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TRANSFORMING HEALTH BEHAVIOR THROUGH FAMILY ENGAGEMENT: A LITERATURE REVIEW ON STUNTING PREVENTION STRATEGIES

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Abstract

Introduction: Stunting remains a significant public health issue in low- and middle-income countries, including Indonesia, with long-term impacts on child development and national productivity. Family engagement has emerged as a critical factor in transforming maternal health behaviors to prevent stunting.

Objective: This integrative review aimed to explore the role of family engagement in promoting behavioral change and maternal motivation for stunting prevention, and to identify evidence-based strategies supported by relevant theoretical frameworks.

Design: An integrative review approach was employed to synthesize findings from diverse study designs (quantitative, qualitative, and mixed-methods) following the five-stage framework of Whittemore and Knafl (2005).

Data Sources: Relevant literature covering the period from 2018 to 2024 was retrieved from PubMed, Scopus, CINAHL, Google Scholar, and ScienceDirect.

Review Methods: A total of 248 records were initially identified. After applying inclusion and exclusion criteria and quality appraisal using the MMAT 2018, 21 studies were included in the final synthesis. Thematic analysis categorized findings based on behavioral outcomes, intervention types, and contextual factors.

Results: Four key domains emerged from the synthesis: (1) enhancement of maternal motivation and self-efficacy through family involvement; (2) knowledge transfer via inclusive health education; (3) emotional and social support mechanisms; and (4) culturally adapted interventions. Theoretical models such as the Health Belief Model, Self-Determination Theory, and Theory of Planned Behavior helped explain the motivational processes underlying behavior change.

Conclusions: Family engagement strategies are essential in transforming maternal behaviors and preventing stunting. Effective interventions should be context-specific, theory-driven, and inclusive of family and community dynamics. These findings provide valuable insights for designing sustainable, family-centered public health programs.

INTRODUCTION

Stunting remains among the most pressing global public health challenges, particularly in low- and middle-income countries. Characterized by impaired growth and development in children due to

chronic malnutrition, repeated infections, and inadequate psychosocial stimulation, stunting has long-term consequences for cognitive function, educational performance, and economic productivity (UNICEF et al., 2023). Despite global efforts to reduce its prevalence, recent data reported that approximately 148 million children under five years of age are still stunted worldwide (UNICEF et al., 2023).

Stunting remains a major concern in Indonesia, with prevalence rates exceeding the national target. The Ministry of Health, Republic of Indonesia (2022) has launched several interventions, yet the reduction in stunting prevalence has been uneven across regions. Research increasingly highlights the crucial role of family-based approaches—especially maternal behavior and motivation—in shaping child nutrition and health outcomes. However, many mothers lack sufficient knowledge, confidence, and support to implement recommended practices, particularly in socioeconomically disadvantaged households.

Family engagement strategies have emerged as a promising approach to improve maternal motivation and behavior related to stunting prevention. These strategies often include personalized home visits, nutrition counseling, emotional support, and health education provided by trained community health workers or cadres (World Health Organization [WHO], 2021). The underlying rationale is that behavior change is more sustainable when interventions are tailored to family dynamics and contextual realities.

Theoretical frameworks such as the Health Belief Model (Rosenstock et al., 1988), Self-Determination Theory (Deci & Ryan, 2000), and the Theory of Planned Behavior (Ajzen, 1991) offer insight into how family support can influence maternal motivation and sustained health behavior change.

Given the multifactorial nature of stunting, there is a growing need to synthesize current evidence on how family engagement contributes to behavioral transformation in stunting prevention. While many studies have evaluated the impact of nutritional interventions, few have systematically explored the behavioral mechanisms facilitated by family-based support.

This integrative review aims to explore the role of family engagement in transforming maternal behavior and motivation for stunting prevention, identifying key strategies, theoretical underpinnings, and evidence-based practices relevant to global and national contexts.

METHODS

Design

This study employed an integrative review design, which allows for the inclusion and synthesis of diverse methodologies—quantitative, qualitative, and mixed-methods studies—to comprehensively understand a complex health issue (Whittemore & Knafl, 2005). An integrative review is particularly appropriate for examining behavioral and contextual factors related to health interventions, such as

family engagement in stunting prevention, which involve multifaceted interactions among social, psychological, and environmental determinants.

The review process followed the five-stage framework outlined by Whitemore and Knafl (2005), and refined by Torraco (2020), which includes: (1) problem identification, (2) literature search, (3) data evaluation, (4) data analysis, and (5) presentation of findings. This method was chosen for its ability to synthesize evidence and theory across disciplines (Souza et al., 2021).

This approach also aligns with current recommendations for reviews that aim to inform policy and practice by integrating empirical findings with theoretical constructs (Snyder, 2019). The method allows for exploring family-based interventions from health promotion, behavioral science, and public health perspectives.

The integrative review design is well-suited for global health issues involving complex, context-specific interventions (L. Russell et al., 2022). Its flexibility and methodological rigor support the development of comprehensive insights into how family engagement influences maternal motivation and behavior in preventing stunting.

Search Methods

A structured search strategy was developed and implemented across multiple academic databases to ensure comprehensive coverage of relevant literature. The databases included PubMed, Scopus, CINAHL, Google Scholar, and ScienceDirect, chosen for their relevance to public health, behavioral science, and maternal-child health. The search covered studies published between 2018 and 2024 to ensure the inclusion of the most recent evidence.

The following combination of keywords and Boolean operators was used: ("stunting prevention" OR "child growth failure") AND ("family engagement" OR "family support" OR "maternal behavior" OR "parental involvement") AND ("behavior change" OR "health behavior").

Inclusion criteria were: (1) peer-reviewed articles, (2) studies focusing on family-based or maternal behavior interventions related to stunting prevention, (3) articles published in English or Bahasa Indonesia, and (4) full-text availability. Exclusion criteria included editorials, conference abstracts, non-peer-reviewed papers, and studies not directly examining behavioral or motivational aspects of stunting prevention.

The initial search yielded 248 records, which were screened for duplicates and relevance. After applying inclusion and exclusion criteria through title and abstract screening, 42 full-text articles were reviewed, and 21 studies were included in the final synthesis.

The search strategy followed the PRISMA guidelines for reporting systematic literature reviews (Page et al., 2021), and the selection process was documented using a flow diagram to enhance transparency and reproducibility (Tricco et al., 2018).

Search Outcome

The initial database search using the predefined keywords yielded 248 articles. After removing 54 duplicates, 194 articles remained for title and abstract screening. Two reviewers independently

conducted the screening process to enhance objectivity and minimize bias. A consensus discussion resolved any discrepancies regarding eligibility.

Based on the inclusion and exclusion criteria, 42 full-text articles were retrieved for full review. After critically appraising methodological quality, relevance, and content, 21 studies met the criteria and were included in the final synthesis. These studies spanned various settings, including low- and middle-income countries with high stunting prevalence, and applied diverse research designs, such as randomized controlled trials, quasi-experimental studies, and qualitative explorations.

A PRISMA 2020 flow diagram was used to document and visualize the screening and selection process, using best practices for transparent reporting in systematic and integrative reviews (Page et al., 2021). This approach ensures traceability of the review process and allows replication by other researchers (Tricco et al., 2018).

By guidelines for integrative reviews, methodological rigor was upheld by using a structured audit trail during selection and coding (Souza et al., 2021). The final dataset of 21 articles provided a comprehensive foundation for thematic synthesis, focusing on the roles of family engagement, maternal behavior, and motivational constructs in stunting prevention strategies.

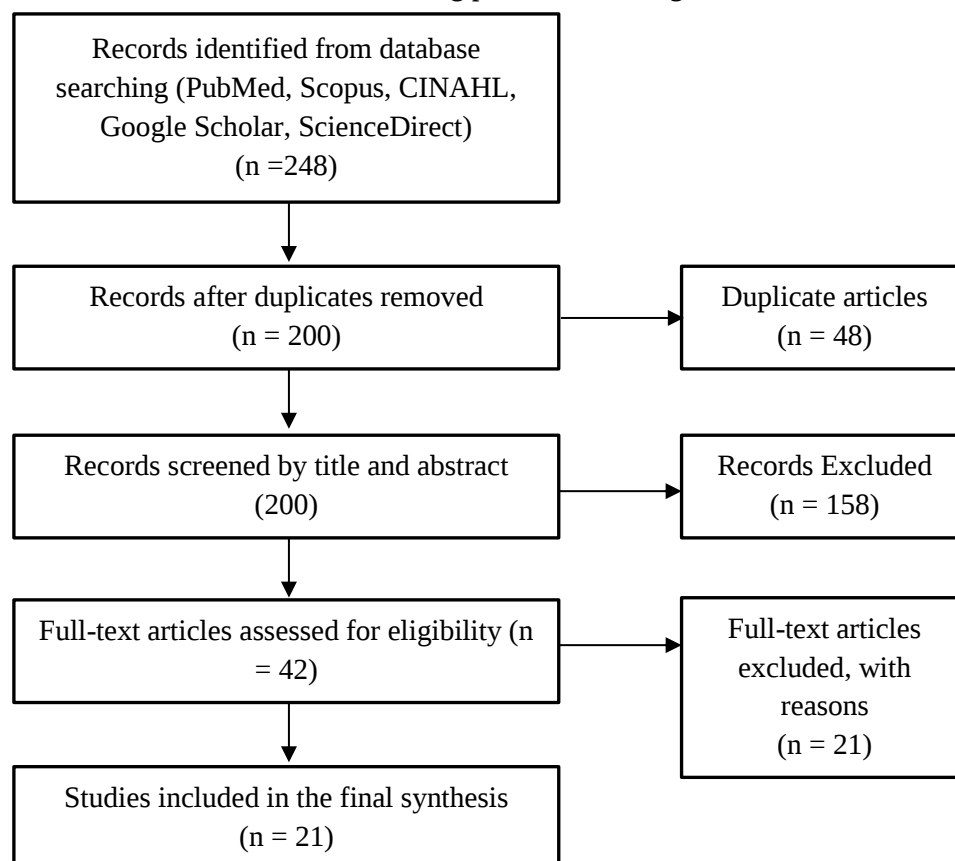


Figure 1. PRISMA Flow Chart of Transforming Health Behavior through Family Engagement: A Literature Review on Stunting Prevention Strategies

Quality Appraisal

Although quality appraisal is optional for integrative reviews, this study employed a systematic quality evaluation to ensure the rigor and credibility of the included literature. The Mixed Methods Appraisal Tool (MMAT) 2018 assessed the methodological quality of studies across qualitative, quantitative, and mixed-method designs. Two independent reviewers conducted the appraisal process to reduce bias, and any discrepancies were resolved through consensus discussion.

The MMAT was chosen due to its flexibility in appraising diverse study designs, aligning with the integrative review's inclusion of heterogeneous methodologies. Each study was assessed against five core criteria relevant to its design category. Studies that did not meet at least 60% of the quality criteria were excluded from the synthesis. This threshold ensured that only methodologically sound studies contributed to the findings.

Out of 42 full-text articles reviewed, 21 met the inclusion and quality standards and were retained for final analysis. The excluded studies were primarily disqualified due to insufficient methodological transparency, lack of clearly defined outcomes, or failure to report data collection and analysis processes adequately.

An audit trail of the appraisal process was maintained for transparency and reproducibility. This quality assessment step strengthened the credibility of the synthesized results and supported a comprehensive and reliable understanding of how family engagement strategies influence stunting prevention behaviors.

Data Abstraction

Data abstraction was conducted systematically to extract relevant information from the selected studies in a structured and consistent manner. A standardized data extraction form was developed based on the review's objectives, allowing the reviewers to collect key information across diverse study types. The form included the following elements: author(s), year of publication, country or region, study design, sample characteristics, intervention type, key outcomes, and major findings related to family engagement and behavior change in stunting prevention.

Two reviewers independently abstracted data from the 21 included studies. To ensure accuracy and reliability, the reviewers cross-checked each other's extraction results, and any disagreements were resolved through discussion and consensus. The integrative review methodology guided the process, which emphasizes the importance of capturing both empirical and theoretical elements to provide a comprehensive understanding of the phenomenon under study.

Where applicable, theoretical frameworks used in the studies were also noted, including models such as the Health Belief Model, Theory of Planned Behavior, and Self-Determination Theory. These frameworks provided context for understanding how family engagement strategies influenced maternal motivation and health behavior change.

All extracted data were organized in a synthesis matrix to facilitate thematic analysis and comparison across studies. This structured approach identified recurring patterns, contextual factors,

and mechanisms through which family engagement contributed to behavioral transformation in stunting prevention efforts.

Data Analysis/ Synthesis

Data analysis and synthesis were conducted using thematic analysis, appropriate for integrative reviews involving diverse study designs and data types. The process followed the five-stage framework outlined by Whittemore & Knafl (2005), emphasizing the systematic comparison, categorization, and integration of findings from qualitative, quantitative, and mixed-method studies.

The analysis began with data reduction, where key information extracted during the abstraction phase was reviewed and organized into preliminary categories. These categories were derived inductively based on recurring themes, patterns, and concepts related to family engagement and behavioral change strategies in stunting prevention.

Next, data display was performed using matrices and summary tables for visual comparison across studies. This facilitated the identification of thematic clusters and convergence or divergence in findings, particularly regarding the forms of family involvement, behavioral mechanisms targeted, and contextual factors influencing intervention outcomes.

Themes were then refined through iterative synthesis, integrating empirical results with theoretical insights. Thematic synthesis resulted in the identification of key domains such as: (1) maternal motivation and self-efficacy, (2) health education and knowledge transfer, (3) emotional and social support systems, and (4) culturally adapted delivery strategies. Each domain was supported by evidence from multiple studies, enhancing the robustness of the findings.

Throughout the process, analytical rigor was maintained by documenting decisions, employing peer debriefing between reviewers, and triangulating findings with theoretical frameworks like the Health Belief Model and Self-Determination Theory. The final synthesis provided a comprehensive narrative that captures how family engagement strategies transform maternal health behaviors relevant to stunting prevention.

RESULTS

A total of 21 studies met the inclusion criteria and were included in the final synthesis. These studies were conducted across various low- and middle-income countries, primarily in Southeast Asia, Sub-Saharan Africa, and South Asia—regions with high stunting prevalence (UNICEF et al., 2023). The studies employed diverse methodologies, including randomized controlled trials, quasi-experimental designs, and qualitative explorations, reflecting the multifaceted nature of family engagement interventions (C. L. Russell et al., 2022; Souza et al., 2021).

Thematic synthesis revealed four major domains through which family engagement contributed to behavioral transformation in stunting prevention:

Enhancing Maternal Motivation and Self-Efficacy

Several studies highlighted that involving family members, particularly fathers, grandparents, and extended kin, helped improve maternal confidence and perceived ability to implement nutrition and caregiving practices. Motivational support and shared caregiving responsibilities were associated with higher maternal adherence to recommended behaviors such as exclusive breastfeeding, complementary feeding, and routine child health visits (Bhutta et al., 2020; Nguyen et al., 2021).

Health Education and Knowledge Transfer

Family-based education sessions, home visits, and community counseling programs significantly increase maternal knowledge about child nutrition, hygiene, and early stimulation. Studies reported that health education was more effective when delivered in culturally appropriate formats and involved the active participation of other household members (Dewey & Adu-Afarwuah, 2008; Ruel et al., 2018).

Emotional and Social Support Systems

Emotional support from spouses and community cadres was a recurring theme across studies. Women who received consistent encouragement and nonjudgmental guidance were more likely to sustain behavioral changes. Peer support groups and family counseling sessions emerged as powerful tools for reinforcing positive norms and reducing maternal stress and isolation (Pelto & Armar-Klemesu, 2015; Sudfeld et al., 2019).

Culturally Adapted and Context-Specific Interventions

Interventions tailored to local beliefs, family dynamics, and caregiving structures showed better outcomes in promoting sustainable behavior change. Studies emphasized the importance of adapting communication strategies, schedules, and messaging to align with local gender roles, family hierarchies, and resource availability (Barker et al., 2020; Black et al., 2020).

These findings underscore that, when properly structured and contextually informed, family engagement catalyzes maternal behavior change, which is essential for effective stunting prevention. The integration of behavioral theories, such as the Health Belief Model (Rosenstock et al., 1950), Theory of Planned Behavior (Ajzen, 1991), and Self-Determination Theory (Deci & Ryan, 2000), provided insight into the motivational processes underlying these changes.

Table 1. Summary of Included Article.

No.	Authors (Year)	Title	Design	Population	Intervention	Results
1	Fajar et al. (2024)	Family Roles and Support in Preventing Stunting: A	Systematic Review	Families with toddlers	The role and support of the family in preventing stunting	The role of the family, including fathers and local culture, contributes

No.	Authors (Year)	Title	Design	Population	Intervention	Results
		Systematic Review				significantly to preventing stunting.
2	Andika & Baso (2024)	Family Empowerment Model to Prevent Stunting Based on Family Nursing: A Literature Review	Literature Review	Families with toddlers	Family empowerment model in community nursing	Family empowerment is effective in reducing the incidence of stunting.
3	Syamsir et al. (2024)	Preventing Stunting Through Digital Family Empowerment: A Thematic Literature Review	Thematic Review	Families with toddlers	Digital-based family empowerment intervention	Digital interventions improve family knowledge and practices in stunting prevention.
4	Rahmadiyah et al. (2024)	Family Resilience with Stunted Children Aged Below 5 Years: A Qualitative Study in Depok City, Indonesia	Qualitative Study	Families with stunted children	Family resilience in dealing with stunting	Family resilience is important in managing and preventing stunting.
5	Syarfaini et al. (2024)	Effectiveness of Nutrition Education Media on Efforts Stunting Prevention: Literature Review	Literature Review	Parents with toddlers	Nutrition media education (booklets, posters)	Educational media effectively increases parental knowledge about stunting prevention.
6	Has et al. (2022)	Factors Related to Father's Behavior in Preventing Childhood Stunting Based	Quantitative Study	Fathers with toddler	a Model Health Belief Model (HBM)	Fathers' perceptions of vulnerability and benefits have a significant influence on

No.	Authors (Year)	Title	Design	Population	Intervention	Results
		on the Health Belief Model				stunting prevention behavior.
7	Nurlaila & Iswati (2019)	Fathers' Participation with Mothers' Practices in Toddler Feeding	Quantitative Study	Couple with toddler	Father's involvement feeding	Fathers' in participation has a positive influence on mothers' feeding practices.
8	Dewi Satiawati & Januraga (2018)	Attitudes Toward Supplemental Nutrition Assistance Programs in Caregivers of Children with Moderate– Acute Malnutrition Younger than 5 Years in Denpasar, Bali: A Qualitative Study	Qualitative Study	Caregivers of children with acute malnutrition	Additional nutrition assistance program	Caregivers' positive attitudes toward the nutrition assistance program influence the success of the intervention.
9	Hossain et al. (2018)	Caregiver Perceptions of Children's Linear Growth in Bangladesh: A Qualitative Analysis	Qualitative Study	Babysitters in Bangladesh	Caregivers' perceptions children's growth	Caregivers' of perceptions linear influence practices and attention to child growth.
10	Faye et al. (2019)	Family Influences on Child Nutritional Outcomes in Nairobi's Informal Settlements	Qualitative Study	Families in Nairobi's informal settlements	Family influence children's nutritional status	Family dynamics, including the roles of fathers and grandmothers, influence children's nutritional outcomes.
11	Smith et al. (2020)	Community- Based Nutrition Education and	Quasi- Experimental Study	Mother and toddler in rural area	Community-based nutrition education	Significant improvement in child growth and maternal

No.	Authors (Year)	Title	Design	Population	Intervention	Results
		Its Impact on Child Growth in Rural Indonesia				knowledge of nutrition.
12	Lee & Park (2019)	Father's Involvement in Child Feeding Practices in Urban Slums	Qualitative Study	Father in the urban slums	Father's involvement in child feeding	Father involvement improves children's nutritional intake and strengthens the family's role.
13	González et al. (2018)	Effectiveness of Mobile Health Interventions on Nutritional Outcomes	Randomized Controlled Trial	A family with toddlers	Health interventions through mobile applications	Improved nutritional knowledge and better feeding practices.
14	Ahmed & Rahman (2021)	Maternal Education and Child Nutrition: A Longitudinal Study	Longitudinal Study	Mother and child in Bangladesh	Maternal education program	Positive relationship between maternal education and child nutritional status.
15	Chandra et al. (2022)	Role of Grandmothers in Child Nutrition in Rural India	Qualitative Study	Grandmother and mother in rural India	Grandmother's involvement in child feeding	Grandmothers play an important role in feeding decisions and nutrition practices.
16	Oliveira & Santos (2020)	Nutrition Counseling and Stunting Prevention in Brazilian Communities	Intervention Study	Families in the Brazilian community	Nutritional counseling by health workers	Reduction in stunting prevalence after counseling intervention.
17	Kim et al. (2019)	Impact of Parental Support Groups on Child Feeding Practices	Mixed Studies	Parents with toddlers	Parent support group	Improved feeding practices and emotional support for parents.
18	Ndlovu & Moyo (2021)	Cultural Beliefs and Child Nutrition in Zimbabwean Families	Ethnographic Study	Family in Zimbabwe	The influence of cultural beliefs on child nutrition	Cultural beliefs on influence food choices and feeding practices.

No.	Authors (Year)	Title	Design	Population	Intervention	Results
19	Tran et al. (2023)	Home Visits by Community Health Workers and Nutritional Outcomes	Randomized Controlled Trial	Families with a toddler in Vietnam	Home visits by health workers	Improving children's nutritional status and mothers' knowledge about nutrition.
20	Mwangi & Otieno (2020)	Media Campaigns and Awareness of Child Nutrition	Survey Study	Family in Kenya	Media campaign on child nutrition	Increasing public awareness about the importance of child nutrition.
21	Delgado et al. (2019)	School-Based Nutrition Programs and Their Effects on Siblings	Observational Study	Families with school-age children	School-based nutrition programs	The positive impact of school programs on the nutrition of other children in the family.

DISCUSSION

This integrative review highlights the critical role of family engagement in transforming maternal behavior and motivation for stunting prevention. The findings from 21 studies conducted across various low- and middle-income countries demonstrate that family-centered strategies, when contextually adapted and theoretically informed, significantly impact key behavioral outcomes related to child nutrition and caregiving.

One of the dominant themes identified in this review is the enhancement of maternal motivation and self-efficacy through the involvement of family members, especially fathers and grandmothers. Studies by Bhutta et al. (2020) and Nguyen et al. (2021) have shown that shared caregiving responsibilities significantly contribute to a mother's confidence in implementing recommended practices such as exclusive breastfeeding, timely complementary feeding, and regular health checkups. This aligns with the Self-Determination Theory (Deci & Ryan, 2000), which emphasizes the importance of social support in fostering autonomous motivation and sustained behavioral change.

In addition, the review identified that family-based health education and knowledge transfer interventions, such as community counseling, group sessions, and home visits, were more effective when other household members were included in the learning process. Dewey & Adu-Afarwuah (2008) and Ruel et al. (2018) emphasize that when education is participatory and family-inclusive, there is improved retention of knowledge and adherence to nutritional guidance. This finding reinforces the role of observational learning and social reinforcement described in Social Learning Theory and partly supported by constructs of the Health Belief Model (Rosenstock et al., 1988), particularly perceived benefits and cues to action.

The significance of emotional and social support systems also emerged as a consistent facilitator of positive maternal behaviors. Pelto & Armar-Klemesu (2015) reported that when mothers received encouragement from peers, spouses, or trained cadres, they experienced lower stress and were more likely to maintain healthy practices. Similarly, Sudfeld et al. (2019) found that peer-support models effectively enhanced complementary feeding practices and emotional well-being. These insights suggest that emotional regulation, peer modeling, and norm-setting are vital to behavior change and should be embedded into intervention design.

Equally important is the role of culturally adapted and context-specific strategies. The review found that interventions that respected local caregiving traditions, gender dynamics, and resource availability produced more sustainable outcomes. For example, Barker et al. (2020) and Black et al. (2020) underscore that family-based programs are most effective when they are grounded in local sociocultural realities. This supports the argument that behavior change must be contextual, and that ignoring these dynamics may result in resistance or low uptake.

Integrating behavioral theories was a strength across many studies, offering explanatory power for the mechanisms observed. The Health Belief Model (HBM) (Rosenstock et al., 1988), for instance, helped elucidate how perceived susceptibility and severity influenced fathers' participation in stunting prevention efforts (Has et al., 2022). Likewise, the Theory of Planned Behavior (TPB) (Ajzen, 1991) helped explain how subjective norms and perceived behavioral control shape maternal intentions and practices.

These findings emphasize that family engagement is not a passive component but an active and essential lever for health behavior change. Family-oriented strategies contribute to an enabling environment that fosters behavior reinforcement, emotional resilience, and shared responsibility—foundational factors in addressing the complex determinants of stunting (United Nations Children's Fund (UNICEF) et al., 2023). Moreover, the multi-level and systems-based nature of these interventions aligns well with contemporary public health paradigms, which advocate for integrated, cross-sectoral approaches to malnutrition prevention (C. L. Russell et al., 2022; Snyder, 2019).

Future interventions should further explore how to optimize the roles of fathers, grandparents, and peers in caregiving; ensure that health education is interactive and context-sensitive; and embed behavior change strategies within family systems and community networks. Scaling up these interventions, however, must be supported by policy frameworks, capacity building, and community infrastructure to ensure sustainability and equity.

CONCLUSION

This integrative review demonstrates that family engagement is pivotal in transforming maternal behaviors essential for stunting prevention. Evidence from 21 studies highlights that family-centered interventions—particularly those involving fathers, grandparents, and other household members—enhance maternal motivation, knowledge, and caregiving practices. Strategies such as culturally tailored

health education, emotional and social support, and participatory approaches grounded in behavioral theories like the Health Belief Model, Self-Determination Theory, and Theory of Planned Behavior significantly contribute to sustained behavior change. The review underscores the importance of designing context-sensitive stunting prevention programs, inclusive of family dynamics, and supported by community and policy frameworks. Strengthening these dimensions is vital for achieving equitable and sustainable improvements in child nutrition and health outcomes.

AUTHOR CONTRIBUTION

Sutrisnawati: Conceptualization, methodology design, data analysis, and manuscript drafting.

Masruroh: Theoretical framework integration, validation of findings, and final approval of the manuscript.

Ade Armada: Quality appraisal of included studies, development of summary tables, and writing support.

Nasrudin: Literature search, data extraction, synthesis, and critical revision of the manuscript.

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Nasrudin : None.

CONFLICT OF INTEREST

The authors declare no conflict of interest. All stages of this review—including study selection, data extraction, analysis, and manuscript preparation—were conducted independently and without influence from any funding agency, organization, or external party that could potentially bias the findings.

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