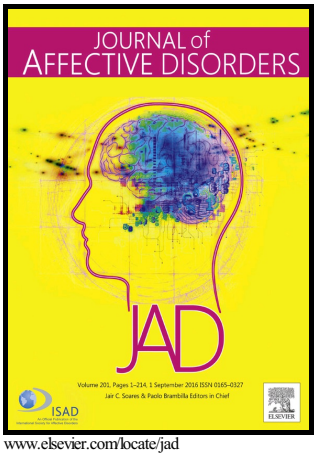

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Adverse childhood experiences and intimate partner violence during pregnancy and their association to postpartum depression

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Abstract

Background. Adverse childhood experiences (ACEs) and intimate partner violence (IPV) are recognized global health problems. Both ACEs and IPV have been linked to adverse physical and mental health problems for both mothers and infants. The aim of this study was to determine the prevalence of physical and/or sexual ACEs and IPV and their association to symptoms of postpartum depression among postpartum women in sub-Saharan Africa.

Methods. A cross-sectional survey was conducted in three health centers in the three districts of Dar es Salaam, comprising Ilala, Kinondoni and Temeke. A total of 500 women were interviewed by two trained midwife nurses during their routine postnatal care. The women were asked about their experiences of adverse childhood experiences, intimate partner violence and symptoms of postpartum depression.

Results: Of the 500 women who were interviewed, 39.4% (n=197) reported to have experienced physical and/or sexual ACE and 18.8% (n=94) experienced physical and/or sexual IPV during their index pregnancy. Physical ACE (AOR 2.6, 95% CI: 1.50-4.57), sexual ACE (AOR 2.7, 95% CI: 1.35-5.41), physical IPV (AOR 5.8, 95% CI: 2.98-11.43) and Sexual IPV (AOR 5.5, 95%CI: 2.51, 12.09) were significantly associated with symptoms of postpartum depression.

Conclusion: Four out of ten women reported to have experienced ACEs and two out of ten women reported IPV in the index pregnancy which was significantly associated with symptoms of postpartum depression. These results are alarming and call upon the attention of health workers and the community at large in prevention, screening and early intervention of ACEs, IPV and symptoms of postpartum depression.

Key words: adverse childhood experiences, intimate partner violence, postpartum depression, pregnancy, abuse

Introduction

Adverse childhood experiences (ACEs) are negative experiences a child might face in the first 18 years of life. ACEs have been classified as abuse (physical, sexual and emotional abuse), household challenges (violence, mental illness, parental separation, and availability of a criminal household member), and neglect (either physical, or sexual neglect, or both) (Bynum et al., 2010). It is estimated that six out of ten people in the United States general population have experienced at least some form of ACE (Brown et al., 2013). A national study conducted in Tanzania on violence against children reported that three out of 10 girls aged 13 to 24 reported at least one experience of sexual abuse before the age of 18. More than eight out of 10 of these girls who experienced sexual violence prior to the age of 18 years also experienced physical violence (UNICEF Tanzania, 2011). These numbers pose great concern as ACEs have been linked to adverse health outcomes such as cardiovascular diseases, cancer, diabetes, mental health disorders, substance abuse and premature death (Brown et al., 2009; Brown et al., 2013; Chapman et al., 2013; De Venter et al., 2013; Jewkes et al., 2010; Kabiru et al., 2010; Spertus et al., 2003). It is not only that ACEs impose this huge disease burden on individual and national health profiles but also ACEs have been linked to intergenerational transfer or toleration of violence in adult relationships (Stith et al., 2000).

In addition to ACEs, intimate partner violence (IPV) is a serious public health problem in Tanzania. According to the Tanzania Demographic Health Survey of 2016 the lifetime prevalence of IPV was said to be 44% (Tanzania demographic health survey, 2016) among women. Lifetime IPV in pregnancy, according to a population based survey, was reported to be 12% among ever partnered women in Dar es Salaam and 9 % in Mbeya (Stockl et al., 2012). A facility-based survey in Dar es Salaam estimated that physical and/or sexual IPV during pregnancy to range from 19% to 27% (Mahenge et al., 2013; Mahenge et al., 2016). Despite the known physical and mental effects of IPV during pregnancy to both the mother and the infant most cases go unreported and thus most of the women do not receive any interventions which puts them and their unborn children at risk (Alhusen et al., 2015; Mahenge et al., 2013).

Adverse childhood experiences and intimate partner violence during pregnancy have been linked to postpartum depression, with women who experience IPV being two to three times more likely to have postpartum depression (Beydoun et al.,2012; Kendall-Tackett, 2007; Sit et al., 2015; Wosu et al., 2015). A study done in rural Bangladesh also indicted that women

who experienced physical IPV were three more times likely to suffer from depressive symptoms at 6-8 months after childbirth (Kabir et al., 2014).

Despite the fact that some of the studies in the US and Peru have established the association between ACEs and IPV during pregnancy with postpartum depression (Nelson et al., 2010; Zhong et al., 2016), there is a paucity of literature in sub-Saharan Africa. The aim of this study was to establish the existence of ACEs and IPV during pregnancy as well as their association to symptoms of postpartum depression in Dar es Salaam, Tanzania.

Materials and methods

A cross-sectional study was conducted in three health centers in Dar-es -Salaam between December 2014 and March 2015. Dar-es Salaam comprised of three districts namely Ilala, Kinondoni and Temeke at the time the study was conducted. We selected one health center from each of the three districts, based on their representative high attendance of women for routine post-natal care. At the health center, trained midwives approached women soon after their routine postnatal care which comprises vaccinations, health promotion, family planning and attention to babies in need of extra care due to birth complications. The daily attendance of women for the postnatal clinics ranged from 50 to 200. The participants provided informed consent. The study received ethical clearance from National Institute of Medical Research (NIMR) in Dar-es-Salaam, Tanzania and University of Heidelberg and approval was also received from the regional medical office, the district medical officers and the medical officers that were in-charge in the respective hospitals.

All attending mothers aged 18 years and older who were physically fit and without cognitive impairment were invited to participate in the study. The response rate was 97%: 541 women were approached to take part in the study and only 18 declined to participate. We excluded 23 women from the study: 15 for security reasons (they attended the clinics with their partners and such partner presence could be intrusive and unsafe) and eight because they were not the biological mothers.

Structured face-to-face interviews were done in separate private rooms by two trained midwife nurses. Women in distress and those who had experienced IPV were referred to the mental health and gender based violence (GBV) intervention units in the respective health centers.

The questionnaire captured women's sociodemographic characteristics, physical and sexual childhood adverse experiences, as well as physical and sexual intimate partner violence during pregnancy and symptoms postpartum depression.

The sociodemographic characteristics were captured by questions on the participants' age, marital status, participants' education, employment status, partners' age and education. The adverse childhood experience scale captured physical violence during childhood by two questions, (being spanked, slapped, kicked or beat up or being hit or cut with an object, for example a knife or cane) , sexual violence was captured by four questions, (being touched or sexually fondled, making you touch them in a sexual way, attempted oral, vaginal or anal sex and lastly actually having had oral, vaginal &anal sex with you) and psychological abuse by two questions, (being insulted, humiliated or yelled at and threatened or actually abandoned or thrown out of the house) . The ACE scale has not been validated in Tanzania though similar questions have been used in the national survey on violence against children (UNICEF Tanzania, 2011).

The WHO IPV scale (Garcia-Moreno et al., 2005) captured physical violence such as being slapped by a partner or thrown object, pushed or shoved to the ground, punched or hit, kicked, dragged, or beat up, burned on purpose, and threatened to use weapon to hurt. Sexual violence by a partner, which included 3 questions such as forced sex, being threatened by the partner, agreed to have sex because of fear and forced sex other than vaginal sex.

The patients' health questionnaire with 9 questions (PHQ9) was used to capture depression. The PHQ9 scores using the nine DSM IV criteria of depression with scores of 0 (not at all), 1 (several days), 2 (more than half of days) and 3 (nearly every day). The scores were summed up; a cut off of 9 was used to determine if women had postpartum depression (personal communication). All the mentioned tools used have been validated and used in the Tanzanian context (UNICEF Tanzania, 2011).

Data analysis was done using Stata 12 IC. A woman was considered to have experienced ACEs or IPV if she answered yes to any form of ACE or IPV. Frequencies were run to estimate the existence of ACEs, IPV and postpartum depression. Multivariate regressions between different forms of ACEs, IPV and postpartum depression were conducted controlling for sociodemographic characteristics including women's age, marital status, employment status, and partner's age. Other variables that were controlled for included whether the respondent wanted the index pregnancy and the presence of childhood ACEs (Table 2). We used a probability value of $p \leq 0.05$ to define the level of statistical significance, and an odds ratio <1 represents a protective factor, where as an odds ratio >1 was considered a risk factor.

Results

A total of 500 women took part in the study, 168(33.6%) from Kinondoni district, 182(36.4%) Temeke district, and 150(30%) from Ilala district. The participants' age ranged from 18 to 48, with a mean age of 27.

The majority of the participants were in the age group 22-35 (337, 67.4%), married (337, 67.4%), with primary education (350, 70%) and at the time of the interview, unemployed meaning not working (292, 58.4%). A total of 116 women (23.2%) were in the age group 18-21, 54 women (10.4%) were 36 years and above. Women who were cohabiting were 84(16.8%) and 79(15.8%) were single.

In terms of education attainment, 25(5%) had no formal education and 125(25%) had secondary school education. A total of 156(31.2%) were self–employed, mainly in small business enterprises and 52(10.4%) were formally employed.

Partners mean age was around 32, with the age range of 18 to 65, 98(16.6%) were 18-25, 251(50.2%) in the age group 26-35 and those who were 36 above were 151(30.2%). The majority had primary education and lower 293 (58.6%) and more than half of them were self-employed 288(57.6%)

Of all participating women, 32% (164) reported physical adverse childhood experience, sexual adverse childhood experience was reported by 11.6% (58) while psychological adverse childhood experience was reported by 25.6% (128) of women. Physical and/or sexual ACEs were reported by 39.4 % (197). There were 12% (62) of women who experienced physical IPV in their index pregnancy and 9% (45) had experienced sexual IPV. Physical and/or sexual IPV in the index pregnancy was 18.8 % (94). The proportion of women who experienced both physical and/or sexual ACEs and physical and/or sexual IPV in the index pregnancy was 10.4% (54).

Table 1: Socio-demographic characteristics and their association with symptoms of postpartum depression.

		Association with postpartum Depression n=68(13%)		
Variable	Total Sample N (%)	n (%) of those with depression	χ^2	P
Station				
Kinondoni	168(33.6)			
Temeke	182(36.4)			
Illala	150(30.0)			
Respondent's Age				
≤21	116(23.2)	26(22.4)	11.527	0.003
22-35	332(66.4)	39(11.8)		
≥36	52(10.4)	3(5.8)		
Respondent's Educational attainment				
No formal education	25(5.0)	3(12)	0.1702	0.918
Primary education	350(70.0)	49(14)		
Secondary education and above	125(25.0)	16(12.8)		
Marital Status				
Married	337(67.4)	28(8.31)	25.1762	< 0.001
Cohabiting	84(16.8)	19(22.6)		
Single	79(15.8)	21(26.6)		
Respondent's employment status				
employed	52(10.4)	2(3.9)	6.7764	0.034
Unemployed	292(58.4)	48(16.4)		
Self-employed	156(31.2)	18(11.5)		
Partners age				
≤25	98(19.6)	26(26.5)	18.6314	< 0.001
26-35	251(50.2)	30(12.0)		
≥36	151(30.2)	12(8.0)		
Partners educational attainment				
Primary education or lower	293(58.6)	43(14.7)	0.6970	0.404
Secondary education and above	207(41.4)	25(12.1)		

Partners employment status				
Employed	212(42.4)	33(15.4)	1.2107	0.271
Self employed	288(57.6)	35(12.2)		
Wanted to get pregnant				
No	213(42.6)	44(20.7)	15.7286	< 0.001
Yes	287(57.4)	24(8.4)		
Physical ACE				
No	336(67.2)	30(8.9)	19.0245	< 0.001
Yes	164(32.8)	38(23.2)		
Sexual ACE				
No	442(88.4)	50(11.3)	16.9723	< 0.001
Yes	58(11.6)	18(31.1)		
Psychological ACE				
No	372(74.4)	35(9.4)	21.7254	< 0.001
Yes	128(25.6)	33(25.8)		
Physical and/or Sexual ACE				
No	303 (60.6)	20 (6.6)	32.06	< 0.001
Yes	197(39.4)	48 (24.4)		
Any ACE				
No	254 (50.8)	11 (4.3)	37.75	<0.001
Yes	246 (49.2)	57 (23.2)		
Physical IPV in their index pregnancy				
No	439(87.8)	38(8.7)	74.8519	< 0.001
Yes	61(12.2)	30(49.2)		
Sexual IPV in their index pregnancy				
No	456(91.2)	51(11.2)	25.7364	< 0.001
Yes	44(8.8)	17(38.6)		
Physical and/or Sexual IPV during pregnancy				
No	408 (81.6)	31 (7.6)	67.98	<0.001
Yes	92 (18.4)	37 (40.2)		

Symptoms of postpartum depression were reported by 13.6% (68) of women at one month to nine months postpartum. Table 1 displays the association between socio-demographic factors and women's reports of postpartum depression.

Even after controlling for sociodemographic characteristics, physical ACE (AOR 2.6, 95% CI: 1.50-4.57), sexual ACE (AOR 2.7, 95% CI: 1.35-5.41) and psychological ACE (AOR 2.5, 95% CI: 1.44-4.49) remained associated with symptoms of postpartum depression. A combination of sexual and/or physical ACEs (AOR 3.82, 95% CI: 2.12-6.87) also showed a significant association with symptoms of postpartum depression. When we combined all

forms of childhood adverse experiences, the presence of any regardless of the absence of the other also showed a significant association with symptoms of postpartum depression (AOR 5.2, 95% CI: 2.63, 10.50).

Both physical IPV (AOR 5.8, 95% CI: 2.98-11.43) and sexual IPV (AOR 5.5, 95%CI: 2.51, 12.09) during pregnancy were also significantly associated with symptoms of postpartum depression. The presence of physical and/or sexual IPV during pregnancy showed a more pronounced significant association with symptoms of postpartum depression (AOR 6.10, 95% CI: 3.28-11.35).

Lastly, when we combined the presence of any ACE and any IPV during pregnancy, the effect of presence of any of those on postpartum depression was even greater (AOR 9.1, 95% CI: 4.50, 18.59).

Table 2: Different forms of ACEs & IPV and their association to symptoms of postpartum depression.

Variable	Total Population n (%)	Postpartum Depression n=68(13%): n (%)	AOR*
Physical ACE			
No	336(67.2)	30(8.9)	ref
Yes	164(32.8)	38(23.2)	2.6(1.50,5.56)
Sexual ACE			
No	442(88.4)	50(11.3)	ref
Yes	58(11.6)	18(31.1)	2.7(1.35,4.41)
Psychological ACE			
No	372(74.4)	35(9.4)	ref
Yes	128(25.6)	33(25.8)	2.5(1.44,4.49)
Any ACE			
No	254 (50.8)	11 (4.3)	Ref
Yes	246 (49.2)	57 (23.2)	5.2(2.63, 10.5)
Physical IPV during pregnancy			
No	439(87.8)	38(8.7)	ref
Yes	61(12.2)	30(49.2)	5.8(2.98,11.43)
Sexual IPV during pregnancy			
No	456(91.2)	51(11.2)	ref
Yes	44(8.8)	17(38.6)	5.5(2.52,12.09)
Physical and/or Sexual IPV during pregnancy			
No	407	30(7.4)	Ref
Yes	93	38(40.9)	6.1(3.28,11.35)
Any ACE and IPV during Pregnancy			

No	448	40(8.9)	Ref
Yes	52	28(53.9)	9.1(4.50,18.59)

AOR*: the multivariate logistic regression model was adjusted for respondent's age, marital status, employment status, partner age, whether the respondent wanted the index pregnancy, and the presence of Childhood ACEs for the IPV variable.

Discussion

This study found a significant association between physical and sexual ACE, physical and/or sexual IPV during pregnancy and postpartum depression, which was highest among women who reported experiencing both. Four out of 10 women experienced ACEs, two out of ten women experienced physical and/or sexual IPV during the index pregnancy, and 13.6% had symptoms of postpartum depression.

The prevalence of ACE in our study is lower than that found in the Violence against Children study in Tanzania(UNICEF, 2011) which estimated that one in three females aged 13 to 24 experienced at least one form of sexual violence prior the age of 18. In the case of physical violence, the Violence against Children Survey reported that around 74% of females experienced physical violence by either a relative, or authority figure (teacher). The differences in ACE rates might be due to recall bias due to the differing recall periods as most the women in this study were significantly older compared to those who took part in the VAC study.

The percentage of women who experienced ACEs in this sample is lower than the 39.1% of women who experienced sexual abuse and the 89.3% of women who experienced childhood physical punishment found in a study from rural South Africa (Jewkes et al., 2010). This study also found the prevalence of emotional abuse to be 54% and 41.6% for emotional neglect which also captured minor forms of abuse such as physical hardship and emotional neglect. In terms of childhood sexual abuse, the results in our study are almost close to the one done in Rakai, Uganda (Koenig et al., 2004) as both studies found that 14% of women reported that their first sexual intercourse was forced.

There are number of reasons that underline why some rates in this study are higher or lower than in other studies. The high prevalence of physical abuse during childhood in our study can be explained as a deep rooted cultural concept of physical punishment seen as acceptable and preferred way of disciplining children in most Tanzanian communities (UNICEF

Tanzania, 2011). Another reason could be linked to help seeking behaviors as most of the violence especially sexual violence in Tanzania goes unreported. Only one in five females, who experienced sexual violence prior to age of 18 sought any help, thus perpetrators walk free (UNICEF Tanzania, 2011). Also, this study was done among adult women and not conducted within a survey focused solely on the prevalence of violence against children, therefore only using the ACE scale and a limited number of questions.

The continuity of abuse from childhood to that of an intimate partner poses great concern to the mother and the child (Gelaye et al., 2010). In this study, 10.4% of women reported both childhood abuse and IPV during their index pregnancy, which raises key health trepidations. As numerous studies highlight (Stith et al., 2000; Gelaye et al., 2010; Montalvo-Liendo et al., 2015; Trickett et al., 2011), one of consequences of adverse childhood experiences is to tolerate adulthood violence. The link between adverse childhood experiences and IPV during pregnancy was reported to be three fold in a study done among Peruvian women (Barrios et al., 2015). The health consequences of the experience of both adverse childhood experiences and IPV according to a study done in a family planning clinic in Philadelphia included unintended pregnancies and low self-esteem (Nelson et al., 2015).

This study also found an association between symptoms of postpartum depression and different forms of adverse childhood experiences as well as with IPV during pregnancy. Women with ACE and IPV during pregnancy had more symptoms of postpartum depression than women who suffered ACE only or IPV only. These findings are consistent with a Philadelphia study that found that women who experienced any form of childhood abuse and experienced current abuse during pregnancy were 5 times likely to suffer from depressive symptoms (Nelson et al., 2010).

Though great care was taken into consideration, like establishment of rapport, and use of well-trained midwives, several limitations of this study must be taken into account. First, the study was done in health centers in Dar es Salaam, which is the biggest city in Tanzania, and the results therefore cannot be generalized to the rest of the population in Tanzania. Due to the sensitive nature of the study, some reporting bias must have emerged, as there might have been underreporting of the violence or the symptoms of depression due to embarrassment or stigma. There might have been issues with recall bias, which might have hindered to capture some of the ACEs. Lastly the study did not capture other forms of ACEs and IPV which might affect the mental health of the women as well.

Conclusion

Four out of ten women experienced physical and/or sexual adverse childhood experiences. One out of ten women experienced both, physical and/or sexual ACE and IPV during pregnancy. Those women were most likely to report symptoms of postpartum depression.

These results call for the attention of health care workers in different sectors, to look on to how they can screen and respond at an early level for women who have suffered adverse childhood experiences, IPV during pregnancy and postnatal depression when women attend postnatal clinics.

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Conflict of interest

The authors have no conflicts of interest.

Contributors

The conceptualization of the study was done by Bathsheba Mahenge, Heidi Stöckl & Albrecht Jahn. Data analysis was conducted by Mucho Mizinduko & Jacob Mazalale. The first draft of the manuscript was written by Bathsheba Mahenge & Jacob Mazalale. The first draft of the manuscript was then

reviewed by Heidi Stöckl & Albrecht Jahn and additional data analysis were conducted by Mucho Mizindiduko. All authors contributed to and have approved the final manuscript.

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Highlights

- Physical and/or sexual adverse childhood experiences (ACEs) were reported by 39.4 % (197) and physical and/or sexual intimate partner violence (IPV) in the index pregnancy was 18.8 % (94).
- Symptoms of postpartum depression were reported by 13.6% (68) of women at one month to nine months postpartum.
- A combination of sexual and/or physical ACEs (AOR 3.82, 95% CI: 2.12-6.87) and physical and /or sexual IPV during pregnancy (AOR 6.10, 95% CI: 3.28-11.35) showed a significant association with symptoms of postpartum depression.
- The presence of any childhood adverse experience and any IPV during pregnancy, the effect of presence of any of those on postpartum depression was even greater (AOR 9.1, 95% CI: 4.50, 18.59).