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Girl child marriage as a risk factor for early childhood development and stunting

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ABSTRACT

This paper quantitatively examines the intergenerational effects of girl child marriage, or the developmental and health outcomes of children born to women who marry before age 18. The overall objective is to understand the mechanisms through which girl child marriage affects the health and well-being of children in sub-Saharan Africa, as well as the relative magnitude and impact of these mechanisms. We used data from 37,558 mother-child pairs identified through 16 national and sub-national cross-sectional surveys across sub-Saharan Africa conducted between 2010 and 2014 by the UNICEF Multiple Indicator Clusters Survey program. The Early Childhood Development Index was used to measure child development, and stunting was used to measure health. Using logistic regression, we found that the odds of being off-track for development and being stunted were 25% and 29% higher, respectively, for children born to women who married before age 18 compared to those whose mothers married later ($p < 0.001$). Geographic location and primary education, which were conceptualized as contextual factors, explained most of this relationship, controlling for country fixed-effects. In adjusted models, we found that early childbearing was not the sole pathway through which girl child marriage affected child development and health. Our final models revealed that disparities in advanced maternal education and wealth explained child development and stunting. We conclude that there are intergenerational consequences of girl child marriage on her child's well-being, and that through association with other contextual, socioeconomic, and biological factors, marrying early does matter for child development and health. Our findings resonate with existing literature and point toward important policy considerations for improving early childhood outcomes.

1. Introduction

In 2007, more than 200 million children under age 5 in low- and middle-income countries (LMICs) were estimated to fall short of internationally-accepted minimum outcomes for physical, educational, and cognitive development due to poverty, poor nutrition, and other social risks (Grantham-McGregor et al., 2007). A recent study estimated that nearly one-third of children aged 3 and 4 in LMICs were not on-track for socioemotional or cognitive development, with over 40% of those children in sub-Saharan African countries (McCoy et al., 2016). In the early years of life, competencies are built which may have long-term consequences for child well-being (Efevbera et al., 2017). Early development is shaped by biological and social factors innate within the child and the child's greater environment (Sameroff and Sameroff, 2009). Understanding early childhood outcomes such as poor health, nutrition, and developmental delays is important because they can be intervened upon, when necessary, setting children on a positive trajectory for adulthood (Anderson et al., 2003; Engle et al., 2011).

Caregivers, especially mothers, play an important role in their children's development (Efevbera et al., 2017; Calkins and Hill, 2007). One maternal risk factor that may affect early childhood development (ECD) and health is a mother's age at marriage. Girl child marriage, or early marriage, is defined as a formal union of a female before the age of 18 (UNICEF, 2014). It is often considered a violation of the rights of a girl according to international and

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regional human rights agreements and has been associated with lower educational attainment, economic opportunities, and some measures of health among young women (Erulkar, 2013a; Machel et al., 2013; Nour, 2009; Svanemyr et al., 2012).

Limited evidence describes the relationship between girl child marriage and child health and development. Mothers' early marriage was significantly associated with child stunting, underweight (Raj et al., 2010a), and increased odds of diarrhea in the last two weeks (Mashal et al., 2008), although results were inconsistent across studies. A country-level analysis found that girl child marriage was significantly associated with infant mortality rates across 96 countries (Raj and Boehmer, 2013).

Empirically, literature on girl child marriage has been closely linked to literature on adolescent motherhood (Santhya, 2011). Some studies found that earlier maternal ages were significantly associated with infant and child mortality even when controlling for sociodemographic variables (Chen et al., 2007; Legrand and Mbacke, 1993), while other studies found no significant relationship once including potential confounders (Sharma et al., 2008; Lee et al., 2008); few studies were in sub-Saharan Africa. Pre-term births, resulting in lower gestational age, and low birth weight were also more common among adolescent mothers (Chen et al., 2007; Kurth et al., 2010; Fall et al., 2015). Stunting, a measure of chronic undernutrition as a result of risk factors including breastfeeding, maternal education, wealth, and child characteristics, was more likely among infants of adolescent mothers (Fall et al., 2015). Stunting is associated with reduced child development (Teller and Alva, 2008), particularly along cognitive (Grantham-McGregor et al., 2007), socioemotional (McCoy et al., 2016), learning, and physical domains (Miller et al., 2015).

Very limited research examines the developmental and health consequences of girl child marriage in sub-Saharan Africa, where one in three girls marry before age 18 (UNICEF, 2015) and some of the largest percentages of young children fall short of developmental and nutritional milestones (Grantham-McGregor et al., 2007; McCoy et al., 2016). Among the 20 countries with the highest prevalence of girl child marriage, 85% are on the African continent (Girls Not Brides, 2017). If current trends persist, sub-Saharan Africa will have the largest number of girl child brides by 2050 (UNICEF, 2015), illuminating an important region to further investigate.

This paper quantitatively examines the intergenerational effects of girl child marriage, or the developmental and health outcomes of children born to women who marry before age 18. The overall objective of this study is to understand the mechanisms through which girl child marriage affects the health and well-being of children born to women who marry early in sub-Saharan Africa, as well as the relative magnitude and impact of these mechanisms. We used data from 16 national and sub-national cross-sectional surveys across sub-Saharan Africa conducted between 2010 and 2014 by the UNICEF Multiple Indicator Clusters Survey (MICS) program. The Early Childhood Development Index was used to measure child development, and stunting was used to measure health. Two hypotheses were tested:

Hypothesis 1: Children born to women who married before age 18 have higher odds of being developmentally off-track and of being stunted.

Hypothesis 2: Mother's age at childbirth, completion of advanced education, and household wealth are the primary mechanisms through which early marriage affects child development and nutritional status.

To our knowledge, this is the first study to elucidate the relationship between girl child marriage and the development of children early in life across cognitive, language, physical, and socioemotional domains.

2. Framework

A framework for hypothesizing the relationship between girl child marriage and child development and health was developed, informed by existing literature and preliminary qualitative fieldwork. Acknowledging the socioecological context in which children develop, including biological disposition, mother, family, community, and societal influences (Bronfenbrenner, 1977), this study focused on only one risk factor for child development and health: mother's marital age.

Prior to marriage, several complex and interacting factors create environments in which women marry at earlier ages. A literature review conducted by the first author revealed that risk factors for girl child marriage include poverty (Chandra-Mouli et al., 2013; Human Rights Watch, 2011; Wolfe, 2013), low education levels and maternal education (Erulkar, 2013a; Erulkar and Muthengi, 2009; Loaiza and Wong, 2012), lack of laws or enforcement of laws (Chandra-Mouli et al., 2013; Myers and Doornbos, 2013), cultural and social norms (Nour, 2009; Hampton, 2010; Walker, 2012), and conflict and fragility (Myers and Doornbos, 2013; Schlecht et al., 2013). Some of these same pre-marital risk factors may directly impact a child or a woman's own health and nutritional status (Gaur et al., 2013; Letamo and Navaneetham, 2014), which may directly impact her child's risk for fetal growth restriction, malnutrition, and poor health at birth with potential long-term health and developmental consequences (Sawant and Venkat, 2013).

Once a woman is married, there are different ways in which she may be vulnerable to biological and social risks, which may subsequently affect her children's development and health. Using a biosocial analysis, which posits that both biological and social processes interact and influence health and disease (Hanna et al., 2013), we theorize that through girl child marriage, both biological and social pathways determine her children's well-being. Girl child marriage often leads to early childbearing, which may have biological consequences leading to poorer health and developmental outcomes for her young children (Williamson et al., 2013). Beyond biological influence, girl child marriage can also lead to social mechanisms that directly impact her children's well-being. We conceptualize these direct social mechanisms as maternal caregiving behavior and decision-making, ultimately influencing child development and health (The Urban Child Institute, 2014).

Maternal behavior may be impacted by early motherhood. Observational data has shown teenage mothers have worse healthcare behavior for themselves and their children as compared to adult mothers (Legrand and Mbacke, 1993). Maternal behavior may also be impacted by education and wealth. While earlier primary educational attainment may influence when, why, and how a woman marries, pursuing and completing secondary schooling is often, in part, disrupted by early marriage, particularly in the context of sub-Saharan Africa (Wodon et al., 2016; Lloyd and Mensch, 2008). Early marriage was cited as a reason for up to 28% of secondary school dropouts in some African contexts (Lloyd and Mensch, 2008) and was reported as a key reason for not completing secondary school among women in a recent qualitative study (Efevbera, 2017). Lower educational attainment lowers labor market opportunities and average incomes (Filmer and Fox, 2014), impacting wealth in the marital household. Mother's advanced education, household income, and early childbearing, in turn, affect a mother's knowledge and behavior, as well as the resources she has to act on her beliefs. This can lead to poorer nutritional status and medical care as well increased poverty (Dopkins Broecker and