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# The Role of Fathers in Promoting Early Childhood Development in Low- and Middle-Income Countries

## A REVIEW OF THE EVIDENCE

David K. Evans and Pamela Jakiela


## Abstract

The role of fathers in parenting young children differs dramatically across societies. Policymakers in low- and middle-income countries (LMICs) are increasingly focused on increasing the amount of early childhood stimulation and other investments received by young children in an attempt to increase human capital accumulation, promote school readiness, and improve long-run outcomes. Until recently, few interventions targeted fathers, and most impact evaluations implicitly assumed that fathers played no meaningful role in parenting. We survey the emerging literature on fathers' involvement in early childhood stimulation and parenting in LMICs and summarize the patterns of results from rigorous impact evaluations. We find that fathers spend less time stimulating their children's development than do mothers or other adults who live in the same households in almost every country in our sample, and that mothers' and fathers' investments are positively associated. We also find evidence that fathers' take-up of parent training programs tends to be low, but that such programs have had effects on changing fathers' knowledge and—to a lesser degree—behaviors.



**KEYWORDS**
early childhood development, parenting, fathers, gender roles, household income

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# The Role of Fathers in Promoting Early Childhood Development in Low- and Middle-Income Countries: A Review of the Evidence

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# 1. Introduction

Hundreds of millions of young children in low- and middle-income countries (LMICs) are at risk because of a lack of adequate nutrition and early childhood stimulation (Black et al. 2017). Well-designed early childhood development (ECD) interventions can have substantial impacts on children's physical, cognitive, and socioemotional development, as well as their eventual schooling attainment, wages, and other life outcomes (Engle et al. 2011, Gertler et al. 2014, Black et al. 2017). As evidence of the effectiveness of ECD interventions mounts, both governments and international institutions are investing in preprimary education and other early childhood development programs.[1] Early childhood interventions often have substantial impacts on family members other than young children, and a number of common policy interventions—for example, parenting education classes—only impact children by changing the behavior of adult household members (Evans, Jakiela, and Knauer 2021). Though the impacts of the most common early childhood interventions on young children and their primary caregivers are reasonably well-documented (Evans, Jakiela, and Knauer 2021, Halim, Perova, and Reynolds 2022), there is comparatively little evidence on how such interventions impact other household members, or the roles that these individuals play in the lives of children.

We review the evidence on the role of fathers in child development during the first six years of life, focusing primarily on evidence from LMICs. Though rarely explicitly defined, ECD typically refers to the wholistic process of physical, cognitive, emotional, and social development in early life. This stage of life includes critical and sensitive periods, when positive and negative shocks (e.g., changes in nutrition or cognitive stimulation) may be more likely to have persistent impacts on later-life outcomes (Black et al. 2017). Development in early childhood is supported through the provision of "nurturing care," which can be defined as "a stable environment that is sensitive to children's health and nutritional needs, with protection from threats, opportunities for early learning, and interactions that are responsive, emotionally supportive, and developmentally stimulating" (Britto et al. 2017). Nurturing care encompasses caregiving practices including feeding and hygiene, cognitive stimulation, responsive parenting, and safety. For most young children, mothers are the main agents providing nurturing care, but fathers, other relatives, childcare professionals, teachers, and other community members may also play a role.

Fathers' role in parenting is often ignored in discussions of early childhood care and policy. There are many reasons for this. Most obviously, fathers do less active childrearing than mothers in most societies, and they are particularly uninvolved in the care of young children (Guryan et al. 2008, Lancy 2015). From a theoretical perspective, many models of household specialization suggest that this pattern reflects an efficient allocation of household resources: men specialize in productive work

1 Data from the World Bank's World Development Indicators database indicates that gross preprimary enrollment in LMICs rose from 29 percent in 2001 to 58 percent in 2018. Pupil-teacher ratios in preprimary remained relatively constant over the same period, suggesting that levels of government investment in early childhood education were also rising over time. World Bank funding for early childhood education programs has also increased substantially over the last two decades (Sayre et al. 2015).

away from home, or in settings that might be unsafe for children, while women specialize in home production, pregnancy, breastfeeding, and childcare (Boserup 1970, Becker 1981). Yet, this pattern is changing over time as total fertility declines and economies shift from "brawn-based" models of production to "brain-based" models of production (Pitt, Rosenzweig, and Hassan 2012, Behrman et al. 2010). In rich countries, fathers do more than they did a generation ago (Doepke and Zilibotti 2017). However, their role in caring for young children in LMIC contexts is still little scrutinized, and many early childhood interventions implicitly assume that parenting young children is the sole responsibility of the mother (e.g., by targeting mothers for parent training interventions).

We review the evidence on fathers' role in early childhood development in LMICs in two steps. First, we use data from UNICEF's Multiple Indicator Cluster Surveys (MICS) to characterize cross-country variation in fathers' involvement in early childhood stimulation. This updates and expands earlier analysis of paternal engagement using MICS data (Cuartas et al. 2020; Jeong et al. 2016). Stimulation is only one dimension of nurturing care. However, in the absence of internationally comparable data on time use by mothers and fathers in LMICs, the MICS measure of stimulating activities by each parent provides a unique window into the division of parenting responsibilities within the household. We find that fathers consistently spend less time stimulating their children's development than do mothers or other adults who live in the same households. We also find that mothers' and fathers' investments tend to be positively associated: countries with high rates of early childhood stimulation by mothers are also countries with high rates of early childhood stimulation by fathers.

We then draw upon a systematic review of impact evaluations of ECD interventions in LMICs to summarize the state of the literature on fathers' parenting and early childhood development. We identify ten parenting interventions that explicitly target fathers as participants (e.g. in parenting classes), either on their own or together with their spouse. Studies of parent training that include fathers do show changes in fathers' knowledge and some changes in behaviors but not in others. Adding fathers to interventions that are primarily designed for mothers has more limited impacts: although there are examples of positive impacts, take-up by fathers is often low. We also identify five evaluations of parenting interventions that did not explicitly target fathers, but where impacts on fathers' parenting practices were measured at endline. These studies suggest that in most cases, parenting interventions targeting the mother or primary caregiver do not generate detectable spillovers onto fathers' parenting behaviors.

Ultimately, we document clear evidence that fathers invest significantly less in child stimulation activities than mothers, and we find limited but promising evidence that there are ways to boost paternal engagement in child stimulation through parent training. However, the total effect on a wider array of aspects of fathers' lives and the impact of other efforts to engage fathers remains an area requiring much further study. Likewise, because most of these interventions target fathers along with other family members, it is difficult to isolate the impact of boosting fathers' involvement on children's outcomes. A previous effort to measure the overall effect of father-inclusive interventions (not just the impact of engaging fathers) on child development found very heterogeneous results (Jeong et al. 2023a).

Our systematic review also allows us to document the extent to which studies of other ECD interventions—for example, center-based childcare and targeted cash grants—impact fathers. There are strong theoretical reasons to expect that many ECD interventions will have direct impacts on household budget constraints and shift the distribution of domestic responsibilities. When this is the case, fathers may be affected—even if they spend little time on childcare. To date, relatively few studies report the impacts of ECD interventions on fathers, but many of those that do find substantial impacts of policies such as center-based care on fathers' labor supply and income.

## 2. The role of fathers in parenting young children

Fathers' role in parenting differs dramatically across societies. In every society, mothers do more active childcare than fathers, but fathers' involvement ranges from near zero to almost equal to that of mothers (Lancy 2015). The causes and consequences of fathers' involvement in parenting are not well understood.

One mechanical reason that fathers are less involved in childcare than mothers is that they are less likely to be present. UNICEF's Multiple Indicator Cluster Surveys (MICS) capture a broad range of human development outcomes related to women and children, and provide a unique source of internationally-comparable data on parenting practices across a broad range of LMICs. Like the Demographic and Health Surveys, the MICS collect data on representative samples of young children; however, the MICS are unique because, for a subset of countries, they also contain information about parenting practices and early childhood stimulation (as discussed further below).[2] Across 69 countries for which data on parenting is available, the average share of children who live with their mother is over 90 percent, while the average share of children who live with their father is only 72 percent. The share of children living with their father also varies considerably across regions, from 66 percent in Sub-Saharan Africa to over 96 percent in the Middle East and North Africa.[3] The reasons that fathers are absent also vary: in some cases, male household members migrate and send remittances home, so an absent father may translate directly into better welfare outcomes for the household (Mansuri 2006; Munshi 2020). Consistent with this, the empirical evidence on the developmental consequences of fathers' absence is, at best, mixed. In a review of the impacts of fathers' presence in the home on child survival, Sear and Mace (2008) note: "Fathers have surprisingly little effect on child survival, with only a third of studies showing any beneficial effects." Their conclusion reflects two main strands of literature on father absence, one exploring the impact of having a father die (i.e., becoming a paternal orphan) and a second exploring the impact

2 MICS have been conducted in 118 countries, but not all surveys measure early childhood stimulation. Appendix Table A1 lists the surveys we analyzed, which are drawn from the three most recent MICS rounds (4, 5, and 6) and cover the period from 2010–2023.

3 The share of children living with their mother varies considerably less, from 85 percent in Sub-Saharan Africa to 99 percent in the Middle East and North Africa.

of father migration (i.e., when the father is still alive but no longer lives in the same community). This literature includes outcomes for children beyond early childhood.

Literature on paternal orphans in LMICs has tended to find that losing one's father does not have dramatic effects on child outcomes. Studies in Kenya and South Africa found no impact of father deaths on children's school participation (Case and Ardington 2006; Evans and Miguel 2007). In Tanzania, there is a modest effect of paternal death on schooling if the father lived in the household at the time of death, but the impact is much smaller than the effect of maternal death (Beegle et al. 2010). A more recent study finds a comparable drop in school enrollment (of about 7 percentage points) for both fathers' and mothers' deaths in India. That study suggests that the channels of impact vary by parent: father deaths reduce schooling by reducing household income, and mother deaths reduce schooling by shifting the households' preferences away from schooling (Guerrero 2024).

The migration literature also finds mixed results. In Mexico, paternal migration is associated with worse child health outcomes, both for any illness and for diarrhea specifically (Schmeer 2009). Likewise in Guatemala, international migration of a father in the previous year is associated with lower height-for-age scores for children, even controlling for remittance income, perhaps because fathers who migrated one year ago have not yet begun remitting income to their families. In contrast, a study in Mozambique identifies no difference in mortality rates across migrant and non-migrant men's children (Yabiku, Agadjanian, and Cau 2012). For education outcomes, instrumental variables estimates in China suggest a modest adverse effect on children's test scores when fathers migrate, though there is a much larger negative effect when mothers migrate (Zhao et al. 2014), while Li, Liu, and Zang (2015) do not find that migration by either parent impacts child health. Taken together, the existing body of evidence suggests that negative impacts of fathers' absence on young children tend to be modest in most contexts.

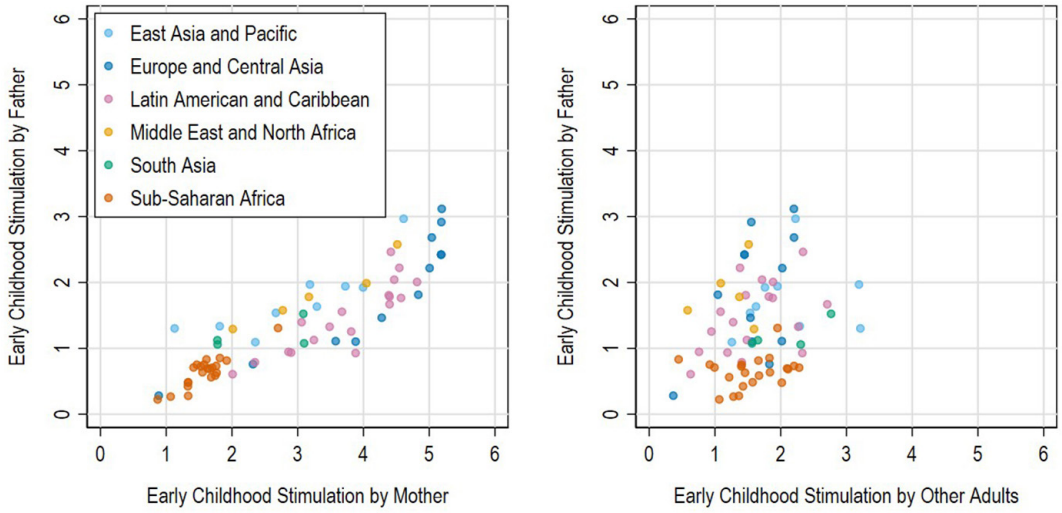
Even when they are present, fathers are typically less involved in the daily activities of parenting than other household members. Figure 1 presents MICS data on early childhood stimulation by mothers, fathers, and other household members. The surveys capture the extent of early childhood stimulation that children receive at home through the Family Care Indicators Questionnaire (Hamadani et al. 2010, Kariger et al. 2012), which asks about six different types of stimulating activities (e.g., shared reading, storytelling, and physical play). For each activity and each young child in the household, enumerators record whether an adult household member engaged in the activity with the child in the 72 hours prior to the survey. This provides a child-level measure of early childhood stimulation experienced, but also a breakdown of the extent to which mothers and fathers share responsibility for engaging with their young children.

Across all 69 countries, mothers engage in an average of 2.9 (out of 6) stimulating activities with young children, while fathers engage in only 1.3 stimulating activities. Mothers engage in more stimulating activities than fathers in every country except Thailand, where mothers engage in an average of 1.1 stimulating activities with each child while fathers engage in 1.3. Across countries,

fathers also engage in fewer stimulating activities with young children than other adult household members, who engage in an average of 1.6 activities with each child.

Figure 1 plots the country-level averages and compares the extent of early childhood stimulation by fathers to what is done by mothers and other adult household members. The left panel of the figure demonstrates that the number of stimulating activities done by fathers and the number done by mothers are positively correlated, increasing more or less linearly (correlation = 0.88). This pattern is not consistent with a model where either the mother or the father specializes in parental stimulation, while the other parent engages in other activities that also benefit the household (such as paid work outside the home). The three countries with the highest reported rates early childhood stimulation by mothers—Montenegro, Serbia, and Bosnia and Herzegovina—are three of the four countries with the highest rates of stimulation by fathers; and the three countries with the lowest rates of stimulation by fathers—The Gambia, Uzbekistan, and Lesotho—are among the four countries with the lowest rates of stimulation by mothers.

**FIGURE 1. Early childhood stimulation by fathers, mothers, and others**
*Data from multiple indicator cluster surveys in 69 countries*




*Sources:* Data from Multiple Indicator Cluster Surveys, rounds 4, 5, and 6 (collected between 2010 and 2023). Outcomes are based on responses to the Family Care Indicators (FCI) survey module, which asks about early childhood stimulation experienced by children aged 3 and 4 in the 72 hours prior to the survey. The FCI captures six distinct stimulating activities (singing songs, telling stories, playing, excursions outside the home, shared reading, and learning activities) and for each activity record the name of the adult household member who engaged in the activity with the child.

The right panel of Figure 1 shows the relationship between stimulation by fathers and stimulation by other adult household members. The two appear to be largely unrelated (correlation = 0.18). One clear pattern that stands out in both figures is that rates of early childhood stimulation by both mothers and fathers, as measured in the MICS surveys, are substantially lower in Sub-Saharan African than in all other regions. The low levels of stimulation by both parents might be seen as evidence that African parents see stimulating activities as less important, developmentally. Such an interpretation

resonates with work (cf. Weber, Fernald, and Diop 2017, Jukes et al. 2018) suggesting that prevalent cultural norms may discourage African parents from conversing with their young children. However, the evidence on stimulating activities by other household members runs counter to this interpretation: Figure 1 illustrates that, while rates of early childhood stimulation by African parents tend to be low, rates of cognitive stimulation by other adults in Sub-Saharan Africa are similar to those observed in other regions. This is consistent with anthropological evidence on the importance of alloparenting and child fostering in many African contexts (Akresh 2009, Lancy 2015).

Importantly, neither panel of the figure suggests that early childhood stimulation by fathers substitutes for attention from other adult household members, since it is not negatively correlated with stimulation by either mothers or others. Instead, fathers' level of engagement in early childhood stimulation is highly correlated with mothers' behavior, though mothers typically do between two and three times as much as fathers.

The descriptive evidence from the MICS raises important questions about fathers' role in parenting young children. One question is: why do fathers do so little early childhood stimulation? Are they bad at it, in the sense that children gain less from responsive parenting by fathers than from responsive mothering or responsive alloparenting by other adults in the household? Alternatively, fathers may be constrained by cultural norms that assign childrearing responsibilities to women and girls (Lancy 2015). If this is the case, households may be misallocating fathers' time toward more traditional or socially acceptable activities that have a lower return than engaging in responsive parenting. A second question is whether parenting norms can be influenced by policymakers. Does providing parents, and specifically fathers, with information on the returns to early childhood investments change fathers' parenting behavior? Can they be nudged to provide more nurturing care to their young children, or are norms related to division of labor within the household strong enough that encouraging fathers to do more will have little effect? A third question is whether convincing fathers to do more engaged parenting will increase child development and household welfare. Would increasing fathers' involvement with their young children have positive impacts on early childhood development, or is it better to target parenting interventions to women because they spend more time with young children? To explore these questions, and others, we surveyed the existing literature on early childhood interventions in LMICs that either attempted to change fathers' parenting practices or measured impacts on fathers' engagement with their children.

## 3. Interventions targeting fathers' parenting practices

Our analysis builds on a systematic review of 3,716 ECD studies published between 2005 and 2019 (Evans, Jakiela, and Knauer 2021). That study identified 478 experimental and quasi-experimental evaluations of ECD interventions in LMICs, only 12 of which reported any results specific to the father or male head-of-household. We extend that sample by systematically identifying papers that cite the original studies, leading to the inclusion of ten more recent studies. Thus, we discuss a total

of 22 impact evaluations of ECD interventions in LMICs that report father-specific results, either impacts on parenting practices or on other individual-specific outcomes such as earned income or mental health. The results of the 22 studies are summarized in Appendix Table A2; the search is characterized in more detail in Appendix Section A. All 22 studies are of relatively high quality, with defensible identification strategies and levels of attrition. We discuss variation in study quality in Section 5 and Appendix B.

While it is still the case that most parenting interventions in LMICs only target mothers (or primary caregivers, who are typically female), the number of programs including or even targeting fathers has increased substantially in recent years. Our sample of 22 papers includes ten evaluations of interventions that either only target fathers or target fathers and mothers together. The first impact evaluation in our sample of an ECD intervention in an LMIC that explicitly targeted fathers was published in 2014, and only one impact evaluation study published before that even reported father-specific parenting results. However, our sample includes three evaluations that were published in peer-reviewed journals since 2020, plus two additional unpublished working papers (or preprints) that have been posted in the last three years, and several additional ongoing randomized evaluations related to fathers' parenting practices in LMICs are currently listed in the American Economic Association trial registry. Hence, the body of evidence on fathers' parenting practices—though small at present—in LMICs is likely to expand over the next few years. Because the overall number of father-focused ECD interventions is modest, it is still possible to provide a narrative overview of all existing studies.

Doyle et al. (2018) evaluate a program targeting fathers with young children in Rwanda; study participants and their (female) partners attended weekly group meetings encouraging reflection and dialogue around topics related to parenting and gender equality. The intervention reduced physical violence against both mothers and children, increased uptake of modern contraception and antenatal care, and increased women's say in household decision-making, although it did not increase the amount of time men devoted to domestic work.

Björkman Nyqvist and Jayachandran (2017) study a parenting intervention in rural Uganda—classes on nutrition and child health—that was randomized at the village level to either mothers or fathers. They find that attendance rates were higher among targeted mothers (who attended 76 percent of sessions) than targeted fathers (who attended 58 percent of sessions). Intent-to-treat effects on the health knowledge of targeted parents were similar for the two interventions, but the intervention targeting fathers led to health knowledge spillovers onto mothers (program participants' wives), while the intervention targeting mothers did not improve their husbands' health knowledge. However, only the arm that targeted women improved household-level health behaviors.

Lighter touch parenting education for fathers has also proven effective in some contexts. Dinga (2019) reports that providing the fathers of newborns with breastfeeding education in Kenya improves their breastfeeding knowledge, while Wang et al. (2015) find that counseling can help

fathers of young children quit smoking in China. All four studies demonstrate that ECD interventions explicitly targeted at fathers can be effective at improving their parenting knowledge, and can also lead to changes in behavior that are likely to benefit children. However, the more ambitious studies by Björkman Nyqvist and Jayachandran (2017) and Doyle et al. (2018) also show that parenting norms can be sticky. Some parenting norms related to the division of labor within the household may be difficult to influence, even with relatively intense interventions; and in places where traditional norms persist, mothers may be better placed to act on parenting knowledge than fathers.

Consistent with this, the evidence on adding fathers to parenting interventions primarily focused on mothers (or primary caregivers) is mixed. In a study in rural Kenya, Luoto et al. (2021) test whether encouraging fathers to participate in group-based parenting education improves outcomes for children or mothers, but find that their intervention failed to convince fathers to regularly attend training sessions.[4] Overall, targeting fathers did not impact outcomes for mothers or children in that context. Their results resonate with those of Justino et al. (2020), who found that encouraging Rwandan fathers to attend parenting classes with their wives led to a participation rate of just over 10 percent.[5] In contrast, Özlüses and Çelebioglu (2014) find that explicitly targeting both fathers and mothers with breastfeeding education improves paternal attachment with infants in Northern Cyprus. Carneiro et al. (2021) find that providing information on child health to both mothers and fathers in northern Nigeria leads to increases in health knowledge for both parents, though impacts on mothers are larger and more persistent.

Amaral, Dinarte, Dominguez, and Perez-Vincent (2021) evaluate a digital parenting program in El Salvador that was implemented during the first year of the COVID pandemic. Both mothers and fathers were eligible to participate, and treatment assignments were stratified by (parent) gender. They find that the program increased male caregivers' stress and anxiety and reduced the frequency of positive interactions with young children—though the intervention had no statistically significant impacts on female caregivers.

There is also some evidence that parenting programs that do not explicitly target fathers can impact their childrearing practices. Antelman et al. (2022), Jensen et al. (2021), and Rahman et al. (2008) find that parenting interventions primarily targeted at mothers improved fathers' engagement with their children in Tanzania, Rwanda, and Pakistan (respectively), though Bos, Khan, Ravindran, and Shonchoy (2022) do not find effects of home visits from child development specialists on fathers' parenting practices in Bangladesh. Osaki et al. (2019) find that distributing maternal and child health materials increased fathers' support for mothers of newborns (in Indonesia). Thus, parenting

4 Another study—not included in our sample because it ultimately did not estimate impacts on fathers—initially included a treatment arm that encouraged men to participate in parent training classes in rural Mexico, but take-up was so negligible that the evaluation of father training was abandoned (Cárdenas, Evans, and Holland forthcoming).

5 However, in contrast to Luoto et al. (2021), Justino et al. (2020) find suggestive evidence that the program did improve the parenting practices of fathers who participated, and Abimpaye et al. (2020) find that the same program increased fathers' involvement in early childhood stimulation.

interventions that do not target fathers explicitly can—but do not always—change their behavior and increase their level of responsive parenting.

Taken together, these studies provide initial evidence that well-crafted parenting programs targeting fathers can increase their maternal and child health knowledge, change their behaviors, and lead to improved outcomes for mothers and children. However, there are potential pitfalls. Most notably, fathers appear less inclined to participate in parenting education programs, particularly those that are mainly targeted to mothers; this can limit the potential impacts on fathers. Moreover, there is some risk that parenting interventions can have unintended negative impacts on fathers, possibly because they lead fathers to attend to aspects of their interactions with children that they had previously accepted uncritically. In general, parenting interventions appear more effective at improving child development when they target mothers (only), with the potential for spillovers onto fathers' practice, as opposed to fathers (only), but interventions that target both parents may be the most effective in some settings. These initial conclusions draw on the limited literature available to date and may change as the body of evidence expands.

## 4. Other impacts of ECD interventions on fathers

Economic theory suggests that many ECD interventions, particularly center-based childcare and early childhood education, have obvious, direct implications for parental income and labor supply. Institutional childcare interventions have the potential to be win-win policies if they improve children's developmental outcomes while also increasing parents' labor force participation and household income. Furthermore, they may have indirect impacts on parenting activities through other channels: e.g., fathers who work more may have less time with their children, which could subsequently affect child development outcomes. Nevertheless, many impact evaluations of daycare, preschool, and kindergarten programs in LMICs do not even report impacts on mothers—though most of those that do find positive impacts on maternal labor force participation (Evans, Jakiela, and Knauer 2021; Halim, Perova, and Reynolds 2022).[6] Much less evidence exists documenting the impacts—or lack of impacts—of institutional childcare and early childhood education on fathers' labor supply and earned income. In this section, we outline the impacts of non-parenting ECD interventions on parenting practices and on other aspects of fathers' lives.

To date, only one study estimates the impact of preschool on fathers' parenting practices in LMICs. Lassassi (2021) uses a difference-in-differences strategy to estimate the impact of preschool availability on fathers' interactions with their young children in Algeria, and does not find a statistically significant

6 Rosero and Oosterbeek (2011); Martinez, Naudeau, and Pereira (2017); Hojman and López Boo (2019) and Clark, Kabiru, Laszlo, and Muthuri (2019) all find that access to childcare (either daycare or preschool) increases maternal labor supply, while Attanasio et al. (2022) and Richardson et al. (2018) do not. Attanasio et al. (2022) find that access to daycare increases labor force participation among adult sisters and grandmothers; in their context, most mothers are already working, and their labor supply is not affected by access to childcare.

impact of preschool on fathers' parenting. However, preschool is also associated with a decline in the quality of interactions between mothers and young children in that context.[7] Likewise, only one randomized trial in an LMIC reports estimates of the impact of access to childcare on fathers' labor market participation. Bjorvatn et al. (2022) estimate the impacts of offering Ugandan households with young children (aged 3 to 5 at baseline) either subsidized childcare, a cash grant of equivalent value, or the combination of the two interventions. Both the childcare subsidy alone and the combination of subsidized childcare with a cash grant increased the likelihood that a young child is in full-time childcare by almost fifty percentage points. Access to childcare increased fathers' labor supply and earned income, effects which were driven by increases in wage labor rather than self-employment. In contrast, access to childcare alone did not increase mothers' labor supply; though the likelihood of self-employment did increase for mothers who received both a childcare subsidy and a cash grant. Access to childcare also had positive and statistically significant impacts on both child development and mothers' wellbeing, suggesting that it is indeed a win-win from a policy perspective in that context.

The number of quasi-experimental studies estimating the impact of daycare, preschool, and kindergarten on fathers labor market participation in LMICs is vanishingly small, making it difficult to draw broad conclusions from the literature. Rosero and Oosterbeek (2011) use a regression discontinuity design to estimate the impact of access to free center-based childcare on households in Ecuador. They find a positive, statistically significant impact of childcare on the income of the household head, who was typically the father, as well as the income of the mother. However, in their setting, institutional childcare had null or even negative impacts on child development, suggesting a tradeoff between household income and children's wellbeing. In contrast, Wang and Lin (2019) use a difference-in-differences strategy to estimate the impact of affordable preschool in China. They find that the expansion of childcare access increased rates of entrepreneurship among mothers, but not among fathers. In related work, Ohrnberger, Fichera, Sutton, and Anselmi (2020) find that child grants in South Africa increased fathers' mental health.

Selection into our sample of published studies is, of course, a concern, but these results suggests that early childhood interventions can and do impact fathers by changing their parenting skills and practices, their involvement in the labor market, or potentially both. Impact evaluations that ignore the role that fathers play in raising children and balancing responsibilities inside and outside the home risk understating the true impacts of ECD interventions.

Overall, it remains difficult to draw conclusions about the impacts of ECD interventions on fathers' lives beyond parenting because the number of studies reporting such impacts is still so small. However, given the evidence that childcare interventions can impact fathers' income (as in Rosero and Oosterbeek 2011 and Bjorvatn et al. 2022, discussed above), it is possible that documented

7 Two other studies that came up in our systematic review find that nutrition interventions (without a cash grant component) increase male income or labor supply (Adams et al. 2018, Fitzsimons et al. 2016); this result is surprising, since child nutrition programs do not inherently free up parental time.

impacts of institutional childcare on household income (Attanasio et al. 2022; Bjorvatn et al. 2022; Rosero and Oosterbeek 2011) might also be partially explained by impacts on fathers' labor supply and wages. This highlights the importance of estimating the impacts of ECD interventions on all household members, and not just children and mothers.

## 5. Discussion

One of the main takeaways from our survey of empirical research on fathers' involvement in parenting young children in LMICs is that the evidence base remains quite small. Given this, it is possible that conclusions will change as the number of well-identified studies expands. All the studies that we consider are of relatively high quality, but there is some variation in the potential risk of bias. We discuss study quality in Appendix B. Most of the studies that we discuss are randomized trials with levels of attrition that are either low or well-balanced across treatment arms—and we do not find evidence that patterns of results differ between experimental and quasi-experimental studies, or between studies with lower vs. higher attrition.

We focus on the role that fathers play in parenting young children in LMICs. Mothers also do more active parenting than fathers in wealthy countries. For example, Guryan et al. (2008) show that fathers spend about half as much time providing childcare as mothers in the United States (6.8 hours per week versus 14 hours), with similar ratios between men and women in Canada, the Netherlands, and Norway and much less equal ratios in some higher income countries (France and Austria). In the United States, at least, the amount of time that fathers spend on childcare has been changing rapidly over time (Doepke and Zilibotti 2017), which may indicate that mothers' and fathers' parenting practices and childcare burdens may eventually converge.

However, parenting norms, educational systems, and labor markets in industrialized countries differ from those found in low-income settings. This may explain why the correlates of parental involvement appear different in high-income countries, where systematic reviews point to strong positive associations between paternal presence and engagement and child outcomes. Sarkadi et al. (2007) review 24 longitudinal studies and find mostly positive associations between paternal involvement and child development in high-income country environments, including fathers' presence (i.e., cohabitation with the child) and fathers' engagement with their children. Positive child development outcomes include fewer behavioral problems among boys and fewer psychological problems among young women, as well as reduced criminal behavior among youth in lower income households. Some studies also suggest a positive link between father-child play and children's cognitive socio-emotional outcomes in high-income settings (Amodia-Bidakowska, Laverty, and Ramchandani 2020). As LMICs continue to industrialize, it remains to be seen whether the empirical patterns associated with fathers' active involvement in parenting will become more similar to those observed in higher income countries.

Alloparenting is another way that childrearing practices in LMICs differ systematically from those observed in industrialized nations. In many LMIC settings, older siblings—particularly sisters—and

grandmothers play a major role in childrearing (Lancy 2015; Evans, Jakiela, and Knauer 2021). To date, few studies document the impacts of ECD interventions on older siblings or grandparents. Alsan (2017) shows that a vaccination campaign targeted to children under five years old in Turkey boosted literacy and educational attainment among older sisters but not older brothers, likely because older sisters were more likely to stay home and care for ill siblings. Consistent with that hypothesis, the effects were larger in households where mothers worked outside of the home. The provision of community-led preschools in Mozambique reduced the amount of time older siblings spent caring for young children and increased their time spent on schoolwork, though it did not have a statistically significant impact on enrollment (Martinez, Naudeau, and Pereira 2017). In urban Brazil, Attanasio et al. (2022) find that access to government-run daycare centers boosted labor market outcomes among both grandmothers and siblings aged 15 or older. Though active, responsive parenting may be optimal from a child development perspective, parents in LMICs are often engaged in pressing tasks such as income generation and subsistence farming, which is why they commonly assign children in middle childhood and adolescence the task of caring for their younger (below school-aged) siblings (Weisner et al. 1977, Hrdy 2009). Given this, the limited evidence on the role that older children play in the lives of their siblings in early childhood seems like an important gap in the literature, just like the role of fathers.

## 6. Conclusion

Fathers are parents too, but their role in parenting—particularly in LMIC contexts—is often ignored. Historically, fathers have played a less important role in parenting than mothers, but this gap is narrowing as societies develop. As women become more educated and enter the workforce, the traditional division of household responsibilities is evolving, and fathers are likely to play a growing role in the lives of young children in the future than they have in the past.

The existing evidence base on fathers' role in early childhood development is small, but it is expanding rapidly. It is increasingly clear that well-designed, contextually-appropriate interventions targeting fathers—or fathers and mothers together—can change fathers parenting knowledge in LMIC settings. It remains to be seen whether targeting fathers improves child and household outcomes. Indeed, a review of interventions intended to engage fathers showed that most apply the same program designs to fathers that have been applied to mothers, with little adaptation (Jeong et al. 2023b). Yet evidence suggests that fathers face specific challenges, such as less time at home, less knowledge about caregiving, and restrictive gender attitudes (Jeong et al. 2023c). Fathers may be less inclined to participate in parenting classes, and they may be less likely than mothers to put their newfound parenting knowledge into practice. Moreover, fathers can also be impacted by interventions that do not target them directly, particularly when access to institutional childcare changes the labor supply decisions facing the household. Understanding when and how to target fathers to maximize child development and household welfare gains requires an expansion of the evidence base documenting the impacts of all types of ECD interventions on fathers' behavior.

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# Appendix

## Appendix section A: Search for studies ECD interventions in LMICs that report father-specific outcomes

We initially carried out a systematic search for articles published between 2005 and 2019 in EconLit, Pubmed, Web of Science, and PsychINFO. We used a variety of search terms to identify evaluations of early childhood development interventions (i.e., targeted at children ages 0–5 or their caregivers): e.g., "early child" or "early childhood" or "infant" or "young children" or "birth" or "early childcare." We also included search terms for broad classes of interventions (e.g., cash transfer or daycare or food supplementation or home visit). We included studies that evaluated interventions in low- and middle-income countries, and we included both experimental and quasi-experimental evaluations. Through this process, we initially identified 3,716 unique, potential studies. We then excluded studies that appeared in the search but did not satisfy the inclusion criteria above and added studies that the authors were aware of and did not appear in the search. This resulted in 478 experimental and quasi-experimental evaluations of ECD interventions in LMICs. Of those, only 12 reported any outcomes specific to the father or male head-of-household. That initial search was completed in the end of 2019. Exhaustive details of that initial search are included in the supplementary materials of Evans, Jakiela, and Knauer (2021).

We then systematically updated our sample by examining all studies that cite those 12 papers and applying the same inclusion criteria described above. This update was finalized in June 2022. This resulted in the inclusion of 10 additional studies, resulting in a total sample of 22 studies.

## Appendix section B: Study quality

Not all the studies we include are of equal quality. There are various factors that contribute to study quality. We use just two factors to provide a simple classification. The first is study design. Because we exclude study designs most likely to incorporate omitted variable bias from our review (propensity score matching or simple multivariate regression), all the study designs are relatively high quality. We propose that randomized controlled trials (RCTs) have the lowest probability of omitted variable bias, so we rank those as high. We also examine study attrition: studies with lower than 20% with relatively good balance (within 5 percentage points) across groups are considered low attrition. None of our studies have attrition higher than 35%, so again, we exclude studies with greatest risk of attrition bias.

We rate RCTs with low, balanced attrition as high quality, RCTs with higher or slightly imbalanced attrition as medium-high, quasi-experimental studies with low attrition as medium-high, and quasi-experimental studies with higher attrition as medium. We treat a lack of attrition analysis the same as high attrition.

This analysis leaves us with, out of a total of 22 studies, 12 high quality studies, 5 medium-high quality studies, and 5 medium quality studies. Because we include the underlying values in Appendix Table A3 below, readers can use their own weights across studies.

## Appendix tables

### TABLE A1. MICS surveys used in analysis

| Country | MICS Round | Survey Year(s) |
|---|---|---|
| Afghanistan | 6 | 2022–2023 |
| Algeria | 6 | 2018–2019 |
| Argentina | 6 | 2019–2020 |
| Bangladesh | 6 | 2019 |
| Barbados | 4 | 2012 |
| Belarus | 6 | 2019 |
| Belize | 5 | 2015–2016 |
| Benin | 5 | 2014 |
| Bhutan | 4 | 2010 |
| Bosnia and Herzegovina | 4 | 2011–2012 |
| Cameroon | 5 | 2014 |
| Central African Republic | 6 | 2018–2019 |
| Chad | 6 | 2019 |
| Comoros | 6 | 2022 |
| Congo, Dem. Rep. | 6 | 2017–2018 |
| Congo, Rep. | 5 | 2014–2015 |
| Costa Rica | 6 | 2018 |
| Cote d'Ivoire | 5 | 2016 |
| Cuba | 5 | 2014 |
| Dominican Republic | 5 | 2014 |
| El Salvador | 5 | 2014 |
| Eswatini | 6 | 2021–2022 |
| Fiji | 6 | 2021 |
| Georgia | 6 | 2018 |
| Ghana | 6 | 2017–2018 |
| Guinea | 5 | 2016 |
| Guinea-Bissau | 6 | 2018–2019 |
| Guyana | 5 | 2014 |
| Honduras | 6 | 2019 |
| Iraq | 6 | 2018 |
| Jamaica | 4 | 2011 |
| Kazakhstan | 5 | 2015 |
| Kiribati | 6 | 2018–2019 |
| Kyrgyz Republic | 5 | 2014 |
| Lao PDR | 4 | 2011–2012 |
| Lesotho | 6 | 2018 |
| Malawi | 6 | 2019–2022 |
| Mali | 5 | 2015 |
| Mauritania | 5 | 2015 |
| Mexico | 5 | 2015 |

**TABLE A1. (Continued)**

| Country | MICS Round | Survey Year(s) |
|---|---|---|
| Moldova | 4 | 2012 |
| Mongolia | 6 | 2018 |
| Montenegro | 6 | 2018 |
| Nepal | 6 | 2019 |
| Nigeria | 4 | 2011 |
| Palestine | 6 | 2019–2020 |
| Panama | 5 | 2013 |
| Paraguay | 5 | 2016 |
| Qatar | 4 | 2012 |
| Saint Lucia | 4 | 2012 |
| Sao Tome and Principe | 6 | 2019 |
| Samoa | 6 | 2019–2020 |
| Serbia | 6 | 2019 |
| Sierra Leone | 6 | 2017 |
| Suriname | 6 | 2018 |
| Thailand | 4 | 2012–2013 |
| The Gambia | 6 | 2018 |
| Togo | 6 | 2017 |
| Tonga | 6 | 2019 |
| Trinidad and Tobago | 4 | 2011 |
| Tunisia | 4 | 2011–2012 |
| Turkmenistan | 5 | 2015–2016 |
| Turks and Caicos | 6 | 2019–2020 |
| Tuvalu | 6 | 2019–2020 |
| Ukraine | 4 | 2012 |
| Uruguay | 4 | 2012–2013 |
| Uzbekistan | 6 | 2021–2022 |
| Vietnam | 4 | 2010–2011 |
| Zimbabwe | 6 | 2019 |

## TABLE A2. Impact evaluations of ECD interventions in LMICs that report father-specific outcomes

| Study | Country | Intervention | Design | Father Outcomes Reported | Coef. | SE/CI/p-value |
|---|---|---|---|---|---|---|
| Abimpaye et al. (2020) | Rwanda | parenting education | RCT | ***Parenting outcome: father learning/play activities*** | | |
| | | | | Treatment: light touch intervention | 0.51 | p<0.001 |
| | | | | Treatment: full intervention | 0.67 | p<0.001 |
| | | | | ***Parenting outcome: father nurturing care activities*** | | |
| | | | | Treatment: light touch intervention | 0.33 | p<0.001 |
| | | | | Treatment: full intervention | 0.31 | p<0.001 |
| | | | | ***Parenting outcome: father harsh discipline*** | | |
| | | | | Treatment: light touch intervention | 0.06 | p>0.05 |
| | | | | Treatment: full intervention | 0.05 | p>0.05 |
| Adams et al. (2018) | Ghana | lipid-based nutrient, iron, and folic acid supplements during pregnancy and post-partum | RCT | Mother's husband's income | 0.109 | (0.055) |
| Amaral, Dinarte, Dominguez, and Perez-Vincent (2021) | El Salvador | digital stress management and positive parenting intervention | RCT | ***Parenting outcomes:*** | | |
| | | | | Positive caregiver-child interactions | -0.137 | (0.067) |
| | | | | Violence in parenting (physical and psychological) | 0.025 | (0.065) |
| | | | | Father's tolerance of violent parenting | 0.019 | (0.066) |
| | | | | ***Other father outcomes:*** | | |
| | | | | Father's mental distress (DASS-21) | 0.093 | (0.05) |
| | | | | Father's impulsiveness (Barratt Impulsiveness Scale BIS-11) | -0.074 | (0.062) |
| Antelman et al. (2022) | Tanzania | Community health workers showing ECD videos to caregivers | DD | Father engagement (adjusted odds ratio) | 1.90 | [1.45,2.48] |
| Björkman Nyqvist and Jayachandran (2017) | Uganda | health and nutrition classes | RCT | ***Parenting outcome: father's health knowledge*** | | |
| | | | | Treatment: men's parenting classes | 0.22 | (0.045) |
| | | | | Treatment: women's classes (spillover to fathers) | 0.018 | (0.042) |
| | | | | ***Parenting outcome: household health behaviors*** | | |
| | | | | Treatment: men's parenting classes | 0.088 | (0.064) |

## TABLE A2. (Continued)

| Study | Country | Intervention | Design | Father Outcomes Reported | Coef. | SE/CI/p-value |
|---|---|---|---|---|---|---|
| Bjorvatn et al. (2022) | Uganda | preschool vouchers, and an equivalent cash grant, or combination of both interventions | RCT | ***Outcome: father's self-employment income*** | | |
| | | | | Treatment: Childcare only | 2.61 | (4.03) |
| | | | | Treatment: Cash only | –5.49 | (3.56) |
| | | | | Treatment: Childcare and cash | 1.87 | (3.84) |
| | | | | ***Outcome: father's income from wage labor*** | | |
| | | | | Treatment: childcare | 18.1 | (9.12) |
| | | | | Treatment: cash equivalent | 8.02 | (8.97) |
| | | | | Treatment: childcare plus cash equivalent | 0.92 | (8.82) |
| | | | | ***Outcome: father's total earned income*** | | |
| | | | | Treatment: childcare | 24.56 | (10.16) |
| | | | | Treatment: cash equivalent | 5.08 | (9.88) |
| | | | | Treatment: childcare plus cash equivalent | 5.04 | (9.94) |
| | | | | ***Outcome: father's self-employment hours worked*** | | |
| | | | | Treatment: childcare | –3.38 | (8.21) |
| | | | | Treatment: cash equivalent | –0.4 | (8.54) |
| | | | | Treatment: childcare plus cash equivalent | 10.43 | (8.76) |
| | | | | ***Outcome: father's wage labor hours worked*** | | |
| | | | | Treatment: childcare | 20.5 | (9.55) |
| | | | | Treatment: cash equivalent | 8.06 | (9.09) |
| | | | | Treatment: childcare plus cash equivalent | 7.56 | (9.33) |
| | | | | ***Outcome: father's total hours worked*** | | |
| | | | | Treatment: childcare | 18.29 | (11.68) |
| | | | | Treatment: cash equivalent | 8.41 | (11.68) |
| | | | | Treatment: childcare plus cash equivalent | 16.27 | (11.79) |
| | | | | ***Outcome: value of father's business assets (1000s of Ugandan shillings)*** | | |
| | | | | Treatment: childcare | 0.98 | –1.13 |
| | | | | Treatment: cash equivalent | 1.97 | –1.31 |
| | | | | Treatment: childcare plus cash equivalent | 0.47 | –1.02 |

## TABLE A2. (Continued)

| Study | Country | Intervention | Design | Father Outcomes Reported | Coef. | SE/CI/p-value |
|---|---|---|---|---|---|---|
| | | | | ***Outcome: father's employees*** | | |
| | | | | Treatment: childcare | 0.03 | (0.05) |
| | | | | Treatment: cash equivalent | 0.03 | (0.04) |
| | | | | Treatment: childcare plus cash equivalent | 0.06 | (0.07) |
| Bos, Khan, Ravindran, and Shonchoy (2022) | Bangladesh | home-visiting intervention providing educational materials and counseling | RCT | Outcome: variety of learning activities provided by father | −0.001 | (0.076) |
| Carneiro et al. (2021) | Nigeria | parenting education and cash transfers | RCT | ***Parenting outcomes:*** | | |
| | | | | Father's parenting knowledge (index) | 0.257 | (0.048) |
| | | | | ***Other father outcomes:*** | | |
| | | | | Outcome: any work in past year | 0.003 | (0.002) |
| | | | | Outcome: days per week in highest-earning activity | 0.394 | (0.197) |
| | | | | Outcome: self-employed | 0.033 | (0.021) |
| | | | | Outcome: farms own land | 0.001 | (0.007) |
| | | | | Outcome: monthly expenditure on father's business | −4.83 | −4.1 |
| | | | | Outcome: monthly earnings | 16.7 | (10.4) |
| Dinga (2019) | Kenya | breastfeeding education for fathers of newborns | RCT | Outcome: knows breastmilk is first food | 2.6 | [0.11] |
| | | | | Outcome: knows should start breastfeeding within 1 hour | 21.8 | [0.01] |
| | | | | Outcome: knows should breastfeed for 2 years | 15.9 | [0.02] |
| | | | | Outcome: knows about exclusive breastfeeding | 23.8 | [0.02] |
| Doyle et al. (2018) | Rwanda | men's groups, discussions of gender equality | RCT | Outcome: mother experienced physical violence (OR) | 0.38 | [0.29,0.50] |
| | | | | Outcome: mother experienced sexual violence (OR) | 0.36 | [0.25,0.50] |
| | | | | Outcome: use of physical punishment (OR) | 0.66 | [0.50,0.89] |
| | | | | Outcome: sharing of tasks at home | 0.33 | [0.26,0.41] |
| | | | | Outcome: time on household tasks | 0.86 | [0.49,1.23] |

## TABLE A2. (Continued)

| Study | Country | Intervention | Design | Father Outcomes Reported | Coef. | SE/CI/p-value |
|---|---|---|---|---|---|---|
| Fitzsimons, Malde, Mesnard, and Vera-Hernández (2016) | Malawi | nutrition education for parents through home visits | RCT | Outcome: male labor supply (index) | 0.262 | [0.131] |
| | | | | Outcome: adult male works | 0.106 | [0.080] |
| | | | | Outcome: adult male has two jobs | 0.08 | [0.025] |
| | | | | Outcome: adult male's work hours | 4.314 | [2.918] |
| Jensen et al. (2021) | Rwanda | home-visits linked to Rwanda's social protection system | RCT | Outcome: father engagement (OR) | 1.592 | [1.069,2.368] |
| Justino et al. (2020) | Rwanda | group-based parenting education | RCT | Outcome: father's parenting time investment index (12 months post-treatment) | | |
| | | | | Treatment: light treatment | 0.177 | (0.094) |
| | | | | Treatment: full treatment | 0.537 | (0.216) |
| | | | | Outcome: father's parenting time investment index (33 months post-treatment) | | |
| | | | | Treatment: light treatment | 0.036 | (0.08) |
| | | | | Treatment: full treatment | 0.183 | (0.056) |
| | | | | Outcome: father's influence index (after 12 months) | | |
| | | | | Treatment: light treatment | 0.452 | (0.225) |
| | | | | Treatment: full treatment | 0.681 | (0.194) |
| Lassassi (2021) | Algeria | preschool | DD | Outcome: fathers' interactions with children | 1.194 | (1.579) |
| Luoto et al. (2021) | Kenya | integrated responsive stimulation and nutrition education | RCT | Outcome: father's Family Care Indicator behavioural score (0–6) | | |
| | | | | Treatment: group-based parenting classes | 0.08 | [–0.10,0.26] |
| | | | | Treatment: group-based parenting classes plus home visits | 0.03 | [–0.15,0.22] |
| Ohrnberger, Fichera, Sutton, and Anselmi (2020) | South Africa | unconditional cash transfer | IV | Outcome: effect on mental health of male adults in the household (CES-D, higher score means better mental health) | 0.468 | (0.447) |
| Osaki et al. (2019) | Indonesia | distribution of maternal and child health handbooks | RCT | Outcome: husband's support for saving for delivery (OR) | 1.82 | [1.2,2.76] |
| | | | | Outcome: husband's support for keeping baby warm (OR) | 1.58 | [1.02,2.46] |
| | | | | Outcome: husband's support for child stimulation (OR) | 1.62 | [1.06,2.48] |

## TABLE A2. (Continued)

| Study | Country | Intervention | Design | Father Outcomes Reported | Coef. | SE/CI/p-value |
|---|---|---|---|---|---|---|
| Özlüses and Çelebioglu (2014) | Turkey | breastfeeding education | DD | Outcome: paternal-infant attachement | | |
| | | | | Treatment: education for mothers | 9 | NA |
| | | | | Treatment: education for both parents | 16.2 | NA |
| Rahman et al. (2008) | Pakistan | home visits | RCT | Outcome: father's play frequency with infant at 12 months | 1.9 | [1.59,4.15] |
| Rosero and Oosterbeek (2011) | Ecuador | childcare centers, home visits | RDD | Outcome: household head income | | |
| | | | | Treatment: home visits | 5.466 | (37.832) |
| | | | | Treatment: childcare centers | 97.621 | (31.572) |
| Wang et al. (2015) | China | smoking cessation counseling, health education for children | RCT | Outcome: father's 7-day quit rate (OR) | 1.12 | [1.02,1.22] |
| Wang and Lin (2019) | China | preschool | DD | Outcome: father's entrepreneurship | 0.025 | (0.026) |

*Note:* The full references for all 22 of these studies are included in the main paper references.

## TABLE A3. Study quality rating

| Study | Design | Attrition | | Overall Quality |
|---|---|---|---|---|
| | | Overall Rate? | Balanced Attrition? | |
| Abimpaye et al. 2020 | RCT | 10% | 2 to 5 p.p. higher attrition in treatment arms | Medium-high |
| Adams et al. 2018 | RCT | 10%–30% | Yes | Medium-high |
| Amaral et al. 2021 | RCT | 27% | Yes | Medium-high |
| Antelman et al. 2022 | DD | 20% | Yes | Medium |
| Björkman Nyqvist and Jayachandran 2017 | RCT | 2% | Not tested | High |
| Bjorvatn et al. 2022 | RCT | 4–8% | 3–4 p.p. higher among control | High |
| Bos et al. 2022 | RCT | 3% | Yes | High |
| Carneiro et al. 2021 | RCT | 23% | Yes | Medium-high |
| Dinga 2019 | RCT | 4% | Not tested | High |
| Doyle et al. 2018 | RCT | 6%* | 2 p.p. higher among treatment | High |
| Fitzsimons et al. 2016 | RCT | 33–35% | Yes | Medium-high |
| Jensen et al. 2021 | RCT | 10%** | Not tested | High |
| Justino et al. 2020 | RCT | 10–18% | Yes | High |
| Lassassi 2021 | DD | Not examined | | Medium |
| Luoto et al. 2021 | RCT | 7% | Yes | High |
| Ohrnberger et al. 2020 | IV | Higher*** | Depends on specification | Medium |
| Osaki et al. 2019 | RCT | 24–28% | 4 p.p. higher among control | High |
| Özlüses and Çelebioglu 2014 | DD | Not analyzed | | Medium |
| Rahman et al. 2008 | RCT | 11–12% | 1 p.p. higher among control | High |
| Rosero and Oosterbeek 2011 | RD | Not relevant for study design | | Medium-high |
| Wang et al. 2015 | RCT | 0% | Yes | High |
| Wang and Lin 2019 | DD | 17% | Not tested | Medium |

*Notes:* RCT = Randomized controlled trial. DD = Difference-in-differences. RD = Regression discontinuity. p.p. = percentage points; When attrition is listed as a range, that indicates variation across time periods or across arms. Balance refers to whether rates of attrition are balanced across treatment groups; *In Doyle et al., the 6% is attrition among men, the focus of this review; **In Jensen et al., the 10% attrition is among caregivers; ***In Ohrnberger et al., the appendix reports that more than 4,000 individuals left the sample between the first two waves, more than 4,000 between the next two waves, and more than 2,000 between the subsequent two waves. The maximum individuals in the sample reported in any table is around 11,000.