



## Domestic violence and child nutrition in Liberia

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### ABSTRACT

Domestic violence against women is endemic globally and is an important social problem in its own right. A compounding concern is the impact of domestic violence against mothers on the nutritional status of their children. Liberia is an apt setting to examine this understudied topic, given the poor nutritional status of young children, high rate of domestic violence against women, and prolonged period of conflict that included systematic sexual violence against women. We expected that maternal exposure to domestic violence would predict lower anthropometric z-scores and higher odds of stunting, wasting, and underweight in children less than five years. Using data from 2467 mother-child dyads in the 2007 Liberia Demographic and Health Survey (LDHS) undertaken between December 24, 2006 and April 19, 2007, we conducted descriptive and multivariate analyses to examine the total, unadjusted and adjusted associations of maternal exposure to domestic violence with these anthropometric measures in children. Maternal reports of sexual domestic violence in the prior year predicted lower adjusted z-scores for height-for-age and weight-for-height as well as higher odds of stunting and underweight. The findings underscore the needs to (1) enhance and enforce conventional and customary laws to prevent the occurrence of domestic violence; (2) treat maternal survivors of domestic violence and screen their children for nutritional deficits; (3) heighten awareness of the intergenerational implications especially of recent sexual domestic violence; and (4) clarify the biological and behavior pathways by which domestic violence may influence child growth, thereby mitigating early growth failure and its adverse implications into adulthood.

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### Introduction

Domestic violence refers to “assaultive and coercive behaviors that adults use against their intimate partners” (Holden, 2003, p. 155), who may include current or former spouses and dating partners (Saltzman, Fanslow, McMahon, & Shelley, 1999). Domestic violence against women is endemic globally and an important social problem in its own right (Ellsberg, Jansen, Heise, Watts, & Garcia-Moreno, 2008; Watts & Zimmerman, 2002). A compounding concern is its impact on mothers, who are typically the main caregivers for children (Davalos & Santos, 2006; Watts & Zimmerman, 2002). The nutritional effects of domestic violence on young children are probably high; however, this relationship is understudied, and the available findings are mixed, especially in poor settings (Bair-Merritt, Blackstone, & Feudtner, 2006; Kishor & Johnson, 2004; Rico, Fenn, Abramsky, & Watts, 2010).

In a conceptual review of the literature, Yount, DiGirolamo, and Ramakrishnan (2011) specified the biological and behavioral pathways by which domestic violence against mothers may impair the physical growth of children in utero through 36 months of life. Biologically, gestation and infancy are critical periods for the development of stress-responsive biological regulatory systems, which are central to maintain physical and mental health (see also Repetti, Taylor, & Seeman, 2002). A child’s observation of or involvement in domestic violence in these periods may permanently disrupt these regulatory systems. Dysregulation of these systems may cause deficits or delays in metabolic and immune activities; sexual maturation and reproductive function; mental and cognitive functioning; as well as physical growth (see also Mead, Beauchaine, & Shannon, 2010). Chronic deficits or delays in these domains may impair intellectual functioning, behavior, health, and stature into adulthood (Repetti et al., 2002).

Behaviorally, a mother’s observation of domestic violence in her own childhood and/or her experiences of such violence in adulthood may impair her health and health behaviors in pregnancy. Such impairments may elevate her risk of a poor pregnancy

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outcome (see also Shah & Shah, 2010), which would strongly predict her child's early growth (Saigal & Doyle, 2008). After delivery, poor maternal health and health risk behaviors that are predicted from observing and/or experiencing domestic violence may compromise the mother's care of her infant. Inadequate psychosocial, nutritional, and health-related care in infancy may also impair the child's early physical growth.

Empirically, the children of mothers who experience domestic violence have elevated levels of biomarkers of stress (see Yount et al., 2011). Mothers experiencing domestic violence also tend to have poorer prenatal health, higher odds of health risk behaviors in pregnancy, less or delayed prenatal care, and higher odds of a range of poor pregnancy outcomes, including fetal death, low birth weight, and preterm birth (Shah & Shah, 2010; see also Yount et al., 2011). Evidence is more mixed, however, regarding the infant care of mothers who have experienced domestic violence or violence in childhood (Yount et al., 2011). On the one hand, the children of these mothers tend to have higher risks of under-two mortality (e.g., Rico et al., 2010), poorer preventive care including lower immunization levels (e.g., Davalos & Santos, 2006; Kishor & Johnson, 2004), and illness or infection in infancy (see Yount et al., 2011). On the other hand, the breast-feeding practices and parenting of mothers who experience domestic violence or violence in childhood range from deficient to what researchers have called *compensatory* (see Yount et al., 2011). Still, these findings overall are troubling, as 11%–71% of women globally report any prior domestic violence (Ackerson & Subramanian, 2008; Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2006; Kishor & Johnson, 2004), and millions of children in the U.S. alone are exposed annually (McDonald, Jouriles, Ramisetty-Mikler, Caetano, & Green, 2006). Also, rates of domestic violence may be higher in conflict and post-conflict settings (World Health Organization (WHO), 2002), where sexual violence is a common tactic of war and exposure to conflict-related violence predicts men's perpetration of domestic violence (Bracken & Petty, 1998; Ward & Marsh, 2006).

Despite evidence of the effects of domestic violence on *predictors* of child growth, evidence of its total (unmediated) effects on child growth is limited and mixed (Yount et al., 2011). In an analyses of five national Demographic and Health Surveys (DHS), maternal exposure to any physical or sexual violence since age 15 years predicted higher odds of stunting in children 6–59 months in only one country (Rico et al., 2010). In contrast, a few longitudinal studies mostly in wealthier settings have shown negative effects of domestic violence against mothers on children's growth (Asling-Monemi, Naved, & Persson, 2009; Montgomery, Bartley, & Wilkinson, 1997; Peck & Lundberg, 1995). Yet, the applicability of findings from wealthier settings to poorer countries with different socio-political and epidemiologic environments is unclear. Also, a prior review has exposed a remarkable dearth of research on the intergenerational effects of domestic violence in African countries (Yount et al., 2011).

The above discussion motivates the present study. We examine the total, unadjusted and adjusted associations of maternal exposure to various forms of domestic violence with available anthropometric measures in children less than five years, using data from the 2007 Liberia Demographic Health Survey (LDHS). Liberia is an appropriate setting to examine this association, given its poor nutritional status of young children, high rate of domestic violence against women, and prolonged civil conflict in which sexual violence against women was a systematic tactic of war.

## Setting

Liberia, situated in West Africa, is home to 3.7 million inhabitants of whom 44% are below 15 years (Central Intelligence Agency

[CIA], 2010). It is among the poorest countries in the world (United Nations Children's Fund [UNICEF], 2007; World Bank, 2008) and experienced 14 years of protracted civil conflict from December 1989 until August 2003, when the United Nations Mission in Liberia assumed peacekeeping duties (CIA, 2010). These years of conflict resulted in over 200,000 deaths, displacement of approximately two million people, the injury and traumatization of countless others (United Nations Development Programme [UNDP], 2006), and the virtual destruction of Liberia's infrastructure and economy. Currently, 85% of Liberians are unemployed, and 84% live on less than \$1.25 per day (World Bank, 2011). Life expectancy at birth is an estimated 56.6 years, and the 2.8% rate of population growth in 2010 is the twentieth fastest among 232 countries worldwide, owing largely to a fertility rate of 5.2 children per woman of reproductive age (CIA, 2010; UNDP, 2006). Still, Liberia's total fertility rate ranks twentieth of 41 Sub-Saharan African countries having DHS data from the past five years (Macro International Inc., 2011). Liberia has the sixth highest maternal mortality ratio in Africa, estimated at 1200 per 100,000 live births compared to the WHO African regional average of 900 per 100,000 live births (WHO, 2010).

In this context, Liberian children experience comparatively lower rates of survival and high levels of malnutrition. Liberia's current rate of under-five mortality (145 per 1000 live births) ranks seventeenth in the world (UNICEF, 2010a). Moreover, 14% of infants are born with low birth-weight (UNICEF, 2010b), and only 39% of children 12–23 months are fully immunized (Liberia Institute of Statistics and Geo-Information Services [LISGIS] et al., 2008). Nutritional data are limited for the periods of civil conflict, yet conflict predicts acute and chronic malnutrition (Agadjanian & Prata, 2003; Senessie, Gage, & Von Elm, 2007). Among children under five years, 8% are wasted, 19% are underweight, and 39% are stunted (Government of Liberia (GOL), 2006), defined as more than two standard deviation (SD) units below the respective median z-score values for the NCHS/CDC/WHO international reference population (WHO, 2006). DHS data from 31 Sub-Saharan countries rank Liberia intermediate in terms of children's mean weight-for-height (16th), weight-for-age (12th), and height-for-age (15th) z-scores (Macro International Inc., 2011).

The poor nutritional status of children in Liberia has occurred in a context of prevalent violence against women. During the civil war, pro-government forces conducted abductions, forced labor, torture, killings, and rape, institutionalizing the maltreatment of women (International Labour Office [ILO], 2006; WatchList, 2004). According to some studies, up to 90% of Liberian women have experienced some form of physical violence, and 60%–74% have experienced some form of sexual violence (Casella et al., 2005; Tomczyk et al., 2007; Warner, 2007). Perpetrators during the war consisted mainly of fighting forces, yet post-conflict perpetrators have included ex-combatants, neighbors, relatives, teachers, and intimate partners (Casella et al., 2005; Tomczyk et al., 2007). In 2007, domestic violence was the most prevalent (26%) of all protection incidents reported to the Liberian National Police (GOL, 2008). Approximately 44% of women 15–49 years have reported physical violence since age 15, most often by a current or former partner (LISGIS et al., 2008), and high percentages of ever-married women have reported physical (35%), sexual (11%), and emotional (36%) violence by an intimate partner (LISGIS et al., 2008). Thus, even post-conflict, the rates of violence against women remain high.

Given prevalent malnutrition in young children, frequent domestic violence against women, and equivocal evidence of their associations, we examined their associations in the post-conflict setting of Liberia. All else being equal, we expected that maternal exposure to domestic violence would predict lower height-for-age, weight-for-age, and weight-for-height z-scores as well as higher

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