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Published in:
Acta Obstetricia et Gynecologica Scandinavica

DOI:
10.1111/aogs.14062

Publication date:
2021

Document version:
Accepted manuscript

Citation for published version (APA):

Go to publication entry in University of Southern Denmark's Research Portal

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Download date: 27. Oct. 2023
Does resilience moderate the effect of intimate partner violence on signs of depression among Tanzanian pregnant women: A cross-sectional study

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Conflicts of interest
None

Funding
The cohort study was funded by DANIDA (the Danish International Development Cooperation), Ministry of Foreign Affairs of Denmark, as part of the PAVE project (The Impact of Violence on Reproductive Health in Tanzania and Vietnam, project number 12-006KU).
**ABSTRACT**

**Introduction:** Exposure to intimate partner violence has been found to be associated with a multitude of poor health and quality of life outcomes. Among the risks exacerbated by intimate partner violence is prenatal depression. Resilience is hypothesized to protect against psychopathology after exposure to a traumatic influence. The present study aims to investigate resilience as a moderator of the effect of exposure to intimate partner violence on prenatal depression among pregnant women in Moshi, Tanzania.

**Material and methods:** In this cross-sectional study, nested within a larger longitudinal study, pregnant women receiving antenatal care were interviewed about exposure to intimate partner violence, signs of depression using the Edinburgh Postpartum Depression Scale, and resilience using the abbreviated Connor-Davidson Resilience Scale. Logistic regression was used to test the effect of the interaction term of resilience and exposure to intimate partner violence during pregnancy on the risk of high level of signs of depression.

**Results:** In total, 1013 women completed all interviews, 300 women reported exposure to intimate partner violence, and 113 had high levels of signs of depression. Mean resilience score was 14.26 (SD=9.45). Exposure to intimate partner violence was correlated with signs of depression (adjusted odds ratio: 6.49, confidence interval: 3.75 - 11.24). Resilience was not correlated with signs of depression, nor was the interaction term of resilience and exposure to intimate partner violence.

**Conclusions:** The study did not find that resilience acted as a moderator of the effect of exposure to intimate partner violence during pregnancy on the risk of prenatal depression. The cross-sectional design of the study may not be well suited to investigate resilience, which could take time to manifest. The abbreviated Connor-Davidson Resilience Scale has not been validated in a Tanzanian setting, or in the Swahili version. Practitioners should take note that all women and families affected by intimate partner violence should be afforded relevant assistance from social services, law enforcement, health care practitioners, and other relevant services, regardless of their apparent level of resilience.
Keywords
Prenatal depression; intimate partner violence; resilience; pregnancy complications, psychology; Sub-Saharan Africa.

Abbreviations
CD-RISC-10: Abbreviated Connor-Davidson Resilience Scale
EPDS: Edinburgh Post-partum Depression
IPV: intimate partner violence
PND: prenatal depression

Key message
One of many risks linked to intimate partner violence is prenatal depression. This cross-sectional study showed that resilience did not moderate this connection among Tanzanian women.
Limitations include a lack of validation of the resilience scale in Sub-Saharan Africa.

INTRODUCTION
Intimate partner violence (IPV) has been defined as violence between partners in an intimate relationship, including both heterosexual and same-sex relationships as well as violence committed by former intimate partners (1). Lipsky and Caetano distinguish between acts of physical violence, which includes coercing others to commit acts of physical violence; sexual violence; and emotional violence (1). Threats of physical or sexual violence are also included in these categories. A systematic literature review conducted by the World Health Organization showed that global lifetime-prevalence of physical and/or sexual IPV among women who have ever had a partner was 30.0%, and 38.8% in the East African region (2).
Studies from Tanzania have reported lifetime-prevalence of exposure to at least one type of IPV between 60.8% and 72.8% and a lifetime-prevalence of physical violence during pregnancy of 6.9% and 12.3% in urban and a rural settings, respectively (3–6).
Studies in both global and Tanzanian contexts showed that certain demographic variables are risk factors for exposure to IPV. These, among other factors, included young age, lower socio-
economic status, alcohol use, and lack of social support (3,7,8). Exposure to IPV may lead to poor health, such as gastrointestinal diseases, chronic pain, neurological symptoms, and in particular sexual and reproductive diseases, including sexually transmitted diseases and HIV/AIDS, as well as poor mental health outcomes (9). Specifically during pregnancy, IPV has been associated with adverse mental health outcomes such as posttraumatic stress disorder, prenatal depression (PND), postpartum depression, as well as low birth weight, and preterm birth (10–13).

In Tanzania, studies have reported prevalence of PND between 33.8% and 39.5% (14,15). Risk factors for PND have been reported to be low level of education, economic disadvantage, life-stress, lack of social support, unintended pregnancy, previous adverse pregnancy outcomes, and physical IPV (11,16,17). PND has also been found to be a risk factor for low birth-weight and preterm birth (18).

A seminal study in the evolution of the concept of resilience is the work of Werner and colleagues who followed a cohort of children born on Kuai, Hawaii, in 1955 (19,20). A substantial number of participants encountered several “potent predictors of negative developmental outcomes.” (20) In spite of this, a subset of these children did not develop learning or behavior problems and continued to do well in adulthood. These resilient individuals were characterized by their personal competence and determination, being supported by a spouse or partner as adults, and a high degree of spirituality. Although the concept of resilience was first applied to children, Bonanno has argued that resilience is a relevant concept in adults (21). Rodriguez et al. investigated resilience as a potential moderator of the effect of exposure to IPV on PND (22). They found that resilience weakened this effect, although their results were only barely statistically significant (p=0.05).

The ability to avoid depression is assumed to be enhanced by resilience. The aim of this study is to contribute to the evaluation of this assumption and, secondly, to the evaluation of resilience as a predictor of psychopathology given exposure to hardships during pregnancy. The mechanisms that contribute to the emergence of PND are not well described. Studying the possible connection between exposure to IPV, resilience, and PND is an important contribution to understanding the occurrence of PND.
MATERIAL AND METHODS

For the present study, a cross-sectional study design was adopted, nested within a longitudinal study conducted in Moshi Municipality, Tanzania, of women who attended antenatal care for the first time during the current pregnancy before gestational week 24. Other results of this study have been reported elsewhere (8,11–13). Data for this study were collected at three interviews: Firstly, at enrollment (before gestational week 24) when information on socio-demographic factors, reproductive health, chronic illness, HIV/AIDS status, relationship with partner, history of depression, previous exposure to IPV, and resilience was obtained; secondly, at gestational week 34 when information on exposure to IPV during pregnancy, depression symptoms, and social support was collected; and thirdly, at 40 days post-partum when data on signs of postpartum depression were collected. The data were collected among women who attended antenatal services at two health centers, Majengo and Pasua Health Centers, located in semi-urban Moshi Municipality, Kilimanjaro Region, Tanzania.

Moshi Municipality, with an estimated population of 200,000, is one of seven districts in Kilimanjaro Region. A total of 23 clinics provide primary antenatal care services in Moshi Municipality, serving about 7,000 to 8,000 pregnant women annually. About half of this number are served by Majengo and Pasua Health Centers.

Women registered at one of the two clinics for antenatal care during the period March 2014 to May 2015 were eligible for enrollment in the study. Inclusion criteria were: aged 18 years or older, planning to deliver in Moshi Municipality, and gestational age less than 24 weeks at the time of enrollment, confirmed by ultrasound scan. Exclusion criteria were: living outside Moshi Municipality, unwilling to participate in follow-up for the entire period of the study, abnormal growth in the uterus, and multiple pregnancy.

Interviews were conducted by six research assistants, who were female nurses aged 35 years or older with previous research experience, and who worked full-time on the project for its entire duration. Before commencing the study, research assistants received training over five days on how to conduct the interviews, with a view to reduce bias and enhance respect for the sensitive nature of the information obtained.
Interviews were conducted in a private room at the clinic. Only the interviewer and the participant were allowed to be present during the interview, with the exception of children under two years of age. Interviews were conducted in Swahili.

The study was designed and conducted to comply with ethical and safety recommendations for domestic violence research of the World Health Organization (23). All participants gave written informed consent and were provided contact information of support services such as medical care for them and their children (if any), and legal and police support available in Moshi Municipality, regardless of whether they reported exposure to violence.

Information on exposure to IPV was collected using a version of the tool used in the World Health Organization Multi-country Study on Women’s Health and Domestic Violence against Women, in Swahili (3). Questions were asked about emotional violence, physical violence, and sexual violence. Women who responded affirmatively to any questions about being exposed to IPV were asked whether this had happened before as well as during the current pregnancy.

Resilience was measured using the abbreviated Connor-Davidson Resilience Scale (CD-RISC-10), translated into Swahili (24). The CD-RISC-10 is a unidimensional measure comprised of 10 items adopted from the longer Connor-Davidson Resilience Scale 25, developed by American researchers Connor and Davidson (25). Each item is rated on a five-point scale (zero to four), with higher scores indicating greater resilience. The items include:

- ability to adapt to changes,
- confidence in ability to deal with future problems,
- ability to see humorous aspect of problems,
- belief that coping with stress can make them stronger,
- perception of being able to “bounce back”,
- belief in ability to achieve one’s goals in spite of obstacles,
- perception of being able to focus under pressure,
- not being easily discouraged by failure,
- perception of being strong in the face of challenges and difficulties,
- and perception of being able to handle unpleasant feelings.

Campbell-Sills and Stein have reported that the CD-RISC-10 had good reliability and that the scale was well suited to measure a moderator effect of resilience on the association between childhood trauma and current psychiatric symptoms, suggesting good validity (24). In Sub-Saharan Africa, Aloba et al. have studied the validity of the CD-RISC-10 scale in Nigeria, and Klasen et al. have applied the scale in Uganda (26,27).

Before employing the CD-RISC-10 scale, the last author of the present publication (DM) was granted permission for its use.
The Edinburgh Postpartum Depression Scale (EPDS) was used to measure signs of depression during pregnancy and postpartum (28). EPDS consists of 10 items addressing the mood and experiences of the woman during the last 7 days, rated on a four-point scale (0 to 3) based on the severity of the symptom, with higher scores indicating more severe signs of depression. A cut-off value of greater than or equal to 13 was applied to distinguish between low and high levels of signs of depression. Rochat and colleagues studied the prevalence of PND in women living in rural South Africa who were screened for HIV during antenatal care using this cut-off value, yielding a sensitivity and specificity of 0.69 and 0.78, respectively (29). When Cox and colleagues first described the EPDS, this cut-off value was also found to have good validity (28).

**Statistical analyses**

To investigate possible confounders in the data, bivariate comparisons were carried out between groups with high or low resilience score, and between groups exposed to or not exposed to at least one type of IPV during pregnancy. Student’s t-test, the Man-Whitney U-test, and the $\chi^2$-test were used as appropriate.

Logistic regression was applied to assess the importance of resilience as an effect modifier in the association between IPV during pregnancy and signs of depression during pregnancy. The dependent variable was level of reported signs of depression. The main independent variables were exposure to IPV during pregnancy, CD-RISC-10 score, as well the interaction term of the CD-RISC-10 score. The interaction term was the product of IPV during pregnancy (zero or one) and the CD-RISC-10 score. Available case analysis was used for the regression and categorical variables were handled using dummy coding.

Nine logistic regression models were constructed, all of which had high or low levels of signs of depression as the dependent variable. Firstly, one model (model 1), which consisted of the known risk factors for PND (also included in all other models) except for exposure to IPV, as independent variables (results not shown). These variables included: age, occupation, level of education, history of depression, self-reported HIV/AIDS status, desire to become pregnant at the time of conception, frequency of drinking during pregnancy, parity, relationship status, primary source of practical support, primary source of emotional support, perceived attention from partner during pregnancy, partner’s desire for the woman to become pregnant at the time of conception, partner’s sex preference, partner’s occupation, and partner’s frequency of
drinking. Secondly, four models (models 2-5), which consisted of all the same known risk factors for PND included in model 1 as independent variables, in addition to exposure to one type of IPV, or exposure to any type of IPV, and CD-RISC-10 score. In this way, model 2 included exposure to at least one type of IPV, model 3 included exposure to emotional IPV, model 4 included exposure to physical IPV, and model 5 included exposure to sexual IPV. Finally, four models (models 6-9) which consisted of the same independent variables as models 2-5 respectively, in addition to the interaction term between the CD-RISC-10 score and exposure to the respective type of IPV or any type of IPV.

All analyses were performed using R, version 3.4.0 (cran.r-project.org).

**Ethical review**

The study received approval from the Kilimanjaro Christian Medical University College Research Ethical Review Board with certification number 592 on 14 January 2014 with extension in 2015.

**RESULTS**

The number of women recruited as participants in the study is summarized in Figure 1. Initially, 1303 women attended antenatal care and were assessed for inclusion during the study period. Among these, 180 women did not meet inclusion criteria and were not enrolled in the study. A total of 1123 women completed the initial interview. In total, 1013 women completed the third interview. For the present study, only data from women who completed all three interviews were available.

Table 1 presents an overview of demographic characteristics and risk factors as well as exposure to IPV and resilience scores among participants with high and low levels of signs of depressions, respectively. A total of 1,007 participants were included in this study (six participants were excluded due to incomplete data). EPDS scores were found to be non-normally distributed.

The results of bivariate analyses showed that a high level of resilience (CD-RISC-10 score greater than or equal to the median=15) was significantly associated with lower age, lower parity, partner being the primary source of practical as well as emotional support, perceived level of attention from partner during pregnancy, partner’s child sex preference for index
pregnancy, partner’s occupation, as well as partner’s frequency of drinking (supporting information, Table S1 and S2). In addition, exposure to at least one type of IPV during pregnancy was significantly associated with history of depression, self-reported HIV/AIDS status, alcohol use during pregnancy, desire to become pregnant at the time of conception, partner not being primary source of practical as well as emotional support, relationship status, perceived level of attention from partner during pregnancy, partner’s desire for the woman to become pregnant at the time of conception, as well as partner’s frequency of drinking (results not shown).

The results of regression analysis are summarized in Table 2. Across models, exposure to IPV was found to have a significant effect on the risk of reporting high levels of depression symptoms. In no model did CD-RISC-10 score produce a significant effect, nor was there any effect of the interaction terms between CD-RISC-10 score and exposure to a type of IPV or any type of IPV.

DISCUSSION

The results of the present study did not show that resilience acted as a moderator of the effect of IPV during pregnancy on PND, nor did they show that resilience in itself had an effect on PND.

A separate analysis of the interaction between IPV and resilience with the dependent variable as postpartum signs of depressions in the same cohort also did not show any interaction effect, nor a main effect of resilience (results not shown). Results that showed a connection between IPV, postpartum depression, PND, low birth weight, and preterm birth have previously been published (11–13).

A limitation of the study was its cross-sectional design, which limited its ability to observe, for example, whether resilience remains stable over time, or whether resilience enhances later recovery from high levels depression symptoms. The study was unable to account for the time elapsed since the participants were exposed to IPV, which could be important for the role of resilience.

The study relied on self-reported data for all variables, which could introduce reporting biases such as recall or desirability bias. Participants may have been reluctant to disclose IPV, e.g.
for fear of repercussions (3). Additionally, resilient people might present themselves in an
overly positive way, leading them to underreporting of IPV and/or depression (21).

The study could have been limited by the instruments used. While the CD-RISC-10 has been
used in Sub-Saharan Africa before, it has not been validated in Tanzania, or in the Swahili
version (26,27). The questions and response options in the CD-RISC-10 questionnaire might
have been poorly understood by women participating in the present study, or the indicators of
resilience might be different in this setting than elsewhere. The study used an EPDS score of
greater than or equal to 13 as the cut-off value for high levels of depression symptoms. This
cut-off value has been validated in other studies (28) However, Sawyer et al. suggested that a
lower cut-off value could improve the sensitivity of the EPDS (30). Therefore, in the present
study analyses were repeated using a cut-off value of greater than or equal to 12 (results not
shown). Using this method, the regression coefficients of resilience and of the interaction term
between resilience and exposure to IPV remained statistically non-significant.

CONCLUSION
The prevalence of exposure to IPV was found to be within the same range as was reported in
other studies from Tanzania (3,6). The prevalence of PND, based on the EPDS score, was
found to be 11.2%, which is low compared to other studies from Tanzania (14,15).

The mean CD-RISC-10 score was 14.26 (SD=9.45). This suggests that the CD-RISC-10 score
reported in the present study was unusually low. By comparison, Campbell-Sills and Stein
reported a mean score of 27.2 (SD=5.8) (24). In Sub-Saharan Africa, Aloba et al. reported a
mean score of 26.7 (SD not reported) among Nigerian student nurses, and Klasen et al.
reported a mean score of 22.7 (SD=8.3) among former child soldiers in Uganda (26,27). In a
cohort, similar to the present study, of pregnant women in northern Vietnam, a mean CD-
RISC-10 score of 24.47 (SD=7.53) and a median score of 26 was found (personal
communication, Hoang 2019).

Exposure to IPV was a strong predictor of PND in the study sample, as has been previously
reported (13). Exposure to physical IPV was the strongest predictor of PND. The negative
association between resilience alone and PND was not significant in any regression model.
The regression coefficients of resilience, as well as of the interaction term between resilience
and exposure to IPV were non-significant in all regression models. As such, the study did not
provide evidence for the role of resilience as a moderator of the effect of exposure to IPV on PND in this setting.

The very low mean CD-RISC-10 score found in the present study calls into questioning the validity of the results of the scale in Tanzanian settings. It would be prudent to conduct validation studies of the scale in this setting, such as have been conducted in other populations (24,26).

A future study of the role of resilience in moderating the effect of IPV during pregnancy on PND may benefit from a longitudinal design in several ways. Firstly, it may be better able to take into account time elapsed since exposure. Secondly, it could investigate the role of resilience in promoting recovery from depression. Thirdly, a longitudinal study could also study effects and effect moderations on long-term outcomes, such as child development.

The results do not support a role for resilience in informing interventions for Tanzanian women exposed to IPV during pregnancy, their children, or partners. Practitioners should take note that all women and families affected by IPV should be afforded relevant assistance from social services, law enforcement, health care practitioners, and other relevant services, regardless of their apparent level of resilience.

References


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Legends, tables and figures

Figure 1: Flowchart detailing enrolment of participants in the study. Adapted from (12). ANC, antenatal care.

Table 1: Demographic characteristics, CD-RISC-10 score, and exposure to IPV among women with or without high levels of signs of depression during pregnancy.

Table 2: Regression coefficients, aORs, and 95% CI's of aORs of high level of signs of depression based on exposure to IPV, CD-RISC-10 score, and their interaction term for models two through nine.

Legends, supporting information

Table S1: Demographic, health and reproductive health characteristics. Comparison between groups with high and low Abbreviated Connor-Davidson Resilience Scale (CD-RISC-10) score.

Table S2: Social support, relationship, and partner characteristics. Comparison between groups with high and low Abbreviated Connor-Davidson Resilience Scale (CD-RISC-10) score.
Table 1: Demographic characteristics, CD-RISC-10 score, and exposure to IPV among women with or without high levels of signs of depression during pregnancy

<table>
<thead>
<tr>
<th>Variable</th>
<th>Low levels of signs of depression</th>
<th>Missing observations</th>
<th>High levels of signs of depression</th>
<th>Missing observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>894</td>
<td>113</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (mean (SD))</td>
<td>25.97 (5.78)</td>
<td>0</td>
<td>27.01 (6.25)</td>
<td>0</td>
</tr>
<tr>
<td>No. past pregnancies (mean (SD))</td>
<td>1.16 (1.26)</td>
<td>0</td>
<td>1.57 (1.49)</td>
<td>0</td>
</tr>
<tr>
<td>CD-RISC-10 score (mean (SD))</td>
<td>14.34 (9.34)</td>
<td>0</td>
<td>13.61 (10.37)</td>
<td>0</td>
</tr>
<tr>
<td>Level of education (no. women (%))</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never attended school</td>
<td>5 (0.6)</td>
<td>0</td>
<td>2 (1.8)</td>
<td>0</td>
</tr>
<tr>
<td>Primary</td>
<td>538 (60.2)</td>
<td>0</td>
<td>64 (56.6)</td>
<td>0</td>
</tr>
<tr>
<td>Secondary</td>
<td>308 (34.5)</td>
<td>0</td>
<td>44 (38.9)</td>
<td>0</td>
</tr>
<tr>
<td>Above secondary</td>
<td>43 (4.8)</td>
<td>0</td>
<td>3 (2.7)</td>
<td>0</td>
</tr>
<tr>
<td>Relationship status (no. women (%))</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married, living together</td>
<td>803 (89.8)</td>
<td>0</td>
<td>100 (88.5)</td>
<td>0</td>
</tr>
<tr>
<td>Married, living apart</td>
<td>4 (0.4)</td>
<td>0</td>
<td>0 (0.0)</td>
<td>0</td>
</tr>
<tr>
<td>Regular partner, living apart</td>
<td>87 (9.7)</td>
<td>0</td>
<td>13 (11.5)</td>
<td>0</td>
</tr>
<tr>
<td>History of depression (no. women (%))</td>
<td>99 (11.1)</td>
<td>0</td>
<td>30 (26.5)</td>
<td>0</td>
</tr>
<tr>
<td>Self-reported positive HIV-status (no. women (%))</td>
<td>26 (2.9)</td>
<td>0</td>
<td>10 (8.8)</td>
<td>0</td>
</tr>
<tr>
<td>Exposure to at least one type of IPV during pregnancy (no. women (%))</td>
<td>224 (25.8)</td>
<td>25</td>
<td>73 (69.5)</td>
<td>8</td>
</tr>
<tr>
<td>Exposure to emotional IPV during pregnancy (no. women (%))</td>
<td>164 (18.4)</td>
<td>1</td>
<td>60 (54.1)</td>
<td>2</td>
</tr>
<tr>
<td>Exposure to physical IPV during pregnancy (no. women (%))</td>
<td>28 (3.3)</td>
<td>35</td>
<td>35 (35.0)</td>
<td>13</td>
</tr>
<tr>
<td>Exposure to sexual IPV during pregnancy (no. women (%))</td>
<td>115 (13.0)</td>
<td>7</td>
<td>50 (45.0)</td>
<td>2</td>
</tr>
</tbody>
</table>

CD-RISC-10: Abbreviated Connor-Davidson Resilience Scale
IPV: Intimate Partner Violence
Table 2: Regression coefficients, aORs, and 95% CI's of aORs of high level of signs of depression based on exposure to IPV, CD-RISC-10 score, and their interaction term for models two through nine

<table>
<thead>
<tr>
<th>Variable</th>
<th>Regression coefficient</th>
<th>aOR for high level of signs of depression</th>
<th>95% CI of aOR of high level of signs of depression</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure to at least one type of IPV</td>
<td>1.87</td>
<td>6.49</td>
<td>(3.75 - 11.24)</td>
</tr>
<tr>
<td>(n = 910)</td>
<td>CD-RISC-10 score</td>
<td>-1.41 * 10^{-2}</td>
<td>0.99</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.96 - 1.01)</td>
</tr>
<tr>
<td><strong>Model 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure to emotional IPV</td>
<td>1.48</td>
<td>4.39</td>
<td>(2.63 - 7.35)</td>
</tr>
<tr>
<td>(n = 936)</td>
<td>CD-RISC-10 score</td>
<td>-1.53 * 10^{-2}</td>
<td>0.98</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.96 - 1.01)</td>
</tr>
<tr>
<td><strong>Model 4</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure to physical IPV</td>
<td>2.58</td>
<td>13.20</td>
<td>(6.11 - 28.53)</td>
</tr>
<tr>
<td>(n = 896)</td>
<td>CD-RISC-10 score</td>
<td>-1.58 * 10^{-2}</td>
<td>0.98</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.96 - 1.01)</td>
</tr>
<tr>
<td><strong>Model 5</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure to sexual IPV</td>
<td>1.84</td>
<td>6.30</td>
<td>(3.66 - 10.82)</td>
</tr>
<tr>
<td>(n = 932)</td>
<td>CD-RISC-10 score</td>
<td>-8.64 * 10^{-3}</td>
<td>0.99</td>
</tr>
<tr>
<td></td>
<td>Interaction term</td>
<td>4.04 * 10^{-3}</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.95 - 1.06)</td>
</tr>
<tr>
<td><strong>Model 6</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure to at least one type of IPV</td>
<td>1.87</td>
<td>6.49</td>
<td>(3.74 - 11.26)</td>
</tr>
<tr>
<td>(n = 910)</td>
<td>CD-RISC-10 score</td>
<td>-1.69 * 10^{-2}</td>
<td>0.98</td>
</tr>
<tr>
<td></td>
<td>Interaction term</td>
<td>4.04 * 10^{-3}</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.95 - 1.06)</td>
</tr>
<tr>
<td><strong>Model 7</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure to emotional IPV</td>
<td>1.48</td>
<td>4.39</td>
<td>(2.63 - 7.35)</td>
</tr>
<tr>
<td>(n = 936)</td>
<td>CD-RISC-10 score</td>
<td>-1.23 * 10^{-2}</td>
<td>0.99</td>
</tr>
<tr>
<td></td>
<td>Interaction term</td>
<td>-5.69 * 10^{-3}</td>
<td>0.99</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.95 - 1.05)</td>
</tr>
<tr>
<td><strong>Model 8</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure to physical IPV</td>
<td>2.84</td>
<td>17.12</td>
<td>(7.90 - 37.09)</td>
</tr>
<tr>
<td>(n = 896)</td>
<td>CD-RISC-10 score</td>
<td>-1.86 * 10^{-2}</td>
<td>0.98</td>
</tr>
<tr>
<td></td>
<td>Interaction term</td>
<td>1.10 * 10^{-2}</td>
<td>1.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.95 - 1.08)</td>
</tr>
<tr>
<td><strong>Model 9</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Exposure to sexual IPV</td>
<td>1.85</td>
<td>6.36</td>
<td>(3.70 - 10.94)</td>
</tr>
<tr>
<td>(n = 932)</td>
<td>CD-RISC-10 score</td>
<td>-8.67 * 10^{-3}</td>
<td>0.99</td>
</tr>
<tr>
<td></td>
<td>Interaction term</td>
<td>5.92 * 10^{-3}</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.95 - 1.05)</td>
</tr>
</tbody>
</table>

AOR: Adjusted Odds-Ratio
CD-RISC-10: Abbreviated Connor-Davidson Resilience Scale
IPV: Intimate Partner Violence
Interaction term: The product of CD-RISC-10 score and exposure (0 or 1). A statistically significant coefficient of the interaction term indicates effect moderation.

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Women assessed for inclusion at ANC visit = 1303

Women completed first interview = 1123

Women completed second interview = 1113

Women completed third interview (postnatal) = 1013

Excluded due to not meeting inclusion criteria = 180

Women lost to follow-up = 10

Women lost their baby = 61

Women enrolled too late to give birth before the end of the study period = 39

Figure 1: Flowchart detailing enrolment of participants in the study. Adapted from (12)