



Impacts of domestic violence on child growth and nutrition: A conceptual review of the pathways of influence

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ARTICLE INFO

Article history:

Available online 12 April 2011

Keywords:

Domestic violence
Early childhood growth
Early childhood malnutrition
Review

ABSTRACT

Domestic violence against women is a global problem, and young children are disproportionate witnesses. Children's exposure to domestic violence (CEDV) predicts poorer health and development, but its effects on nutrition and growth are understudied. We propose a conceptual framework for the pathways by which domestic violence against mothers may impair child growth and nutrition, prenatally and during the first 36 months of life. We synthesize literatures from multiple disciplines and critically review the evidence for each pathway. Our review exposes gaps in knowledge and opportunities for research. The framework also identifies interim strategies to mitigate the effects of CEDV on child growth and nutrition. Given the global burden of child malnutrition and its long-term effects on human-capital formation, improving child growth and nutrition may be another reason to prevent domestic violence and its cascading after-effects.

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Introduction

Domestic violence against women is a global problem. In North America and Europe, as well as Africa, Asia, Latin America, and the Middle East, 11%–71% of women have reported prior physical domestic violence (ICF Macro, 2010; Johnson et al., 2008; Tjaden & Thoennes, 1998), and sexual and psychological forms often co-occur (Kishor & Johnson, 2004). Domestic violence against women is more likely in early marriage and pregnancy (Kishor & Johnson, 2004), and young children, who rely on their mothers as primary caretakers, are likely to be exposed.

Global estimates of children's exposure to domestic violence (CEDV) are lacking; however, some 15.5 million American children are exposed annually (McDonald, Jouriles, Ramisetty-Mikler, Caetano, & Green, 2006), and those under five years are disproportionate witnesses (Fantuzzo, Boruch, Beriama, Atkins, & Marcus, 1997). CEDV predicts poorer health and development in early childhood (Bair-Merritt, Blackstone, & Feudtner, 2006; Kitzmann, Gaylord, Holt, & Kenney, 2003; Wolfe, Crooks, McIntyre-Smith, & Jaffe, 2003), but its effects on nutrition and growth prenatally and through the toddler years (to 36 months) are understudied. This gap is surprising, given the global burden and consequences of malnutrition in these periods (Bhutta et al. 2008; Black et al., 2008; Underwood, 2001).

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In poor countries, about 112 million children less than 5 years are underweight (weight-for-age z-score or *waz* < -2 SD from reference median), 178 million are stunted (height-for-age z-score or *haz* < -2 SD from reference median), and levels of stunting are 8%–50% (Black et al., 2008). Vitamin-mineral deficiencies, especially of iron and zinc, are widespread and predict higher risks of child morbidity and mortality (Black et al., 2008). Anemia, a low blood-hemoglobin [Hb] concentration often resulting from iron deficiency, affects roughly two billion people globally and especially pregnant women (~50%) and young children (~48% in 0–2 year-olds and 25% in 3–5 year-olds) (Allen & Casterline-Sabel, 2001). Malnutrition prenatally and the first years of life has adverse effects across the life course, including low birth weight (LBW), infant morbidity and mortality, impaired early childhood growth and development, and various human-capital outcomes into adulthood (Martorell, 1995, 1997; Ramakrishnan, 2001).

Despite what is known separately about domestic violence and early malnutrition, their inter-relationships are understudied. We propose an evidence-based conceptual framework of the pathways by which CEDV may impair growth and nutrition prenatally through the toddler years. Our conceptual review integrates literatures from multiple disciplines, providing a synthesis of theory and research. We critically review the evidence for each pathway, identifying gaps in knowledge and opportunities for research. The framework helps to identify interim strategies, short of eliminating domestic violence, to mitigate the effects of CEDV on child growth and nutrition during these critical periods for subsequent human-capital formation.

The rest of the paper is organized as follows. We first describe definitions of domestic violence and children's exposure to it. We then discuss prior research on the effects of CEDV, noting its focus on developmental outcomes in school-aged children in North America (and its oversight of nutritional outcomes among younger children in poor regions). To motivate further our path framework, we review (limited) research in children generally under six years of the *total effects* of CEDV on growth and nutrition. We then describe our conceptual framework and review evidence for each pathway linking CEDV to poorer growth and nutrition in the prenatal, *infant* (0–11 months), and *toddler* (1–3 years) periods. We conclude with discussions of the findings, gaps in knowledge, and opportunities for research and intervention.

Defining domestic violence and children's exposure

Domestic violence refers to “assaultive and coercive behaviors that adults use against their intimate partners” (Holden, 2003, p. 155). The aspects of domestic violence with potential implications for children include its *type* (psychological, physical, sexual), *specific acts* (threatening, hitting, using weapons), *severity*, *injurious effects* (bruises, hospital visits, death), and *timing, frequency, duration, and age at exposure* (Holden, 2003). Other dimensions with possible implications for children include its *escalation, type of perpetrator, perpetrator's relationship to the child, victim's behavior during the assault, and outcome of the assault*, such as apology, submission, or continuation (Holden, 2003).

Children's exposure to domestic violence (CEDV) includes direct prenatal exposure and direct or indirect involvement (Holden, 2003). *Direct prenatal exposure* refers to physical trauma or exposure to an altered uterine environment as a result of a pregnant mother's experience of domestic violence. *Direct involvement* includes participation in an assault, intervention on the victim's behalf, victimization from verbal or physical abuse during an assault, observation (or over-hearing) of an assault, and the initial or longterm effects of an assault, including residential displacement, incarceration of the perpetrator, altered parenting, and/or maternal psychological challenges. *Indirect involvement* includes being told of or hearing about the assault or being ostensibly unaware of it. Despite these standard definitions, their use in research is limited (Edleson et al., 2007).

Prior research on CEDV

Prior research on domestic violence and children has focused on its co-occurrence with *child maltreatment* (Jouriles, McDonald, Smith, Heyman, & Garrido, 2008), or acts of “commission or omission by a parent or ...caregiver” resulting in potential or actual harm to a child (Leeb, Paulozzi, Melanson, Simon, & Arias, 2007, p. 11). Prior research also has stressed the effects of CEDV on children's behavior, social competence, and emotional and psychological status (Evans, Davies, & DiLillo, 2008; Kitzmann, Gaylord, Holt, & Kenny, 2003; Holt, Buckley, & Whelan, 2008; Ribeiro, Andreoli, Ferri, Prince, & Mari, 2009; Wolfe et al., 2003) mostly (e.g., Wolfe et al., 2003), but not entirely (e.g., Ellsberg et al., 2000; Ribeiro et al., 2009) in selective U.S. samples. In several meta-analyses (Evans et al., 2008; Kitzmann et al., 2003; Wolfe et al., 2003), CEDV has adversely affected emotional and behavioral development in children three years and older; yet, the included studies were of varying quality and limited mainly to U.S. samples.

Other limitations of prior research on CEDV are notable. In one review (Edleson, 1999), only 31 studies separated physical from other forms of marital conflict, measured other co-occurring violence, clarified the sample and measurement procedures, assessed the socio-demographic attributes of children, or applied

rigorous qualitative methods. The 31 studies that met these criteria had other drawbacks, including case-control designs, purposive samples from selective populations, small samples ($n < 250$ for 20 studies), the grouping of 3–6 year-olds (when studied) with older children, maternal report of psychosocial and behavioral outcomes, an inability because of study design to assess the moderating effects of community context, and poor representation of non-U.S. populations, with only two studies being non-U.S. based and none conducted in populations with prevalent child undernutrition. Thus, the effects of CEDV on growth and nutrition prenatally through 36 months (a critical period for growth and development) are understudied, especially in poor, malnourished populations.

Total effects of CEDV on malnutrition in childhood

To clarify this gap and motivate our path framework, Table 1 describes the 13 studies we identified that assessed the *total effects* of CEDV on growth and nutrition in various periods of childhood. Six of these studies were conducted in the last 10 years, confirming the newness of this topic. A majority were conducted in North America (5) and Western Europe (3), exposing the gap in knowledge for poorer regions. Almost half were based on case-control (4) or cross-sectional (2) designs, and only one was based on national samples, limiting the capacity to make broader inferences. A majority (8) included samples of fewer than 500 children, and only four focused on children under three years. Moreover, the types of domestic violence assessed, and tools for assessment, differed widely (Table 1). Finally, the studies controlled variously for other confounders, such as co-occurring violence (e.g., Karp, Scholl, Decker, & Ebert, 1989; Olivan, 2003). Thus, cross-study comparisons and generalizations beyond most samples warrant caution.

In this context, the findings from case-control studies were mixed. Two found no difference in Hb concentration or anthropometry in infants and 2–6 year-olds by maternal exposure to physical domestic violence (Arcos, Uarac, & Molina, 2003; Attala & McSweeney, 1997); yet, matched case-control studies found associations between the number of violent parental disagreements and non-organic failure-to-thrive (Bithoney & Newberger, 1987) as well as severe physical violence and the adjusted odds of wasting (weight-for-height z-score or *whz* < -2 SD from reference median) in children 1–24 months (Hasselmann & Reichenheim, 2006).

The findings from cross-sectional studies were similarly mixed. In three villages in Karnataka, India, children 3–14 years of ever-beaten mothers consumed 294–394 fewer (kilo)calories than those of never-beaten mothers (Rao, 1998). Yet, in five national samples of children 6–59 months, the adjusted odds of stunting and severe stunting were higher only in those of Kenyan mothers exposed to any or only physical domestic violence (Rico, Fenn, Abramsky, & Watts, 2010).

The findings from prospective cohort studies in diverse settings were persuasive, however. A follow-up of 121 newborns of exposed women in the U.S. showed greater increases in weight from 6–12 months among those whose mothers reported an end to violence at 6 months than among those whose mothers reported continued violence (McFarlane & Soeken, 1999). A follow-up of pregnant women in U.S. cities showed higher adjusted risks of obesity at age five years among the children of mothers with chronic domestic violence (Boynton-Jarrett, Fargnoli, Suglia, Zuckerman, & Wright, 2010). A longitudinal nutrition experiment with pregnant women in rural Bangladesh showed lower weight and length at birth, smaller changes in *waz* and *haz* from 0 to 24 months, and lower *waz* and *haz* at 24 months with exposure to any domestic violence (Åsling-Monemi, Naved, & Persson, 2009). Finally, in national follow-ups of a British birth cohort and a Swedish cohort of adults, exposure to *family conflict* or *dissent* predicted higher adjusted

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