Published in final edited form as:

Int J Gynaecol Obstet. 2017 July ; 138(1): 74–78. doi:10.1002/ijgo.12173.

Correlations between intimate partner violence and spontaneous abortion, stillbirth, and neonatal death in rural Malawi[☆]

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Abstract

Objective—To characterize associations between intimate partner violence (IPV) and adverse delivery outcomes among married Malawian women.

Methods—In the present secondary analysis of an ongoing project investigating sexual and reproductive health decision making in rural, Lilongwe District, Malawi, married women who had experienced at least one pregnancy were interviewed between July 15, 2014, and February 25, 2015. Associations between physical IPV experienced with participants' current partners and history of adverse delivery outcomes (spontaneous abortions, stillbirths, and neonatal deaths) were examined using log-binomial regression.

Results—The analyses included 792 women. The 166 (21.0%) participants who reported having experienced physical IPV with their current partner were significantly more likely to have a history of adverse delivery outcomes in the unadjusted (prevalence ratio 1.23; 95% confidence interval 1.08–1.41) and adjusted (adjusted prevalence ratio 1.19; 95% CI 1.01–1.40) analyses.

Conclusion—Physical IPV was reported by a large proportion of participants in the present study and was significantly associated with adverse delivery outcomes. Public health interventions providing physical IPV screening and referral to support services could help improve maternal and child health in Malawi.

[☆]Presented at the 20th College of Medicine Research Dissemination Conference; September 8, 2016; Blantyre, Malawi, and at the American College of Physicians Ohio/Air Force Chapter Meeting; October 13–14, 2016; Columbus, Ohio, United States.

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Author contributions

NR analyzed the data and wrote the manuscript. AT, BH, PN, VB, and AN assisted with data analysis and the revision of the manuscript. All authors approved the final manuscript.

Conflicts of interest

The authors have no conflicts of interest.

Keywords

Intimate partner violence; Malawi; Spontaneous abortion; Neonatal death; Stillbirth

1. Introduction

Intimate partner violence (IPV)—broadly defined as physical, sexual, or emotional violence by formal or informal relationship partners [1]—affects millions of women worldwide and has lasting negative impact on women's health and quality of life [2]. IPV against women is highly prevalent in Sub-Saharan Africa [2]; up to 66% of women in Sub-Saharan Africa experience physical or sexual IPV at some point in their lives [2].

In high-resource settings, IPV has been linked to adverse delivery outcomes, specifically, spontaneous abortion, premature delivery, and stillbirth [3]. Despite the high prevalence of IPV in Sub-Saharan Africa [2] and the continued emphasis on improving maternal health in the region (e.g. Millennium Development Goal 5), associations between IPV and adverse delivery outcomes in Sub-Saharan Africa have rarely been examined [4, 5].

Although all forms of IPV can affect maternal and child health, the present analysis was restricted to the impact of physical IPV (excluding sexual IPV) only; in contrast to other forms of IPV, physical IPV has a standardized definition across many international contexts [2]; physical IPV data are comparable across settings. Despite this restriction, different forms of IPV can occur together frequently [6] and the possibility that physical IPV could be a proxy for other IPV experiences impact delivery outcomes was considered in the interpretation and discussion of the data gathered.

The aim of the present study was to examine associations between physical IPV and a composite measure of three adverse delivery outcomes—spontaneous abortion, stillbirth, and neonatal death—in a cohort of women in rural Malawi.

2. Materials and methods

The present secondary analysis included data collected as the initial wave of an ongoing prospective cohort study (the Umoyo wa Thanzi ["Health for Life"] research project) investigating sexual and reproductive health decision making in rural Malawi. The study was conducted between July 15, 2014, and February 25, 2015, across the catchment area for a rural clinic in Lilongwe District, Malawi, a 40-km² area that included 68 villages with a total population of approximately 20 000 people. Potential participants for the parent study were randomly selected using stratified cluster sampling. First, villages were selected via two-stage stratified cluster sampling and, in the selected villages, all women aged 15–39 years and their male partners were eligible to participate. Participants were surveyed in interviews in Chichewa; all surveys were conducted by trained research assistants. Women were interviewed separately from their male partners. The population included in the present secondary analysis included only married female participants who had experienced at least one pregnancy and who provided responses to the survey questions assessing exposure to physical IPV and history of adverse delivery outcomes. The parent study and the present

secondary analysis were approved by the Ohio State University institutional review board, Columbus, Ohio, USA, and the University of Malawi College of Medicine Research and Ethics Committee, Blantyre, Malawi. Written informed consent was obtained from all participants.

The primary exposure of the present analysis was participant-reported history of ever having experienced physical IPV with their current husband; participants were asked whether their current husband had ever hurt them on purpose (pushed, bit, punched, kicked, or slapped). This instrument was based on measures previously described as valid and reliable for assessing physical IPV [2].

The primary outcome was a composite measure of self-reported, lifetime history of spontaneous abortion, stillbirth, or neonatal death. Participants were asked how many times they had experienced a spontaneous abortion (“How many times have you had a miscarriage, where a pregnancy ended by accident?”). Participants were also asked how many times they had either experienced delivery of a stillborn neonate (a “child who had already died” at delivery) or a living neonate who then died within the first month of life. Stillbirth and neonatal death were included concurrently because these terms often have overlapping definitions in Sub-Saharan Africa [7]. These responses were combined to produce a composite, dichotomous variable.

Participant baseline demographic data were compared between individuals who had/had not experienced physical IPV using the χ^2 test. After accounting for village-level clustering, log-binomial regression was used to examine associations between physical IPV and adverse pregnancy outcomes. An a priori decision was made to adjust all multivariable regression models for age, and education and income were evaluated as potential confounders; if the removal of either covariate resulted in changes in the association of interest of at least 10%, that variable was retained in the adjusted model. To assess whether any overall association between physical IPV and adverse delivery outcomes was driven by a specific delivery outcome (either spontaneous abortion or stillbirth/neonatal death), associations between physical IPV and spontaneous abortion alone, and between physical IPV and stillbirth/neonatal death alone were also evaluated. All analyses were performed using R Version 3.2.2 (R Foundation for Statistical Computing, Vienna, Austria) and $P < 0.05$ was considered statistically significant.

3. Results

The present analysis included 792 participants with a mean $\pm$ SD age of 27 $\pm$ 6 years. There were 262 (33.1%) participants who reported having monthly incomes below 5000 Malawian kwacha (MK) (approximately US\$13 at the time of data collection) and 532 (67.2%) participants reported monthly incomes below MK 20 000 (approximately \$52) (Table 1). Having complete 4–8 years of education was reported by 387 (48.9%) participants but 290 (36.6%) had completed fewer than 4 years of school. Experiencing physical IPV in their current relationship was reported by 166 (21.0%) participants.

When data were stratified based on reporting having experienced IPV, no significant differences were observed in participant income ($P=0.643$), education ($P=0.807$), or age ($P=0.985$) (Table 1).

There were 252 (32%) participants who reported having experienced spontaneous abortion, stillbirth, or neonatal death (Table 1); 196 (25%) participants had experienced spontaneous abortion, and the mean number of spontaneous abortions experienced among all participants was 0.33 ± 0.67 (range 0–5). There were 99 (12%) respondents who had experienced stillbirth or neonatal death; and the mean number of these events among all participants was 0.15 ± 0.44 (range 0–4).

Women reporting a history of physical IPV with their current partner were significantly more likely to report a history of spontaneous abortion, stillbirth, or neonatal death in both the unadjusted model and after adjustment for age (Table 2); age was the only confounding variable included in the adjusted model.

In the secondary outcome analyses that examined adverse delivery outcomes separately, no significant associations were recorded using the adjusted model. Some increases in prevalence were recorded but these were not statistically significant (Table 2).

4. Discussion

Physical IPV was prevalent among Malawian women in the present analysis, with 166 (21.0%) reporting having experienced physical IPV with their current partner. A significant, albeit modest, association was recorded between reporting having experienced physical IPV and a higher prevalence of spontaneous abortion, stillbirth, or neonatal death. No significant associations were recorded when the outcomes of spontaneous abortion and stillbirth/neonatal death were considered separately.

The patterns in the present study data are disheartening; IPV is often one manifestation of a broader web of social norms and policies that disempower women [8]. Additionally, many study participants had experienced not only physical IPV—a traumatic, life-changing event—but also adverse delivery outcomes associated with IPV, outcomes that are highly stigmatized in Sub-Saharan Africa [7].

The finding that physical IPV was associated with adverse delivery outcomes was consistent with the existing literature [4, 5]. An experience of physical IPV during pregnancy could certainly explain this association; abdominal trauma can result in fetal death directly or could lead to preterm delivery [9], which is associated with an increased risk of neonatal mortality [10]. Alternatively, other (non-physical) forms of IPV, during or even preceding pregnancy could explain the association; women experiencing IPV often experience multiple forms of IPV over the course of their lives [6]; physical IPV could be a proxy for a host of IPV experiences, each of which could contribute to adverse delivery outcomes. Risky or violent sex can predispose individuals to HIV [11], which can jeopardize early and late pregnancy [12]. Stress and even psychiatric illness resulting from any form of IPV could directly predispose a woman to pregnancy loss [13, 14]. In the present analysis, neither outcome measure (spontaneous abortion or stillbirth/neonatal death) drove the association

between physical IPV and the composite outcome individually. Any of the pathways discussed above—mechanisms associated with either early or late pregnancy loss—could explain the primary finding that physical IPV was associated with adverse delivery outcomes.

Approximately one in five women in the present cohort reported having experienced physical IPV with their husbands; this was consistent with an estimate of 19% from Malawian demographic health survey data [15]. Studies of the lifetime prevalence of physical IPV among women in the study region have suggested that the prevalence of physical IPV in Malawi (23%) [16] is lower in comparison with other parts of Sub-Saharan Africa (47% and 49% in rural Tanzania and Ethiopia, respectively) [17]. The prevalence of physical IPV in Malawi could truly be lower than in other countries in Sub-Saharan Africa; abuse has been increasingly criminalized in Malawi over the past decade [18]. This legislation, although implemented inconsistently [19], could have altered public attitudes toward IPV [20]. In comparison with several other countries in Sub-Saharan Africa, a smaller proportion of women in Malawi feel that violence against them is justified [21]; consequently, Malawian women could be less likely to tolerate IPV. However, under-reporting could also explain the low prevalence of physical IPV in Malawi relative to neighboring countries. In the context of domestic violence legislation in Malawi and uncertainty regarding its implementation, women could fear the social and economic consequences of implicating their partners as perpetrators of violence.

In the present study, no differences in demographic characteristics were observed between women who reported experiencing physical IPV and women who did not. These findings corroborate the existing literature; a woman's age, education, and socioeconomic status have not been consistently predictive of experiencing IPV in Sub-Saharan Africa [22]. The relationships between socioeconomic factors and IPV could be more nuanced; low household income, compounded by inequalities in earnings or employment between partners, rather than low household income alone, could be more consistently predictive of an increased risk of IPV [23]. Further, women who have completed some school could challenge the perpetrators of violence and be at increased risk of experiencing IPV; education could only protect women from IPV after completing more years of schooling [23].

The present study has contributed to the existing literature as one of few studies that have examined the link between physical IPV and adverse delivery outcomes in Sub-Saharan Africa, a region with a high prevalence of IPV [2] and considerable morbidity associated with adverse delivery outcomes [7]. The present study had several important limitations. The data analyzed were cross-sectional; although IPV and adverse delivery outcomes were correlated in the present analysis, it was not possible to elucidate the temporality and mechanisms of this. Spontaneous abortion, stillbirth, and neonatal death could precipitate episodes of IPV [24]. However, it is suggested here that, regardless of the direction of the association, it has public health significance and merits further investigation. Misclassification could also have limited the analysis; local terms and understandings of spontaneous abortion, stillbirth, and neonatal death could overlap and not correspond exactly with biomedical definitions [7]. Additionally, misclassification could have occurred as a

consequence of IPV under-reporting, as discussed above, as well as under-reporting adverse delivery outcomes. Women who have experienced spontaneous abortion can be subject to accusations of having undergone an induced abortion [7], which is stigmatized in Malawi and illegal when not performed to save a woman's life. Adverse delivery outcomes can be considered to result from sorcery or witchcraft [7], and disclosure of these outcomes is thought to invite further malevolent spirits [7]. Grieving publicly following pregnancy loss or neonatal death can sometimes be considered to compromise future fertility [7]. Consequently, underreporting adverse delivery outcomes could have weakened the association between physical IPV and adverse delivery outcomes in the present study.

In summary, physical IPV was prevalent among rural Malawian women. Women who experienced physical IPV were significantly more likely to have experienced adverse delivery outcomes. These data are relevant to other contexts in which many women experience physical IPV over the course of their lives and in which adverse delivery outcomes threaten women's health and social standing. Confidential screening for physical IPV and prompt referral to support services, both of which are rarely performed in low-resource settings, could be important steps in improving women's reproductive health [25].

Acknowledgments

The present study was supported by a grant from the National Center for Advancing Translational Sciences (KL2TR001068), a grant from the Eunice Kennedy Shriver National Institute of Child Health and Human Development awarded to the Ohio State University Institute for Population Research (P2CHD058484), the Ohio State University College of Medicine Samuel J. Roessler Research Scholarship Fund, and by a grant from the Medical Scientist Training Program (T32 GM008719).

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Synopsis

Physical IPV was significantly associated with adverse delivery outcomes—a composite outcome of spontaneous abortions, stillbirths, and neonatal deaths—among women in rural Malawi.

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Table 1Participant characteristics. ^a

Variable	Self-reported history of IPV with present partner (n=166)	No self-reported history of IPV with present partner (n=626)	All participants (n=792)	P value
Income				0.643
< MK 5000	59 (35.5)	203 (32.4)	262 (33.1)	
MK 5000–19 999	52 (31.3)	218 (34.8)	270 (34.1)	
>MK 20 000	44 (26.5)	161 (25.7)	205 (26.0)	
Missing response	11	44	55	
Education completed				0.807
None	14 (8.4)	47 (7.5)	61 (7.7)	
1–3 y	50 (30.1)	179 (28.9)	229 (28.9)	
4–8 y	81 (48.8)	306 (48.9)	387 (48.9)	
Secondary or above	20 (12.0)	93 (14.9)	113 (14.3)	
Missing responses	1	1	2	
Adverse delivery outcomes ^b	62 (37.3)	190 (30.4)	252 (31.8)	0.104
Spontaneous abortion	49 (29.5)	147 (23.5)	196 (24.7)	0.133
Stillbirth/neonatal death	23 (13.9)	76 (12.1)	99 (12.5)	0.630
Age, y	27±6	27±6	27±6	0.985

Abbreviations: IPV, intimate partner violence; MK, Malawian kwacha.

^aValues are given as number (percentage), number, or mean±SD, unless indicated otherwise.^bAdverse delivery outcomes represents a composite of all participants who reported having experienced spontaneous abortion and stillbirth/neonatal death either alone previously. Participants who had experienced both were counted within each individual measure but were only included once in the composite outcome.

Table 2

Associations between IPV and adverse delivery outcomes.

Outcome	Prevalence ratio (95% CI)	Adjusted prevalence ratio (95% CI) ^a
Primary outcome		
Spontaneous abortion, stillbirth/neonatal death		
No self-reported history of IPV with present partner	Ref.	Ref.
Self-reported history of IPV with present partner	1.23 (1.08–1.41)	1.19 (1.01–1.40)
Secondary outcomes		
Spontaneous abortion		
No self-reported history of IPV with present partner	Ref.	Ref.
Self-reported history of IPV with present partner	1.26 (1.05–1.50)	1.21 (0.99–1.48)
Stillbirth/neonatal death		
No self-reported history of IPV with present partner	Ref.	Ref.
Self-reported history of IPV with present partner	1.15 (0.72–1.83)	1.17 (0.74–1.85)

Abbreviations: IPV, intimate partner violence; CI, confidence interval.

^a Adjusted for age.