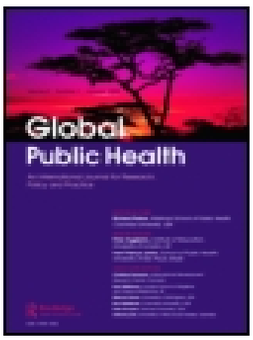

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Non-partner sexual violence experience and toilet type amongst young (18–24) women in South Africa: A population-based cross-sectional analysis

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ABSTRACT

Inadequate toilet facilities may increase women's risk of experiencing non-partner sexual violence. We sought to assess the association between young (18–24 year-olds) women's access to toilets and past year non-partner rape experience, in deprived communities in South Africa. Data came from cross-sectional, population-based survey from poor communities from four health districts in two provinces, namely, City of Johannesburg, and Ekurhuleni in Gauteng, and eThekwini and uMgungundlovu, in KwaZulu-Natal. Descriptive, unadjusted and adjusted associations, were estimated in STATA/IC16, accounting for study design. In total, 10,635 young women provided data on toilet access. Past year non-partner rape prevalence was 5.7%. In adjusted analyses, those reporting a shared toilet were more likely to report past year experience of non-partner rape (adjusted odds ratio: 1.45, 95% confidence intervals [1.17, 1.80]), compared to those with their own toilet indoors. Improving access to private, secure toilets is an important component for the prevention of non-partner sexual violence.

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Rape; South Africa; sanitation; WASH; sexual violence

Introduction

Women's experiences of non-partner rape, or sexual violence, is common globally, with 7.2% of women reporting non-partner rape in their lifetime (Abrahams et al., 2014). Experience of non-partner rape has significant negative health impacts on women's mental health, substance use, and reproductive health (Campbell et al., 2009; Decker et al., 2014; Koss et al., 1994).

Research highlights the intersections of water, sanitation and hygiene (WASH) and violence against women and girls (Sommer et al., 2015), where a lack of private and secure toilets and water access, exacerbates women and girls risk for experiencing violence (Barchi & Winter, 2019; Sommer et al., 2015). Qualitative research outlines clearly how shared toilet facilities or open defecation increases the risk of non-partner violence, whereby women have to walk to use toilets, thus increasing their vulnerability, particularly at night (Corburn & Hildebrand, 2015; Sommer et al., 2015). Quantitative research generally supports this hypothesis, however, there is variation by country and urban-rural settings (Barchi & Winter, 2019; Srinivasan, 2015; Winter & Barchi,

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2016), and studies have tended to measure non-partner violence in terms of physical violence or combined physical and/or sexual violence experience. Understanding whether non-partner sexual violence is associated with toilet access as opposed to physical violence and whether these associations are sustained in very poor communities, where non-partner sexual violence may be more common, remains unexplored.

In South Africa, non-partner sexual violence is exceedingly high; lifetime estimates suggest the prevalence of non-partner rape ranges from 12% to 5%, however, other population-based studies suggest lifetime non-partner rape perpetration by men is as high as 21% (Jewkes et al., 2011; Jewkes & Abrahams, 2002). Studies on risk factors for women's experience of non-partner sexual violence have tended to focus on individually measurable constructs such as poverty, alcohol use and poor mental health, rather than considering how structural contexts and community-level factors, such as access to toilets, impact on women's risk. Notable in this regard are qualitative studies that have highlighted the impact of lack of access to WASH in schools as a significant concern for sexual violence (Moletsane et al., 2008). In addition, one modelling study assessed the impact of lack of private WASH facilities on women's experience of rape in one township in South Africa, suggesting this contributed an additional 635 sexual assaults per year (Gonsalves et al., 2015).

In this paper, using a population-based sample of young (18–24) women from highly deprived South African communities, we assess whether access to different toilet types is associated with recent experience of non-partner sexual violence. Our analysis was based on the hypothesis that the pathway through which toilet access increased the risk of non-partner sexual violence experience was through greater mobility outside of the home, particularly at night. Therefore we hypothesized having to use toilets outside the home (whether shared or non-existent) would be associated with an increase in the likelihood of experiencing non-partner sexual violence.

Methods

Study design

We conducted a cross-sectional household survey of young (12–24) women and adolescent girls using a multistage stratified cluster-based sampling design from February 2017 to July 2018. The survey was conducted in four health districts, City of Johannesburg, and Ekurhuleni in Gauteng, and eThekwini and uMgungundlovu, in KwaZulu-Natal, South Africa. Health districts comprise the primary level through which health services and systems are coordinated and delivered in South Africa (of which there are 52). The four selected Districts were targeted by the DREAMS (Determined, Resilient, Empowered, AIDS-free, Mentored and Safe) programme of PEPFAR/USAID, which focused on high burden HIV-communities (George et al., 2020). These health districts had the highest burden of HIV in the country, and were targeted to receive structured interventions and programmes, particularly targeted at adolescent girls and young women (Saul et al., 2018).

The four health districts were the primary strata, and PEPFAR partners gave guidance on where DREAMS interventions were being implemented, primarily targeting poorer communities. These areas were mapped onto census small areas layer (SAL), and a PPS (proportional to size, where size was total households) sample was drawn. Within each SAL random sample of 55 households were drawn and if a household had an adolescent girl or young woman (12–24) they were eligible. Face-to-face interviews were conducted, by same-sex trained fieldworkers. More information is available on the study (George et al., 2020).

Measures

Toilets: We asked participants about what toilet they had access to: own – flushing; own – pit latrine; own – bucket latrine; own – pit latrine with/without ventilation; shared – flushing; no toilet; other. We recoded the different toilet types into four categories: 'own toilet (indoors)' comprising own toilet

flushing, which was assumed to be internal to the house; 'own toilet (outside)' which incorporated both own pit latrines and own bucket toilets which are both outside the main house, but within a person's own backyard; 'shared toilet' reflecting having to share with others; 'no toilet (bush or field)' reflecting those with no toilet access. For those responding 'other' we viewed written responses and recoded as appropriate, or set to missing if it was unclear what the correct response was (in total n=5 set to missing). Data on toilet usage, were only captured on those 18 and older.

Non-partner sexual violence: This was assessed with five questions about past year experiences of non-partner sexual violence, based on questions previously developed in South Africa (Jewkes et al., 2006). Three items had the same introductory phrasing: 'In the last 12 months has any man who is not your boyfriend or partner … ', with different endings: (1) ' … forced you to have sex with you when you did not want to?'; (2)' … tried to force you to have sex against your will and did not succeed?'; (3) ' … ever forced you to have sex against your will when you were too drunk or drugged to refuse?'; and two additional items were: 'How many times ever did two or more men force you to have sex with them at the same time against your will?' And, 'How many times ever did two or more men force you to have sex with them at the same time against your will when you were too drunk or drugged to refuse?' For each item, responses were 'never', 'once' or 'more than once'. If a woman answered once, or more than once, to one or more items she was coded as having experienced past year non-partner sexual violence.

We also assessed age, education level (completed high school versus not completed), alcohol use using AUDIT-C as a continuous scale (range 0–12, α=0.83 (Saunders et al., 1993)) and past month food insecurity using the HIFAS scale (Coates et al., 2007), summing items (range 0–9 α=0.93) with larger scores indicating greater food security. These items were selected as potential cofounders from prior research indicating association with non-partner sexual violence (Jewkes & Abrahams, 2002), which were independent of toilet type, and assessed within the questionnaire.

Ethics

The study received ethical permission from the University of KwaZulu-Natal's Biomedical Research Ethics Committee, the Associate Director of Science of the Center for Global Health (CGH) at the United States Centers for Disease Control and Prevention (CDC) and the Provincial Department of Health in both KZN and Gauteng. All those aged 18 and above provided written informed consent.

Analysis

We first describe the sample in terms of proportions/means and 95 percent confidence intervals (95%CI), and then describe the socio-demographic and risk factors by toilet type using percentages/means and 95%CI and assess differences using Pearson's chi-squared for bivariate and t-test for continuous variables. We then report unadjusted and adjusted odds ratios (aORs) assessing whether there is an independent association between toilet type and non-partner sexual violence experience, reporting 95%CI, and p-values. All analyses adjusted for the survey design and clustering.

Results

In total 10,635 young women over the age of 18 provided data on their access to toilets. Overall (Table 1), half (49.1%) had their own toilet (indoors), a fifth (21.2%) an own toilet (outside), almost a third (29.2%) used shared toilets, and 0.6% reported none (bush or field). One in 20 (5.7%) reported experiencing non-partner sexual violence in the past year.

Descriptive associations between toilet type and socio-demographics are presented in Table 1. The proportion who had completed secondary school was lower among those reporting 'own toilet (outside)' compared to all other toilet types. In addition, lower mean scores for food-security were associated with reporting own toilet (outside), shared toilet or other toilet, compared to 'own toilet

Table 1. Descriptive associations between potential risk factors, non-partner sexual violence experience and toilet types.

	Overall %/mean (n/ 95%CI)	Own toilet (inside) %/mean (95% CI)	Own toilet (outside) %/mean (95%CI)	Shared toilet %/mean (95%CI)	None (bush or field) %/mean (95%CI)	*p*-value
		49.1(47.2, 51.0)	21.2(19.4, 23.0)	29.2(27.6, 30.8)	0.6(0.5, 0.8)	
Age						
18/20	45.0(5060)	45.4(43.9, 46.9)	44.9(42.9 47.0)	44.1(42.3, 46.0)	55.7(44.7, 66.1)	0.270
21/24	55.0(5573)	54.6(53.1, 56.1)	55.1(53.0, 57.1)	55.9(54.0, 57.7)	44.8(34.3, 55.8)	
Education						
Not completed Grade 12	32.3(3241)	30.2(28.7, 31.8)	39.7(37.4, 52.8)	31.2(29.1, 33.3)	34.1(23.8, 46.1)	<0.001
Completed Grade 12	67.7(6726)	69.8(68.2, 71.3)	60.3(57.5, 63.1)	68.8(66.7, 70.9)	65.9(53.9, 76.2)	
Other factors						
Food insecurity (>=more food secure)	7.61(7.54, 7.68)	7.80(7.82, 7.89)	7.43(7.27, 7.59)***	7.43(7.30, 7.56)***	6.83(6.07, 7.60)**	
Alcohol (>=more alcohol use)	0.75(0.72, 0.79)	1.12(1.04, 1.19)	0.87(0.76, 0.98)***	1.05(0.96, 1.15)	0.69(0.22, 1.16)	
Past year non-partner sexual violence	5.7(568)	4.8(4.2, 5.6)	5.5(4.4, 6.7)	7.2(6.2, 8.3)	7.1(2.7, 17.4)	0.001

For continuous variables with 'own toilet (inside)' as reference: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

(inside)'. While, mean scores for alcohol use were lower for those with own toilet (outside) compared to those with their own toilets (inside). The proportion reporting non-partner sexual violence in the past year was higher for those reporting a shared toilet (7.2%) or none (field or bush) (7.0%) compared to those with their own toilets (indoors) (4.8%) or own toilet (outside) (5.5%, p=0.001).

In unadjusted and adjusted logistic regression (Table 2) compared to those with their own toilet (indoors), those who shared toilets had a greater odds of reporting past year non-partner sexual violence (aOR1.45, [1.17, 1.80]). The adjusted odds ratio for those reporting no toilet (field or bush) was of a similar magnitude to those reporting shared toilets (aOR1.43,[0.53, 3.81]) however, the 95%CI passed through zero, possibly driven by a small sample size, and the null hypothesis could not be rejected.

Discussion

For young (18–24) women in DREAMS targeted communities in South Africa, their past year experience of non-partner sexual violence was significantly associated with reporting having a 'shared toilet'. Shared toilets were common, with just over a third of women reporting having to use these sorts of toilet facilities. This analysis reflects other studies suggesting an association between lack of adequate WASH facilities and non-partner violence (Abrahams et al., 2006; Barchi & Winter, 2019; Sommer et al., 2015; Winter & Barchi, 2016). Previous work had assessed physical non-partner violence, in their analyses. This analysis extends this previous work through its specific focus on non-partner sexual violence, in communities where this may be

Table 2. Unadjusted and adjusted associations between non-partner sexual violence and toilet type.

	OR(95%CI)[a]	*p*-value	aOR(95%CI)[b]	*p*-value
Own toilet (indoors)	ref		ref	
Own toilet (outside)	1.13(0.87, 1.48)	0.359	1.09(0.83, 1.44)	0.542
Shared toilet	1.51(1.23, 1.86)	<0.001	1.45(1.17, 1.80)	0.001
None (bush or field)	1.50(0.54, 4.16)	0.438	1.43(0.53, 3.81)	0.477

[a]n = 10,442 degrees of freedom 1307, and p = 0.0012; [b]n = 9,885, degrees freedom 1,297, p<0.001. Adjusted models, include age, education, alcohol use and food insecurity. All models take into account the survey structure.

more common (Gibbs et al., 2018) and highlights the differential risk young women face because of their access to specific toilet facilities.

While not significant, the adjusted association between women reporting having no toilet access and/or open defecation and non-partner sexual violence was of the same magnitude as that for women reporting 'shared toilets'. Only 0.6% of the sample (n=72) reporting having no access to any form of toilet, and thus the 95%CI were wide, and overlapped with one. However, the association between open defecation and non-partner violence has been described in other studies (Srinivasan, 2015). The lack of access to any toilet facilities may also be a marker of extreme deprivation, which may also account for the increased risk of non-partner sexual violence.

This study did not assess potential pathways between having to use shared toilets and increased non-partner sexual violence risk, however, qualitative studies suggest that this association is driven by having to walk to toilets, particularly at night (Meth, 2017; Sommer et al., 2015), and the poor maintenance of shared facilities. Importantly, the analysis did adjust for poverty (in the form of food insecurity and education) and alcohol use, which are also risk factors for non-partner sexual violence experience (Jewkes & Abrahams, 2002), suggesting an independent association between shared toilets and non-partner sexual violence, and this association was not attenuated significantly once adjustment for potential cofounders was made.

The past-year prevalence of non-partner sexual violence in the sample showed just under 1 in 20 young women had experienced non-partner rape in the past year. This is slightly lower than global lifetime estimates (Abrahams et al., 2014), but high given these are past year estimates among young women, suggesting the spaces targeted by the DREAMS programming are including some young women who are very at risk of violence.

Descriptively we found that education, food insecurity and alcohol use were associated with toilet type. Access to their own pit latrine was more common among those who had not completed Grade 12 (high school) and those who drank less alcohol. It may be that these young women were in more rural communities, where education attainment is often lower (Gibbs et al., 2020), and access to alcohol is more limited, and there was space for a pit latrine. The consistent finding between reduced food security and not having their own toilet, suggests that household food insecurity was a clear marker of poverty, even in DREAMS communities which were selected as communities with many overlapping challenges, including poverty.

This study has a number of limitations. Toilet type may have been a marker for wider social deprivation and the analysis is capturing this relationship, rather than an independent association between toilet type and rape. However DREAMS communities are broadly areas of need, and we adjusted for food-insecurity as a proxy for poverty and social deprivation. While the data is population representative, it is for those residing in DREAMS targeted areas, and not representative of the districts or Provinces where data were collected. There was low reporting of non-partner sexual violence, which may have biased the results, but it is unclear how this would have affected the associations. We also did not assess the distance from where people lived to shared toilets and it may be that women who live further away from shared toilets, and thus have to walk further, are much more at risk of experiencing non-partner rape, than those closer.

Among very poor, highly marginalised young women in communities targeted by HIV and violence prevention programming in South Africa, having to use shared toilet facilities was independently associated with young women's experience of non-partner sexual violence. Importantly this highlights that despite overarching vulnerability of women living in poor communities to non-partner sexual violence, access to toilets was a 'structural driver' of young women's vulnerability and differentiated their risk. Addressing the significant public health and human rights burden of non-partner sexual violence must also address the urban structure, as well as focusing on social transformation. Strategies of urban upgrading and deconcentration, which have been shown to reduce interpersonal violence (Cassidy et al., 2014; Matzopoulos et al., 2020), must also include

ensuring that WASH facilities are private and secure, as one important way to reduce women's experiences of non-partner sexual violence.

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