



Family structure and child anemia in Mexico



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ARTICLE INFO

Article history:
Available online 8 December 2012

Keywords:

Maternal union status
Cohabitation
Divorce
Child health
Malnutrition
Biomarker
Mexico
MxFLS
Grandparents

ABSTRACT

Utilizing longitudinal data from the nationally-representative Mexico Family Life Survey, this study assesses the association between family structure and iron-deficient anemia among children ages 3–12 in Mexico. The longitudinal models ($n = 4649$), which control for baseline anemia status and allow for consideration of family structure transitions, suggest that children living in stable-cohabiting and single-mother families and those who have recently experienced a parental union dissolution have higher odds of anemia than those in stable-married, father-present family structures. Interaction effects indicate that unmarried family contexts have stronger associations with anemia in older children (over age five); and, that the negative effects of parental union dissolution are exacerbated in poorer households. Resident maternal grandparents have a significant beneficial effect on child anemia independent of parental family structure. These results highlight the importance of family structure for child micronutrient deficiencies and suggest that understanding social processes within households may be critical to preventing child anemia in Mexico.

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Introduction

Despite advances in child health and nutrition around the world, 47% of children under five currently suffer from iron-deficient anemia, most in low- and middle-income countries (Balarajan, Ramakrishnan, Ozaltin, Shankar, & Subramanian, 2011). Anemia (caused by a combination of poor diet and high burden of infectious disease) can have immediate and long-term effects on children's cognitive, neurological, and socio-emotional development (Corapci, Calatroni, Kaciroti, Jimenez, & Lozoff, 2010; Lozoff, 2007), with implications for reduced individual and societal well-being (Balarajan et al., 2011). Recent research suggests that, unlike underweight status, anemia has been difficult to address at the population level and has been largely unchanged by economic growth in developing countries (Alderman & Linnemayr, 2009).

Given the small effect of national economic growth on child anemia rates, understanding the effects of more proximal social and economic environments may be key to reducing child anemia. Family and household contexts are important for children's health and nutrition across settings due to their direct effects on children's access to resources and care (Grzywacz & Fuqua, 2000; Wachs, 2008). But recent research finds that increasing poor households' access to economic resources may do little to improve child

micronutrient deficiencies (Leroy, Ruel, & Verhofstadt, 2009). This suggests that in these proximate contexts, social processes, and who is available to care for children, may be more critical determinants of child anemia than economic resources. It has been posited in U.S. research that non-marital family structures and family instability may be particularly important (and growing) sources of health inequalities among children (Bzostek & Beck, 2011; Harknett, 2009; McLanahan & Percheski, 2008; Schmeer, 2011). However, less research has been dedicated to understanding family structure as a social determinant of child nutrition in developing country settings.

To begin to fill this gap in child health and nutrition research, this study assesses the associations between family structure and child anemia in Mexico. Despite the stability of marriage in Mexico, divorce and cohabitation dissolution rates have been rising in the past two decades: it was estimated in 2008 that 10% of all households in Mexico were single parent families with children (Vega & Olvera, 2010). There is also evidence that cohabitation is becoming more common and less stable than marriage in Mexico (Heaton & Forste, 2007; Parrado & Tienda, 1997; Solis, 2004), and high rates of male migration to the U.S. mean additional sources of father absence and family instability for Mexican children (although with potential benefits).

Using data from the nationally-representative Mexico Family Life Survey (MxFLS) and logistic regression models, this study assesses the associations among different family structures (including father absence due to migration) and anemia in children

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aged 3–12. This study also considers the influence of resident maternal grandparents, who may be important additional caregivers as Mexican children are increasingly faced with unmarried and unstable parental family structures. The findings indicate that family structure is associated in important ways with child malnutrition and may be growing source of child health inequalities in Mexico.

Background

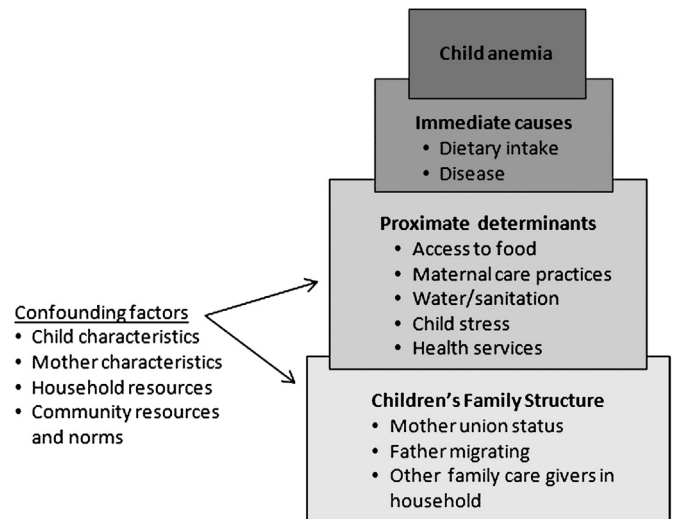
Although Mexico has been undergoing epidemiological and nutrition transitions (characterized by shifts away from infectious and towards chronic disease; and a growing problem of obesity), undernutrition remains the most common child nutrition problem in Mexico (Gonzalez-de Cossio et al., 2009). Current anemia rates are estimated at 24% for children ages 1–4, 21% among children ages 5–8, and 15% among children ages 9–11 (Rivera, Irizarry, & Gonzalez-de Cossio, 2009). These rates reflect small declines in national-level anemia rates since 1999, and rates have actually increased in Mexico City from 14% in 1999 to 17% in 2006. This suggests that economic development and the epidemiological and nutrition transitions have not translated into improvements in child micronutrition in Mexico.

Despite recognition that child anemia is a serious population health problem, we know little about the social determinants of anemia in developing countries. There is some evidence that anemia is higher in younger, lower SES, and indigenous children, and those in households with young mothers or poor living conditions (Balarajan et al., 2011; Cotta et al., 2011; Leal, Batista, de Lira, Figueiroa, & Osorio, 2011). But again, household income seems to play a small role in reducing child anemia: a recent review of the effects of conditional cash transfer programs suggests little impact of these programs on children's micronutrient deficiencies. The Mexican program (Oportunidades) does have a small association with reduced anemia in very young children, but only in non-urban areas (Leroy et al., 2009). This suggests that child anemia may not be significantly reduced by increasing household income; and, that the influence of other family/household factors needs to be explored.

The role of parental family structure

The conceptual framework shown in Fig. 1 suggests that the foundation of child anemia may be rooted, in part, in family structure, which influences more proximate and direct causes of anemia. Family members (and particularly parents) promote child nutrition through the quality and quantity of time and goods they provide (Wachs, 2008), the health behaviors they impart (Burke, Beilin, & Dunbar, 2001; Patrick & Nicklas, 2005), and the extent of emotional support, supervision, and guidance they afford their children through parenting (Sparks, 2011; Wachs, 2008). Parents' ability to provide food, household sanitation, and adequately prevent and treat infectious diseases, in particular, are important proximate determinants of the two main causes of anemia – poor diet and high disease burden. Child stress is another proximate determinant of anemia due to stress effects on the immune system, with the potential to increase children's susceptibility to disease and exacerbate the effects of illnesses (Flinn & England, 2003).

Family structure (i.e., maternal union status) is posited to work through these pathways to affect child anemia in a number of ways. Research from other countries (mainly, the U.S.) suggests that resident fathers may be important in ensuring the health development of children due to the social and economic resources they provide (Brown, 2010; Carr & Springer, 2010). Although two-parent households are the norm in Mexico, 10% of births were to single mothers in 2005 (INEGI, 2005). In addition to non-marital births,



Adapted from: Hawkes, C. 2007. WHO Commission on Social Determinants of Health, *Globalization, Food and Nutrition Transitions*, Figure 3, pg. 22.

Fig. 1. Conceptual model of family structure and child anemia.

the rising divorce rate means more Mexican children than ever are living in single-mother homes (Arriagada & Aranda, 2004; INEGI, 2011). The determinants of divorce have not been widely explored in the Mexican context, but recent statistics show that women are much more likely than men to cite spouse abandonment, domestic violence, and lack of contribution to the household welfare as reasons for divorce (INEGI, 2011). This suggests that children with divorced mothers may have reduced access to food and adequate care due to family conditions before the divorce, in addition to losing resources after the divorce if fathers had been providing economic or social support. They also may experience higher levels of stress before and after the divorce than those in stable-married or cohabiting parent households.

It should be noted, however, that developing country research also suggests that mothers, more than fathers, utilize household resources to promote child wellbeing (Handa, 1996; Hoddinott & Haddad, 1995; Phipps & Burton, 1998), including increasing expenditures on food (Schmeer, 2005). This research indicates that mothers' access to and control over resources may increase parental investment in children. Thus, children may fare better in single-mother households than in two-parent or extended family households if single mothers have more decision making power and are better able to direct resources towards improving children's diets and health when fathers are absent.

Cohabitation, a second type of nonmarital family structure, is associated with less support by fathers and more partner transitions than marital unions in the U.S. (Brown, 2004). In the Mexican context, cohabiting unions have been traditionally characterized as stable unions that have not been formalized due to lack of resources. However, research shows that contemporary cohabiting unions are less stable than marriages in Mexico (Heaton & Forste, 2007), potentially reflecting less commitment from partners. Cohabiting-couple households also tend to be of lower economic status than married-couple households in Mexico (Rodriguez, 2005), due to resources constraints that may motivate couples to cohabit rather than marry or due to lower levels of economic investment by partners in cohabiting unions. Recent statistics show that cohabitation is on the rise in Mexico and that children are increasingly faced with cohabiting family structures: in 2005, 36% of all births in Mexico were to cohabiting women (INEGI, 2005). However, little evidence indicates whether cohabitation provides

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