 2.22)	<0.001
Age entered sex work					
18+ years	2647 (88.9)	1823 (68.9)	822 (31.1)	Ref	–
<18 years	331 (11.1)	203 (61.3)	128 (38.7)	1.16 (1.02, 1.32)	0.025
Work circumstances					
Years in sex work					
<2 years	159 (5.3)	124 (78.0)	35 (22.0)	Ref	–
2+ years	2836 (94.7)	1913 (67.5)	921 (32.5)	1.11 (0.94, 1.31)	0.218
Place where mostly slept in the last week					
Private house or flat/home	1485 (49.5)	1083 (73.0)	400 (27.0)	Ref	–
Homeless	608 (20.3)	395 (65.0)	213 (35.0)	1.13 (0.98, 1.30)	0.086
Sex Work Venue	909 (30.3)	564 (62.1)	345 (38.0)	1.11 (0.97, 1.26)	0.125
Sells sex on the streets					
No	1064 (35.4)	742 (69.9)	320 (30.1)	Ref	–
Yes	1941 (64.6)	1302 (67.1)	638 (32.9)		0.935

Table 3 (continued)

Variable	Total	No past year SIPV	Past year SIPV	RR (95% CI)	P-Value
	n (column %)/mean (SD)	n (row %)/mean (SD)	n (row %)/mean (SD)		
				1.00 (0.89, 1.13)	
Number of days worked in past month					
0–7 days	301 (10.1)	246 (81.7)	55 (18.3)	Ref	–
8–14 days	431 (14.4)	318 (73.8)	113 (26.2)	1.45 (1.11, 1.90)	0.007
15–21 days	1087 (36.4)	746 (68.6)	341 (31.4)	1.53 (1.18, 1.98)	0.001
>21 days	1169 (39.1)	724 (61.9)	445 (38.1)	1.35 (1.04, 1.76)	0.025
Taking alcohol or drugs to help with sex work					
None	1886 (62.9)	1376 (73.0)	510 (27.0)	Ref	–
Alcohol	511 (17.0)	287 (56.2)	224 (43.8)	1.24 (1.10, 1.40)	<0.001
Drugs	263 (8.8)	186 (70.7)	77 (29.3)	0.89 (0.71, 1.11)	0.290
Alcohol and drugs	340 (11.3)	194 (57.1)	146 (42.9)	1.15 (0.99, 1.34)	0.062
Mental health					
Depression					
No	1421 (47.3)	1057 (74.5)	361 (25.5)	Ref	–
Yes	1524 (52.7)	987 (62.3)	537 (37.7)	0.99 (0.86, 1.13)	0.859
PTSD					
No	1391 (46.3)	1091 (78.4)	300 (21.6)	Ref	–
Yes	1611 (53.7)	953 (59.2)	658 (40.8)	1.41 (1.25, 1.59)	<0.0001
Partner characteristics					
Partner was a client					
No/No partner	2009 (67.0)	1462 (72.7)	547 (27.2)	Ref	–
Yes	989 (33.0)	580 (58.7)	409 (41.4)	1.22 (1.08, 1.37)	0.001
Partner knows she sells sex					
No	1158 (38.6)	852 (73.6)	306 (26.4)	Ref	–
Yes	1289 (43.0)	836 (64.9)	453 (35.1)	1.10 (0.89, 1.25)	0.126
No partner	551 (18.4)	354 (64.3)	197 (35.8)	–	–
Relationship control from current or most recent partner					
Low	687 (22.9)	506 (73.7)	181 (26.4)	Ref	–
Mid	1936 (64.6)	1383 (71.4)	553 (28.6)	1.45 (1.19, 1.77)	<0.0001
High	373 (12.5)	151 (40.5)	222 (59.5)	1.92 (1.57, 2.35)	<0.0001

the widespread occurrence of such violence, and also noted some regional variations and districts with a particularly high prevalence, suggesting that there are particular problems in some areas. These findings confirm the high prevalence of violence observed in local studies in South Africa, such as that of Coetzee et al. in their study in Soweto, Johannesburg (Coetzee, Gray, & Jewkes, 2017).

The abuse of power by the police is a recurring theme in research on violence experienced by FSWs. Previous research conducted in Cape Town found that 12% of sex workers had been raped by the police and 28% were asked for sex by policemen when in police custody after arrest (Gould & Fick, 2008). Our findings were very similar. Street-based SWs in Cape Town were specifically found to be vulnerable to misuse of power by law enforcement authorities (Gould & Fick, 2008). Physical violence, rape and verbal abuse or threats of abuse from police, and fear of arrest were found to prevent SWs from reporting violence to the police or accessing other public agencies (e.g., health or social services), exacerbating their trauma and health risks (Gould & Fick, 2008). It is unlikely that SWs will report such cases of abuse and violence against them. Our research thus confirms the need for more effective police service management so that officers are held accountable for their behaviour towards FSWs. The very high prevalence of police violence against FSW reported in some districts suggests that the problem in those areas is systemic and unlikely due to isolated bad actors. Our findings suggest that gender norms around patriarchal privilege and sexual entitlement contribute to driving violence in those areas, particularly as the districts with the highest prevalence of police violence also had very high prevalence of violence from clients and other men. This suggests a problem that extends beyond abuse and corruption with police services management, very likely including particular stigmatisation of FSWs in the area and of social norms condoning violence against FSWs (Platt et al., 2018). It is also possible that in some areas with less police violence, FSWs are gaining protection from effective SW outreach programmes.

The analysis of factors associated with SIPV and rape by a non-partner in the past year largely confirmed the hypothesis that five groups of variables are important drivers of FSW's risk. Among the structural drivers we found evidence to support food insecurity and homelessness increasing risk. Education and migration status did not influence FSWs risk of rape. Women who did not have a current partner were particularly at risk of rape by a partner, we assume that these are mainly ex-partners, but cannot exclude the rape being prior to a separation in some cases. Among the childhood and trauma variables, both entering SW as a child and having experienced child abuse and neglect increased the risk of subsequent SIPV and non-partner rape. In this analysis it was hard to investigate the impact of other trauma on risk of revictimization because lifetime trauma was nearly ubiquitous and most raped women having been previously raped (97.9%). This has been commonly established as a risk factor in rape research (Messman-Moore, Walsh, & DiLillo, 2010). Rape revictimization was very common both over the lifecourse, and within a year: 26.7% of FSWs had been raped by more than one person in the past year. Aspects of the working environment increased women's risk of SIPV and rape by a non-partner, with risk most associated with working more days and substance abuse to cope with work, as well as selling on the streets increasing the risk of non-partner rape. There was a strong association between FSW's mental health and risk of SIPV and non-partner rape, with PTSD strongly associated and depression associated with non-partner rape. There was also evidence to support the importance of partner characteristics in risk of SIPV, with risk increased if the partner had been a client and exhibited more controlling behaviour. After adjusting for these, whether he knew she still sold sex was not associated with SIPV.

Our analysis has highlighted FSWs' particular vulnerability to violence when homeless or living in sex work venues. Legislative change is foundational for strengthening protection of workers in sex work spaces, strengthening outreach work and enabling more FSWs to work indoors with options for collective action and enhancing each other's safety. Long awaited legislative change is vital for reducing exposure to

Table 4
Risk factors associated with non-partner rape in the past 12 months (n = 2944).

Variable	Total n (column %) or mean (SD)	Unexposed n (row %) or mean (SD)	Exposed n (row %) or mean (SD)	RR (95% CI)	P-Value
Structural factors					
Age (in years)	33.3 (7.95)	33.7 (8.2)	32.9 (7.74)	1.00 (0.99, 1.00)	0.088
Migration status					
Local	2492 (83.0)	1156 (46.5)	1329 (53.5)	Ref	–
Documented migrant	178 (5.9)	48 (27.0)	130 (73.0)	0.97 (0.87, 1.08)	0.306
Undocumented migrant	334 (11.1)	149 (44.6)	185 (55.4)	0.94 (0.85, 1.04)	0.168
Education level					
None/ Incomplete High School	668 (22.3)	1064 (45.7)	1264 (54.3)	Ref	–
Complete High School/Post	2334 (77.8)	289 (43.3)	379 (56.7)	1.01 (0.93, 1.09)	0.835
Food security					
Secure	1643 (54.8)	898 (54.8)	740 (45.2)	Ref	–
Insecure	1355 (45.2)	454 (33.5)	900 (66.5)	1.11 (1.02, 1.21)	0.011
Childhood and other trauma					
Childhood abuse					
None	347 (11.6)	282 (81.5)	64 (18.5)	Ref	–
Some	2654 (88.4)	1070 (40.4)	1581 (59.6)	2.37 (1.85, 3.04)	<0.0001
Age (years) entered sex work					
18+ years	2647 (88.9)	1221 (46.2)	1420 (53.8)	Ref	–
<18 years	331 (11.1)	121 (36.6)	210 (63.4)	1.10 (1.00, 1.21)	0.043
Work circumstances					
Years in sex work					
<2 years	159 (5.3)	81 (50.9)	78 (49.1)	Ref	–
2+ years	2836 (94.7)	1270 (44.9)	1560 (55.1)	1.11 (1.01, 1.23)	0.027
Place where mostly slept in the last week					
Private house or flat/home	1485 (49.5)	765 (51.7)	714 (48.3)	Ref	–
Homeless	608 (20.3)	250 (41.1)	358 (58.9)	1.19 (1.09, 1.31)	<0.0001
Sex Work Venue	909 (30.3)	338 (37.2)	571 (62.8)	1.09 (1.01, 1.18)	0.024
Sells sex on the streets					
No	1064 (35.4)	528 (49.7)	534 (50.3)	Ref	–
Yes	1941 (64.6)	825 (42.6)	1111 (57.4)	1.09 (1.01, 1.18)	0.031
Number of days worked in past month					
0–7 days	301 (10.1)	173 (57.5)	128 (42.5)	Ref	–
8–14 days	431 (14.4)	217 (50.4)	214 (49.7)	1.14 (0.98, 1.33)	0.087
15–21 days	1087 (36.4)	500 (46.1)	585 (53.9)		0.025

(continued on next page)

Table 4 (continued)

Variable	Total n (column %) or mean (SD)	Unexposed n (row %) or mean (SD)	Exposed n (row %) or mean (SD)	RR (95% CI)	P-Value
>21 days	1169 (39.1)	458 (39.2)	711 (60.87)	1.18 (1.02, 1.35) 1.08 (0.94, 1.24)	0.295
Taking alcohol or drugs to help with sex work					
None	1886 (62.9)	964 (51.1)	921 (48.9)	Ref	–
Alcohol	511 (17.0)	172 (33.7)	339 (66.3)	1.11 (1.03, 1.20)	0.008
Drugs	263 (8.8)	126 (48.1)	136 (51.9)	1.16 (1.03, 1.32)	0.017
Alcohol and drugs	340 (11.3)	91 (26.8)	249 (73.2)	1.19 (1.07, 1.33)	0.001
Mental health					
Depression					
No	1421 (47.3)	832 (58.8)	584 (41.2)	Ref	
Yes	1524 (52.7)	523 (33.0)	1061 (67.0)	1.20 (1.09, 1.31)	<0.0001
PTSD					
No	1389 (46.3)	868 (62.5)	521 (37.5)	Ref	
Yes	1611 (53.7)	487 (30.2)	1124 (69.8)	1.42 (1.30, 1.55)	<0.0001

violence, and reducing associated impunity for perpetrators. A recent systematic review has shown that FSWs in contexts of more assertive policing have a greater risk of rape and physical violence from clients and other men (Platt et al., 2018). Criminalisation and inappropriate regulation of sex work are well recognised as driving FSWs into more isolated work locations, increasing their vulnerability and reducing their access to justice (Platt et al., 2018). Social interventions are needed to protect very vulnerable women from violence. This is particularly poignant in the present day given concerns that Covid-19 may have reduced access to HIV services for FSWs in some, but not all, settings (Mantell et al., 2021), and the rapid rise in unemployment which may result in an increase in sex-for-money transactions for survival and more risky transactions (Kimani et al., 2020).

Our observations that depression, PTSD and substance use were highly prevalent in the study population and associated with a greater risk of reporting rape confirm the findings of previous research with FSWs, including a systematic review, and show a great need for mental health and substance use interventions for FSWs (Beattie, Smilenova, Krishnaratne, & Mazzuca, 2020; Coetzee et al., 2018). The volume of alcohol drunk by those reporting alcohol use was often exceptionally high. Rape elevates the risk of developing PTSD, depression and harmful alcohol use in the aftermath, and there is also considerable evidence that PTSD, depression, harmful drinking and/or drug use increase the risk of victimisation (Jewkes, Corboz, & Gibbs, 2018; Machisa, Christofides, & Jewkes, 2017). The greater risk of sex violence amongst those using alcohol and drugs to enable sex work has been previously demonstrated in South Africa by Wechsberg et al. (Wechsberg et al., 2011). Drinking to cope and emotional dysregulation increases the risk of sexual assault, and alcohol problems increase the risk of sexual assault (Messman-Moore et al., 2013, 2015). Coping through alcohol use is both a consequence and risk factor for sexual assault, and thus rape, emotional dysregulation,

PTSD, and alcohol abuse have a cyclical relationship (Messman-Moore et al., 2015). FSW interventions that have focused on trying to reduce drug and alcohol use have been developed and tested in some parts of South Africa, shown to be effective, and further efforts are needed to enable the transition of these from research into services and scale up (Parcesepe et al., 2016; Wechsberg et al., 2011). The associations between child abuse and subsequent further rape exposure are likely to be mediated by PTSD and emotional dysregulation, as shown in other analyses (Weiss, Walsh, DiLillo, Messman-Moore, & Gratz, 2019), and this further highlights the need for greater child protection as well as the need for treatment for those affected.

Many of the intimate partners had been clients and knew their partner sold sex, but this was not unexpected and has been found among FSWs previously (Campbell, 2000; Javalkar et al., 2019). It was anticipated that partner characteristics would be key drivers of the SIPV risk of SWs and partner controlling behaviour a key indicator. Previous research among men who have been clients of SWs confirms that they have notably violent and controlling behaviour (Jewkes et al., 2012a, 2012b), as well as being clients of SWs, being associated with a propensity for physical violence and rape perpetration (Jewkes & Morrell, 2017; Jewkes, Jordaan, Myrntinen, & Gibbs, 2020). This points for the need for interventions with men to protect FSWs and other women from violence.

The levels of violence reported in our study affirm that participants trusted the study teams and were able to disclose very personal experiences, often described in detail to the interviewers during the interview. This was most notable in sites such as Vhembe, where cases of extremely violent sexual abuse were frequently reported. It is a strength of this research that we have managed to implement a rigorous study with a fairly representative sample of FSWs in South Africa working in areas linked to programmes. We worked with FSWs as partners, which was intended to be empowering given the stigma and vulnerability they face. We are not aware of a previous successful attempt to do this at national level.

Other strengths of the study included the efficient nature of the design to collect the required data and its ability to access a large sample size over a short period of time with a wide coverage and diversity across locations. Diversity is expressed across multiple levels, including the varying districts and venue types from which participants were enrolled. The study, however, also had a number of limitations. We cannot confirm generalisability of our findings to health districts that do not have sex work programmes or to FSWs working outside the networks of established programmes. Responses were self-reported and possibly influenced by social desirability bias, where respondents could have provided a more favourable answer to the interviewer.

5. Conclusions

Our research has shown that across South Africa, FSWs are particularly vulnerable to rape and other violence from a range of men, including current or ex-male intimate partners, policemen, clients, and other men in the community. We have shown the widespread occurrence of such violence, albeit with some regional variations and districts with a particularly high prevalence. A key finding from our research is the need for sensitisation training for the police and more effective police service management so that officers are held accountable for their behaviour towards sex workers and shown that they cannot abuse their position with impunity. Our findings confirm our hypothesis that there are five main groups of drivers of rape experienced by FSWs: structural factors, childhood and other trauma, poor mental health, work circumstances and, for SIPV, partner characteristics. Many of the factors highlighted are amenable to intervention, with structural interventions to improve women's economic circumstances, police sector interventions to sensitise and strengthen police management, mental health and substance use interventions and interventions around gender norms in the general community. However, decriminalisation of sex work is foundational for measures to substantially advance the safety of FSWs.

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Authors contributions

Rachel Jewkes Contributed to study design and scientific aspects of the study, data analysis and led drafting the manuscript. Kennedy Otwombe Data preparation and assisted in analysis of data. Kristin Dunkle contributed to data analysis and interpretation and drafting the paper. Minja Milovanovic Facilitated the design, oversaw the implementation and scientific aspects of the study and reviewed the manuscript. Khuthadzo Hlongwane Undertook data preparation and assisted in analysis of data. Mokgadi Matuludi managed the field research. Venice Mbowane assisted with fieldwork particularly debriefing field. Maya Jaffer oversaw implementation of the clinical aspects of the study and assisted with manuscript preparation. Faith Mokgadi facilitated the overall study operation, data collection and monitored sites Kathryn L Hopkins reviewed the final version of the paper. Naomi Hill contributed to data collection and reviewed the final version of the paper. Glenda Gray contributed to the scientific aspects of the study and reviewed the final version of the paper. Jenny Coetzee led the study design, implementation, scientific aspects of the study, contributed to interpretation of findings and drafting of the paper.

Declaration of competing interest

The authors have no conflicts of interest to declare.

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