

Intimate partner violence and early interruption of exclusive breastfeeding in the first three months of life

Violência entre parceiros íntimos e interrupção precoce do aleitamento materno exclusivo nos primeiros três meses de vida

Violencia entre parejas íntimas e interrupción precoz de la lactancia materna exclusiva durante los primeros tres meses de vida

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Abstract

The aim of this study was to investigate the role of intimate partner violence in the early interruption of exclusive breastfeeding in the first three months of life. We used data from a prospective cohort of 564 children attending four primary health clinics in Rio de Janeiro, Brazil. Interruption of exclusive breastfeeding was defined as a child receiving any kind of liquid or solid, regardless of breast milk intake, measured by a 24 hour recall. The Portuguese version of the Conflict Tactics Scales (CTS-1) was used to assess intimate partner violence. Associations were expressed as prevalence ratios and relative risks and their respective 95% confidence intervals. Children of mothers who experienced severe violence had 30% greater likelihood of early interruption of exclusive breastfeeding in the second month of life as compared to those who did not experience this type of violence. Strategies in health services for promoting exclusive breastfeeding should consider identifying and addressing family violence.

Breast Feeding; Intimate Partner Violence; Cohort Studies

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Background

Despite recognition of the importance of breastfeeding^{1,2}, recent decades have witnessed only modest improvements in the prevalence of exclusive breastfeeding³. In developing countries, the prevalence of exclusive breastfeeding in infants six months old increased from 35% in 1995 to 39% in 2010³. Although Brazil has shown a gradual increase in breastfeeding, suggesting a response to government measures to promote breastfeeding⁴, exclusive breastfeeding is still limited to only 41% of children in the first six months of life⁵, short of the goal set by the World Health Organization⁶. Studies on the psychosocial determinants of exclusive breastfeeding are thus welcome and necessary.

Recent research on determinants of infant feeding practices, including breastfeeding, has highlighted several relevant psychosocial aspects⁷. Studies generally recognize the importance of maternal mental health and social networks and social support^{8,9}. However, there are few and inconsistent results concerning the relationship between intimate partner violence and infant feeding practices^{10,11,12}. The literature on this topic is largely based on cross-sectional studies on breastfeeding that uses wide age brackets, such as infants from birth to four or six months¹².

This study thus investigated the role of intimate partner violence in early interruption of exclusive breastfeeding in the first three months of life.

Materials and methods

Study setting

Data come from a prospective cohort study originally designed to evaluate the association between intimate partner violence and childhood growth. Infants from primary health clinics under the Rio de Janeiro Municipal Health Secretariat were followed for growth monitoring during their first year of life.

Study design and sample

This was a prospective cohort of 564 children 30 to 60 days of age (mean 34.76 days, SD = 2.6 – second month of life) who visited four primary health clinics for a heel stick test or BCG vaccination from June 2005 to December 2009. The clinics were selected intentionally based on the average daily number of consultations and the availability of a physical area for conducting the interviews.

Children were evaluated again 20 to 40 days after the first visit (mean 64.30 days, SD = 5.70 – third month of life). Twins were excluded from the study.

Data collection and variables

Data were collected during face-to-face interviews with the mothers of the selected infants. At follow-up, information was collected on breastfeeding (“From yesterday morning until this morning, did you breastfeed your baby?”) and the consumption of other types of milk, tea, juice, and other foods. The target outcome was early interruption of exclusive breastfeeding, that is, a child receiving any kind of supplement, liquid or solid, regardless of whether they were still receiving breast milk from the mother⁶.

Regarding intimate partner violence, mothers answered questions about the strategies they and their partners used to resolve possible disagreements. The Portuguese version of the *Conflict Tactics Scales* (CTS-1)¹³ was used to collect this information during the child’s second month of life (first visit).

The CTS-1 instrument consists of 18 items that measure strategies used to resolve disagreements in the 12 months prior to the interview. Intimate partner violence was classified as present when women responded to at least one of the items from the physical aggression scale, either as a victim or the perpetrator (overall intimate partner violence). Intimate partner violence was also evaluated in terms of severity (severe intimate partner violence).

The study was approved by the Institutional Review Board of the Institute of Social Medicine, Rio de Janeiro State University.

Data analysis

We used three approaches to evaluate early cessation of exclusive breastfeeding: (1) prevalence in the second month of life, (2) cumulative incidence until the third month of life, and (3) cumulative incidence at the third month of life among children still exclusively breastfed in the second month.

Multivariate results were based on Poisson regression models with robust variance. We evaluated both overall intimate partner violence and severe intimate partner violence in relation to early interruption of exclusive breastfeeding, calculating prevalence ratios (in the second month) and relative risks (until the third month and at the third month for those on exclusive breastfeeding at the second month) and their respective 95% confidence intervals (95%CI), adjusting

for potential confounders identified in advance from the literature – sex, child's age (in days), birth weight, maternal schooling, maternal age, and household assets^{14,15}. Statistical significance was set at $p < 0.05$. The study had a power of 85% for detecting a risk ratio of 1.4 as statistically significant (alpha error of 5%), considering an incidence of 40% for early interruption of exclusive breastfeeding among the unexposed. Data analysis was performed in Stata/SE (StataCorp LP, College Station, USA).

Results

We observed 39.7% prevalence of interrupted breastfeeding in the second month of life ($n = 564$). Cumulative incidence of cessation of breastfeeding was 44.6% until the three months of life ($n = 372$). Among the 230 exclusively breastfed children in the second month of life who returned for follow-up during their third month of life, the risk of cessation of breastfeeding was 25.7%.

As illustrated in Table 1, overall intimate partner violence and severe intimate partner violence were present in 33.7% and 17.5% of partner relationships, respectively.

Table 2 shows the results of the multivariate analyses. Children of mothers who experienced severe violence showed 30% greater likelihood of early interruption of exclusive breastfeeding in the second month of life as compared to children of mothers who did not experience this type of violence, regardless of sex, age, birth weight, maternal schooling, maternal age, and number of household assets. Overall intimate partner violence and severe intimate partner violence were both associated with a higher cumulative incidence of interruption of breastfeeding until the third month of life.

Among children that were still exclusively breastfed until the second month of life, severe intimate partner violence was significantly associated with interruption of breastfeeding at age three months. Risk of introduction of other liquids and/or foods apart from breast milk in the third month of life was double for children exposed to severe intimate partner violence.

Discussion

The results of this study show that children of women who experienced physical violence were at greater risk of early interruption of exclusive breastfeeding, both in the second month of life, and in the following month, even after controlling for potential confounders. These findings are

Table 1

Characteristics of study subjects in the second month of life ($n = 564$). Cohort study, Rio de Janeiro, Brazil, 2005-2009.

Variable	n *	%
Infant's sex		
Female	273	48.4
Male	291	51.6
Maternal schooling (years)		
≥ 8	270	48.0
< 8	292	52.0
Household assets		
> 10	363	65.4
≤ 10	192	34.6
Birth weight (g)		
$\geq 2,500$	519	92.3
$< 2,500$	43	7.7
Maternal age (years)		
≥ 20	419	74.6
< 20	143	25.4
Overall intimate partner violence		
No	374	66.3
Yes	190	33.7
Severe intimate partner violence		
No	465	82.5
Yes	99	17.5

* Totals may vary due to missing values for some variables.

consistent with other research^{10,11,12}. Zureick-Brown et al.¹¹ indicate that mothers exposed to physical or sexual abuse were more likely to offer solid foods to their children in the 24 hours prior to the interview.

The study's methodological characteristics deserve particular attention. During the study period, a program to foster exclusive breastfeeding was ongoing at the public health services in which the subjects were selected. Therefore, the support offered by health professionals involved in these programs probably increased the likelihood that women enrolled in the study practiced exclusive breastfeeding. Thus, attempts to extrapolate the results to unassisted women should be made with caution, since the strength of the putative relationship between intimate partner violence and early interruption of exclusive breastfeeding may not be the same in settings where weaning is more frequent.

A 24 hour recall was used to assess breastfeeding status, reflecting what the child ingested in the previous 24 hours, which may have misclassified as exclusively breastfed some infants

Table 2

Multivariate analyses: overall intimate partner violence and severe intimate partner violence in relation to early interruption of exclusive breastfeeding adjusted for potential confounding variables. Cohort study, Rio de Janeiro, Brazil, 2005-2009.

Variable	2 nd month (n = 564)		Until the 3 rd month of life (n = 372)		In the 3 rd month of life (n = 230) *	
	PR **	95%CI **	RR **	95%CI **	RR **	95%CI **
Overall intimate partner violence	1.23	0.99-1.52	1.35	1.07-1.71	1.56	0.96-2.52
Severe intimate partner violence	1.32	1.04-1.67	1.51	1.16-1.95	2.10	1.27-3.48

95%CI: 95% confidence interval; PR: prevalence ratio; RR: risk ratio.

* Among children still exclusively breastfeeding at two months;

** Adjusted for infant's sex, age (in days), birth weight, household assets, maternal schooling, and maternal age.

who occasionally or systematically ingested foods other than breast milk outside the 24 hour period. The impact of this potential misclassification bias cannot be assessed with certainty, but there is no strong evidence supporting a differential misclassification regarding the exposure (intimate partner violence). Therefore, such non-differential misclassification would, at most, underestimate the association between intimate partner violence and early interruption of exclusive breastfeeding.

Another potential validity problem is selection bias due to loss to follow-up (34% in the third month). Women exposed to intimate partner violence might be less likely to return for follow-up interviews. If such women were also at increased risk for early cessation of breastfeeding, then a bi-

as due to selective loss to follow-up may have occurred in the study. However, such a bias would result in an underestimation of the strength of associations between intimate partner violence and early interruption of exclusive breastfeeding. In fact, there was a significant difference in the proportion of women lost to follow-up that were exposed to severe intimate partner violence (24%) as compared to those that remained in the study (14%; $p = 0.004$). There was no such significant difference when considering exposure to overall intimate partner violence ($p = 0.32$).

Despite these limitations, the study's results can contribute to the development of health promotion measures, including prevention of intimate partner violence and promotion of exclusive breastfeeding.

Contributors

M. H. Hasselmann conducted the study conception and design, data analysis and interpretation, drafting of the manuscript, and preparation of the final version. A. C. Lindsay, P. J. Surkan and G. L. Werneck collaborated in the study conception, data analysis and interpretation, and drafting and revision of the manuscript. G. V. B. Vianna contributed in the data analysis and interpretation and drafting and revision of the manuscript.

References

1. Sankar MJ, Sinha B, Chowdhury R, Bhandari N, Taneja S, Martines J, et al. Optimal breastfeeding practices and infant and child mortality: a systematic review and meta-analysis. *Acta Pædiatr* 2015; 104:3-13.
2. Chowdhury R, Sinha B, Sankar MJ, Taneja S, Bhandari N, Rollins N, et al. Breastfeeding and maternal health outcomes: a systematic review and meta-analysis. *Acta Pædiatr* 2015; 104:96-113.
3. Cai X, Wardlaw T, Brown DW. Global trends in exclusive breastfeeding. *Int Breastfeed J* 2012; 7:12.
4. Ministério da Saúde. Pesquisa Nacional de Demografia e Saúde – PNDS 2006: dimensões do processo reprodutivo e da saúde da criança. Brasília: Ministério da Saúde; 2009.

5. Ministério da Saúde. II pesquisa de prevalência de aleitamento materno nas capitais brasileiras e Distrito Federal. Brasília: Ministério da Saúde; 2009.
6. World Health Organization. Indicators for assessing infant and young child feeding practices: conclusions of a consensus meeting held 6-8 November 2007 in Washington D.C., USA. Part 1: definitions. Geneva: World Health Organization; 2008.
7. de Jager E, Skouteris H, Broadbent J, Amir L, Mellor K. Psychosocial correlates of exclusive breastfeeding: a systematic review. *Midwifery* 2013; 29:506-18.
8. Dennis CL, McQueen K. Does maternal postpartum depressive symptomatology influence infant feeding outcomes? *Acta Paediatr* 2007; 96:590-4.
9. Dearden K, Altaye M, Maza I, Oliva M, Stone-Jimenez M, Burkhalter BR, et al. The impact of mother-to-mother support on optimal breastfeeding: a controlled community intervention trial in peri-urban Guatemala City, Guatemala. *Rev Panam Salud Pública* 2002; 12:193-201.
10. Moraes CL, Oliveira AS, Reichenheim ME, Lobato G. Severe physical violence between intimate partners during pregnancy: a risk factor for early cessation of exclusive breast-feeding. *Public Health Nutr* 2011; 14:2148-55.
11. Zureick-Brown S, Lavilla K, Yount KM. Intimate partner violence and infant feeding practices in India: a cross-sectional study. *Matern Child Nutr* 2015; 11:792-802.
12. Misch ES, Yount KM. Intimate partner violence and breastfeeding in Africa. *Matern Child Health J* 2014; 18:688-97.
13. Hasselmann MH, Reichenheim ME. Adaptação transcultural da versão em português da *Conflict Tactics Scales Form R* (CTS-1), usada para aferir violência no casal: equivalências semântica e de mensuração. *Cad Saúde Pública* 2003; 19:1083-93.
14. World Health Organization. Global and regional estimates of violence against women: prevalence and health effects of intimate partner violence and non-partner sexual violence. Geneva: World Health Organization; 2013.
15. Boccolini CS, Carvalho ML, Oliveira M. Factors associated with exclusive breastfeeding in the first six months of life in Brazil: a systematic review. *Rev Saúde Pública* 2015; 49:91.

Resumo

O objetivo do estudo foi de investigar o papel da violência entre parceiros íntimos na interrupção precoce do aleitamento materno exclusivo nos três primeiros meses de vida. Usamos dados de uma coorte prospectiva de 564 crianças atendidas em quatro unidades de atenção primária no Rio de Janeiro, Brasil. A interrupção do aleitamento exclusivo foi definida como a ingestão pela criança de qualquer forma de líquido ou sólido, independente da ingestão de leite materno, nas 24 horas anteriores. Violência entre parceiros íntimos foi avaliada com a versão em português das Conflict Tactics Scales (CTS-1). As associações foram expressas como razões de prevalência e riscos relativos e os respectivos intervalos de 95% de confiança. Os filhos de mulheres que haviam vivenciado violência grave apresentavam uma probabilidade 30% maior de interrupção precoce do aleitamento exclusivo no segundo mês de vida, comparados com aqueles cujas mães não haviam vivenciado esse tipo de violência. Estratégias dos serviços de saúde para promover o aleitamento materno exclusivo devem levar em conta a identificação e enfrentamento da violência familiar.

Aleitamento Materno; Violência por Parceiro Íntimo; Estudos de Coortes

Resumen

El objetivo del estudio era investigar el papel de la violencia en la pareja en la interrupción precoz de la lactancia materna exclusiva durante los tres primeros meses de vida. Usamos datos de una cohorte prospectiva de 564 niños, atendidos en cuatro unidades de atención primaria en Río de Janeiro, Brasil. La interrupción de la lactancia materna exclusiva fue definida como la ingestión por parte del bebé de cualquier forma de líquido o sólido, independientemente de la ingestión de leche materna, durante las 24 horas anteriores. La violencia en la pareja fue evaluada con la versión en portugués de las Conflict Tactics Scales (CTS-1). Las asociaciones fueron expresadas como razones de prevalencia y riesgos relativos con sus respectivos intervalos de confianza de un 95%. Los hijos de mujeres que habían experimentado violencia grave presentaban una probabilidad un 30% mayor de interrupción precoz de la lactancia materna exclusiva durante el segundo mes de vida, comparado con aquellos cuyas madres no habían experimentado ese tipo de violencia. Las estrategias de los servicios de salud para promover la lactancia materna exclusiva deben tener en cuenta la identificación y combate a la violencia familiar.

Lactancia Materna; Violencia de Pareja; Estudios de Cohortes

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