THE NATURE AND IMPACT OF FATHER INVOLVEMENT ON MATERNAL AND CHILD HEALTH OUTCOMES IN SUB-SAHARAN AFRICA

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INTRODUCTION

Father involvement (FI) describes a wide array of roles and activities that directly and indirectly influence the well-being of mothers and children. It may be viewed in 3 dimensions: (1) financial provision and decision-making, (2) interpersonal support (emotional and practical support) and (3) direct interactions with children.[1–3] Fathers indirectly affect maternal and child well-being by making decisions and providing financial support for activities that influence maternal and child health.[2] Interpersonal support directly impacts maternal mental health and mediates maternal-child relationships, while child-directed engagement affects child development and growth.[2–4]

In many countries in Sub-Saharan Africa (SSA), fathers are often household heads, primary breadwinners and decision-makers who are central in providing and allocating money for healthcare-seeking.[2,5,6] Fathers' decisions about food quality and availability, access and use of health services, contraceptive use and other important determinants of health directly impact maternal and child health outcomes.[7] Despite their influence on maternal and child well-being, especially in SSA, where patriarchal norms are dominant, the role of fathers is largely neglected in maternal and child health programs in the region.[3,8,9]

In low-middle income areas, including SSA, maternal and child morbidity and mortality rates are high due to poor care practices during 4 periods of heightened vulnerability: (1) pregnancy, (2) delivery, (3) postpartum and (4) the first 5 years of life.[3,7,10] In each of these periods, simple, effective and available interventions can prevent or improve poor health outcomes.[9,11] Although

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there have been improvements in obstetric and child care coverage and quality in SSA, male involvement in care is required to increase access to life-saving interventions and improve maternal and child health outcomes in the region.[5] Despite recognizing men's role in improving maternal and child well-being, FI in maternal and child care health programs is often neglected, with most programs focused on mothers.[3,5]

The impact of FI on child and maternal well-being has been demonstrated in high-income countries (HICs) where spousal participation in care is a common practice.[2,7] However, SSA is characterized by rapidly changing family dynamics influenced by demographic transitions like rural-urban migration, economic development and the introduction and implementation of gender equity laws and policies on a background of persistent societal and cultural expectations of gender roles in care.[1,6] The shift in family dynamics has impacted the previously accepted perceptions about the role of fathers in childcare, especially in urban and semi-urban areas where other female relatives may be absent or caring for their families.[6,12]

This review aims to describe the nature of FI in African countries, its impact on maternal and child health outcomes and interventions to increase FI and their effects in SSA.

SEARCH STRATEGY AND SELECTION CRITERIA

Search strategy

A search was conducted on MEDLINE via PubMed and Google Scholar between 4 October and 10 October 2022. The keywords entered were 'paternal involvement,' 'father involvement,' 'father engagement,' 'maternal health,' 'child health' and 'Africa'. The search was limited to articles written in English and published between January 2010 and October 2022 (Appendix). After selecting the initial articles, relevant studies were identified from a backward and forward screening of their references.

Selection criteria

Two reviewers carried out the initial screening of articles based on predetermined criteria. Disagreements were settled by discussion and consensus between the two reviewers. Included studies were: (1) observational or interventional, (2) described paternal involvement prenatally, during birth, postnatally and in the first five years of childhood in SSA countries, (3) described outcomes of interest such as nature of paternal involvement (PI), child and maternal outcomes, (4) included parents of children who were younger than 5 years and (5) were published in English between January 2010 and the search date. Articles that: (1) did not explicitly state that they were conducted in SSA countries and (2) those that did not address any of the outcomes of interest, were excluded.

Following the initial title and abstract screening, a second full-text article screening was conducted by the 2 reviewers with disagreements settled by consensus. Studies were excluded if: (1) they were systematic reviews, (2) they did not discuss male involvement (MI), (3) they only focused on the determinants of FI and (4) studied fathers of children older than 5 years old.

Data extraction

The 2 reviewers extracted data independently using data extraction sheets designed to capture authors' names, year of publication of articles, country, population studied, population size, study design, nature of paternal involvement and its impact on child and maternal health outcomes.

Risk of bias assessment

The risk of bias assessment was conducted using critical appraisal tools for randomized-control trials (RCTs), cross-sectional analytical studies and qualitative studies from the Joanna Briggs Institute. Each article was assessed by the 2 reviewers and each reviewer made the decision to either include or exclude the article. Disagreements were settled by consensus.

RESULTS

Study characteristics

A total of 32 articles were included in this review (Figure 1). The results of the literature search are summarized in Figure 1. Of the studies included, 23 were cross-sectional observational studies, 4 were RCTs, 1 a trial of improved practices, 1 a cohort study, 1 quasi-experimental, 1 a pre-post study and the remaining one a mixed methods study. 6 studies were conducted in Uganda, 5 in Ethiopia and Kenya, 4 in Ghana, 2 in Nigeria, Tanzania, Malawi and Rwanda and 1 in Burkina Faso, South Africa, Madagascar, and New Guinea (Table 2). The results of this study are categorized into the nature of FI and the impact of FI on maternal and child health outcomes.

Risk of bias assessment

The critical appraisal tool to assess risk of bias in cross-sectional studies was used to assess 13 analytical cross-sectional studies, while 10 studies were assessed using the appraisal tool for qualitative studies. All cross-sectional and cohort studies were included after the appraisal, although no analytical studies identified or described methods of addressing confounders and no qualitative studies addressed the impact researchers had on the studies or the reverse. Although all RCTs were included in the studies, blinding of participants and assessors was unclear or impossible in all 4.

The nature of FI

FI in the antenatal period

14 studies discussed father involvement in the antenatal period. Studies indicate that 59.2% to 84.4% of fathers participate in the antenatal period by facilitating transport to antenatal care (ANC) clinics.[8,13,14] In these studies 8.4% to 77.8% of men accompanied their expectant spouses to ANC clinics.[8,13,15–17] Some studies reported paternal involvement in encouraging ANC

clinic attendance[18,19] whilst others reported FI in the form of joint decision-making regarding ANC clinic attendance.[20] A study by Alupo et al. reported that fathers took part in the Prevention of Mother-to-Child Transmission of HIV (PMTCT) activities.[15]

FI during delivery

Six studies included in this review described paternal involvement activities during delivery. A large proportion of fathers in Ghana (99.2%) provided financial support during delivery by saving money for safe delivery under the supervision of skilled personnel.[8,21] In a study conducted in Uganda, 85.2% of men provided financial support for their partners by purchasing delivery kits and baby clothes required for delivery.[15]

In addition to financial support, 44.5% of men in Ghana provided interpersonal support to their partners during delivery by accompanying them to health facilities for delivery.[8] In comparison, only 1.42% of men in South Africa supported their partners by attending birth.[3] In Ghana, male involvement was characterized by providing information and advice on new-born care.[21]

FI during postpartum

A high maternal and neonatal mortality burden is associated with the first 6 weeks after delivery, otherwise known as the postpartum period.[9] During this time, postpartum hemorrhage, postpartum hypertensive disorders and sepsis contribute significantly to maternal mortality, while preterm birth, neonatal infection and birth asphyxia contribute to poor neonatal outcomes.[9]

In the first few weeks after delivery, postnatal care is essential for promoting maternal and new-born care through assessment for complications, nutrition education, breastfeeding support, and family planning counselling and initiation.[9] For babies with low birth weight, postpartum interventions such as Kangaroo Mother Care (KMC) are essential to increase the chances of survival.

4 studies outlined FI in the postpartum period. During postpartum, male involvement in SSA is primarily interpersonal and includes emotional support of their partners by accompanying them to postnatal care clinics,[5,9] family planning clinic visits,[8] participating in post-delivery pre-discharge consultations[9] and discussing family planning with their partners.[8] Some fathers also provide interpersonal support by encouraging breastfeeding during this period.[22]

Only 1 study conducted in Malawi discussed men directly interacting with new-borns by providing skin-to-skin contact as part of a KMC programme to improve outcomes in neonates with low birth weight.[12] Fathers involved in KMC reported that their participation benefited their children and eased the burden of care placed on their partners.[12]

FI in care of children below 5 years of age

Paternal involvement in early childhood involves financial support and decision-making, interpersonal support and direct engagement of children.[1,3] FI influences child outcomes in child nutrition, health-seeking, hygiene and learning.[2,4 10] FI in the form of interpersonal support to female partners impacts maternal health and the maternal-child relationship.[2,9] 14 studies explored FI in early childhood in child nutrition, health-seeking, hygiene and cognitive stimulation.

Child Nutrition

Fathers contribute financially to child nutrition by providing money to buy food or purchasing food for children directly.[22–24] Regarding direct FI in child nutrition, fathers in Eastern and Western Africa prepare children's food, feed their children and teach them to feed themselves.[6,10,22,23,25–27] Fathers also impact maternal nutrition practices by motivating and supporting exclusive breastfeeding in the first 6 months, assisting mothers with household chores and caring for older children to give mothers time to prepare food for infants.[22–24] In SSA, where malnutrition contributes to a large proportion of deaths of children younger than 5 years, financial and interpersonal FI may influence food availability and optimum breastfeeding practices.[10,23]

Health-seeking

Although the role of caring for sick children in SSA is attributed to women, fathers often make decisions regarding when and where to seek healthcare for sick children.[11,12] In addition to their decision-making role, fathers in SSA provide money to cover transport to health facilities, settle hospital bills, pay for tests and purchase drugs.[10,11,28,29] Mothers who remain with their sick children receive interpersonal support from their partners who care for the children left at home, as reported by Tolulope et al. following a study conducted in Nigeria.[29] Fathers directly interact with their sick children by accompanying them to hospitals and assisting in bathing them.[11,29]

Hygiene

FI involvement in hygiene practices in SSA involves direct child interaction when fathers bathe, diaper and dress their children.[6,10,23,26]

Cognitive stimulation

Fathers in SSA stimulate their children's cognitive development by engaging in learning activities such as reading, singing, story-telling and playing with them.[2,4,6] Paternal stimulation contributes to children's development and future productivity, especially among children who require more support to achieve optimum developmental potential, such as those born prematurely, with low birth weight or experiencing conditions such as birth asphyxia.[4]

Impact of FI on maternal and child health outcomes in Africa

8 studies in this review discussed the effect of FI on maternal and child health outcomes. They discussed the impact of prenatal and postnatal involvement on maternal health and FI in early childhood on child health (Table 3).

Impact of antenatal FI

3 studies addressed the impact of antenatal FI. In South Africa, Drysdale et al. reported no association between male attendance of ANC clinic visits and antenatal maternal depression or birth weight. [3] Additionally, male participation in PMTCT in Malawi did not significantly impact the number of expectant women who got tested for HIV or were on ARV treatment.[30] In Kenya, however, Aluisio et al. reported that male attendance of antenatal care clinics and male testing for HIV was associated with lower risks of vertical transmission of HIV to infants and lower risks of combined outcomes of vertical transmission and neonatal mortality.[31]

Impact of postnatal FI

In South Africa, paternal financial, emotional, informational and practical support during the postpartum period significantly improved maternal mental health by decreasing levels of postnatal maternal depression.[3] It, however, did not affect the proportion of women exclusively breastfeeding their children at 6 weeks postpartum.

In Burkina Faso, an intervention that included male involvement in group discussions, couple counselling and a postpartum, pre-discharge consultation was associated with higher maternal attendance of outpatient postnatal care clinic visits.[9]

Impact of FI during the first 5 years of life

In a randomized controlled study conducted in Kenya, fathers involved in antenatal nutritional counselling provided mothers with more financial and practical support postnatally.[22] FI in this study was associated with more mothers initiating breastfeeding within an hour of birth and exclusively breastfeeding their children at 6 months, fewer neonates receiving pre-lacteal feeds and later introduction of complementary foods.[22] Paternal involvement in complementary feeding of children older than 6 months was associated with more children receiving minimum meal frequencies, minimum acceptable diets and minimum dietary diversity.[22,23]

Paternal involvement in nutritional and hygiene feeding practices was not only associated with optimum feeding practices but also with fewer instances of illness such as fever, acute respiratory infections and diarrhoea[22] and better growth in the form of higher Height-for-Age Z scores.[10]

A study conducted in Kenya only reported an association between intrahousehold FI and overall child development and receptive and expressive language use.[2] Direct child engagement in learning activities such as reading, singing or playing with children had an inconsistent impact on child development. Garcia et al. reported that child-directed engagement (CDE) did not affect language, cognition or socioemotional development.[2] Oryono et al. reported an association between CDE and fewer delays in problem-solving milestones, lower risk of developmental delays and better overall development.[4]

In addition to the impact of FI on child health, paternal interpersonal involvement in early childhood was associated with reduced maternal depressive and stress symptoms and early uptake and use of long-term modern contraceptives.[2,9]

DISCUSSION

The nature of FI in Africa

Involvement of fathers in maternal and childcare in SSA is mainly characterized by financial support of healthcare activities including health-seeking, skilled delivery and nutrition. This is in line with the traditional view of fathers as 'providers' in this setting.[32]

In the antenatal period, FI mainly involves provision of financial support and facilitating maternal access to antenatal healthcare services with a small proportion of male partners providing interpersonal support. Although only a few studies address FI during delivery in the region, male involvement during this period is mainly characterized by financial support for skilled delivery. On the other hand, interpersonal forms of male participation during delivery are limited in African countries.[5] The low

levels of interpersonal support during delivery may be attributable to men's fear of seeing their partners in pain, fainting or being unable to cope with some aspects of maternal care.[7]

In the post-partum period, male involvement in SSA is mainly characterized by interpersonal support with only 1 study reporting FI in the form of direct childcare by providing KMC for babies born preterm.[12] During the first 5 years of childhood, fathers in SSA mainly participate in child nutrition and health-seeking by providing financial support for these activities in accordance with the traditionally held role of fathers as 'providers' with a few providing information and emotional support to their partners to promote healthier behaviours.[3,23] Few fathers participated in direct child-care activities during all major periods with most fathers choosing not to take up the role of caregivers due to sociocultural and economic factors that view the role as primarily female.[8]

Overall, however, few fathers are involved in maternal and child health practices in SSA, mostly due to social and cultural barriers to paternal access to health services such as attending births, clinics and health education programmes.[3]

The impact of FI on maternal and child health

Maternal health

Prenatal interventions that improve the postnatal involvement of fathers have the most consistently reported positive impact on maternal and child health in studies conducted in Africa. Antenatal interpersonal FI was associated with increased odds of delivering with skilled birth attendants[34] and higher uptake of contraceptives and postnatal care services.[9] In the postnatal period, interpersonal FI was associated with better maternal mental health by reducing depressive and stress symptoms.[2,3]

Child health

Antenatal interpersonal FI was associated with increased odds of delivery conducted by skilled birth attendants and decreased risks of vertical transmission and infant mortality due to HIV.[31] Interpersonal antenatal FI was associated with lower risks of

vertical HIV transmission, lower neonatal mortality[31] and increased exclusive breastfeeding in the postpartum period.[9] Intrahousehold FI in SSA has been linked to improved child health due to the impact of better maternal wellbeing and parenting behaviours.[2] In the first 5 years of life, fathers are involved in child care by directly caring for children, providing finances and interpersonal support to mothers. FI in the first 5 years was associated with fewer odds of undernutrition, better dietary diversity and higher scores in growth assessment metrics.[10,27,32]

Impact of Interventions to increase FI

The two interventions put in place to increase FI included formal invitations (through invitation cards) and community education. Community education increased FI in 1 study[22] while invitation cards increased interpersonal FI by increasing father attendance of ANC[20] in a study conducted by Nantamu.

The studies above indicate that postnatal paternal involvement positively impacts maternal and child health outcomes in SSA. Despite its immense potential to decrease poor maternal and child outcomes, few studies in SSA address the impact of FI. Although the overall effect of FI seems to be an improvement in health outcomes, it may also reduce female autonomy in seeking their own care, especially regarding sensitive aspects of healthcare like family planning abate.

LIMITATIONS

The papers included in this study were cross-sectional and this limited our ability to establish causation. Studies were conducted in only a few African countries and addressed several variable outcomes which make it difficult to generalize conclusions made. Despite these limitations, the included studies addressed diverse aspects of FI in maternal and childcare.

CONCLUSION

The nature of FI in SSA is multi-dimensional, with men carrying out various activities to impact maternal and childcare. The main form of FI reported in SSA is financial support and decision-making. Although financial support is an essential determinant of family dynamics, paternal interpersonal support and direct child interactions also significantly impact maternal and child outcomes in this setting.

FI in this setting was associated with improved maternal mental health and access to postnatal care services. Moreover, male involvement in childcare was associated with better nutritional practices and better overall development of children.

Future studies that look into improving paternal involvement in care while increasing female autonomy in SSA would shed light on the relationship between these 2 aspects. In addition to this, we recommend further research into interventions that increase interpersonal involvement which has been shown to improve maternal health and health-promoting behaviors directly while indirectly impacting child health positively.

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APPENDIX

Table 1: Illustration of search terms entered on PUBMED

'Paternal involvement' OR 'Father involvement' OR 'Father engagement'	'Maternal health' OR 'Child health'	Africa

Table 2: Study characteristics

Author (Year)	Country	Setting	Population and sample size	Study design	Addresses FI in the context of
Aluisio et al., 2011	Kenya	Hospital - Antenatal care clinic	HIV- positive women (456)	Cohort	Antenatal care
Asefa et al., 2014	Ethiopia	Hospital- Antenatal care clinic	Adult expectant women attending ANC (385)	Cross-sectional	Antenatal care
August et al., 2016	Tanzania	Community	Adult men with partners who had delivered within	Quasi-experimental	Antenatal care, Delivery, Postpartum and

			two years of the study		
Chintalapudi, 2018	Malawi	Community	Father-mother pairs with HIV +ve mothers of children younger than 2 years (15)	Cross-sectional	Child nutrition, HIV
Bilal et al., 2016	Ethiopia	Community	Adult fathers with a child between 6 and 23 months (10) Adult mothers from different households (10)	Cross-sectional	Child nutrition
Byamugisha et al., 2010	Uganda	Hospital-Antenatal care clinic	Adult men whose spouses were attending ANC (387)	Cross-sectional	Antenatal care
Bilal et al., 2014	Ethiopia	Community	Fathers of children between 6 and 23 months old	Comparative cross-sectional	Child nutrition, health seeking, hygiene
Flax et al., 2022	Nigeria	Community	Father-mother pairs with a child between 6 and 23 months of age (Baseline 497; endline 495)	Pre-post study	Child nutrition-complementary feeding
Dumbaugh et al., 2014	Ghana	Community	Adult women with newborns (25)	Cross-sectional	Newborn care, Delivery

			Adult men : interviews(12), FDGs (25)		
Kansiime et al., 2017	Uganda	Community	Households with a male caregiver and a child between 6 and 59 months (346)	Cross-sectional	Child nutrition, Health-seeking
Mangeni et al., 2013	Kenya	Hospital-Antenatal care clinic	Couples with at least one child younger than 3 years (730)	Cross-sectional	Antenatal care
Nantamu 2011	Uganda	Community	Adult men with expectant spouses or children younger than 2 years old	Cross-sectional	Antenatal care, delivery
Kura et al., 2013	New Guinea	Community	Adult married men currently living with their wife and child	Cross-sectional	Antenatal care, delivery
Abate and Belachew, 2017	Ethiopia	Community	Households (749)	Cross-sectional	Child nutrition
Allotey et al., 2022	Nigeria	Community	Father-mother pairs (495)	Cross-sectional	Child nutrition-complementary feeding
Alupo et al., 2020	Uganda	Community	Adult males with expectant partners (135)	Cross-sectional	Antenatal care
Atuahene et al., 2017	Ghana	Community	Adult men married to partners who were expectant or	Cross-sectional	Delivery, post-partum, family planning

			had a child younger than 5 years old		
Dinga et al., 2018	Kenya	Hospital	Father-mother pairs mothers were pregnant at 23-27 weeks gestation attending ANC	RCT	Child nutrition
Daniele 2017	Burkina Faso	Hospital	Pregnant females older than 15 at 20-36 weeks gestation who were cohabiting with male partner or husband	Mixed methods study: RCT and Cross-sectional qualitative	Antenatal care, post-partum
Dakurah, 2021	Ghana	Hospital	Married but expectant women living with their husbands (218)	Cross-sectional	Antenatal care
Drysdale et al., 2021	South Africa	Hospital	Adult women <25 weeks gestation (212)	RCT	Antenatal care, delivery
Funk et al., 2020	Ethiopia	Community	Adult fathers with children between 2 and 59 months (24)	Cross-sectional	Health- seeking
Ganle and Dery, 2015	Ghana	Community	Adult men (25) Adult female spouses (25) Key informants (30)	Cross-sectional	Antenatal care, Postnatal care

Rakotomanana, 2020	Madagascar	Community	Mothers (46) and fathers (17) of children between 6 and 23 months old	Cross-sectional	Child nutrition
Garcia et al., 2022	Kenya	Community	Two parent households with a child 16-34 months old (681)	Cluster RCT	cognitive child development
Martin et al., 2021	Tanzania	Community	Couples with infant 6-18 months old (50 mothers; 40 fathers)	Trial of improved practices	Child nutrition-complementary feeding
Mukasa, 2012	Uganda	Community	Working fathers (200) and their working spouses (200)	Cross-sectional	Direct childcare
Sonkola et al., 2019	Kenya	Community	Father mother pairs with infants (61)	Cross-sectional	Health-seeking
Nyondo et al., 2015	Malawi	Hospital	Expectant women <30 weeks gestation attending ANC without their spouse (Intervention 230, Control 232)	RCT	Antenatal PMTCT
Oryono et al., 2021	Rwanda	Community	Primary caregivers of children aged 24 to 47 months with diagnosis of PTM	Cross-sectional	Direct childcare

			birth, HIE, LBW (226children)		
Tweheyo et al., 2010	Uganda	Community	Adult men with partners who had full term delivery within 24 months (331)	Cross-sectional	Antenatal care
Jensen et al., 2020	Rwanda	Community	Families with child aged 6-36 months	Cluster RCT	Direct childcare

Figure 1: Representation of article selection

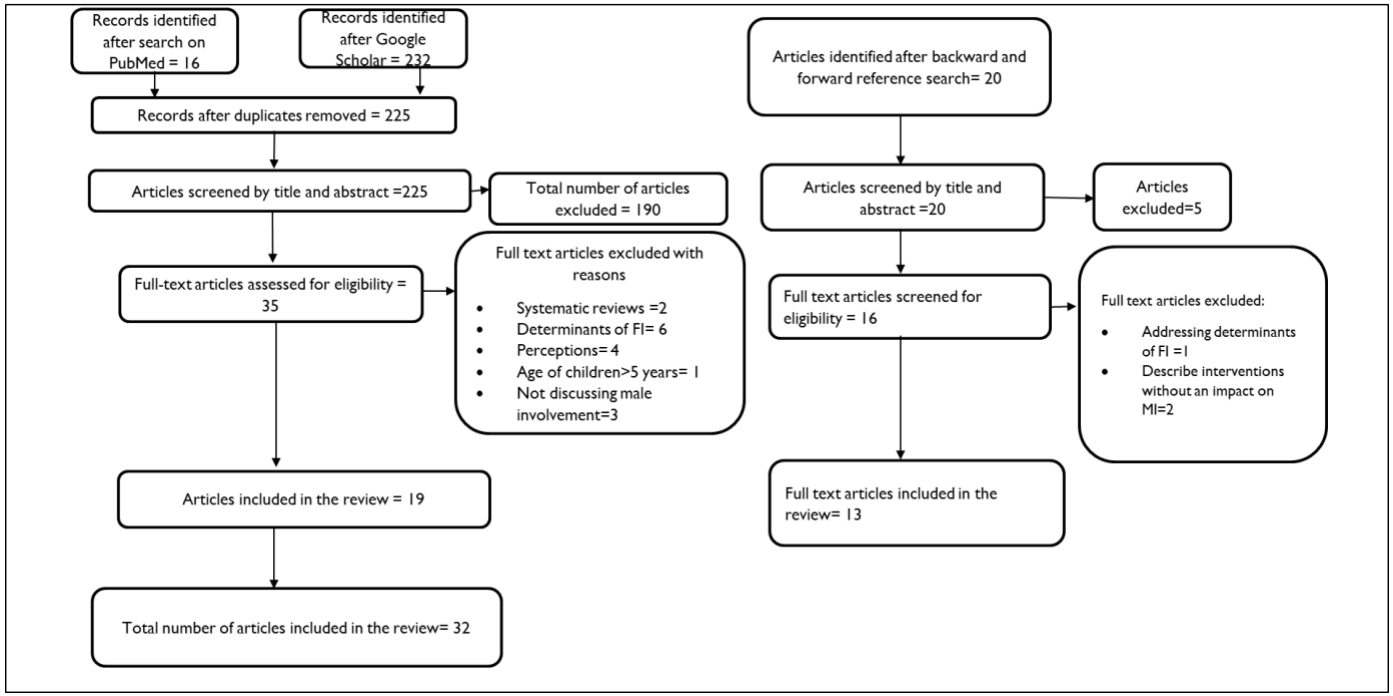

Table 3: Associations between father involvement and maternal and child health outcome

Author (Year)	Country	Study type and sample size	Intervention to increase FI	FI activities	Maternal outcome	Child outcome
August et al., 2016 [17]	Tanzania	Quasi-experimental (1378 interventional group, 1359 control)	Community-based education	The intervention had a significant net Interventional Effect (NIE) of: • 16.4% on males accompanying partners to ANC • 33.1% on males accompanying partners to delivery • 38.5% on shared decision-making about place of delivery • 27% on males knowledge of at least 3 danger signs in each phase • 26.8% on BP/CR actions • 41.1% on overall male involvement index	Facility deliveries increased significantly in the intervention area, but insignificantly compared to the control district. The net effect was not significant	
Flax et al., 2022 [33]	Nigeria	Pre-post study (baseline 497 father-mother pairs, endline 495 father-mother pairs with children	Social and behavioral change communication (SBCC) Interventions targeted	% of fathers providing financial support and purchasing food increased significantly (79% to 90%) % of fathers playing an informational/advisory role		There are no associations between fathers' exposures and complementary feeding practices

		between 6 and 23 months old)	towards fathers	significantly increased (38% to 51%) No significant change in child-directed engagement.		
Nantamu (2011) [20]	Uganda	Cross-sectional descriptive (434 men with children younger than 2 years)	Fathers formally invited to ANC and PNC clinics by means of invitation cards	Men who received invitation cards were more likely to attend ANC and PNC (aOR=2.98 and 3.48)		
Dinga et al (2018) [22]	Kenya	RCT (290 father-mother pairs with 145 in control and 145 in intervention group)	Couples educated about child nutrition in the antenatal period	94.2% of mothers in intervention arm reported receiving support from their spouses compared to 45% in the control group. FI was characterized by • purchasing food for the baby • motivating the mother to continue breastfeeding • practicing optimum infant feeding • helping with other household chores • preparing the child's food • feeding the child		Intervention was significantly associated with: • higher rates of breastfeeding initiation withing an hour • EBF at 6 months • later introduction of complementary feeds • higher attainment of minimum meal frequency and minimum acceptable diet • less wasting and underweight at 9 months

						• fewer instances of illness and ARTIs at 3 months • fewer instances of diarrhea, ARTIs and fever at 6 months • more instances of fever at 9 months
Daniele (2017) [9]	Burkina Faso	Mixed methods study; RCT and cross-sectional qualitative 1144 pregnant women and their spouses Intervention arm (583) Control (561)		• Group discussion with male partners of expectant women. • Couple-counselling session during pregnancy • Male partner participation in first postnatal consultation in the facility prior to discharge	Intervention was associated with • No difference in ANC attendance • Increased uptake of outpatient PNC attendance (RD=11.7%) • Increased uptake of modern contraceptives at eight months (RD= 6.4%) • Increased uptake of long-acting/ permanent contraceptive methods at eight months (RD=8.1%) • Increased timely uptake of contraceptive methods (RD=7.6%)	• Intervention increased the practice of EBF at three months (RD=11.4%)

					• Reduced unmet need for contraceptive (RD=-4.8%)	
Drysdale et al., 2021 [3]	South Africa	Cross-sectional study within a separate RCT Pregnant women (212)	Invitation cards issued to women attending ANC	Antenatal father involvement by accompanying their partner to ANC, study ultrasound and birth. They also provide postnatal and antenatal practical, financial and emotional support.	• Antenatal PI had no significant direct impact on antenatal maternal depression. • Postnatal PI directly impacted postnatal maternal depression-better postnatal maternal health	• Antenatal PI had no direct or indirect impact on birth weight • Postnatal PI had no direct or indirect impact on EBF
Garcia et al., 2021 [2]	Kenya	RCT	Responsive parenting intervention-community education program	• Provide encouragement to partners • Help with household chores • Involve mother in decision making • Child directed care: reading, writing, story-telling	• Intrahousehold involvement was associated with reduced maternal levels of depressive and stress symptoms	• CDE had no significant association with overall child development, cognition, receptive or expressive language. • Intrahousehold involvement was associated with statistically significant improvements in overall child development, use of receptive and

						expressive language and better dietary diversity
Nyondo et al., 2014 [35]	Malawi	RCT	Use of invitation cards (230)	Antenatal FI by accompanying their spouse to PMTCT clinics	No significant association between HIV testing/being on ARVs and father involvement in PMTCT	
Oryono et al., 2021[4]	Rwanda	Cross-sectional		Child-directed engagement by participating in direct childcare everyday		• The number of childcare activities a father participated in was associated significantly with overall development; increased number of FI activities were associated with a lower risk of developmental delay
Aluisio et al., 2011[31]	Kenya	Cohort study		• Prenatal male attendance of ANC clinics Previous male partner testing for HIV		Male attendance and previous testing associated with • lower risks of transmission (HR=0.58 and HR=0.57 respectively)

						• lower risk of combined outcome of vertical transmission and infant mortality (HR=0.52 and HR=0.65 respectively) Male attendance associated with • lower mortality risk in uninfected infants (HR=0.57) but • a greater mortality risk in HIV-infected infants (HR=2.07)
Bilal et al.,2014 [32]	Ethiopia	Comparative cross-sectional		Father involvement in early childhood through: • provision of food or finances • caring for children when mothers are not around • routine childcare activities • child health-seeking activities • child-feeding activities		• Paternal knowledge of important things needed to keep children healthy was significantly associated with dietary diversity OR 3.43 (urban) and 2.58 (rural) • Paternal knowledge of food groups was

						significantly associated with dietary diversity OR of 5.28 (urban) and 8.38 (rural) • Paternal knowledge of childcare was significantly associated with dietary diversity OR of 4.62 (urban) and 2.88 (rural) • Paternal practice of routine childcare activities was significantly associated with better dietary diversity OR of 2.32 (urban) and 1.73 (rural) • Paternal provision of children's needs was significantly associated with better dietary

						diversity OR of 3.43 (urban) and 1.73 (urban) • Paternal involvement in child feeding activities was associated with better dietary diversity OR in urban regions of 3.42
Flax et al., 2022 [33]	Nigeria	Pre-post study		Father involvement in child nutrition during early childhood by • providing finances and purchasing food • providing information on child feeding • assisting partners with other chores • feeding the child directly, washing, the child's hands before eating and teaching the child how to feed themselves	No associations between fathers' exposures and complementary feeding practices	
Kansiime et al., 2017 [27]	Uganda	Cross-sectional		Father involvement in early childhood by purchasing food for the child and lactating mother, facilitating		• Paternal provision of transport to child clinics was

				transport to child health clinics, making final decisions on exclusive breastfeeding and complementary feeding, assisting mother with household chores and farming activities, providing appropriate information on breastfeeding and young child feeding and feeding the child during meal times		associated with good child nutritional status (aOR =0.5) • Low male involvement scores were associated with undernutrition (aOR=1.8)
Mangeni et al., 2012 [34]	Kenya	Cross-sectional		Prenatal father involvement by accompanying the spouse to ANC	The odds of utilizing a skilled birth attendant were 2.8 times higher for women accompanied by their husbands to at least one ANC visit than for women who had attended ANC but were not accompanied by their husbands (aOR 2.17, CI 1.49-5.36).	
Abate and Belachew, 2017 [10]	Ethiopia	Cross-sectional		Father involvement in early childhood through provision of finances for childcare, providing information about optimal childcare, feeding the child, facilitating child healthcare-seeking		• Father involvement in childcare and feeding (direct child engagement) was associated with higher height for age z scores by 0.1 (HAZ)