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Alcohol use and intimate partner violence in HIV-uninfected pregnant women in Cape Town, South Africa

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Abstract

In settings with a high burden of HIV, pregnant women often experience a cluster of risk factors, including alcohol use and intimate partner violence (IPV). These interrelated risks are poorly understood among pregnant women at risk of HIV in sub-Saharan Africa. We aim to determine cross-sectional associations between pregnant women's alcohol use and victimization due to IPV in the HIV-Unexposed-Uninfected Mother-Infant Cohort Study in Cape Town, South Africa. Women who tested HIV-negative at first antenatal care (ANC) visit were followed to delivery. Trained interviewers collected demographic and psychosocial information, including recent alcohol use and experiences of IPV victimization. We assess the prevalence of alcohol use and associations with IPV using multivariable logistic regression. In 406 HIV-uninfected pregnant women (mean age=28 years; mean gestational age=21 weeks), 41 (10%) reported alcohol consumption in the past 12 months; 30/41 (73%) of these at hazardous levels. Any and hazardous alcohol use were associated with greater odds of reporting past year IPV (adjusted odds ratio [aOR] for hazardous use: 3.24, 95% CI=1.11, 7.56; aOR for any alcohol use: 2.97, 95% CI=1.19,

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7.45). These data suggest the occurrence of overlapping HIV risk factors among pregnant women and may help design improved health interventions in this population.

Keywords

pregnancy; alcohol; substance use; South Africa; intimate partner violence; HIV; PMTCT

Background

The risk of HIV acquisition nearly doubles during pregnancy, likely due to both biological and behavioral factors, including substance use and intimate partner violence (IPV) victimization.(Graybill et al., 2020; D. Joseph Davey, Farley, Gomba, Coates, & Myer, 2018; D. L. Joseph Davey et al., 2019; Thomson et al., 2018) South Africa has one of the highest levels of alcohol consumption in the world, and alcohol use during pregnancy is prevalent, with hazardous alcohol use frequently documented in pregnant women.(Brittain et al., 2017; D. Joseph Davey, Farley, Towriss, et al., 2018; Petersen-Williams, Mathews, Jordaan, & Parry, 2018; Petersen Williams, Jordaan, Mathews, Lombard, & Parry, 2014; Wong et al., 2017) In South African women an estimated 27% of sexually transmitted infections (STIs) and HIV infections are attributed to IPV victimization.(Field, Onah, van Heyningen, & Honikman, 2018; Gordon, 2016) (Norman et al., 2010) Physical, sexual and emotional IPV may increase the risk of HIV acquisition and often interferes with victims' engagement in and adherence to antenatal care (ANC) and HIV prevention services..(Beth S Russell, Lisa A Eaton, & Petal Petersen-Williams, 2013; Sullivan, 2019)

Prior research has demonstrated co-occurring epidemics of alcohol use (Brittain et al., 2017; Croxford & Viljoen, 1999; Davey et al., 2018; Davis, Rotheram-Borus, Weichle, Rezaei, & Tomlinson, 2017; Desmond et al., 2012; D. Joseph Davey, Peters, et al., 2018) and sexual risk behaviours.(Chetty, Vandormael, Thorne, & Coutsoudis, 2017; D. Joseph Davey, Farley, Gomba, et al., 2018; D. Joseph Davey, Farley, Towriss, et al., 2018) Mutually reinforcing epidemics of substance use, IPV victimization and sexual risk combined with high HIV incidence in South Africa represent a synergistic epidemic that disproportionately impacts cisgender women.(E. V. Pitpitan et al., 2013; Merrill Singer & Clair, 2003) Syndemic theory posits that it is the synergistic clustering of conditions, rather than the summation of symptoms, that influences the burden of disease in a population.(Merrill Singer, Bulled, Ostrach, & Mendenhall, 2017) The co-occurrence of alcohol use, IPV and HIV risk is poorly understood among pregnant women in sub-Saharan Africa.(Meyer, Springer, & Altice, 2011) This cluster of HIV risk factors has been explored in men²⁶ and women(Hatcher et al., 2019; Eileen V. Pitpitan et al., 2012) in South Africa, but rarely in pregnant women.(Meyer et al., 2011; Beth S Russell et al., 2013)

To address this gap we examined the prevalence of alcohol consumption prior to and during pregnancy and the association between alcohol consumption, and hazardous consumption in particular, and co-occurrence of IPV in a cohort of HIV-negative pregnant women in ANC in Cape Town, South Africa.

Methods

We conducted a secondary, cross-sectional analysis of data from the HIV-Uninfected-Mother HIV-Unexposed-Infant Study (2014–2017). (Myer et al., 2016) Our study was conducted in an ANC clinic at a large, community-based public sector primary care facility in Cape Town, South Africa, which serves a predominantly African population of approximately 350,000 people with an antenatal HIV-prevalence of 30%. (Myer et al., 2015)

Data collection:

Study methods have been published previously. (le Roux, Abrams, et al., 2019; le Roux et al., 2018; le Roux, Donald, et al., 2019) Briefly, women who tested HIV-negative at first ANC visit provided consent for follow-up through pregnancy to delivery. Trained fieldworkers administered questionnaires including demographics, alcohol use, medical and psychosocial information. HIV testing results were abstracted from maternal case records where available, or women received on-site HIV counselling and testing. We referred women who reported IPV or any alcohol use in pregnancy to local social services and counselling support.

Variables and outcomes:

At the participant's first study visit, trained interviewers assessed basic demographic characteristics, employment, and education. Study-specific questionnaires assessed IPV using the WHO Violence Against Women questionnaire that measures exposure to sexual, physical and psychological abuse in the past year. (Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2006) We administered the Alcohol Use Disorders Identification Test (AUDIT) (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) at baseline (first ANC visit) to assess alcohol use during the past 12 months. The AUDIT-C (AUDIT-Consumption) scoring system was used as a measure of hazardous drinking (score of ≥ 3) compared with no or moderate drinking (< 3 in AUDIT-C). (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998) The AUDIT-C has been validated in women and in pregnancy. (Burns, Gray, & Smith, 2010), (Bradley et al., 2003) Any alcohol use included any reported alcohol use in the past 12 months. Depending on gestation at first ANC visit (mean gestation: 21 weeks), the AUDIT and IPV surveys included the period prior to and during early pregnancy.

Data analysis:

Covariates associated with any alcohol use and hazardous alcohol use in the preceding 12 months were compared using chi-square and rank sum tests as appropriate or Fisher's exact tests when categories had < 10 women. We evaluated if alcohol use was associated with IPV in unadjusted models and after adjustment for potential confounders including maternal age, education, socio-economic status, and unintended pregnancy. Data were analysed using STATA version 14.0 (Stata Corporation, College Station, TX, USA).

Ethical considerations:

Our study was approved by the University of Cape Town's Faculty of Health Sciences Research Ethics Committee (UCT-HREC, 567/2014; 451/2012). Written informed consent was obtained from all participants.

Results

Overall, 406 HIV-uninfected pregnant women were included in our analysis (mean maternal age=28 years; standard deviation, [SD]=6) (Table 1). At first ANC visit, mean gestational age was 21 weeks (SD=7.5). Fewer than half of women reported being in a stable relationship (44%); and 25% were primagravida. Approximately one-third (31%) of women reported that their pregnancy was planned. Physical, psychological or sexual IPV in the past 12 months was reported by 8% of women. Forty-one (10%) reported any alcohol consumption in the past 12 months; of those, 73% (n=30) reported high levels of alcohol consumption.

Women who reported any alcohol use in the past 12 months (vs. no drinking) were more likely to not be in a stable relationship (i.e., neither married nor cohabiting) (73% vs 54% respectively; $p<0.05$). Thirty-two percent of women who reported no alcohol use reported that their pregnancy was planned compare to 20% in hazardous drinkers, and 22% in any drinkers. Finally, 20% of hazardous drinkers and 17% of those reporting any level of alcohol use reported some form of IPV in the past year, compared with 7% of non-drinkers (Table 2). One quarter of this HIV-uninfected cohort of pregnant women reported the co-occurrence of heavy alcohol use and/or IPV victimization (n=103; 25%).

In multivariable logistic regression models adjusted for maternal age, education, socio-economic status and unintended pregnancy, any alcohol use and hazardous alcohol use in pregnant women was associated with 3-time the odds of reporting IPV in the past 12 months (aOR any alcohol use=2.97; 95% CI=1.19, 7.45; aOR hazardous use vs. none=3.24, 95% CI=1.11, 7.56).

Discussion

We identified a sub-set of pregnant HIV-uninfected women in an urban ANC clinic who reported overlapping alcohol use and IPV victimization. At first ANC visit, 10% of HIV-uninfected pregnant women reported alcohol consumption in the past 12 months, and of those, almost three-quarters reported hazardous levels of alcohol use. In women who reported *any* alcohol use or prior to and during early pregnancy, odds of reporting IPV was almost 3-times as high, compared to non-drinkers, after adjusting for covariates.

Consistent with prior studies, we found a strong association between alcohol use and experiencing past year IPV in pregnant women.(Bernstein et al., 2016; Brittain et al., 2017; Davis et al., 2017) Unlike prior studies, our study was in a population of HIV-uninfected women at risk of HIV acquisition. We found that 20% of hazardous drinkers and 17% of any drinkers reported some form of IPV in the past year. Associations between IPV and alcohol use are well described, including that alcohol use among couples increases risk of IPV and women who report IPV also report high levels of alcohol use.(Baliunas, Rehm, Irving, & Shuper, 2010; Burnhams, London, Laubscher, Nel, & Parry, 2015; D. Joseph Davey et al., 2017)

Alcohol use and IPV are independent risk factors for HIV that frequently co-occur and interact together to increase risk of HIV acquisition.(Dunkle et al., 2004; D. Joseph Davey

et al., 2017; B. S. Russell, L. A. Eaton, & P. Petersen-Williams, 2013) Forced or coercive sexual intercourse with a partner living with HIV is one of the routes of transmission for HIV and STIs to women. Women's ability to safely negotiate condom use is limited in an abusive relationship.(Dunkle et al., 2004; Ellickson, Collins, Bogart, Klein, & Taylor, 2005) Our prior research has demonstrated that women who drink alcohol during the peripartum and early pregnancy are at risk of IPV and condomless sex and therefore HIV acquisition. (D. Joseph Davey, Farley, Gomba, et al., 2018; D. Joseph Davey, Farley, Towriss, et al., 2018; D. Joseph Davey, Peters, et al., 2018; D. L. Joseph Davey et al., 2017) For HIV prevention in women exposed to IPV and alcohol use, pre-exposure prophylaxis (PrEP) may reduce risk and increase the ability of high-risk HIV-uninfected women to protect themselves and their infant from HIV.(D. Joseph Davey, Farley, Gomba, et al., 2018; D. Joseph Davey, Farley, Towriss, et al., 2018)

Our study identified that *any* recent alcohol use was associated with IPV. Interventions among women who report *any* alcohol intake in early pregnancy are urgently needed in this setting. Despite the negative consequences of alcohol use during pregnancy, few evidence-based interventions to identify and treat alcohol use among pregnant women have been implemented. A study in South Africa evaluated the efficacy of case management for pregnant women and found that most had previous alcohol-exposed pregnancies, and in participants who received case management, AUDIT scores improved significantly by 6-months follow-up.(May et al., 2013) Another community-level, behavioural intervention addressed alcohol use, HIV risk and infection, and pregnancy in Cape Town by mentor mothers, lay health care workers residing within the same community.(Rotheram-Borus et al., 2011) Targeted interventions to protect pregnant women who experience IPV are necessary. Recent studies on intensive group-based interventions for violent men have shown reductions in IPV.(Gibbs et al., 2020)

This study had several limitations. The baseline alcohol assessment included the periconception and early pregnancy period and not the latter trimesters, which may have over-estimated the true proportion of pregnant women who use alcohol. The data on alcohol use and IPV may have been under-reported because of social desirability bias, which would under-estimate the true prevalence of these issues in this population and their associations. In this cohort, there were relatively low proportions of women using alcohol and experiencing IPV compared to population estimates in South Africa. Our findings demonstrate the importance of a future definitive study to evaluate alcohol use and IPV in a larger study.

Conclusion

In our cohort of HIV negative pregnant women, most women who reported alcohol use, reported hazardous levels of alcohol use prior to and during pregnancy. Importantly, any reported alcohol use prior to or during pregnancy was associated with higher reports of recent IPV, consistent with syndemic theory.(Merrill Singer et al., 2017; Merrill Singer & Clair, 2003) Alcohol use and IPV are concurrent and mutually reinforcing risks of HIV acquisition (and potential vertical HIV transmission). Interventions are urgently needed to reduce IPV perpetration by male partners, alcohol use in pregnancy and HIV risk among pregnant women.

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Table 1.

Socio-demographic and risk factors by maternal drinking (any and hazardous) in past 12 months of first antenatal care (ANC) visit among HIV-uninfected women in Cape Town, South Africa

	Total	No alcohol use	Any alcohol use	Hazardous drinking
Total	406 (100%)	365 (90%)	41 (10%)	30 (7%)
Maternal age (mean, SD)	28.1 (6.1)	28.1 (6.1)	27.7 (5.5)	28.6 (4.9)
Lives in brick home with water and toilet	154 (38%)	136 (38%)	17 (42%)	11 (37%)
Education				
Less than secondary	225 (55%)	202 (55%)	23 (56%)	17 (57%)
Completed secondary	181 (45%)	163 (45%)	18 (44%)	13 (43%)
SES category				
Low SES	119 (29%)	108 (30%)	11 (27%)	8 (27%)
Moderate SES	127 (32%)	114 (31%)	13 (32%)	10 (33%)
Highest SES	160 (39%)	143 (39%)	17 (41%)	12 (40%)
Single relationship status	226 (56%)	196 (54%)	30 (73%)*	20 (67%)
First pregnancy	101 (25%)	94 (26%)	7 (17%)	4 (13%)
Planned pregnancy	127 (31%)	119 (32%)	9 (22%)	6 (20%)
Reported intimate partner violence including physical, psychological or sexual violence in past 12 m	31 (8%)	24 (7%)	7 (17%)**	6 (20%)*

* p<0.05;

** p<0.10

Table 2.

Evaluation of concurrent reporting of intimate partner violence and maternal alcohol use (any and hazardous use) in HIV-uninfected women at first antenatal visit: crude and adjusted odds ratios from logistic regression models

	IPV reported in past year (n; %)	OR (95% CI)	Adjusted OR (95% CI)*
Hazardous alcohol use (n=30)	6 (20%)	3.17 (1.06–6.06)	3.24 (1.11– 7.56)
Any alcohol use (n=41)	7 (17%)	2.93 (1.17–7.29)	2.97 (1.19–7.45)
No alcohol use (ref; n=365)	24 (7%)	--	--

Abbreviations: OR, odds ratio; aOR, adjusted odds ratio; CI, confidence interval; all OR represent relative odds for the listed outcome, comparing: (1) any vs none, and (2) hazardous to no alcohol use reported for preceding 12 months, at first antenatal visit (defined as AUDIT-C score ≥ 3 vs <3)

* adjusted for maternal age, education, socio-economic status, and unintended pregnancy.