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Associations of Emotional, Physical or Sexual Intimate Partner Violence and Depression Symptoms among South African Women in a Prospective Cohort Study

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Abstract

Objective—Violence against women remains a significant public health problem globally. Majority of longitudinal studies documenting the negative impact of intimate partner violence (IPV) on the mental health of women come from high-income countries. The aim of this study was to investigate the longitudinal association between emotional, physical or sexual IPV and depression symptoms among South African women in a prospective cohort study.

Methods—Participants were 981 South African women enrolled in the Drakenstein Child Health Study – a cohort study investigating the early life determinants of child health. Interview data from 4 time-points (antenatal care visit, 6 months, 12 months, and 18 months post-partum) were included. The primary independent variable was self-reported emotional, physical and sexual IPV in the past 12 months. Depressive symptoms were assessed at each time-point with the Edinburgh Postnatal Depression Scale (EPDS); a cut-off score of ⩾ 13 was used to define significant depression symptoms. We used pooled-multivariable logistic regression models to determine associations between the 3 different forms of IPV and significant depression symptoms while adjusting for time-fixed and time-updated covariates.

Results—Mean age of the sample at antenatal care visit was 27 years (standard deviation=6.0). In the adjusted model including all forms of IPV and adjusting sociodemographic and clinical

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characteristics, substance use and childhood trauma, emotional [adjusted odds ratio (aOR) =1.55 95% confidence interval (CI); 1.02, 2.34; p=.039)] and sexual (aOR= 2.02, 95% CI: 1.10, 3.72; p=<.001) IPV were significantly associated with significant depression symptoms. The relationship between physical IPV and significant depression symptoms was not statistically significant (aOR=0.68, 95% CI: 0.44, 1.05; p=.485).

Conclusion—Our study confirms findings from high-income countries of the association between IPV and depressive symptoms among women in South Africa. Routine screening for IPV, including emotional IPV and intervention programs for IPV among women is needed in South Africa.

Introduction

Violence against women remains a crucial public health problem and violation of women's human rights. Global estimates from the World Health Organization (WHO) indicate that between 15% and 71% of women worldwide report some form of lifetime physical and/or sexual violence perpetrated by their intimate partner (K. M. Devries et al., 2013; Garcia-Moreno et al., 2006). Intimate Partner Violence (IPV) is considered an established risk factor for a wide range of adverse mental health problems including, posttraumatic stress disorders (Bennice, Resick, Mechanic, & Astin, 2003; Campbell, 2002), suicide attempts (K. Devries et al., 2011; Karen M. Devries et al., 2013) and depressive symptoms (Coker et al., 2002) among women.

In South Africa where the rates of IPV are among the highest in the world (K. M. Devries et al., 2013; Dunkle et al., 2004; Groves et al., 2015; R. K. Jewkes, Dunkle, Nduna, & Shai, 2010), significant gaps exits in the literature on the links between IPV and mental health. For instance, in one recent systematic review of 13 longitudinal studies on the association between IPV and incident depression, none of the studies identified or included were conducted in sub-Saharan Africa (Karen M. Devries et al., 2013). However, two studies have been published from sub-Saharan Africa since that systematic review. Tsai and colleagues (Tsai, Wolfe, et al., 2016) analyzed data from a cohort of 173 HIV-positive women in rural Uganda who were interviewed every three months for a median of 1.8 years of follow-up. In their multivariable analysis, they found significant associations between forced-sex victimization and greater depression symptom severity, lower mental health-related quality of life and increased risks of probable depression across the follow-up period. In the other study, that used longitudinal data from 1,238 pregnant women in Cape Town, South Africa, who were assessed at 4 time-points across a 3-year period found – in adjusted analysis – that greater intensity of IPV was significantly associated with depression symptom severity (Tsai, Tomlinson, Comulada, & Rotheram-Borus, 2016).

While these studies are important in beginning to address the limited studies on the longitudinal links between IPV and mental health outcomes among women in sub-Saharan Africa, a few knowledge gaps remain. We have limited knowledge about the impact of different forms of IPV on mental health outcomes. Intimate partner violence may manifest in different forms including sexual, physical and emotional abuse. Majority of studies have focused on sexual or physical IPV or on IPV as a singular domain (i.e. sexual and physical

IPV). Although emotional IPV is more common than other forms of IPV (Shamu, Abrahams, Temmerman, Musekiwa, & Zarowsky, 2011; Yoshihama, Horrocks, & Kamano, 2009), it is unclear whether its impact on depression is as strong as the effect of other forms of IPV. Another important gap in the extant studies is that they do not frequently control for key confounders of the association between IPV and depressive symptoms (Karen M. Devries et al., 2013). Research consistently shows that women with a history of childhood sexual abuse or other types of childhood traumatic experience are more likely to be victims of IPV (Barrios et al., 2015; Whitfield, Anda, Dube, & Felitti, 2003; Widom, Czaja, & Dutton, 2014) and exhibit depressive symptoms in adulthood (Barrios et al., 2015; Lindert et al., 2014; Wosu, Gelaye, & Williams, 2015). Therefore, in previous research, early life stressors may have confounded observed associations between IPV and depressive symptoms.

Our study aims to address these limitations and advance the literature on the relationship of IPV and mental health outcomes among women in sub-Saharan Africa. Here we focus our study on the vulnerable group of pregnant women residing in Cape Town, South Africa, increasing the diversity of research addressing IPV and mental health outcomes, which have predominantly come from countries in North America and Europe. Women who experience IPV during pregnancy are an important group because IPV can also affect the health of the newborn. Women who experience IPV during pregnancy as compared to women who do not have higher rates of low birth weight infants and preterm births, which are associated with more neonatal morbidity and greater mortality (Alhusen, Ray, Sharps, & Bullock, 2015; Boy & Salihu, 2004; Koen et al., 2014). Additionally, antenatal care, which a vast majority of women access provides an important opportunity to screen for IPV. We had the unique opportunity to study the relationships between IPV and depression symptoms using longitudinal data from pregnant women enrolled antenatally and followed for up to 18 months postpartum in a South African cohort study. Specifically, the aim of the current study was to address the research question of whether emotional, physical and sexual IPV are longitudinally associated with significant depression symptoms – among a sample of pregnant women in Cape Town, South Africa and whether these relationships hold after adjusting for childhood traumatic experiences. We hypothesized that emotional, physical and sexual IPV will be longitudinally associated with significant depression symptoms independent of childhood traumatic experiences.

Methods

Study setting

Data for this analysis comes from the Drakenstein Child Health Study (DCHS), a multidisciplinary cohort study investigating the early life determinants of childhood health within the Drakenstein subdistrict of the Western Cape Province, South Africa (Stein et al., 2015; Zar, Barnett, Myer, Stein, & Nicol, 2015). Drakenstein is a periurban area located about 60 km from Cape Town (periurban areas are settlements lying on the outskirts of urban districts). It is a low socioeconomic community, with a population of approximately 200,000 (Zar et al., 2015). The area is characterized by a high prevalence of childhood illnesses (Zar et al., 2015) and risk factors for poor health outcomes such as alcohol abuse,

tobacco smoke exposure, drug use, IPV, poverty, and HIV (Stein et al., 2015). Most of the population access health care in the public sector, including antenatal, mental health and child health care services (Western Cape Government, 2012).

Study participants

Pregnant women were recruited from two primary health care clinics – TC Newman clinic (serving a mixed ancestry population) and Mbekweni (serving a black African population) – in the Drakenstein sub-district. Enrollment of pregnant women took place between March 2012 and March 2015. Mothers were enrolled in the DCHS during their initial antenatal care visits in the second trimester of pregnancy and were eligible to participate if they were 18 years or older, were accessing antenatal care at either of the recruitment clinics, had no intention to move out of the area within the following year and signed written informed consent.

Study design

Pregnant women enrolled in the DCHS are currently followed longitudinally throughout their pregnancy until at least 5 years after birth. The current analysis utilized data collected from mothers over 4 study visits: initial antenatal care visit (referred here as baseline visit), 6 months, 12 months and 18 months. Data on a wide range of measures was collected via self-report and clinician administered measures, however, we detail only those measures relevant for the current study.

Measures

Dependent variable: Depression Symptoms—The primary dependent variable in this secondary data analysis of the DCHS was time-updated depressive symptoms assessed at each time-point, using the Edinburgh Postnatal Depression Rating Scale (EPDS)(Cox, Holden, & Sagovsky, 1987). The EPDS is a 10-item self-report measure of recent (past seven days) depressive symptoms. The EPDS has been validated for use in pregnancy (Psych & John L. Cox MA, 1990). Each item is scored on a frequency scale ranging from 0 to 3. A total score is obtained by summing the individual responses, with higher score indicative of more severe depressive symptoms. In this study, we defined a cut-off score   13 on the EPDS at each time-point to indicate significant depression symptoms as described in the original development of the scale (Cox et al., 1987) and in South Africa (Hartley et al., 2011).

Independent variable: Intimate Partner Violence—The primary independent variable was IPV exposure by sub-type (emotional, physical and sexual IPV) in the past 12 months, assessed at each time-point. The IPV questionnaire used in this study was adapted from the WHO multi-country study (R. Jewkes, 2002) and the Women's Health Study in Zimbabwe (Shamu et al., 2011) in order to assess lifetime and past-year exposure to emotional, physical and sexual IPV. Emotional abuse was assessed with the following items: being insulted or made to feel bad about oneself; being belittled or humiliated in public; being purposefully scared or intimidated; and being threatened. To assess physical abuse, women were asked about having been slapped or having something thrown at them which could hurt them; being pushed or shoved; being hit with a fist or with something else that could hurt them;

being kicked, dragged, beaten choked or burnt; and being threatened with or actually abused with a gun, knife or other weapon. Finally, sexual abuse was defined as having been physically forced to have sex when one did not want to; having sex with one's intimate partner when one did not want to out of fear of what he might do; and/or having been forced to do something sexually that was degrading or humiliating. A 4-point frequency of occurrence scale was used: (1) never, (2) once, (3) few times, (4) many times. Scoring guidelines were devised for the purposes of this study, and were based on prior work in similar South African Studies (Dunkle et al., 2004; Koen et al., 2014). Participants were assessed as having no exposure to IPV, if all responses were "never" or one response was "once" in the questionnaire.

Covariates

Sociodemographic characteristics: The study used an adapted version of the South African Stress and Health Study (SASH) (Myer, Stein, Grimsrud, Seedat, & Williams, 2008) to assess sociodemographic characteristics of participants. The questionnaire included assessment of employment status, marital status, highest level of education completed and household income. Additionally, the questionnaire assessed participant's ethnicity, as persistent socioeconomic and health disparities exist across racial groups. All sociodemographic characteristics were time-fixed assessed at enrollment.

Substance use: Substance use in this study was time-updated, assessed at each time-point with the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) (WHO ASSIST Working Group, 2002). The ASSIST assessed reported substance use across 10 categories, but due to low frequencies of other reported substance use, the current study only included data on maternal alcohol and tobacco use. Total scores are obtained for each substance by summing individual item responses, with a higher score indicative of greater risk for substance-related health problems. We used published guidelines for the ASSIST to classify scores into three categories: low risk, moderate risk and high risk (World Health Organization, 2010).

Childhood Trauma—History of childhood trauma in this study was time-fixed, assessed only at baseline visit with the Childhood Trauma Questionnaire-Short Form (CTQ)(D. P. Bernstein et al., 1994). The CTQ is a 28-item inventory assessing three domains of childhood abuse (sexual, physical and emotional) and two domains of childhood neglect (physical and emotional), occurring at or before the age of 12 years. Each item is scored on a frequency scale from 1 ("never true") to 5 ("very often true"), such that each subscale (domain of abuse or neglect) is scored on a spectrum from 5 (no history of abuse or neglect) to 25 (very extreme history of abuse or neglect). Cut-off scores for each clinical domain as defined in the CTQ manual (D. Bernstein, 1998) were used. Cut-off scores for each clinical domain as defined in the CTQ manual (D. Bernstein, 1998) were used. Respondents scoring within the "none or minimal" range were defined as below threshold for a history of childhood trauma; those in any other category (i.e. "low to moderate", "moderate to severe" or "severe to extreme") were defined as above threshold.

Data Analysis

Frequencies and percentages were calculated to describe the sociodemographic characteristics, different forms of IPV, substance use, and childhood trauma of the analytic sample at their baseline visit. We used Chi-square tests/Fisher exact tests to compare the distributions of sociodemographic characteristics, IPV, substance use and history of childhood trauma among those with and without significant depression symptoms at their baseline visit. Pooled-logistic regression models using generalized estimating equations (GEE) were used to determine relationships between the different forms of IPV (emotional, physical and sexual) and significant depression symptoms over the follow-up visits. To preserve the temporal sequence between IPV and significant depression symptoms, we lagged the IPV variables by one time-point, so that the model estimated association between IPV at a specific time-point and significant depression symptoms at a subsequent time-point. We included data from baseline and follow-up visits and specified an exchangeable working correlation structure to account for the dependency between the repeated measurements. All sociodemographic characteristics and history of childhood trauma were treated as time-fixed variables and all others were treated as time-updated variables at each follow-up visit. When constructing multivariable models, we included all variables hypothesized a priori to be associated with maternal significant depression symptoms. We initially conducted separate models for emotional, physical and sexual IPV and including all three forms of IPV simultaneously in a final multivariable model.

Sensitivity analysis

Because prior studies have suggested that a reciprocal relationship between IPV and depression symptoms (Karen M. Devries et al., 2013; Tsai, Tomlinson, et al., 2016), we tested for potential bi-directional relationships between IPV and significant depression symptoms. We accomplished this by estimating a model using IPV as the dependent variable and lagged- significant depression symptoms as a covariate. Therefore, this model estimated the association between significant depression symptoms at one time point and IPV at a subsequent time point (Tsai, Tomlinson, et al., 2016). For this model, we used a composite variable of any IPV exposure.

Attrition

Women experiencing any IPV and those with significant depressive symptoms at baseline visit were more likely to have subsequent missed visits or to drop out from the study, thus associations between IPV and depressive symptoms may be biased. We used an inverse probability of attrition weighing approach to adjust for attrition related selection bias as described previously (Weuve et al., 2012). We first constructed models of the probability of remaining in the study (and not lost to follow-up) and calculated predicted probabilities of remaining in the study for each woman and each time-point of participation. Using the predicted probabilities from this model, we computed analytical weights that represent the inverse proportion of the probability of remaining in the study. We performed all statistical analyses using SAS version 9.4 (SAS Institute Inc., Cary, North Carolina, USA).

Results

Sample characteristics

Of 1,225 mothers enrolled in the DCHS, between March 2012 and March 2015, 981 (86%) who had two or more visits with data available on significant depression symptoms were included in this analysis and contributed 3,102 observations across 4 time-points, with 62% follow-up rate from antenatal care visit (supplemental table 2). The women who were included in the study were significantly more likely to have lower educational attainment and lower income than the women who were excluded. There were no other significant differences found between those included and those excluded (data not shown). The mean age of women at enrollment was 27 years (standard deviation=6). Most women were unemployed (73%) and 88% reported an average household income less than R5000 (approximately 500 USD) per month (Table 1). Majority of the women reported that they had been previously pregnant (65%) and about 19% were HIV-positive. At their baseline visit, 32% reported any IPV in the past year and 15%, 12% and 5% reported one, two and three forms of IPV. Twenty-five percent, 21% and 6% reported emotional, physical and sexual IPV (Table 1). At the baseline visit, 33% scored above threshold on the childhood trauma scale and prevalence of significant depression symptoms was 21% (Table 1). At baseline visit, significant depression symptoms was significantly associated with being unemployed, reporting lower educational attainment, alcohol use, reporting a history of childhood trauma and all forms of IPV.

Factors associated with significant depression symptoms in multivariable analysis

Scoring above threshold on the childhood trauma scale was significantly associated with significant depression symptoms in all multivariable models (Tables 2, 3 & 4). In addition, in the final multivariable model adjusting for all three forms of IPV, scoring above threshold on the childhood trauma scale remained significantly associated with significant depression symptoms (aOR= 2.52, 95% CI: 1.81, 3.51; p=. <.001; Table 5). Educational attainment also emerged as a consistent predictor of significant depression symptoms in all models, with results indicating that women with some secondary education and those who reported completing secondary/tertiary education had reduced odds of significant depression symptoms compared to those with only primary school education (Tables 2, 3, 4 & 5). In addition, in all models, women scoring in the low-moderate risk for alcohol use on the ASSIST had reduced odds of significant depression symptoms as compared to those that never used alcohol, with no significant difference for those with high-risk alcohol use compared to those who never used alcohol.

Associations between different forms of IPV and significant Depression

In a pooled-multivariable model adjusted for attrition emotional and sexual IPV were significantly associated with significant depression. Specifically, women who reported emotional IPV were 1.39 times [adjusted odds ratio (aOR) =1.39, 95% confidence interval (CI); 1.03, 1.89; p=.002; Table 2) more likely to experience significant depression symptoms compared to those who did not report emotional IPV. Women who reported sexual IPV had 2.07 times (95% CI: 1.19, 3.61; p=<.001; Table 4) greater odds of experiencing significant depression symptoms compared to women who did not report sexual IPV. The relationship

between physical IPV and significant depression symptoms was not statistically significant (aOR=1.04, 95% CI: 0.74, 1.47; p=.485; Table 3). When all three IPV variables were included simultaneously into a multivariable logistic model, emotional IPV (aOR=1.55, 95% CI: 1.02, 2.34; p=.039) and sexual IPV (aOR=2.02, 95% CI: 1.10, 3.72; p=<.001) remained statistically significantly associated with significant depression symptoms (Table 5), whereas the association with physical IPV was not statistically significant (aOR=0.68, 95% CI: 0.44, 1.05; p=.485).

Sensitivity analysis

In a sensitivity analysis that tested for potential bi-directional relationship, women who were depressed as compared to those not depressed were 1.43 times more likely to report experiencing any IPV at a subsequent time point (95% CI: 1.15, 1.79, p=<.001; supplemental Table 1).

Discussion

In this study, reporting emotional or sexual IPV in the past 12 months was significantly associated with depression symptoms compared to women with no IPV exposure.

This study is among the few large population-based longitudinal studies investigating the association between different forms of IPV and significant depression symptoms among pregnant women in sub-Saharan African setting, Cape Town, South Africa. The associations between IPV and significant depression symptoms among women is well established in Countries in North America and Europe (Beydoun, Beydoun, Kaufman, Lo, & Zonderman, 2012; Lövestad, Löve, Vaez, & Krantz, 2017; Martin et al., 2006). However, longitudinal data from sub-Saharan Africa, particularly South Africa – where IPV rates are among the highest in the world – are only beginning to emerge. Our results are consistent with previous research that has found IPV to be associated with worse depressive symptoms. In one recent secondary analysis of data from a 3-year-cluster, randomized controlled trial of 1,288 pregnant women in peri-urban settings in Cape Town found that IPV intensity had a statistically significant association with depressive symptom severity (Tsai, Tomlinson, et al., 2016). The present study extends these findings by assessing different forms of IPV and documenting associations between emotional and sexual IPV and significant depression symptoms, independent of a history of childhood trauma experiences. Another longitudinal study among HIV-positive women in rural Uganda followed for over 2 years, found that experience of forced-sex victimization was associated with a subsequent increased level of depression symptom severity and increased risk of probable depression (Tsai, Wolfe, et al., 2016). Nevertheless, that study was among a cohort of HIV-positive women successfully retained in care, limiting its generalizability to other settings.

One of the important contributions of our study is the finding of an association of emotional IPV and increased odds of significant depression. The links between emotional IPV and mental health outcomes among women is less frequently studied when compared to sexual or physical IPV. Our findings are consistent with one population based study of women in Japan that found that women who experience only emotional abuse had increased symptoms of distress (Yoshihama et al., 2009). Taken together, these findings indicate that emotional

IPV might be as important an influence as sexual and physical IPV with significant depression symptoms. Emotional IPV can manifest in different forms including threats of violence, verbal abuse, humiliation, enforcement of social isolation and deprivation of financial and other basic resources by one's intimate partner (R. Jewkes, 2010). Emotional IPV may serve as a precursor to physical or sexual IPV (Renner, Habib, Stromquist, & Peek-Asa, 2014) or increases its frequency (Outlaw, 2009). Therefore, our study suggests a need for health care professionals to assess emotional violence in addition to sexual or physical partner violence in their patients experiencing depression symptoms.

In our study, sexual IPV was more robustly associated with significant depression symptoms compared to other forms of IPV. Our finding is consistent with a large body of literature demonstrating the adverse effects of sexual IPV on the mental health of women (Karen M. Devries et al., 2013). Traumatic and psychological distress linked to sexual IPV is likely a mechanism whereby IPV promotes development of depressive symptoms. The enduring stress, low self-esteem, isolation, hopelessness and physical pain due to experiences of sexual IPV can lead to mental health problems – particular depression (Dillon, Hussain, Loxton, & Rahman, 2013; Ellsberg, Jansen, Heise, Watts, & Garcia-Moreno, 2008; Rees et al., 2011).

Although, the accumulation of evidence from extant studies suggest a causal association between IPV and depression symptoms, there is some evidence of more complex bidirectional relationship between IPV and depressive symptoms (Karen M. Devries et al., 2013; Tsai, Tomlinson, et al., 2016). In our sensitivity analysis, we found that depression symptoms were also associated with subsequent IPV (supplemental table 6). The study by Tsai and colleagues (2016), found a statistically significant relationship between depressive symptoms and experiencing IPV at a subsequent time-point (Tsai, Tomlinson, et al., 2016). Symptoms of depression may hinder the ability of women to leave an abusive or potentially abusive relationship (Iverson et al., 2011). Additionally, depressive symptoms may increase the odds of subsequent IPV by contributing to perceptions of inescapable threat by diminishing the cognitive recognition of imminent harm from current abusers or from other triggers linked to IPV (Breslau, Davis, Andreski, Peterson, & Schultz, 1997; Cougle, Resnick, & Kilpatrick, 2009). Additional investigation is needed to better understand the processes by which depressive symptoms may predispose to IPV.

Our study has some limitations. We relied on self-reported data for all variables used in the analysis. Particularly for the IPV, and history of childhood trauma, self-report may be prone to non-disclosure and recall bias. Underreporting of IPV and childhood trauma may occur, leading to underestimation of the association with significant depression. Second, although we aimed to preserve the temporal ordering of IPV and depression symptom relationship; we cannot infer causality regarding these associations. Because there was some overlap in the recall periods for IPV across time-points, we were unable to determine definitively that new experiences of IPV were associated with significant depressive symptoms at a subsequent time point. Related to this issue is that some of our study variables were not measured on a consistent timeframe as the outcome (e.g. alcohol and tobacco use). Third, there was a substantial overlap between the different forms of IPV, such that some of the participants in the reference group for a particular form of IPV may have experienced other

forms of IPV, potentially driving odds ratios toward the null. Fourth, significant depression symptoms in our study were measured using the EPDS, which is a screening tool originally developed for screening for the identification of postpartum depressive symptoms (Cox et al., 1987). Although, the EPDS has been shown to reliably and validly measure perinatal depression symptoms severity or screen for postpartum depression in African populations (Tsai et al., 2013), it is not a diagnostic classification of depression or of more severe forms of depression (e.g. major depressive disorders). Moreover, the recall period of the EPDS was the past 7 days, which can characterize a woman's recent depression symptoms but not how she feels 3- or 6-months ago. Fifth, coercive control and stalking, which are other forms of IPV and not included in our study may also be an important predictors of significant depressive symptoms as prior studies suggest (Cavanaugh et al., 2012; Lacey, McPherson, Samuel, Powell Sears, & Head, 2013; Mechanic, Weaver, & Resick, 2008). Finally, our study did not adjust for additional factors that may confound the associations between IPV and significant depressive symptoms including coexisting conditions (e.g. diabetes, hypertension)(Thompson & Ajayi, 2016), weight loss/gain, present or past pregnancy (Ali, Azam, Ali, Tabbusum, & Moin, 2012) complications and lack of social support (Biaggi, Conroy, Pawlby, & Pariante, 2016). In addition, most of our sociodemographic factors were measured as time-stable covariates. Changes in some sociodemographic factors during the study follow-up period such as marital status and income can also affect depression symptoms suggesting a potential for residual confounding in our study. However, our study has many strengths including our use of data from a large prospective study of women in South Africa, a country with high prevalence of IPV and depressive symptoms. In addition, our study also assessed different forms of IPV and accounted for many of the potential confounding factors of the relationship between IPV and depression symptoms particularly childhood trauma. Our study provides a significant addition to the literature, given that longitudinal studies of different forms of IPV and depressive symptoms among women from sub-Saharan Africa are scare (Karen M. Devries et al., 2013; Tsai, Tomlinson, et al., 2016; Tsai, Wolfe, et al., 2016).

In sum, our study confirms findings from North American and European countries of the associations between experiences of IPV and significant depression symptoms among woman in Cape Town, South Africa, and highlights the adverse impact of emotional IPV on significant depression symptoms in addition to sexual IPV. These findings have important policy implications for women's health both during pregnancy and postpartum. There is a need for health care professionals caring for women during this period to screen for all subtypes of IPV, particularly among women with depression symptoms. Given that, screening alone does not reduce IPV, additional research and resources is urgently needed to develop and scale up effective healthcare-based and community-based interventions to prevent and reduce all subtypes of IPV.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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Table 1.

Baseline Characteristics of the Sample by Significant Depression

| | Overall | | Significant Depression Symptoms | | | | |
| | | | Yes | | No | | |
Characteristics	N	%	n	%	n	%	p-value
Total	980	100	208	24.0	660	76.0	
Age, mean (SD)	27 (6.0)		26 (6.0)		27 (6.0)		0.09
Site							
Mbekweni	535	54.5	101	48.6	363	55.0	0.10
Newman	446	45.5	107	51.4	297	45.0	
Race							
Black	534	54.5	102	49.0	360	54.6	0.16
Mixed race	446	45.5	106	51.0	299	45.4	
Marital Status							
Single	588	60.0	127	61.1	392	59.5	0.69
Employment							
Not working	725	73.9	168	80.8	477	72.3	0.01
Income							
<ZAR1000/m	379	38.6	88	42.3	255	38.6	0.64
ZAR1000–5000/m	483	49.2	96	46.2	324	49.1	
>ZAR5000/m	119	12.1	24	11.5	81	12.3	
Educational attainment							
Primary	74	7.5	26	12.5	43	6.5	0.01
Some secondary	535	54.5	114	54.8	362	54.8	
Completed secondary/any tertiary	372	37.9	68	32.7	255	38.6	
Multigravida	640	65.2	137	65.9	432	65.5	0.91
HIV Positive	183	18.7	35	16.8	122	18.5	
Childhood trauma (CTQ)							
Above threshold	331	34.4	109	52.4	186	28.2	<0.01
Alcohol involvement (ASSIST)							
Never	644	65.6	117	56.3	414	62.7	<0.01
Low-moderate risk	242	24.7	55	26.4	187	28.3	
High risk	95	9.7	36	17.3	59	8.9	
Tobacco involvement (ASSIST)							
Never	670	68.3	129	62.0	431	65.3	0.16
Low-moderate risk	63	6.4	11	5.3	52	7.9	
High risk	248	25.3	68	32.7	177	26.8	
Emotional IPV[†]	252	25.7	84	40.4	155	23.5	<0.01
Physical IPV[†]	211	21.5	79	38.0	115	17.4	<0.01

			Significant Depression Symptoms				
	Overall		Yes		No		
Characteristics	N	%	n	%	n	%	p-value
Sexual IPV[†]	65	6.6	35	16.8	26	3.9	<0.01

Note- EPDS=Edinburg Postnatal Depression Scale; Above Threshold defined as 13 on EPDS; SD=Standard Deviation, ZAR= South African Rand; IPV=Intimate Partner Violence; CTQ=Childhood Trauma Questionnaire; ASSIST= Alcohol, Smoking and Substance Involvement Screening Test

[†]Past year

[*]p<.05

[**]p<.01

[***]p.<.001

Table 2.

Multivariable Models of the Association Between Emotional IPV and Significant Depression Symptoms

	Odds ratio (95% CI)	
	Not adjusted for attrition	**Adjusted for attrition**
Age	0.99 (0.96, 1.02)	1.01 (0.97, 1.05)
Race (vs. Black)		
Mixed race	1.20 (0.50, 2.86)	2.10 (0.60, 7.35)
Marital status (vs. Married/cohabiting)		
Single	1.02 (0.77, 1.34)	1.51 (1.01, 2.26)
Site (vs. Mbekweni)		
Newman	1.39 (0.60, 3.21)	1.05 (0.29, 3.81)
Gravidity (vs. Multigravida)		
Primigravida	0.97 (0.72, 1.32)	1.11 (0.71, 1.74)
Work (vs. not working)		
Working	0.81 (0.59, 1.12)	0.86 (0.57, 1.31)
Education (vs. primary)		
Some secondary	0.63 (0.44, 0.92) [***]	0.53 (0.33, 0.80) [***]
Completed secondary/any tertiary	0.54 (0.36, 0.81) [***]	0.46 (0.28, 0.76) [***]
Income (vs. <ZAR1000/m)		
ZAR1000–5000/m	0.93 (0.72, 1.20)	1.08 (0.77, 1.52)
>ZAR5000/m	1.07 (0.69, 1.66)	0.98 (0.57, 1.68)
Alcohol (vs. never)		
Low-moderate risk	0.78 (0.59, 1.03)	0.69 (0.48, 0.99) [*]
High risk	1.24 (0.92, 1.65)	1.17 (0.82, 1.69)
Tobacco (vs. never)		
Low-moderate risk	0.68 (0.42, 1.12)	0.55 (0.28, 1.01)
High risk	0.97 (0.72, 1.30)	1.00 (0.66, 1.50)
HIV status (vs. negative)		
Positive	1.08 (0.79, 1.51)	1.14 (0.73, 1.76)
Childhood abuse (vs. below threshold)		
Above threshold	2.42 (1.91, 3.08) [***]	2.52 (1.80, 3.51) [***]
Emotional IPV (vs. none) [†]	1.32 (1.05, 1.66) [**]	1.39 (1.03, 1.89) [**]

Note- EPDS=Edinburg Postnatal Depression Scale; CI=confidence interval; Above Threshold defined as 13 on EPDS; SD=Standard Deviation, ZAR= South African Rand; IPV=Intimate Partner Violence; CTQ=Childhood Trauma Questionnaire; ASSIST= Alcohol, Smoking and Substance Involvement Screening Test

[†] Past year

[*] p<.05

[**] p<.01

***
p.<.001

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Table 3.

Multivariable Models of the Association Between Physical IPV and Significant Depression Symptoms

	Odds ratio (95% CI)	
	Not adjusted for attrition	**Adjusted for attrition**
Age	0.99 (0.96, 1.02)	1.00 (0.97, 1.04)
Race (vs. Black)		
Mixed race	1.22 (0.54, 3.00)	1.76 (0.59, 5.26)
Marital status (vs. Married/cohabiting)		
Single	1.00 (0.75, 1.33)	1.41 (0.97, 2.05)
Site (vs. Mbekweni)		
Newman	1.41 (0.62, 3.20)	1.20 (0.39, 3.66)
Gravidity (vs. Multigravida)		
Primigravida	0.97 (0.71, 1.33)	1.05 (0.69, 1.60)
Work (vs. not working)		
Working	0.82 (0.61, 1.15)	0.87 (0.58, 1.32)
Education (vs. primary)		
Some secondary	0.64 (0.44, 0.93)[*]	0.51 (0.32, 0.82)[*]
Completed secondary/any tertiary	0.54 (0.35, 0.84)[*]	0.45 (0.27, 0.75)[*]
Income (vs. <ZAR1000/m)		
ZAR1000–5000/m	0.93 (0.72, 1.20)	1.07 (0.76, 1.51)
>ZAR5000/m	1.06 (0.68, 1.66)	0.98 (0.57, 1.69)
Alcohol (vs. never)		
Low-moderate risk	0.79 (0.60, 1.04)	0.65 (0.45, 0.94)[*]
High risk	1.25 (0.94, 1.08)	1.20 (0.83, 1.73)
Tobacco (vs. never)		
Low-moderate risk	0.68 (0.41, 1.11)	0.55 (0.29, 1.01)
High risk	0.97 (0.72, 1.31)	1.02 (0.67, 1.54)
HIV status (Vs. negative)		
Positive	1.07 (0.78, 1.48)	1.13 (0.72, 1.76)
Childhood abuse (vs. below threshold)		
Above threshold	2.45 (1.93, 3.11)[***]	2.57 (1.84, 3.58)[***]
Physical IPV (vs. none) [†]	1.15 (0.90, 1.47)	1.04 (0.74, 1.47)

Note- EPDS=Edinburg Postnatal Depression Scale; CI=confidence interval; Above Threshold defined as   13 on EPDS; SD=Standard Deviation, ZAR= South African Rand; IPV=Intimate Partner Violence; CTQ=Childhood Trauma Questionnaire; ASSIST= Alcohol, Smoking and Substance Involvement Screening Test

[†]Past year

[*]p<.05

[**]p<.01

***
p.<.001

Table 4.

Multivariable Models of the Association Between Sexual IPV and Significant Depression Symptoms

	Odds ratio (95% CI)	
	Not adjusted for attrition	Adjusted for attrition
Age	0.98 (0.96, 1.01)	1.00 (0.97, 1.03)
Race (vs. Black)		
Mixed	1.25 (0.56, 2.80)	1.81 (0.64, 5.36)
Marital status (vs. Married/cohabiting)		
Single	0.99 (0.76, 1.32)	1.39 (0.95, 2.02)
Site (vs. Mbekweni)		
Newman	1.32 (0.58, 2.98)	1.09 (0.37, 3.14)
Gravidity (vs. Multigravida)		
Primigravida	0.83 (0.60, 1.14)	1.05 (0.69, 1.60)
Work (vs. not working)		
Working	0.85 (0.62, 1.16)	0.86 (0.57, 1.30)
Education (vs. primary)		
Some secondary	0.63 (0.44, 0.91) [*]	0.53 (0.34, 0.82) [*]
Completed secondary/any tertiary	0.54 (0.37, 0.81) [*]	0.42 (0.28, 0.77) [*]
Income (vs. <ZAR1000/m)		
ZAR1000–5000/m	0.93 (0.72, 1.21)	1.07 (0.75, 1.51)
>ZAR5000/m	1.04 (0.68, 1.60)	0.93 (0.55, 1.58)
Alcohol (vs. never)		
Low-moderate risk	0.77 (0.58, 1.03)	0.66 (0.46, 0.96) [*]
High risk	1.27 (0.95, 1.70)	1.21 (0.84, 1.75)
Tobacco (vs. never)		
Low-moderate risk	0.70 (0.42, 1.15)	0.57 (0.30, 1.07)
High risk	0.97 (0.72, 1.27)	1.01 (0.67, 1.57)
HIV status (Vs. negative)		
Positive	1.07 (0.77, 1.48)	1.12 (0.72, 1.75)
Childhood abuse (vs. below threshold)		
Above threshold	2.40 (1.89, 3.05) [***]	2.52 (1.81, 3.51) [***]
Sexual IPV (vs. none) [†]	1.83 (1.27, 2.64) [***]	2.07 (1.19, 3.61) [***]

Note- EPDS=Edinburg Postnatal Depression Scale; CI=confidence interval; Above Threshold defined as 13 on EPDS; SD=Standard Deviation, ZAR= South African Rand; IPV=Intimate Partner Violence; CTQ=Childhood Trauma Questionnaire; ASSIST= Alcohol, Smoking and Substance Involvement Screening Test

[†] Past year

[*] p<.05

[**] p<.01

*** p.<.001

Table 5.

Multivariable Models of the Independent Associations Between Different Forms of IPV and Significant Depression Symptoms

	Odds ratio (95% CI)	
	Not adjusted for attrition	**Adjusted for attrition**
Age		
Race (vs. Black)	0.99 (0.96, 1.01)	1.00 (0.97, 1.03)
Mixed	1.26 (0.55, 2.85)	1.93 (0.71, 5.23)
Marital status (vs. Married/cohabiting)		
Single	1.01 (0.77, 1.33)	1.36 (0.94, 1.97)
Site (vs. Mbekweni)		
Newman	1.30 (0.57, 2.98)	1.00 (0.36, 2.76)
Gravidity (Ref= Multigravida)		
Primigravida	0.98 (0.72, 1.34)	1.04 (0.69, 1.57)
Work (vs. not working)		
Working	0.83 (0.62, 1.16)	0.87 (0.58, 1.32)
Education (vs. primary)		
Some secondary	0.65 (0.45, 0.94) [*]	0.52 (0.33, 0.80) [***]
Completed secondary/any tertiary	0.54 (0.36, 0.81) [***]	0.46 (0.29, 0.78) [***]
Income (vs. <ZAR1000/m)		
ZAR1000–5000/m	0.93 (0.72, 1.21)	1.07 (0.76, 1.51)
>ZAR5000/m	1.04 (0.68, 1.62)	0.93 (0.55, 1.58)
Alcohol (vs. never)		
Low-moderate risk	0.77 (0.58, 1.02)	0.66 (0.46, 0.96) [*]
High risk	1.25 (0.94, 1.67)	1.20 (0.83, 1.73)
Tobacco (vs. never)		
Low-moderate risk	0.70 (0.42, 1.16)	0.58 (0.31, 1.08)
High risk	0.96 (0.72, 1.29)	0.99 (0.64, 1.50)
HIV status (Vs. negative)		
Positive	1.07 (0.78, 1.48)	1.13 (0.73, 1.76)
Childhood abuse (vs. below threshold)		
Above threshold	2.38 (1.88, 3.03) [***]	2.52 (1.81, 3.51) [***]
Emotional IPV (vs. none) [†]	1.29 (1.02, 1.73) [*]	1.55 (1.02, 2.34) [*]
Physical IPV (vs. none) [†]	0.87 (0.63, 1.20)	0.68 (0.44, 1.05)
Sexual IPV (vs. none) [†]	1.72 (1.15, 2.57) [***]	2.02 (1.10, 3.72) [***]

Note- EPDS=Edinburg Postnatal Depression Scale; CI=confidence interval; Above Threshold defined as 13 on EPDS; SD=Standard Deviation, ZAR= South African Rand; IPV=Intimate Partner Violence; CTQ=Childhood Trauma Questionnaire; ASSIST= Alcohol, Smoking and Substance Involvement Screening Test

[†] Past year

*
 p<.05

**
 p<.01

***
  p.<.001

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