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Father Involvement in Complementary Feeding Practices and Nutritional Status among Children Aged 6–24 Months: A Systematic Review Based on Friedman Family Theory

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ABSTRACT

Nutritional problems among children aged 6–24 months remain a major public health concern, particularly those related to suboptimal complementary feeding (CF) practices. Father involvement in child feeding has gained increasing attention; however, its role within family systems remains insufficiently synthesized. This study aimed to systematically review the association between father involvement, complementary feeding practices, and children's nutritional status using the Friedman Family Theory framework. A systematic review was conducted following the PRISMA 2020 guidelines. Literature searches were performed across PubMed, Scopus, Web of Science, ScienceDirect, and Google Scholar for studies published between 2018 and 2025. A total of 15 studies met the inclusion criteria, comprising cross-sectional, cohort, randomized controlled trial, qualitative, and mixed-methods designs. Data were synthesized narratively due to heterogeneity in study design and measurement. The findings indicate that father involvement is consistently associated with improved complementary feeding practices, including dietary diversity, meal frequency, feeding routines, and adherence to recommended feeding guidelines. In contrast, evidence linking father involvement to children's nutritional status (e.g., height-for-age, weight-for-age, and weight-for-height) is more heterogeneous and less consistent across studies, reflecting the multifactorial determinants of child growth. Direct paternal engagement in feeding activities showed stronger associations with feeding outcomes compared to indirect forms such as financial support. The main limitations of this review include the predominance of cross-sectional studies, variability in the measurement of father involvement, reliance on self-reported data, and restriction to English-language publications. These limitations may affect the comparability and generalizability of findings. In conclusion, father involvement plays a significant and consistent role in improving complementary feeding practices, while its impact on anthropometric outcomes remains variable. Integrating fathers into family-centered nutrition interventions is essential to strengthen caregiving dynamics and optimize child feeding practices.

Keywords: Father involvement; Complementary feeding; Nutritional status; Friedman Family Theory; Child caregiving

INTRODUCTION

Nutritional problems among children aged 6–24 months remain a major public health concern globally and in Indonesia. The first 1,000 days of life represent a critical developmental window that strongly influences physical growth, cognitive development, and long-term health outcomes. In this period, appropriate complementary feeding practices, including timely introduction of complementary foods, adequate feeding frequency, and sufficient dietary diversity, are essential for ensuring optimal nutritional intake. Inadequate complementary feeding may contribute to undernutrition, increased susceptibility to infection, impaired development, and stunting. The World Health Organization emphasizes that appropriate complementary feeding practices are key determinants of nutritional status and survival among infants and young children, particularly during the transition from exclusive breastfeeding to family foods [1-3].

Despite global efforts to improve infant and young child feeding practices, malnutrition remains widespread. Recent estimates indicate that more than 148 million children under five years of age are affected by stunting worldwide [4]. In Indonesia, the prevalence of stunting declined from 30.8% in 2018 to 21.5% in 2023; however, this level still exceeds the WHO threshold for a non–public health concern (<20%). Regional disparities also persist. In South Sulawesi Province, the prevalence of stunting remained relatively high at approximately 27% in 2023 [5]. Although some districts, including Gowa, have shown improvements, suboptimal complementary feeding practices, such as limited food variety, inappropriate feeding frequency, and delayed introduction of complementary foods, continue to contribute to persistent child nutrition problems [6].

Child feeding practices have traditionally been considered the responsibility of mothers, while fathers have often been viewed primarily as economic providers. However, family structures and caregiving dynamics are evolving, and increasing attention has been directed toward the role of fathers in childcare and feeding practices [7]. Emerging evidence suggests that father involvement may influence complementary feeding through

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multiple pathways, including household decision-making, food procurement, emotional support for mothers, and shared caregiving responsibilities [8].

Several studies conducted in diverse cultural contexts indicate that father involvement is associated with improved complementary feeding behaviors, including better dietary diversity, more consistent feeding routines, and greater adherence to feeding recommendations [9,10]. When fathers participate in caregiving activities or support mothers in feeding decisions, mothers may experience reduced caregiving burden and greater capacity to maintain recommended feeding practices [11]. Conversely, limited father involvement may constrain mothers' ability to implement optimal feeding practices due to time constraints, emotional stress, or limited household support. These findings highlight the importance of understanding father involvement as a potential component of family-based strategies for improving child nutrition [12].

Although the importance of fathers in child feeding has increasingly been recognized, the existing literature presents several limitations. First, many studies examine father involvement primarily as a behavioral variable without considering broader family dynamics or caregiving systems [13]. Second, findings regarding the relationship between father involvement and child nutritional outcomes remain inconsistent. While several studies report positive associations between father participation and complementary feeding practices, evidence linking father involvement directly to anthropometric indicators such as height-for-age or weight-for-age remains less consistent [14].

Additionally, previous research has often focused on individual determinants of feeding practices such as maternal knowledge, socioeconomic status, and cultural norms without sufficiently integrating family-level processes that shape caregiving behavior [15]. Few reviews have synthesized evidence on father involvement within a comprehensive theoretical framework that captures the complexity of family roles, communication patterns, and caregiving functions. As a result, the mechanisms through which father involvement may influence complementary feeding remain insufficiently conceptualized [16].

Given these gaps, a family-centered theoretical perspective is needed to better understand how father involvement interacts with other family dynamics in shaping complementary feeding practices. This review addresses that need by synthesizing existing evidence through the lens of Friedman Family Theory, a framework widely used in family and community health nursing to analyze family structure, family functions, and developmental processes within households [17]. Friedman Family Theory conceptualizes the family as a dynamic system composed of three interrelated dimensions: family structure, family functions, and family development. Family structure refers to the roles, relationships, and organization of family members, including caregiving roles and authority patterns [18]. Family functions describe how families perform essential tasks such as caregiving, communication, decision-making, and emotional support. Family development focuses on how family roles and responsibilities evolve across life stages.

These dimensions provide a useful framework for understanding father involvement in complementary feeding. Within this perspective, father participation in feeding may reflect structural roles within the household, functional caregiving responsibilities, and developmental adjustments in parenting during early childhood [19]. Compared with other family theories, such as Bowen's Family Systems Theory, which primarily emphasizes emotional interdependence, or the Calgary Family Assessment Model, which focuses on clinical family assessment, Friedman Family Theory offers a practical framework for examining caregiving roles and health behaviors within community and public health contexts. Its emphasis on family structure, functions, and development aligns closely with the multidimensional processes involved in complementary feeding and child nutrition [20,21].

Based on this perspective, the present literature review aims to synthesize current evidence on the relationship between father involvement and complementary feeding practices among children aged 6–24 months, and to interpret these findings using the framework of Friedman Family Theory. By integrating empirical findings within a family systems perspective, this review seeks to provide a clearer conceptual understanding of how family dynamics, particularly father involvement, may influence complementary feeding practices and child nutrition outcomes.

MATERIALS AND METHODS

Study Design

This study employed a systematic literature review design following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to ensure transparency, methodological rigor, and reproducibility. The objective of this review was to synthesize empirical evidence regarding the relationship between father involvement and complementary feeding practices among children aged 6–24 months. In this study, Friedman Family Theory was not used as a search keyword but was applied during the analytical stage as a conceptual framework to interpret the findings. This approach enables empirical studies of paternal involvement in child feeding to be interpreted through the dimensions of family structure, family function, and family development, as proposed in Friedman Family Theory. The review protocol was developed before the study to guide the research process, including the formulation of research questions, eligibility criteria, search strategy,

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screening procedures, and quality appraisal methods. However, the protocol was not formally registered in a public database.

Search Strategy

Table 1. Search Strategy by Database

Database	Search String	Filters
PubMed	("father involvement" OR "paternal involvement") AND ("complementary feeding" OR "infant feeding")	English, 2018–2025
Scopus	TITLE-ABS-KEY ("father involvement" OR "paternal participation") AND ("complementary feeding" OR "child nutrition")	Article, English
Web of Science	TS=("father involvement") AND TS=("complementary feeding" OR "infant feeding")	2018–2025
ScienceDirect	("father involvement" AND "complementary feeding")	Research articles
Google Scholar	"father involvement" AND "complementary feeding"	First 200 relevant records

A comprehensive literature search was conducted across five electronic databases, namely PubMed, Scopus, Web of Science, ScienceDirect, and Google Scholar. The search aimed to identify relevant studies published between 2018 and 2025 to capture recent developments in research on father involvement and complementary feeding practices. The search strategy combined controlled vocabulary and free-text keywords related to paternal engagement and infant feeding practices. The primary keywords included "father involvement," "paternal involvement," "father participation," and "paternal engagement," which were combined with feeding-related terms such as "complementary feeding," "infant feeding," "child feeding," "dietary diversity," and "child nutrition." Boolean operators such as AND and OR were applied to refine the search process and improve the relevance of retrieved articles. Importantly, the term "Friedman Family Theory" was not included as a search keyword because the theory was used solely as an analytical framework rather than a search criterion. In addition to database searching, the reference lists of selected articles were manually screened to identify additional relevant studies.

Operational Definition of Father Involvement

In this review, father involvement was operationally defined as any form of paternal participation in caregiving and feeding activities related to complementary feeding among children aged 6–24 months. This involvement may include direct participation in feeding activities; decision-making related to child nutrition; emotional or practical support for mothers during feeding practices; involvement in food purchasing or preparation; and participation in mealtime interactions. Studies that measured paternal engagement through indicators such as caregiving participation, shared decision-making, supportive roles, or direct feeding practices were considered relevant for inclusion in this review.

Eligibility Criteria and Study Selection

Studies were selected based on predefined inclusion and exclusion criteria. Eligible studies were empirical research involving fathers of children aged 6–24 months that examined complementary feeding practices or related feeding behaviors. Quantitative, qualitative, and mixed-methods studies published in English between 2018 and 2025 were considered eligible. Studies focusing exclusively on breastfeeding without examining complementary feeding practices were excluded. Additionally, articles that addressed paternal roles unrelated to caregiving or feeding, such as economic provision only, were excluded. Review articles, editorials, commentaries, and studies lacking extractable data related to father involvement were also excluded from the analysis.

All retrieved references were imported into Mendeley reference management software to facilitate organization and removal of duplicate records. The screening process was conducted in three stages: duplicate removal, title and abstract screening, and full-text eligibility assessment. Two reviewers independently performed the screening to minimize selection bias. Discrepancies between reviewers were resolved through discussion and consensus. A total of 1,200 records were identified through searches of electronic databases and registers. After removing irrelevant entries and preparing the dataset for screening, 700 records were evaluated based on titles and abstracts. From this stage, a subset of 80 reports was sought for full retrieval to enable in-depth assessment. Of these, 40 full-text reports were successfully retrieved and evaluated for eligibility according to the predefined inclusion and exclusion criteria. Following this rigorous appraisal, 15 studies met all requirements and were included in the final systematic review.

During the full-text screening stage, several studies were excluded due to specific reasons. The most common reasons for exclusion included studies focusing exclusively on breastfeeding practices, lack of specific

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measurement of father involvement, absence of complementary feeding outcomes, and articles that were review papers or conceptual discussions rather than empirical research.

Quality Appraisal

The methodological quality of the included studies was assessed using established critical appraisal tools appropriate to the study design. Quantitative studies were evaluated using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional Studies, which examines aspects such as sampling procedures, measurement validity, identification of confounding factors, and statistical analysis. Qualitative studies were assessed using the JBI Checklist for Qualitative Research, which evaluates methodological coherence, researcher reflexivity, and credibility of interpretations. Mixed-methods studies were evaluated using the Mixed Methods Appraisal Tool (MMAT), which examines the integration of qualitative and quantitative components within a single study design. The quality appraisal process was conducted independently by two reviewers to ensure objectivity. Each study was categorized as having high, moderate, or low methodological quality based on the overall appraisal results. Most of the included studies were rated as having moderate methodological quality, primarily due to the reliance on self-reported measures of father involvement and limited adjustment for potential confounding variables.

Data Extraction

Data extraction was performed using a standardized extraction form developed for this review. The extraction process captured key study characteristics, including author information, year of publication, country or study setting, study design, sample characteristics, measurement of father involvement, complementary feeding indicators, and main findings. The extracted data also included information regarding measurement instruments used to assess feeding practices and paternal participation. To ensure accuracy and consistency, the data extraction process was conducted independently by two reviewers, and any discrepancies were resolved through discussion.

Data Synthesis and Application of Friedman Family Theory

Due to the heterogeneity of study designs, measurement instruments, and outcome indicators, a narrative synthesis approach was adopted. After the empirical findings were extracted from each study, the results were organized and interpreted using the conceptual dimensions of Friedman Family Theory. In this synthesis process, father involvement findings were categorized according to three primary dimensions of the theory: family structure, family function, and family development. The family structure dimension was used to interpret how paternal roles and authority patterns influence feeding decisions within households. The family function dimension was used to analyze caregiving activities, communication patterns, and decision-making processes related to complementary feeding practices. The family development dimension was used to examine how parental roles evolve during the early stages of child development and how these transitions influence feeding practices. Through this theoretical lens, empirical findings were integrated to provide a broader understanding of how family dynamics shape paternal engagement in complementary feeding.

Methodological Limitations

Several methodological limitations should be acknowledged in this review. First, the inclusion of English-language publications only may have excluded relevant studies published in other languages. Second, most of the included studies used cross-sectional designs, which limit the ability to establish causal relationships between father involvement and complementary feeding outcomes. Third, the measurement of father involvement varied considerably across studies, which may affect the comparability of findings. Finally, although a predefined review protocol guided the research process, the protocol was not formally registered in a systematic review registry, which may limit external verification of the methodological procedures.

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RESULTS

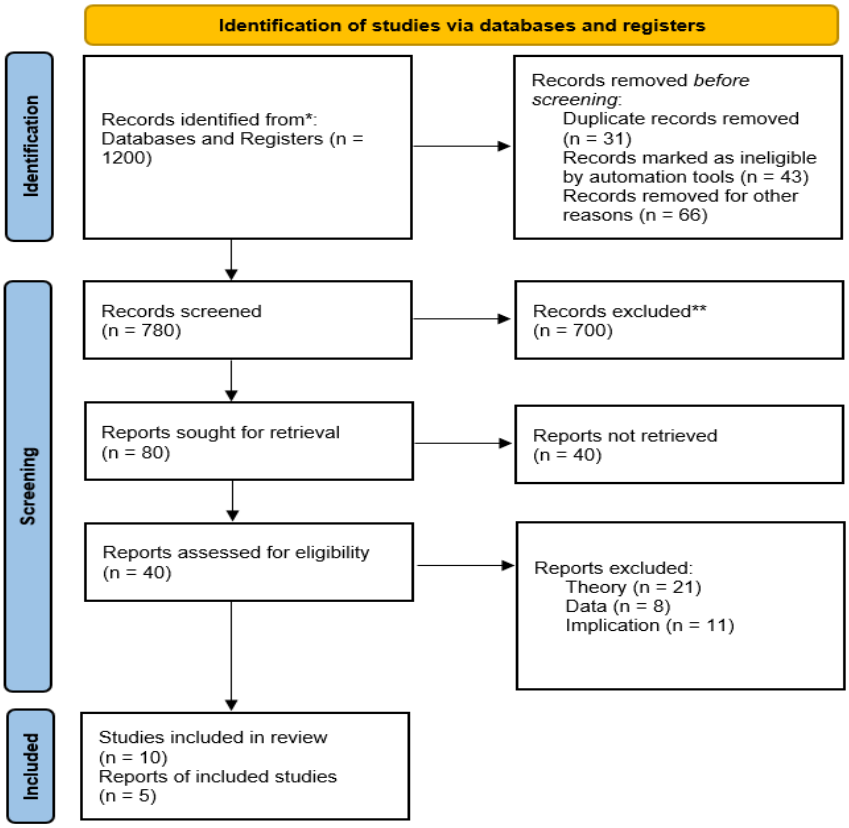

Figure 1. Flow Diagram PRISMA

Based on Figure 1, a total of 1,200 records were identified through searches of electronic databases and registers. After removing irrelevant entries and preparing the dataset for screening, 700 records were evaluated based on titles and abstracts. From this stage, a subset of 80 reports was sought for full retrieval to enable in-depth assessment. Of these, 40 full-text reports were successfully retrieved and evaluated for eligibility according to the predefined inclusion and exclusion criteria. Following this rigorous appraisal, 15 studies met all requirements and were included in the final systematic review. This selection process ensured that only studies with methodological rigor, relevance to father involvement and complementary feeding, and completeness of reporting contributed to the final evidence synthesis.

Table 2. Father Involvement and Complementary Feeding Practices in Early Childhood: A Friedman Family Theory

Author, Year	Study Design	Sample Characteristics	Category of Father Involvement	Indicators of Father Involvement	Feeding Practice Outcomes	Nutritional Status Outcomes	Key Findings
Smith et al., 2021 [22]	Cross-sectional	412 father–mother–child dyads (6–24 months)	Physical involvement	Feeding engagement, meal preparation, and decision-making	Dietary diversity, meal frequency	WAZ, HAZ, WHZ	Direct paternal participation improved dietary diversity and feeding regularity

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Author, Year	Study Design	Sample Characteristics	Category of Father Involvement	Indicators of Father Involvement	Feeding Practice Outcomes	Nutritional Status Outcomes	Key Findings
Li & Zhang, 2022 [23]	Cohort	380 toddlers (6–36 months)	Physical involvement	Daily feeding time, co-feeding	Timely introduction of complementary feeding	HAZ	Co-feeding practices were associated with improved linear growth
Osei et al., 2023 [24]	Randomized controlled trial	210 families	Physical involvement	Feeding role reinforcement modules	Complementary feeding diversity	WAZ	Intervention encouraging paternal feeding roles increased dietary diversity and child weight
Almeida et al., 2024 [1]	Qualitative	25 fathers	Supportive involvement	Emotional presence, daily caregiving	Feeding routines	Perceived nutritional adequacy	Cultural norms limited direct paternal feeding participation
Rahman et al., 2023 [25]	Mixed-method	32 fathers, 28 mothers	Supportive involvement	Emotional support, financial support, feeding assistance	Responsive feeding, hygiene practices	MUAC, WHZ	Low paternal knowledge reduced feeding quality
Muthoni et al., 2022 [26]	Cross-sectional	275 dyads	Physical involvement	Co-feeding, nutritional decision-making	Meal frequency	WHZ	Co-feeding associated with lower risk of wasting
Patel & Singh, 2021 [27]	Cross-sectional	318 fathers	Supportive involvement	Feeding supervision, healthcare support	Timely complementary feeding introduction	WAZ	Early paternal support improved adherence to feeding recommendations

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Author, Year	Study Design	Sample Characteristics	Category of Father Involvement	Indicators of Father Involvement	Feeding Practice Outcomes	Nutritional Status Outcomes	Key Findings
Kamal et al., 2024 [28]	Cohort	354 infants	Physical involvement	Engagement in daily childcare	Meal frequency	HAZ, WHZ	Fathers engaged in daily care contributed to improved growth indicators
Hassan & Noor, 2023 [14]	Cross-sectional	220 fathers	Physical involvement	Shared feeding responsibility	Dietary adequacy	BMI-for-age	Shared feeding responsibilities improved complementary feeding adequacy
García et al., 2022 [21]	Qualitative	19 fathers	Supportive involvement	Cultural feeding norms, paternal authority	Feeding patterns	Perceived child nutrition	Fathers influenced feeding practices through cultural norms
Boateng et al., 2024 [4]	Cross-sectional	402 caregivers	Resource involvement	Household food purchasing decisions	Dietary diversity	WAZ	Food purchasing roles influenced household dietary diversity
Khan et al., 2021 [29]	Cross-sectional	298 fathers	Physical involvement	Feeding motivation, supervision	Meal composition	HAZ	Motivated fathers supported better complementary food composition
Leung & Tan, 2023 [30]	Cross-sectional	189 dyads	Physical involvement	Shared parenting roles, self-feeding support	Responsive feeding	WAZ	Shared parenting improved feeding responsiveness
Mohamad et al., 2024 [31]	Mixed-method	64 fathers	Supportive involvement	Psychological and emotional involvement	Complementary feeding planning	MUAC	Emotional support improved maternal feeding

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Author, Year	Study Design	Sample Characteristics	Category of Father Involvement	Indicators of Father Involvement	Feeding Practice Outcomes	Nutritional Status Outcomes	Key Findings
							performance
Wang et al., 2025 [32]	Cohort	516 infants	Physical involvement	Feeding consistency, routine setting	Feeding routine stability	HAZ, WAZ	Routine-setting fathers improved feeding stability and growth outcomes

A total of 15 studies met the eligibility criteria and were included in the final synthesis. The studies consisted of various research designs, including cross-sectional, cohort, randomized controlled trial, qualitative, and mixed-methods studies, with sample sizes ranging from small qualitative samples to large cohort populations. Most studies were conducted in low- and middle-income countries.

Direct involvement refers to fathers' active participation in feeding-related activities, such as co-feeding, meal preparation, feeding supervision, and establishing feeding routines. Emotional support and decision-making involvement include fathers' roles in providing encouragement to mothers, participating in feeding-related decisions, and shaping household norms around child nutrition. Resource or financial support involvement refers to fathers' contributions through food purchasing, income provision, or ensuring household food availability.

Across the included studies, direct involvement appears to have the strongest and most consistent association with improved complementary feeding practices, particularly dietary diversity, meal frequency, and feeding routines. Fathers who are directly engaged in feeding activities are more closely linked to proximal behavioral outcomes. In contrast, resource or financial support alone shows more limited and less consistent associations with feeding practices, especially when not accompanied by active participation in caregiving or decision-making. Emotional and decision-making support tends to have an indirect influence, often mediated through maternal caregiving capacity and household coordination.

Table 3. Enhanced Data Extraction With Risk-of-Bias Assessment

Study	Design	Main Bias Risk	Overall Assessment
Smith et al., 2021 [22]	Cross-sectional	Self-report bias; confounding	Moderate
Li & Zhang, 2022 [23]	Cohort	Loss to follow-up	Low
Osei et al., 2023 [24]	RCT	Allocation concealment unclear	Moderate
Almeida et al., 2024 [1]	Qualitative	Researcher positionality	Moderate
Rahman et al., 2023 [25]	Mixed-method	Small sample; contextual bias	Moderate
Muthoni et al., 2022 [26]	Cross-sectional	Measurement bias	Moderate
Patel & Singh, 2021 [27]	Cross-sectional	Social desirability	High
Kamal et al., 2024 [28]	Cohort	Attrition	Low
Hassan & Noor, 2023 [14]	Cross-sectional	Self-reported feeding practices	Moderate
García et al., 2022 [21]	Qualitative	Limited transferability	Moderate
Boateng et al., 2024 [4]	Cross-sectional	Confounding	Moderate
Khan et al., 2021 [29]	Cross-sectional	Recall bias	High
Leung & Tan, 2023 [30]	Cross-sectional	Reporting bias	Moderate
Mohamad et al., 2024 [31]	Mixed-method	Selection bias (volunteers)	Moderate
Wang et al., 2025 [32]	Cohort	Missing data	Low

Based on Table 3, the methodological quality assessment revealed varying levels of bias across the included studies, with clear patterns emerging according to study design. Cohort studies such as Li and Zhang (2022), Kamal et al. (2024), and Wang et al. (2025) consistently demonstrated a low risk of bias due to stronger control of confounding factors, more structured data collection procedures, and longitudinal follow-up that enabled clearer temporal relationships between father involvement and child feeding outcomes. Importantly, these higher-quality studies generally reported positive associations between paternal engagement and improved

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complementary feeding practices or child growth indicators, suggesting that the observed relationships are not solely driven by lower-quality evidence.

However, the majority of studies included in the review were cross-sectional in design and were classified as having a moderate risk of bias. Common methodological concerns in these studies included reliance on self-reported measures of father involvement, potential recall bias, and limited control for confounding variables. While most cross-sectional studies reported positive associations between father involvement and feeding indicators such as dietary diversity or meal frequency, the inherent limitations of cross-sectional designs restrict causal interpretation. Furthermore, two cross-sectional studies (Patel and Singh, 2021; Khan et al., 2021) were assessed as having a high risk of bias due to strong susceptibility to social desirability and recall bias, which may have inflated reported levels of paternal engagement.

Qualitative studies (Almeida et al., 2024; García et al., 2022) and mixed-method studies (Rahman et al., 2023; Mohamad et al., 2024) were generally categorized as having a moderate risk of bias. In qualitative research, limitations were primarily related to the restricted transferability of findings and the potential influence of researcher positionality on data interpretation. Mixed-method studies faced additional methodological challenges, including small sample sizes and volunteer-based recruitment, which may limit the generalizability of the findings.

While cross-sectional studies, most of which were rated as having moderate risk of bias, also reported similar positive associations, their findings should be interpreted with caution due to limitations such as self-reported measures and limited control of confounding variables. Nevertheless, the consistency of findings across both low-risk longitudinal studies and moderate-risk cross-sectional studies strengthens the overall evidence, particularly regarding feeding practices.

However, for nutritional status outcomes, even studies with a lower risk of bias showed more variable results, reinforcing the conclusion that anthropometric indicators are influenced by multiple factors beyond father involvement alone. This pattern suggests that the evidence base is stronger and more consistent for feeding practices than for nutritional status outcomes.

Characteristics of the Included Studies

The included studies examined different dimensions of father involvement in complementary feeding. These dimensions were categorized into three main types: physical involvement, supportive involvement, and resource-based involvement. Physical involvement referred to direct participation in feeding-related activities, such as co-feeding, meal preparation, and daily childcare. Supportive involvement included emotional support, supervision, and participation in decision-making related to child nutrition. Resource-based involvement referred to fathers' contributions through food purchasing or financial support for household food provision. Across the included studies, the indicators used to measure father involvement varied considerably, reflecting differences in conceptualization and measurement approaches across research settings.

Father Involvement and Complementary Feeding Practices

Most of the included studies examined the relationship between father involvement and complementary feeding practices, which represent proximal behavioral outcomes. The primary feeding practice indicators included dietary diversity, meal frequency, timely introduction of complementary foods, feeding routines, hygiene practices, and responsive feeding behaviors.

Studies consistently indicated that the physical involvement of fathers in feeding-related activities had a stronger association with improved feeding practices. For example, fathers who actively participated in feeding routines, meal preparation, or co-feeding were associated with higher dietary diversity and more regular feeding schedules. Evidence from randomized and cohort studies suggested that interventions encouraging paternal participation in feeding roles increased dietary diversity and improved adherence to complementary feeding recommendations. Similarly, shared feeding responsibilities and direct engagement in childcare activities were linked to improved meal frequency and more consistent feeding routines.

Supportive forms of father involvement also played a role in shaping feeding behaviors, although their influence was often indirect. Emotional support and shared decision-making between parents were associated with improved maternal capacity to maintain appropriate feeding practices, including responsive feeding and hygiene during food preparation. However, the effects of supportive involvement appeared to be mediated through maternal caregiving roles rather than through direct feeding actions.

In contrast, resource-based involvement, such as fathers' role in food purchasing or financial provision, showed more limited effects on feeding practices when considered independently. Although food procurement was associated with improved dietary diversity in some studies, financial support alone did not consistently translate into improved complementary feeding behaviors unless accompanied by direct engagement in feeding or decision-making processes.

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Father Involvement and Child Nutritional Status

Several studies also examined the relationship between father involvement and child nutritional status, which represents a more distal health outcome. Nutritional indicators used across the studies included weight-for-age (WAZ), height-for-age (HAZ), weight-for-height (WHZ), mid-upper arm circumference (MUAC), and body mass index-for-age (BMI-for-age). The findings regarding nutritional status outcomes were more heterogeneous compared with feeding practice outcomes. Some cohort and intervention studies reported positive associations between active father involvement and improved growth indicators, particularly height-for-age and weight-for-age. Fathers who regularly participated in feeding routines or childcare activities were associated with improved growth trajectories in infants and young children.

However, several cross-sectional studies reported weaker or inconsistent associations between father involvement and anthropometric indicators. This variation may be attributed to the multifactorial nature of child growth, which is influenced not only by feeding practices but also by factors such as infection, socioeconomic conditions, maternal health, and household food security. As a result, while father involvement may contribute to improved feeding behaviors, its direct impact on anthropometric outcomes appears less consistent across studies.

Interpretation through the Friedman Family Theory

When interpreted through the framework of Friedman Family Theory, the findings highlight the role of family dynamics in shaping paternal participation in child feeding. The family structure dimension reflects the distribution of caregiving roles within households, where traditional gender norms may limit fathers' direct involvement in feeding activities. The family function dimension is reflected in caregiving practices, communication patterns, and decision-making processes that influence complementary feeding behaviors. The family development dimension relates to the evolving roles of parents as children transition into the complementary feeding stage, which may create opportunities for increased paternal engagement. Overall, the synthesis suggests that direct paternal participation in feeding-related activities plays a more substantial role in shaping complementary feeding practices than financial support alone. These findings emphasize the importance of considering family systems and caregiving dynamics when designing interventions aimed at improving child nutrition.

DISCUSSION

Father Involvement and Complementary Feeding Practices

The findings of this review indicate that father involvement is more consistently associated with improvements in complementary feeding behaviors than with anthropometric outcomes. Across the included studies, fathers who were directly engaged in feeding-related activities such as co-feeding, meal preparation, supervision during mealtime, and participation in feeding routines were associated with improved dietary diversity, appropriate meal frequency, and greater adherence to complementary feeding recommendations [22]. These feeding practices represent proximal determinants of child nutrition and therefore respond more immediately to changes in caregiving behavior [23].

Importantly, the review reveals that different forms of father involvement have varying levels of influence on feeding practices. Direct physical involvement in feeding activities appears to have the strongest association with improved complementary feeding indicators. Fathers who actively participate in meal preparation or feeding routines contribute directly to the child's dietary intake and feeding environment [24]. In contrast, paternal involvement limited to financial provision or food purchasing demonstrates weaker associations with feeding outcomes when considered independently [25]. While financial support may improve household food availability, it does not automatically translate into improved feeding practices unless accompanied by active engagement in caregiving or decision-making processes. This finding highlights the importance of conceptualizing father involvement not solely as economic provision but as a multidimensional form of caregiving participation.

Father Involvement and Child Nutritional Status

Compared with feeding behaviors, the relationship between father involvement and child nutritional status indicators such as height-for-age (HAZ), weight-for-age (WAZ), and weight-for-height (WHZ) was less consistent across the studies. Several cohort and intervention studies reported improvements in growth indicators among children whose fathers were actively involved in caregiving and feeding routines [26,27]. However, other studies reported weak or non-significant associations between paternal involvement and anthropometric outcomes.

This inconsistency reflects the complex and multifactorial nature of child growth. Anthropometric indicators represent distal outcomes influenced by numerous factors beyond feeding practices alone, including infection rates, sanitation conditions, maternal health, and household socioeconomic status [28]. Consequently, while father involvement may contribute to improved feeding behaviors, its influence on child growth is often indirect and mediated by broader environmental conditions [29]. These findings suggest that anthropometric indicators should be interpreted cautiously when assessing the impact of paternal engagement.

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Direct and Indirect Pathways of Influence

The evidence synthesized in this review suggests that father involvement affects complementary feeding practices through both direct and indirect mechanisms. Direct pathways occur when fathers actively participate in feeding-related tasks, including feeding the child, preparing complementary foods, or establishing regular feeding routines [30]. Through these actions, fathers directly influence children's dietary intake and mealtime structure. Indirect pathways operate through the broader caregiving environment. Emotional and practical support from fathers may reduce maternal caregiving stress and workload, thereby enabling mothers to maintain more consistent and responsive feeding practices [31]. Shared decision-making between parents also improves coordination within the household, facilitating adherence to recommended feeding schedules and dietary diversity. In this way, father involvement strengthens the overall caregiving system rather than acting solely as an individual determinant of child feeding behavior [32].

Cultural and Structural Moderators of Father Involvement

The role of fathers in complementary feeding is strongly shaped by cultural norms and structural conditions. In many settings, traditional gender norms continue to define childcare and feeding as primarily maternal responsibilities [33]. Such cultural expectations may limit fathers' opportunities to participate directly in feeding activities even when they are willing to do so. In contrast, societies experiencing shifts toward more egalitarian parenting roles have reported greater levels of paternal participation in child feeding and caregiving.

Structural constraints also play a critical role in moderating the effects of father involvement. In households experiencing severe poverty or food insecurity, paternal engagement alone may not be sufficient to improve complementary feeding outcomes [34]. Even when fathers are motivated to support child feeding, limited household resources may restrict access to diverse and nutrient-rich foods. Under such circumstances, educational interventions aimed at increasing father involvement may produce limited effects unless they are complemented by broader economic and social support programs [35]. Therefore, father-focused nutrition interventions should be integrated with policies addressing food security, poverty reduction, and access to adequate nutrition.

Interpretation through the Health Care Function in Friedman Family Theory

The findings of this review can be more comprehensively interpreted through the Health Care Function within Friedman Family Theory, which conceptualizes the family's capacity to maintain and promote the health of its members through caregiving, health-related decision-making, and resource allocation [36]. Within this framework, father involvement is associated with a more balanced and collaborative distribution of caregiving roles, which may enhance the overall functioning of the family system in supporting child nutrition [37]. When fathers participate in feeding practices and childcare activities, caregiving responsibilities are more evenly shared, potentially reducing maternal burden and improving coordination in household health practices [38].

Importantly, the absence or limited participation of fathers does not necessarily indicate family dysfunction or failure. Evidence from the included studies suggests that families, particularly mothers, often adapt through various coping mechanisms, such as assuming additional caregiving responsibilities or relying on extended family support [39]. However, these adaptive strategies may come at a cost, as increased maternal workload and psychological stress can affect the sustainability and quality of complementary feeding practices over time. Thus, rather than framing father absence solely as a deficit, it is more appropriate to understand it as a condition that may shift caregiving demands disproportionately onto mothers.

Furthermore, the Health Care Function also highlights the importance of resource allocation within the family system. In contexts where households experience food insecurity or economic constraints, the potential benefits of father involvement in feeding practices may be limited. Educational interventions targeting fathers may improve knowledge and engagement; however, without adequate access to food and financial resources, such improvements may not fully translate into better nutritional outcomes. Therefore, efforts to promote father involvement should be integrated with broader economic and social interventions, including food security programs and poverty alleviation strategies, to strengthen the family's capacity to support optimal child nutrition.

Comparison with Previous Reviews

The findings of this review are broadly consistent with previous studies highlighting the importance of paternal engagement in child nutrition and caregiving. Earlier research has emphasized that father involvement contributes to improved household decision-making, maternal well-being, and child development outcomes [40,41]. However, most previous reviews have focused primarily on general parenting roles or maternal determinants of feeding practices [42,43]. In contrast, the present review specifically synthesizes evidence on father involvement in complementary feeding within the theoretical framework of Friedman Family Theory. This theoretical perspective provides a more comprehensive understanding of how family structure, caregiving roles, and communication patterns interact to shape feeding practices and nutritional outcomes [44,45].

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Policy Implications for Family-Centered Nutrition Programs

The findings of this review highlight the need for a shift from mother-centered to family-centered nutrition interventions. Many existing nutrition programs continue to target mothers as the primary agents of child feeding, while fathers remain largely excluded from program design and implementation [46-48]. Integrating fathers into complementary feeding education, parenting programs, and community-based nutrition initiatives may strengthen household decision-making and improve feeding practices [49]. However, father-focused interventions should be implemented alongside broader structural policies. In settings characterized by economic constraints, improving paternal knowledge alone may not lead to substantial improvements in child nutrition without addressing food access and household resources [50]. Therefore, family-centered nutrition programs should integrate educational strategies with economic support initiatives, such as food assistance programs and community nutrition services [51].

Future Research Directions

Future research should aim to develop standardized and multidimensional measures of father involvement in child feeding to improve comparability across studies. Longitudinal and intervention-based research designs are also needed to clarify the causal pathways linking paternal engagement, feeding practices, and child nutritional outcomes. In addition, further studies should explore how sociocultural norms, gender dynamics, and household economic conditions shape paternal participation in complementary feeding. Such research will contribute to a deeper understanding of how family systems influence child nutrition and how interventions can effectively support both mothers and fathers in caregiving roles.

Limitations of the Review

Several limitations should be acknowledged. First, the studies included in this review used heterogeneous measures of father involvement, ranging from direct feeding participation to financial or emotional support, which limits comparability across studies. Second, most studies employed cross-sectional designs, restricting the ability to establish causal relationships between paternal involvement and nutritional outcomes. Third, the reliance on self-reported measures of father involvement may introduce recall bias or social desirability bias. Finally, the inclusion of English-language publications only may have excluded relevant studies conducted in other languages or regions.

CONCLUSION AND RECOMMENDATIONS

This review indicates that father involvement is associated with complementary feeding practices, particularly dietary diversity, meal frequency, and responsive feeding behaviors. The evidence linking paternal engagement to feeding practices appears to be more consistent and robust across studies. Fathers who participate in feeding routines, caregiving, and household food decision-making are associated with more supportive feeding environments for young children. In contrast, evidence linking father involvement with anthropometric indicators of nutritional status remains more heterogeneous and less consistent, reflecting the complex and multifactorial determinants of child growth. Viewed through the framework of Friedman Family Theory, paternal engagement may contribute to strengthening the family's health care function by supporting shared caregiving roles and coordinated household health practices. These findings highlight the importance of shifting from mother-centered to family-centered nutrition strategies. Integrating fathers into complementary feeding interventions may support improvements in feeding practices; however, such efforts should be accompanied by broader structural support addressing food insecurity and socioeconomic constraints.

Based on these findings, we recommend integrating fathers more systematically into nutrition programs at the community and primary care level. Policymakers and program designers should develop family-centered interventions such as father-targeted behavior change communication (BCC), joint parental counseling, and community engagement activities that acknowledge and leverage fathers' influence. Additionally, health systems should monitor and evaluate paternal involvement in child feeding as part of routine nutritional surveillance. Further research employing longitudinal or experimental designs is also warranted to assess causal pathways and test scaled-up father-inclusive intervention models rigorously.

AUTHOR'S CONTRIBUTION STATEMENT

Hamdayani: Conceptualization, Methodology, Data curation, Writing – Original draft preparation.
Wahyu Endang Setyowati and Iskim Luthfa: Supervision, Validation, Writing – Reviewing and Editing. Endang Setyowati and Iskim Luthfa: Investigation, Formal analysis, Visualization, Data interpretation.
Dwi Heppy Rohmawati: Validation, Writing – Reviewing and Editing.

CONFLICT OF INTERESTS

The authors declare that the research was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

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