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Does it Take a Village? Kin Coresidence and Child Survival in Tanzania

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Abstract

Children in Tanzania live in a variety of family structures, many of which contain related and unrelated non-parental adults. In this article, I use data from the Rufiji Health and Demographic Surveillance System in Tanzania to examine the role of coresident non-parental adults in childrearing. First, I use quantitative demographic data to investigate the association between kin coresidence and child survival, differentiating by lineage. I also examine the role of unrelated coresident adults. Second, I test whether coresident non-parental adults moderate the association between parental absence and child survival. Finally, I draw from qualitative interview data to investigate childrearing practices and beliefs, with a particular focus on parental absence and kin coresidence. I find that, despite the institutionalization of kin caregiving, coresidence with kin is not beneficial, and kin are unable to compensate for parental absence. The two-parent living arrangement is viewed as ideal, although the reality of childrearing in the setting is complex and fluid. While absent parents try to maintain support of their children, such assistance is insufficient in times of health crisis. Kin care for children with absent parents, but their willingness to assist depends on the reason for the absence.

Introduction

Throughout much of sub-Saharan Africa, childrearing rights and responsibilities are traditionally shared across the extended family system (Bledsoe 1990; Madhavan, Mee, and Collinson 2014; Page 1989). Biological parents are not expected to serve all functions of childrearing, and children are thought to belong to the lineage rather than individual parents. As a result, children live with a variety of non-parental adults both in addition to, and in place of, biological parents (Sibanda 2011). Children's living arrangements are complex and often transitory (Notermans 2008). Yet despite the centrality of kin in the lives of children, existing research on child wellbeing tends to focus on biological parents (Case, Paxson, and Ableidinger 2004; McDaniel and Zulu 1996), and there is limited research examining how kin coresidence influences children's health (Gage, Sommerfelt, and Piani 1997; Gibson and Mace 2005; Sear and Mace 2008).

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The majority of research on kin concentrates on the function, norms, and rules of shared childrearing, often citing such practices as tools for redistribution and reciprocity (Bledsoe and Isiugo-Abanihe 1989; Goody 1982). When children are exchanged among relatives or kin, both sending parents and recipient families benefit, as parents experience alleviation in the demand for resources, and recipient families can make requests for assistance from sending parents as well as lay claim to the labor and future benefits of the child (Isiugo-Abanihe 1985; Verhoef and Morelli 2007). These practices serve to maintain close kinship ties, providing parents and caregivers with a familial safety net, or a network of support on which they can routinely draw (Cox and Fafchamps 2007; Eloundou-Enyegue and Shapiro 2005).

While kin childrearing roles are well institutionalized, scholars argue that the kinship rules governing such responsibilities are more malleable and dynamic than characterized in much of the anthropological literature (Setel 1999). Kinship systems are in constant flux in response to changing cultural and gender norms, economic realities, and health crises (Smith 2001a; Therborn 2004). This is not to say that the forces of modernization have eliminated the reliance on extended kin; on the contrary, features of modern economic and political life may have renewed the need for and use of such strategies of reciprocity (Cliggett 2003; Smith 2001b). Indeed, families continue to use fosterage to cope with economic and family crises (Akresh 2009; Grant and Yeatman 2012), and kinship and educational fosterage continue to play a role in equalizing inequalities and promoting mobility (Eloundou-Enyegue and Shapiro 2005; Serra 2009).

Alongside traditional practices of child fostering, as prime age adult mortality climbed during the AIDS epidemic there was widespread concern as to whether the African extended family would be able to support rising numbers of AIDS orphans (Deininger, Garcia, and Subbarao 2003; Foster 2000; Hunter 1990). While certainly an important problem, parents are likely to be absent from their children for a variety of reasons (Gaydosh 2015), and these differences have implications for children's survival (Gaydosh 2017). It is therefore important to examine the role of kin in response to all of the contemporary demographic realities that shape parental coresidence and family structure, including non-marital childbearing, divorce, and migration.

Using a mixed-methods approach integrating quantitative demographic surveillance data and qualitative interview data from Rufiji, Tanzania, I examine the role of non-parental adults in child survival in instances of both parental coresidence and parental absence. First, I examine the association between non-parental adult coresidence and child survival, controlling for parental coresidence. I find that non-parental adult coresidence is associated with worse child survival, independent of parental coresidence. Second, in a context of shared childrearing where care for children is not restricted to the parents, the exit of a parent does not necessarily result in a loss of caregiving, which may have implications for the consequences of parental absence. Given the well-established norms and practices of shared childrearing and the commonality of parental absence, I test whether non-parental adults are able to serve as sufficient substitutes in the event of parental non-residence. Specifically, I investigate whether non-parental adult coresidence moderates the association between parental absence and child survival. I find that coresident non-parental adults are

unable to offset the increase in child mortality associated with parental absence. Finally, I draw on qualitative interview data to examine kin caregiving expectations and limitations to provide insight into why kin are unable to alleviate the elevated child mortality risk of parental absence.

Background

The coresidence of kin in the household may influence child survival in several ways. First, according to sociological and economic theories of the household, the presence of adults in the household influences the material, temporal, social, and emotional resources available to children (Becker 1981; Biblarz and Raftery 1999). Kin may bring additional economic resources to the household (Case 2004; Duflo 2000), thereby improving child health and survival. Additional adults in the household also translates into more potential caregivers and greater supervision of children (Fouts and Brookshire 2009). The coresidence of kin may extend the social network of the household (Hadley 2004), providing families with an even larger safety net on which they can draw in challenging times. Provided that kin are motivated to contribute to childrearing, their coresidence should increase the level of care and supervision of the child. Taken together, the resource framework predicts that kin coresidence will be beneficial for child survival. There is some empirical evidence documenting a protective association between kin coresidence and child death. The coresidence of maternal grandmothers is associated with greater child survival (Sear et al. 2002), and kin alleviate some domestic burdens for mothers (Gibson and Mace 2005).

Moreover, the extended kin system of childrearing is fully institutionalized in this setting. Following a collective model of childrearing, many individuals fulfill the roles and responsibilities of childrearing, not only biological parents (Goody 2005). Through a combination of arrangements, ranging from short school vacation visits to instances of formal fostering extending through the majority of childhood, close kinship ties are maintained and children become adept at adapting to various living arrangements (Notermans 2008). Kin have well-established norms and roles on which to draw to organize their childrearing responsibilities (Cherlin 1978; Therborn 2004). Such diffuse childrearing responsibilities should promote the investment of kin resources in children in the household.

Furthermore, because parental absence is common and kin care is institutionalized, it is possible that kin coresidence may buffer children against the consequences of parental absence. The exit of the parent from the household does not necessarily result in a tumultuous renegotiation of roles and relationships if kin childcare roles are already established. Therefore, the institutionalization framework predicts that kin coresidence will moderate the association between parental absence and child death. In a study of orphans, Case and colleagues (2004) find that schooling outcomes are positively associated with the degree of the child's relatedness to the household head. Madhavan and colleagues (2012) find that the addition of two prime age females in the household lowers the odds of child mobility when children experience maternal death.

There may be important variation in the responsibilities and investment of kin depending on the lineage system practiced. Huber and Breedlove (2007) find that the greater the reliance

on patrilineal groups, the larger the investments of paternal kin. In the Tanzanian area of study, patrilocal and patrilineal systems shape the roles and responsibilities of kin. Paternal relatives often reside in the same household or compound as children, and are responsible for the children in the event of parental death or union dissolution (Alber 2004; Oleke, Blystad, and Rekdal 2005); in particular, customs of widow inheritance dictate that a man's brother is responsible for the widow and her children upon his death (Goody 1969). While this traditional practice has largely fallen out of style, the institutionalized responsibility of paternal uncles remains (Foster 2000; Weisner, Bradley, and Kilbride 1997). In analyses, I differentiate between maternal and paternal kin to investigate this potential variation.

While resource and institutionalization frameworks predict that kin will be beneficial for child survival and alleviate the negative consequences of parental absence, there are five reasons to predict that kin coresidence would be associated with worse child survival. First, research on the daughter-in-law disadvantage suggests that mothers in patrilocal extended households may have less access to medical care and poorer nutrition (Allendorf 2013). Kin coresidence, particularly paternal, may therefore influence child survival indirectly through worse maternal health. Previous research on paternal kin demonstrates a deleterious relationship between paternal kin and child health (Beise and Volland 2002; Castle 1995). Second, coresidence with kin may limit or interfere with the mother's autonomy. Paternal grandmothers in particular may undermine mothers' childcare priorities due to conflict over appropriate childrearing practices (Gage, Sommerfelt, and Piani 1997). Third, in households headed by grandparents, there may be increased demands for child labor (Bledsoe and Isiugo-Abanihe 1989). Even very young children are expected to participate in domestic labor, including looking after younger children and fetching water (Notermans 2008). Fourth, coresidence with kin may increase competition over limited resources, leading to worse nutrition and higher mortality (Gage, Sommerfelt, and Piani 1997; Sear 2008). Finally, it is possible that families facing difficulties caring for their children or making ends meet select into extended kin living arrangements. Parents may move with their children into households with grandparents in anticipation of illness or migration (Adato et al. 2005; Schatz 2007). Households may also take in members of the extended family who are in need of assistance, particularly given expectations of familial care in old age (Oppong 2006; Weisner, Bradley, and Kilbride 1997). If such a selection process occurs, households with coresident kin may be disadvantaged in important ways, leading to an association with worse child survival.

Data and Methods

This paper relies on two data sources collected in the same location, the Rufiji Health and Demographic Surveillance System (HDSS) in Tanzania. The Rufiji HDSS monitors the vital and residency status of an open cohort of approximately 110,000 members residing in a geographic catchment area of 1,800 square kilometers. More detailed information about the site and HDSS data collection platforms is available elsewhere (Mrema et al. 2015; Ye et al. 2012).

Quantitative Data

In 1998, an initial census was conducted to register all individuals living in the catchment area. Each year, households are visited three times to collect information on the residency and vital status of every member. Households are defined as the residential unit and all those individuals who share the resources of that unit or, in colloquial terms, “eat from the same pot.” Household members are added by birth or immigration and are removed at death or emigration.

Drawing from the dates of births, deaths, and migration events, I construct exposure episodes for all children born in the site from 1998 to 2011. Exposure begins at birth and ends either with an event, here the death of the child, or with censoring. Censoring occurs in three instances—when the child turns five, if the child moves out of the site, or at the end of observation, here December 31, 2011.

Children’s living arrangements are classified in terms of coresidence with three groups of adults: biological parents, kin, and unrelated adults. To investigate the role of kin in buffering against the consequences of parental absence, I include a time-varying categorical measure of parental coresidence comparing children who live with two biological parents (reference) to children who live with the mother only, father only, or neither parent. A child experiences parental absence when he/she does not reside with the parent in the same household for at least four months. Absence may be due to parental death, migration, divorce/remarriage, non-marital childbearing, or other fostering. At birth, 64 percent of children live with both biological parents, and the remaining 36 percent live with the mother only (table 1).

Kin are defined as biologically related non-parental adults, limited to great-grandparents, grandparents, aunts, uncles, cousins, and siblings. I examine the role of kin by including a time-varying dichotomous measure of any coresident kin. At birth, 38 percent of children live with kin (table 1). The measures of kin coresidence rely on several assumptions about the linking of individuals in the site. All individuals are assigned unique identification numbers. At each household visit, all household members are listed on a household roster, the identification numbers of the father and mother of each member are listed, and the relationship of each individual to the head of the household is recorded. If an individual’s parents are residents of the surveillance area, they have an identification number. Children are linked to their parents, who are subsequently linked to their own parents, or the child’s grandparents, and further extended to great-grandparents. Similarly, if parents are linked to grandparents, it is possible to capture aunts, uncles, and cousins by linking shared grandparents.

Approximately one-quarter of children born in the site do not have an identification number for their fathers. Without the father’s identification number, it is not possible to link these children to their paternal relatives. I assume that any individual who has an unknown father identification number is not living with the father or any of his relatives. In this way, I construct time-varying measures of coresidence of maternal and paternal kin. I differentiate between non-sibling kin as maternal or paternal, creating dichotomous time-varying indicators for each type of coresident kin. At birth, 25 percent of children live with maternal

kin, and 17 percent with paternal kin (table 1). I further differentiate between types of kin by including measures of maternal and paternal grandparental core-sidence. Children are most likely to live with maternal grandmothers at birth (18 percent), and between 9 and 10 percent live with each maternal grandfather, paternal grandfather, and paternal grandmother (table 1). The findings are substantively similar for laterally and vertically extended kin defined by age (18–64 and 65+, respectively), and therefore are not differentiated in this way.

Children may also live with unrelated adults. With over 100,000 individuals residing in the site, the linking of individuals across family networks is incomplete. In addition to kin, at birth roughly one-third of children (31 percent) live with at least one adult whose relatedness to the child is undetermined, referred to hereafter as unrelated (table 1). Unrelated individuals may be more distantly related than the relatives linked with the available parental identification data. For example, elderly residents without parental identification numbers cannot be linked to their siblings, making linkage between children and their great-aunts and -uncles unlikely; roughly half of unrelated adults do not have parental identification numbers. Alternatively, unrelated individuals may be related through marriage rather than biologically, leaving spouses of biological aunts and uncles classified as unrelated. Finally, they may be truly unrelated individuals such as stepparents, or friends and neighbors who have taken in non-familial children.

While the majority of households with unrelated adults also include coresident biological parents and coresident kin, 826 children live at some point during the exposure period with only unrelated adults (no biological parents and no kin). One percent of children live in this arrangement at the time of final observation (table 2). Importantly, this living arrangement does not include children who live in orphanages; institutional residents are not included in the surveillance population.

All models include controls for child, maternal, and household characteristics that are established covariates of child death (table 1). Child sex, multiple birth, birth order, and cohort are included. I control for maternal age and education, as well as a time-varying measure of household wealth derived from asset ownership information (Rutstein and Johnson 2004). Finally, to account for resource competition and sibling caregiving, I include an indicator for whether any additional children under age 15 reside in the same household.

Survival Analysis Methods

To examine the influence of kin coresidence on child survival, I use piecewise exponential survival analysis. Children's exposure episodes are divided into intervals of 0–1 month, 1–6 months, 6–12 months, 12–24 months, and 24–60 months, assuming that the baseline hazard is constant within each interval. Models include a shared frailty term to account for common, unobserved characteristics of shared mothers; the random effect for the mother is assumed to have a gamma distribution with a mean of one. Conditional on the shared frailty, the survival time of siblings is assumed to be independent. The model is expressed as

$$\lambda_{imj} = \theta_m \lambda_j \exp\{X_{imj}\beta\},$$

where λ_{imj} is the hazard of individual i of mother m in interval j , θ_m is a mother-specific random effect, λ_j is the baseline hazard in interval j , and X_{imj} is a vector of time-constant and time-varying covariates.

Qualitative Data

I also draw from original in-depth interviews with parents and caregivers regarding kin involvement in childrearing collected with members of the Rufiji HDSS concurrently with the quantitative data described above. Qualitative interview respondents were purposively selected from the surveillance population to investigate kin childrearing responsibilities in response to parental absence. Therefore, the sample captures a range of living arrangements across different types of parental absence. From the perspective of an index child, parents were classified as present (both biological parents coresident) or absent (at least one biological parent absent from the household). Absent parent families were further classified by which parent was absent (mother or father or both), the reason for absence (death, migration, marriage), and the child's relationship to the head of the household (remaining parent, grandparent, aunt/uncle, or sibling). Written informed consent was obtained from all respondents.

Interviews were conducted by a Tanzanian qualitative researcher trained in interview methodology and overseen by myself. Twenty-two index children were selected for whom I intended to collect childrearing narratives and living arrangement histories. For one child, the household could not be located; the entire household had dissolved, with all members relocating to areas outside the research site. For the remaining 21 children, the aim was to interview at least two caregivers per child. First, the primary caregiver was interviewed. For intact families, this is the biological mother and father. For children in absent parent family structures, this may be the remaining parent, an aunt or uncle, a grandparent, a sibling, or other kin. Second, for intact families an additional extended family member or kin was interviewed. These individuals were identified after interviewing the parents and asking for the names and contact information of family members, kin, or neighbors who assisted them when facing challenges raising their children. For children in absent parent family structures, the goal was to track and interview all living but non-resident biological parents. Four living non-resident biological parents could not be reached, and one non-resident biological father refused to be interviewed. In total, 58 parents, kin, and caregivers of 21 index children were interviewed. Six children resided with both biological parents, six with the mother only, three with the father only, two with grandparents, three with aunts and/or uncles, and one with siblings (table 3).

Interviews were conducted in Swahili using an interview guide to direct the conversation. The interview guide was organized around four themes of "norms and values of childcare," "conditions of absence," "child placement," and "continuing contact with children." The interview guide was developed iteratively in discussion with the interviewer over the course of three focus group discussions and five pilot interviews for which I was present. We met daily to debrief, with the interviewer reporting on key discussions and challenges while I took detailed field notes. Interview length ranged from 35 to 100 minutes, with a typical length of one hour. Respondents were given a gift of a bar of soap in appreciation for their

participation. Interviews were tape-recorded and subsequently transcribed in Swahili by the interviewer. The training and data collection were completed over three months in 2013.

Transcripts were translated into English by a team of three translators, all native Swahili speakers fluent in English and formally employed as Swahili language instructors for English speakers. I reviewed all transcripts with the interviewer and translator, clarifying sections that were unclear. I read each interview several times and read interviews regarding the same index child in succession. I coded the interviews as themes emerged and wrote summaries for each index child family. The quotations presented here represent themes present across multiple interviews. Respondents are assigned a pseudonym to preserve confidentiality.

Results

I begin with the results for the quantitative analysis of non-parental adult coresidence and child survival. First, I present the results for non-parental adult coresidence, distinguishing between unrelated adults and kin, differentiating between maternal and paternal kin, and further by grandparental coresidence specifically. I then investigate the moderating association between kin coresidence and parental absence. Finally, I analyze the qualitative data to investigate responses to parental absence, and in particular why kin are unable to offset the increased risk associated with parental absence.

Kin Coresidence and Child Survival

Table 4 presents estimates for piecewise exponential models including time-varying covariates for kin coresidence. Model 1 includes an indicator for whether any adult kin live in the household, regardless of relationship or lineage. The core-sidence of any kin in the household is associated with a 41 percent increase in the hazard of death for children, controlling for parental coresidence and child, maternal, and household sociodemographics. Coresidence with any unrelated adults is associated with a similar increase in the hazard of death, 37 percent. Model 2 differentiates between maternal and paternal kin. Coresidence with maternal kin is associated with a 28 percent increase in the hazard of death; similarly, coresidence with paternal kin is associated with a 29 percent increase in the hazard. Finally, model 3 focuses on the coresidence of grandparents only. Coresidence with maternal grandmothers is associated with a 35 percent increase in the risk of death, while coresidence with paternal grandfathers is associated with a 50 percent increase. Neither maternal grandfather nor paternal grandmother coresidence are significantly associated with child survival, although the direction of the association is consistent with increased risk.

Buffering Parental Absence through Kin Coresidence

While there is no evidence that living with extended kin is beneficial for children independent of family structure, it is possible that the importance of kin depends on parental coresidence. In table 5, I present estimates for all possible living arrangements considering both parental and extended family coresidence. As shown in table 4, maternal and paternal kin are almost identically associated with the risk of mortality; therefore, I consider here the coresidence of any kin regardless of lineage. Moreover, unrelated adult coresidence is

associated with an increase in child mortality of similar magnitude to kin coresidence. Hereafter, I combine kin and unrelated adults into a measure of any non-parental coresident adults, referred to as non-parental adults.

If non-parental adults are able to serve as substitutes for biological parents, then their coresidence should buffer children against the detrimental consequences of parental absence. We would expect that when a parent is absent but other non-parental adults are present, the risk of mortality is reduced compared to the equivalent parental living arrangement when no kin are present. There is no support for this hypothesis. Concentrating first on children who live with both biological parents, compared to children who live in a nuclear family, children who live with both parents and non-parental adults face a 52 percent higher risk of death (table 5). In contrast, children who live with the mother only have a similar risk of death compared to children in the nuclear family living arrangement. In contrast, children have a 79 percent higher hazard of mortality if they live with the mother only and non-parental adults, compared to the nuclear family arrangement. Children living with the father only and with the father and non-parental adults have an elevated risk of death (around five-fold) compared to the nuclear family arrangement. Finally, the risk of death is elevated significantly over five-fold for children who live with non-parental adults only (neither parent) compared to those in a nuclear family arrangement.

The more relevant comparison is between children living in equivalent parental arrangements with and without kin or unrelated adults, such as with the mother only and with the mother and kin. These comparisons can be seen more easily in figure 1, demonstrating the hazard ratios for each living arrangement. There are no instances where the coresidence of non-parental adults (extended) reduces the risk of death for children compared within types of parental living arrangements (two parent, mother only, father only, neither). In fact, there is evidence that children living apart from their father but with their mother and non-parental adults are more likely to die than those living with just their mother alone. On the contrary, non-parental adult coresidence is not associated with differential mortality risk comparing children living with only their father or for children living with neither parent. The findings demonstrate a significantly elevated risk of death when children live with non-parental adults compared to when they do not for two-parent and mother-only living arrangements, but not for father-only and neither-parent living arrangements.

Qualitative Evaluations of Kin Support

The quantitative analyses demonstrate that parental absence and kin coresidence are independent and additively associated with increased risk of child mortality. There is no evidence that kin coresidence moderates the association between parental absence and child mortality; kin are unable to buffer children against the increase in mortality risk associated with parental absence. Moreover, when children reside with their mother but not their father, kin coresidence actually increases the risk of child mortality.

I turn now to the qualitative interview data to investigate why kin are unable to attenuate the deleterious consequences of parental absence, despite well-established norms and expectations of extended family involvement in childrearing. I begin with a presentation of the two-parent ideal. Despite this ideal, the reality of children's living arrangements is

complex and includes many non-parental adults. Drawing on instances of children's health crises, I demonstrate how the simultaneous belief in the two-parent ideal and reliance on extended kin networks results in larger networks of support for children living with biological parent caregivers, but limitations in support for children living with non-parental caregivers only. Finally, I examine variations in kin support by reason for parental absence, returning to the quantitative data to test these qualitative findings.

The two-parent ideal

Respondents describe the two-parent family structure as the ideal, and express concern for children's health when biological parents are absent. When asked how children should be raised, most respondents express the ideal that children should live with both parents, and that parents should avoid being absent. Asha, a married woman raising four biological children and three foster children together with her husband Hamish, explains that in order for a child to be raised well:

What a child needs most is to be with his parents. They need to stay together. Then parents can listen to his problems and help him. That way, if they stay together, if he needs something, the parent can give it in a timely manner.

(4—mother)

Children who live with their parents will have their needs met quickly and will be looked after closely. Biological mothers in particular are the most attentive caregivers for small children. Tisha is married and raising three children together with her husband. Tisha explains:

When the children are young, they have to live with the mother. The mother is the one who knows most about caring for a child. When a child is sick, you can see that he is weak, you know—"My child is sick." You will discover that more quickly than others.

(2—mother)

When children live apart from their biological mothers, their illnesses may go unnoticed or untreated. This sentiment is consistent with the quantitative results indicating that maternal absence is more consequential for children's survival than paternal absence, and that kin are unable to compensate for maternal absence.

The interviews reveal stepmothers as one reason why kin coresidence is unable to compensate for maternal absence. Felicia and Mosi are married with four children. Mosi works in the city, but Felicia believes it is important to stay married despite his frequent absence:

When parents leave their children, the children are not cared for properly. They don't get enough food, their clothes are not washed, they are living in chaos. That's why we mothers are required to endure our husbands, despite the shortcomings of some men. You have to stay with him to raise your children. Suppose you left. Who will take care of your children? Then it becomes very difficult. Say you left them

with the father—who can always marry another woman...That woman will never raise them the way a real mother would.

(11—mother)

The evil stepmother trope is often invoked in support of the two-parent ideal. The distinction between “real” mothers and stepmothers underscores a belief that the primary motivation in caring for children is biological relatedness, and in particular the primacy of the mother-child bond.

Indeed, stepmothers are suspected of mistreating children in the absence of biological mothers. Nala, a divorced mother, believes in the superior quality of maternal care and the dangers of stepmothers. Nala had four children with a man much her senior. They divorced when he accused her of adultery, and the four children remained living with the father and his relatives. Nala explained her concerns living apart from her youngest son:

I worry they might not feed him or mistreat him. Or he will get sick. I feel bad. It's like casting my children aside. I felt in my soul that I have abandoned my children and they will suffer. I worried, “Who will cook for them? Who will bathe them?” Especially the two that are still young. I worried when he remarried that now with a stepmother they will really suffer. She will think that it is not her child and neglect him.

(14—mother)

Nala believes that her absence is bad for the children because others will not care for them the way she would, and that a coresident stepmother may actually harm her children. This concern is consistent with the quantitative findings of elevated mortality risk associated with kin coresidence, although the increase is not restricted to stepmothers only but is found with non-parental adult coresidence more generally. This explanation is more broadly reflective of parental concern that the competing interests of other adult household members will negatively affect their children when both biological parents are not present to advocate for and protect their interests.

Respondents believe in the two-parent ideal because biological parents provide the best care, and children who live with kin only will receive inferior supervision. Asha is also raising foster children, and explains that the relationship between foster parents and children is not as good as that between biological parents and children:

When you take a relative's child, there are some differences between that child and your child...You want it to be the same with him as with your other children, but there are just some challenges. They are not very serious challenges, just normal difficulties of raising foster children.

(4—mother)

Asha's sentiment exemplifies the common concern that other caregivers cannot provide the same attention and care as biological parents would themselves. This concern over non-parental kin care as inferior is consistent with the quantitative results that living with kin only is associated with elevated child mortality.

There is discussion relevant to why kin coresidence in addition to both biological parents would be associated with elevated child mortality. Martha is a young woman with a new baby living together with her husband in his family's compound, where her mother-in-law and sisters-in-law also live. When asked about her hopes for the future of her children, she explains:

Martha: God willing, I hope we can build our own house soon, and start our own settlement. We will give [his family] space, this is their home.

Interviewer: You seem like you're tired of living with your in-laws here?

Martha: I don't mean that...but as you know, living together as husband and wife is very nice only if you have some freedom, and get space to bring up your children without any interference. (18—uncle's wife)

Martha expresses that parental autonomy is limited when living with kin, and kin coresidence can interfere with effective parenting. This comment provides support for limited autonomy as a reason why kin coresidence is associated with an increase in child mortality, independent of parental coresidence.

The extended family reality

When asked about childrearing realities rather than ideals, respondents provided rich descriptions of children's living arrangements and complex family histories. All five of the households selected as two-parent families for the qualitative sample either had children from previous marriages; were caring for additional, non-biological children; or had sent some of their children out to live with other family members. For example, Zara and her husband Omar have seven biological children together; Mohamed, the index child, resides with both parents and three of his siblings. The remaining three children have been sent to live with their maternal grandmother: one, Tano, lives with her permanently, and the other two have gone to spend their school holiday with her. The grandmother explains that Zara had another child not long after Tano was born. The grandmother appealed to Omar to let her take Tano to give him the appropriate attention and care, since Zara was busy with another newborn. What started as a temporary arrangement has endured, as the grandmother describes:

I took Tano to my house and he was staying with me for some time. When Zara came, she saw herself that Tano was very happy and she was satisfied with the care I was providing for him. And so she decided to leave him here, and when she has a desire to see her child she calls me and I send him there. He goes and plays with his brothers and sisters for two or three days, and then he returns here.

(5—grandmother)

Family structures are fluid and complex; children are thought to belong to many households. While respondents stress the primary importance of living with both biological parents as an ideal, it is embedded within the reality of an extended kin support structure. Indeed, respondents simultaneously emphasize the value of residing with two parents as well as the rights and responsibilities of extended kin.

The simultaneous responsibility of biological parents but reliance on the extended kin system is most apparent in instances of child illness. Healthcare in rural Tanzania requires costly and time-consuming travel to clinics or hospitals, where care is usually of low quality, medication shortages are frequent, and referral to larger district or private hospitals is common. Salim, a middle-aged farmer, describes health problems as his biggest concern raising his four children together with his wife:

The biggest challenge is when your children are sick. That is the biggest one, because diseases—suppose that your child is sick. Your mind will be troubled. First you are thinking, “How can I get health services?” You know these days, health costs money. Even problems of food, clothing, education—all of which we are facing—they don’t compare because the problem of sickness has no patience. You cannot say, “Oh, let me wait until tomorrow to take care of him.” There is no time! When a child is sick, he should be treated right away. But money is required. So you borrow. You go and borrow because you have no other choice. With other problems you can try to put them off, wait a bit, persevere. But with health, you cannot wait.

(6—father)

Salim’s description of the challenges of medical care in raising children reflects a common sentiment of parents and caregivers in the area. Medical care requires immediate action, which is often challenging due to cash constraints. In order to overcome this obstacle, parents residing with their children must rely on an extended system of support to borrow money for medications and services. Salim’s younger brother Mussa echoes this sentiment: “When children get sick, we collaborate. When they are healthy, each one takes care of his own family” (6—uncle). Not only does Mussa’s statement demonstrate reliance on the extended family for support in times of health crisis, but it also reflects an underlying belief in the two-parent ideal.

Recall Felicia, the mother of four with the migrant husband. She describes a similar reliance on kin in times of child illness:

Eeeh on illness, if a child falls sick then you have to borrow, rob, so that a child is taken to hospital... If I do not have [the money], I go to my brother and tell him, “Your nephew is sick.” He helps me, and I am very grateful, honestly, my brother is really helping me. During the month of April, that was the long rain season, my child was sick, and their father had no money and my business was bad, so I had to go and explain it to my brother. He gave me money and I took the child to the hospital.

(11—mother)

Biological parents first try to exhaust their own resources, and when two are present they are able to draw from both maternal and paternal sources. However, when they need additional support, they call on extended kin. Note that the kin support these biological parents mention is provided by non-resident kin. This provides insight into why kin coresidence in two biological parent families is not associated with improved survival.

Non-resident kin assistance is essential to successful childrearing and health-care provision, suggesting that there is something distinct about coresident kin coresidence that is associated with fewer rather than additional childcare resources. In fact, the kin who coreside in two-biological-parent families cited receiving support from the family rather than providing assistance. Recall Asha and Hamish, who are raising their four biological children and supporting three foster children. They also live with Babu, Hamish's father. Babu explains a recent illness, and how Hamish responded:

During that time, they were helping me with food, clothing...everything. Even until now they are still helping me, because it has been nine months since I had that operation... They have even built a house for me—there it is [pointing to nearby house].

(4—grandfather)

This example provides evidence of the distinction between non-resident and coresident kin as differential sources or demands on resources, respectively. Coresident kin may represent resource competition rather than collaboration.

Limitations of kin support

Children's healthcare requires resources that are drawn from a large support system. When both biological parents are together, they are able to not only draw on their own resources, but call on a wide network of non-resident kin. When children live with neither parent, kin caregivers have fewer resources on which they can rely. Furthermore, kin caring for children with absent parents are limited in their success to secure assistance from biological parents, even in times of health crisis. As Salim described above, children's healthcare is a need that requires immediate action. There is a tension here between the ordering of responsibility for children where parents are believed to be primarily responsible, and the immediacy of the need when children are sick. In such instances, non-parental caregivers explain that they must take responsibility for the health of children in their care. Hamish took in Iba, his deceased sister's son, because Iba's father had not yet remarried and had no sisters to care for the boy. Hamish explains the limitations of Iba's father's responsibilities in child healthcare:

If he is sick, I cannot just accept it and leave the child with a fever. I have to bring him to the doctor immediately...So issues of food and health, these I will look after because I am the one living with the child. I cannot tell his father—"Bring me money for the doctor"—because I cannot know when he will get sick.

(4—father)

Medical needs must be tended to quickly, and guardians cannot wait for parental assistance. The need for medical services is not only urgent, but costly. In this cash-constrained setting where even biological parents caring for their own children must solicit assistance in paying hospital bills, non-parental guardians are often less able or willing to cover such expenses.

Furthermore, securing assistance from absent parents is difficult, and some parents refuse to provide such help. Yussuf and his wife Maria have an infant child together, and care for Maria's three children from her previous marriage as well as Maria's nephew Abdul. Yussuf

is disabled and has trouble earning enough money from farming to care for his family. He explains his difficulty covering the healthcare expenses for Maria's nephew Abdul:

Abdul has had malaria for two weeks. All the children are looking to me for help, and all the relatives look to me for help, but I am completely stuck. I have to ask for help. I need assistance because this child is sick, and I can't force his father. Tell him the child needs medicine? I absolutely cannot. I want to help these children, but it's very tough. People here are dying because we don't have the resources. If you get malaria, it's impossible. At the hospital, they just give you fever [reducing] pills. Malaria, diarrhea, vomiting, it all happens at once, and we don't have the ability to bring him to the hospital. It is troubling... So that child is just getting weaker, I don't have the money, and I see that the child is just suffering.

(8—stepfather)

When biological parents care for their children, kin are the source of support in times of need. However, when kin are the primary caregivers, this limits the availability of other sources of support when they are unable to provide the necessary resources themselves. Because the parents are absent and may live far away from children and kin caregivers, they may not be able or willing to assist, further limiting support and placing the child at a disadvantage.

These findings do not imply that all absent biological parents refuse to assist care-givers with their children. However, the medical care required is often acute and time sensitive, and physically distant parents are limited in how they can assist. When absent biological parents live nearby, they are often more effective in assisting during times of health crisis. One grandmother, Bibi, caring for her son's children following his death, explains how the mother, Grace, stays nearby and visits the children every day. Bibi explains how Grace is able to respond when the children are ill:

Idris gets sick often. Just two days ago he was sick. His mother is here—nearby. So, I told his mother and she came to take him to the hospital. She took him to the hospital, he was given tablets, she bought some milk and sodas, all those treats he gets while he is sick.

(17—grandmother)

As Bibi describes, parental assistance is possible when parents live near their children. Such parental assistance while absent is not restricted to medical care. Grace explains her continuing care for the children even in her non-residence:

After I left, the children kept coming to me, asking me to return. My husband and I then agreed that I could still go and care for them. So, in the mornings I go and cook for them, make sure they are clean, and send them off to school.

(17—mother)

Some absent parents maintain a strong presence in the lives of their children, an effort that underscores their faith in the two-parent ideal and represents their knowledge that their absence may be harmful for their children. When parents are absent, there is tension between their enduring primary responsibility for the child, and the urgency of assistance in

times of child illness. Furthermore, in instances of parental absence, caregiving coresident kin are limited in the network of support on which they can draw, and experience limitations in the adequacy and timeliness of available parental support. This tension provides a deeper understanding of why kin are unable to buffer children against the negative consequences of parental absence.

Variations in kin support

While kin express a general willingness to support children in the event of parental absence, there is important variation depending on the reason for absence. Despite the general responsibility of the extended family to respond when children are in need, they draw a distinction between orphans and other children experiencing absence. If the support available to children varies by cause of absence, this has important implications for their wellbeing. When probed about parental absence due to death versus divorce, respondents made a clear distinction in willingness to assist with orphaned children compared to children of divorce. If parents have died, it is viewed as without fault and therefore with more sympathy. Hamish explained the difference between a widow and a divorcée:

Hamish: The one who left and abandoned his family, it is seen as deliberate. So there will be people there to assist, but not the same as in the case of bereavement. This one [death], it is God's actions that happened to her, it is possible tomorrow this can happen to me. That is why I told you that relatives will be there, spiritually and physically, to look after the bereaved. Different from the one who divorced, others will tell you, "Why don't you follow him [the husband] to where he is?" and another, "Take him to police station," and the other, "Take him to court." Each person there will have his own words.

Interviewer: And if someone is divorced or has divorced, what will the support be like?

Hamish: There the assistance becomes small, because that is of your own making. What you were looking for, you got it. That is why you find so many street children. It is not mostly death, it is mainly divorce, because in that case relatives are unwilling to take care of the children. (4—father)

The sentiment that there is fault in the event of divorce is consistent with the belief in the two-parent ideal. Recall Maria, a remarried divorcée with three children from her previous marriage. She says she cannot ask others for assistance with her three children because people view her misfortune as resulting from her own "negligence"; by asking for help, "you are asking for embarrassment only" (8—mother). Even though parental absence is common, it is not ideal, and extended kin response differs depending on the responsibility for the absence assigned to the parent.

Respondents elaborated on the role of responsibility following divorce, explaining that the residence of children following a divorce depends on who initiates the divorce. The parent who initiates the divorce is responsible for the children, not kin. Jamal, a divorced man with four children, explains how children should be divided following a divorce:

Interviewer: What happens if the parents have divorced? Who is supposed to stay with children now?

Jamal: That issue is the one that should be scrutinized first. Examine how they divorced and who is the one with the bad character. You have to determine who started the divorce, who asked for the divorce, because if it is the wife, then this load [children] will be her burden. Because she has asked for the divorce, she is given the children.

Interviewer: And suppose it was the husband?

Jamal: Then the burden is his. (15—father)

There is variation in children's living arrangements due to differentiation by cause of absence and the assignment of blame and responsibility. This assignment of blame was expressed for divorce, migration, and non-marital childbearing as causes of absence.

If kin are more willing to support children with deceased parents than children with parents absent for other reasons, kin may be able to offset some of the increased risk of child mortality associated with parental death. In table 6, I return to the quantitative data to test the claim that kin support varies by type of absence, differentiating between deceased parents and parents who are absent for other reasons. Indeed, there is evidence that when kin are coresident in the event of maternal death, the risk of child mortality is slightly reduced, by 63 percent. There is no evidence of kin moderation for paternal death, or paternal and maternal absence due to other causes. There is some quantitative support for the qualitative result that kin support varies by type of parental absence.

Discussion

Despite the emphasis placed on the tradition of shared childrearing in this context, biological parents remain of primary importance. Children's coresidence with all types of non-parental adults—kin, unrelated, maternal, paternal, and grandparents—is associated with elevated mortality for children in rural Tanzania. There is no evidence that the extended kin safety net is able to moderate the elevated risk faced by children who do not live with both biological parents. Kin are unable to serve as sufficient substitutes in the event of parental absence. Even in a context of shared childrearing where both parents and extended kin participate in caring for children, the presence of parents in the household remains influential, and the influence of parent-child ties predominates over kin-child ties.

These findings may seem in conflict with a long-standing narrative on the benefits of the extended family system of childrearing in the region. However, the existing research is actually inconclusive as to the effects of kin coresidence. Previous research on paternal kin documents a similar deleterious relationship between paternal kin and child health (Beise and Volland 2002; Castle 1995). The findings are in contrast with documented positive associations between maternal kin and child health (Gibson and Mace 2005; Sear and Mace 2008). Yet, Sear finds a similar detrimental association of coresidence with maternal kin in Malawi for female children only, although the setting is matrilineal (2008). It is possible that in this patrilineal research setting, coresidence with maternal kin is highly selective, and

associated with lower socioeconomic status as well as worse child survival. The measure of asset ownership used here is limited and may insufficiently proxy socioeconomic status. Among several justified criticisms, the wealth index is insensitive to per capita consumption and income fluctuations and prioritizes modern assets over traditional holdings (Bingenheimer 2007; Ichoku 2011). Further research is needed to better understand the potential socioeconomic mechanisms and selection underlying this relationship.

The finding that child survival is equivalent in the mother-only and two-parent nuclear living arrangements, but is increased with kin coresidence, is consistent with a mechanism of reduced maternal autonomy. The qualitative results also support this possibility, with reference to the reduced freedom when living with in-laws. The role of women's autonomy in the context of kin coresidence is a fruitful area of further research.

The qualitative findings underscore the primary importance of parental care. Even though extended kin are expected to be involved in childrearing, respondents view the care of two biological parents as ideal. Extended kin care for children when parents are unavailable, but the response varies depending on the cause of absence. Absent parents may continue to support their children, but the immediacy of need in times of health crisis makes distant parental assistance ineffective. Caregiving kin are already involved, and the network of support available to ill children may therefore be reduced, particularly if it does not include parents.

When the two-parent ideal is not attained, kin express differential willingness to respond to parental absence depending on the reason for absence. There is a moral hierarchy in causes of absence, with the children of deceased parents viewed as most deserving of assistance. This is perhaps unexpected given speculation as to the stigmatization of orphans, particularly AIDS orphans (Cluver and Orkin 2009). It is also possible that these relatives are aware of the greater public assistance available to orphans, to which they may gain access when taking in an orphaned child (Bachan 2014; Weinreb, Gerland, and Fleming 2008). Furthermore, this view on the innocence of orphaned children could be an extension of the narratives of blame that often surround AIDS deaths, wherein bereaved relatives make sense of death by negotiating responsibility for an individual's diseases and death, and children are cited as innocent victims (Ashforth and Watkins 2015). The assignment of blame to the parents who are absent due to divorce, migration, and non-marital childbearing has important implications for the wellbeing of their children, particularly because the mortality risk associated with parental absence depends on the reason (Gaydosh 2017). The quantitative findings support kin's inability to offset the increased risk associated with parental absence of this type.

The qualitative sample was designed to investigate instances of parental absence and kin response compared to parental coresidence, specifically how childcare arrangements differ and whether kin are able to offset the negative consequences of parental absence. The questions centered on childcare, and therefore solicited less information about the demands that coresident kin place on the household. By citing non-resident kin as sources of support, and referencing assistance provided to coresident kin, the qualitative data do provide insight into the quantitative patterns. However, the qualitative data are limited in the information

that they can provide on why children living in two-parent and single-mother households with coresident kin have higher mortality. Rather, the qualitative data offer greater insight into why kin are unable to substitute for parental care in the event of absence, and how the reason for absence affects kin support. Future research should more fully explore why child mortality is higher when coresident kin are present, independent of parental coresidence.

The results provide a deeper understanding of children's lived experience of parental absence and kin coresidence. The findings suggest that while coresidence of parents and kin is indeed associated with child survival, coresidence does not completely capture the network of support available to caregivers. Caregivers cite assistance from many non-residential kin, and future research is needed to develop new measurement strategies to more comprehensively assess the structure and nature of support. More research is needed to better understand children's complex and fluid living and care arrangements, and how best to support the health of children in a context with common parental absence and limited kin support.

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Figure 1.
Hazard ratios for child mortality by living arrangement with 95 percent confidence intervals

Table 1.

Sample descriptive statistics at birth

Any coresident kin	38%
Maternal kin	25%
Maternal grandmother	18%
Maternal grandfather	9%
Paternal kin	17%
Paternal grandmother	9%
Paternal grandfather	10%
Unrelated adult coresidence	31%
Parental coresidence (two biological parents)	64%
Mother only	36%
Male	50%
Twins	4%
Birth order (firstborn)	20%
2 to 3	30%
4 to 5	21%
6 and up	29%
Birth cohort (1998–2002)	32%
2003–2007	41%
2008–2011	27%
Mother's age	26.4 (7.5)
Mother's education (none)	42%
Some primary	16%
Primary or higher	42%
Asset index	−0.13 (2.37)
Number of coresident children	3.3 (2.3)
<i>Children</i>	36,976
<i>Mothers</i>	19,890
<i>Events</i>	2,380

Percentages or means, with standard errors in parentheses.

Table 2

Living arrangement at birth and last observation

Biological parents	Kin	Unrelated adults	Birth	Last observation
Two	No	No	37%	37%
Two	Yes	No	11%	10%
Two	No	Yes	9%	7%
Two	Yes	Yes	7%	6%
Mother only	No	No	9%	8%
Mother only	Yes	No	12%	10%
Mother only	No	Yes	7%	7%
Mother only	Yes	Yes	8%	7%
Father only	No	No	0%	1%
Father only	Yes	No	0%	0.3%
Father only	No	Yes	0%	1%
Father only	Yes	Yes	0%	0.5%
Neither	No	No	0%	0%
Neither	Yes	No	0%	2%
Neither	No	Yes	0%	1%
Neither	Yes	Yes	0%	2%
<i>Children</i>			36,976	
<i>Mothers</i>			19,890	

Table 3

Qualitative sample

Family ID	Living arrangement	Cause of absence	Number and relationship of family members interviewed*
1	Two parent, nuclear	N/A	2—Mother, father
2	Two parent, nuclear	N/A	3—Mother, father, co-mother
3	Two parent, nuclear	N/A	2—Mother, father
4	Two parent, extended	N/A	3—Mother, father, grandfather
5	Two parent, extended	N/A	3—Mother, father, grandmother
6	Two parent, extended	N/A	3—Mother, father, paternal uncle
7	Mother only	Death	2—Mother, neighbor
8	Mother only	Divorce	2—Mother, stepfather
9	Mother only	Non-marital birth	2—Mother, paternal uncle
10	Mother only	Non-marital birth	3—Mother, stepfather, paternal great-grandmother
11	Mother only, extended	Migration	3—Mother, father, paternal grandfather
12	Mother only, extended	Divorce	3—Mother, paternal grandmother, co-mother
13	Father only	Death	3—Father, stepmother, neighbor
14	Father only	Divorce	1—Mother
15	Father only	Divorce	2—Father, stepmother
16	Neither parent, extended	Death	1—Paternal grandmother
17	Neither parent, extended	Divorce	4—Mother, paternal grandmother, paternal grandfather, paternal aunt
18	Neither parent, extended	Divorce	3—Father, paternal uncle, uncle's wife
19	Neither parent, extended	Divorce	6—Mother, father, stepmother, stepfather, two paternal aunts
20	Neither parent, extended	Death	3—Two half-brothers, sister-in-law
21	Neither parent, extended	Divorce	4—Mother, paternal aunt, two sisters

* Relationship to index child

Table 4

Hazard ratios for the risk of child death by non-parental adult coresidence

	Model 1		Model 2		Model 3	
	Hazard ratio	SE	Hazard ratio	SE	Hazard ratio	SE
Any adult kin in household	1.41 ***	(0.07)				
Maternal kin			1.28 ***	(0.08)		
Maternal grandmother					1.35 ***	(0.10)
Maternal grandfather					1.07	(0.10)
Paternal kin			1.29 ***	(0.08)		
Paternal grandmother					1.12	(0.10)
Paternal grandfather					1.50 ***	(0.17)
Unrelated adult coresidence	1.37 ***	(0.07)	1.37 ***	(0.07)	1.40 ***	(0.07)
Parental coresidence (two parents)						
Mother only	1.17 **	(0.06)	1.20 **	(0.07)	1.15 *	(0.07)
Father only	3.96 ***	(0.64)	4.00 ***	(0.65)	3.89 ***	(0.64)
Neither parent	4.00 ***	(0.49)	4.15 ***	(0.52)	3.95 ***	(0.50)
Male	1.10 *	(0.05)	1.10 *	(0.05)	1.10 *	(0.05)
Twins	4.50 ***	(0.40)	4.51 ***	(0.40)	4.48 ***	(0.40)
Birth order (firstborn)						
2 to 3	0.93	(0.07)	0.93	(0.06)	0.93	(0.07)
4 to 5	1.02	(0.09)	1.02	(0.09)	1.01	(0.09)
6 and up	1.21 *	(0.10)	1.19 *	(0.10)	1.22 *	(0.10)
Birth cohort (1998–2002)						
2003–2007	0.76 ***	(0.04)	0.76 ***	(0.04)	0.76 ***	(0.04)
2008–2011	0.65 ***	(0.04)	0.65 ***	(0.04)	0.65 ***	(0.04)
Mother's age	1.01 **	(0.00)	1.01 *	(0.00)	1.01 **	(0.00)
Mother's age squared	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)
Mother's education (none)						
Some primary	0.99	(0.06)	0.99	(0.06)	0.99	(0.06)
Primary or higher	0.91	(0.05)	0.91	(0.05)	0.91	(0.05)
Asset index	0.92 ***	(0.02)	0.92 ***	(0.02)	0.92 **	(0.02)
Any children in household	0.84 ***	(0.01)	0.84 ***	(0.01)	0.84 ***	(0.01)
Children	36,976		36,976		36,976	
Mothers	19,890		19,890		19,890	
Deaths	2,380		2,380		2,380	

Note: Results for piecewise exponential models. All models control for age group categories 0–1, 1–6, 6–12, 12–24, and 24–60 months and include a frailty term for shared mother.

*
 $p < 0.05$,

**
 $p < 0.01$,

 $p < 0.001$.

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Table 5

Hazard ratios for the risk of child death by living arrangement

	Hazard ratio	SE
Living arrangement (two parents only)		
Two parents, non-parental adults	1.52 ***	(0.09)
Mother only	1.15	(0.10)
Mother, non-parental adults	1.79 ***	(0.11)
Father only	4.99 ***	(1.24)
Father, non-parental adults	5.19 ***	(1.10)
Non-parental adults	5.62 ***	(0.70)
Male	1.10 *	(0.05)
Twins	4.53 ***	(0.41)
Birth order (firstborn)		
2 to 3	0.92	(0.06)
4 to 5	1.01	(0.09)
6 and up	1.19 *	(0.10)
Birth cohort (1998–2002)		
2003–2007	0.76 ***	(0.04)
2008–2011	0.65 ***	(0.04)
Mother's age	1.01 *	(0.00)
Mother's age squared	1.00	(0.00)
Mother's education (none)		
Some primary	0.99	(0.06)
Primary or higher	0.91	(0.05)
Asset index	0.92 **	(0.02)
Any children in household	0.84 ***	(0.01)
<i>Children</i>	36,976	
<i>Mothers</i>	19,890	
<i>Deaths</i>	2,380	

Note: Results for piecewise exponential models. All models control for age group categories 0–1, 1–6, 6–12, 12–24, and 24–60 months and include a frailty term for shared mother.

* $p < 0.05$,

** $p < 0.01$,

*** $p < 0.001$.

Table 6

Hazard ratios for the risk of child death by type of parental absence and non-parental adult coresidence

	Hazard ratio	SE
Mother deceased	26.50 ***	(8.21)
Father deceased	1.79	(0.84)
Any extended	1.52 ***	(0.09)
Mother deceased * any extended	0.37 **	(0.14)
Father deceased * any extended	0.73	(0.42)
Mother absent	2.87 ***	(0.68)
Father absent	1.17	(0.10)
Mother absent * any extended	0.89	(0.24)
Father absent * any extended	1.00	(0.10)
Male	1.10 *	(0.05)
Twins	4.49 ***	(0.40)
Birth order (firstborn)		
2 to 3	0.93	(0.07)
4 to 5	1.01	(0.09)
6 and up	1.20 *	(0.10)
Birth cohort (1998–2002)		
2003–2007	0.76 ***	(0.04)
2008–2011	0.65 ***	(0.04)
Mother's age	1.01 *	(0.00)
Mother's age squared	1.00	(0.00)
Mother's education (none)		
Some primary	0.98	(0.06)
Primary or higher	0.91	(0.05)
Asset index	0.92 **	(0.02)
Any children in household	0.84 ***	(0.01)
<i>Children</i>	36,976	
<i>Mothers</i>	19,890	
<i>Deaths</i>	2,380	

Note: Results for piecewise exponential models. All models control for age group categories 0–1, 1–6, 6–12, 12–24, and 24–60 months and include a frailty term for shared mother.

* $p < 0.05$,

** $p < 0.01$,

*** $p < 0.001$.