Journal of Current Health Sciences. 2026, 6(2): 93-102
DOI: https://doi.org/10.47679/jchs.2026153
ISSN 2809-3275 (print), ISSN 2809-2236 (online)

RESEARCH ARTICLE

Unpacking Caregiver Experiences in Positive Deviance Hearth Programs: Facilitators and Barriers to Sustainable Child Nutrition Interventions in Kenya

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Published online: 04 May 2026

Abstract

Child undernutrition remains a major and persistent public health problem in Kenya, especially among children under five years of age, despite the implementation of evidence-based community nutrition interventions. The positive deviance hearth programs have demonstrated effectiveness in rehabilitating and improving short-term nutritional outcomes through leveraging locally available foods and positive dietary or caregiving behaviors. However, caregivers' lived experiences and perspectives and factors influencing the sustainability of gains achieved after completion of PDH programs have remained underexplored, with no published evidence yet. The study aimed to fill this research gap by exploring caregivers' experiences and perspectives regarding perceived barriers and facilitators of sustaining improved child nutrition practices following a six-month positive deviance hearth intervention conducted in Konoin Sub-County, Bomet county, Kenya, from July to August 2025. A qualitative exploratory study was conducted after completion of the PDH intervention in Bomet County among caregivers of children under five years involved in the program. Focused group discussions and in-depth interviews were conducted until thematic saturation was achieved. Discussions and interviews were audio-recorded, transcribed verbatim, coded, and inductive reflexive thematic analysis. NVivo version 14 software used in data analysis. A total of fourteen FDGs and IDIs were conducted. The discussions and interviews revealed two main major themes and several linked sub-themes: (i) facilitating factors (including improved nutrition knowledge and caregiving practices, observable child well-being improvement, and peer learning and community motivation) and (ii) barriers (such as food insecurity and economic limitations, caregiver workload and competing domestic roles, and cultural beliefs and intra-household resistance). The findings highlight that PDH programs are perceived as supportive in promoting nutrition knowledge, positive caregiving behaviors, and motivation to sustain improved practices. However, persistent food insecurity, economic constraints, competing household responsibilities, and cultural resistance were experienced as key barriers to adoption and sustainability of PDH-recommended practices. Therefore, integrating economic, social, and community-based support mechanisms and sustained community engagement is critical for sustaining post-PDH child nutrition practices.

Keywords: Positive Deviance Hearth; Caregiver experiences; Child undernutrition; Sustainability; Facilitators and barriers; Kenya.

INTRODUCTION

Child undernutrition continues to be a major public health challenge globally, particularly low-and middle-income countries (LMICs). According to 2025 joint report by United Nations Children's Fund (UNICEF), World Health Organization (WHO) and the World Bank, approximately 23.2 per cent or 150.2 million children under five were stunted (low height-for-age) while 6.6 per cent or 45 million were estimated to be wasted (low weight-for-height) globally in 2024, with nearly half of deaths among under 5 years of age linked to undernutrition (UNICEF et al., 2025). Africa is the only region where the number of children with undernutrition has significantly increased, and in Kenya, it remains a persistent threat to child survival, growth, and development. According to the 2022 Kenya National Bureau of Statistics (KNBS) reported that approximately 22% of children under five were stunted, 4%

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Submitted: 23 January 2026 Revised: 21 April 2026 Accepted: 23 April 2026

were wasted, and underweight (KNBS & ICF, 2023). Despite decades of policy interventions and nutrition programs, undernutrition among under five has remain a significant challenge. Studies have significantly associated child undernutrition to impaired cognitive development, child growth, increased susceptibility to infections, and reduced productivity later in life (Carvalho et al., 2025; Morales et al., 2023; Suryawan et al., 2022). Community-based nutritional interventions such as positive deviance hearth (PDH) programs have emerged as innovative solution to address malnutrition among under five children. According to Amelia et al. (Amelia et al., 2025) PDH is a community-based, food-based approach designed to tackle child malnutrition, particularly underweight, through local solutions and sustainable behaviour change. The PDH model focus on identification and promotion of successful, locally-available feeding and care practices used by some caregivers who have healthy children despite poverty and limited food resources. The approach aims to empower caregivers to sustain improvements through practical, hands-on learning sessions (hearths) conducted for 10- to 12- days using locally available foods to rehabilitate malnourished children, build capacity to treat child malnutrition while sustaining their rehabilitation, and prevent potential future cases (David et al., 2023). Most PDH programs have been conducted among underweight and moderately wasted under five children while hearth (education) session aims on behavior change through adoption of positive deviant caregivers' "secret" recipes and habits, hence sustainable low-cost solution for improving child nutrition. PDH programmes conducted across 21 countries among approximately 50,000 at risk and underweight children under five years reported 54% full rehabilitation success within three months (World Vision, 2025). Additionally, World Vision reported to have rehabilitated over 372,000 undernourished children under five years across 44 nations over the last decade through utilization of only locally-available, nutritious foods.

While PDH programs have demonstrated measurable improvements in child anthropometry and dietary practices (David et al., 2023), most existing studies have focused on effectiveness metrics, leaving the perspectives, experiences, and lived realities of caregivers largely unexplored. The caregivers are the central agents of PDH programs through whom behavioral interventions are operationalized and sustained. Similarly, PDH programs heavily depend on caregivers' active participation, translation of knowledge, and sustained practice of recommended behaviors, hence it's critical to understand their experiences regarding the program. Some studies have highlighted household workload, food security, cultural norms, social support systems, and mother knowledge could significantly influence adherence, participation and long-term sustainability of program (David et al., 2023; Kim et al., 2021). Similarly, Konoin sub-county is characterized by heavily reliance on tea farming and limited market access which might shape sustained PDH practice. However, these issues have not been examined in the context of PDH programs in Kenya from caregivers' lived experiences. Additionally, a key gap remains in understanding why post-intervention behavior changes persist or fail to persist over time, particularly in low-resource settings. Therefore, limited understanding experiences of caregivers when implementing PDH programs, the program implementers could misalign intervention strategies with community lived-realities, which could potentially limit participation, adoption of recommended behaviors, reduction of retention rates, and long-term sustainability of the program to address child malnutrition. Sustainability entailed continued practice of Positive Deviance Hearth (PDH)-recommended child feeding, hygiene, and care practices by caregivers after the initial intervention phase. Similarly, existing PDH studies focus primarily on quantitative outcomes and measurements (Chek et al., 2022; David et al., 2023; Gizaw et al., 2024; Kim et al., 2021), failing to assess the mechanisms through which engagement of caregivers or mothers drive success, the contextual issues that limit and facilitate their engagement in promotion of PDH program and its sustainability. This knowledge gap necessitated this study to focus on caregivers' voices and perspectives prioritization for better understanding and improving PDH implementation. Therefore, the study aimed to unpack barriers and facilitators to sustainable adoption of positive deviance hearth – recommended practices in Konoin sub-county, Bomet County, Kenya.

METHODS

Study design and setting

The study employed qualitative exploratory study design to explore lived-experiences, barriers and facilitators, and perceptions of the caregivers regarding six-month PDH intervention. The study was conducted in Konoin Sub-County, Bomet County from July 21 to August 29, 2025. A six-month PDH program was conducted in the area among caregivers of moderately underweight under five children. Bomet County reports significant childhood underweight malnutrition, largely attributed to household food insecurity, poverty and suboptimal infant feeding practices (Korir et al., 2022). This qualitative approach explored contextual, social, and behavioral factors influencing effectiveness, caregiver participation and sustainability of PDH programs.

Study Participants and Sampling

The study consisted primary caregivers of moderately underweight under five children recruited, and participated in PDH intervention. The study included caregivers who had completed or actively participated in PDH sessions and were willing to share their experiences under audio-recording, while excluding those who came from same household and refused to participate and share. The study employed purposive sampling to capture variation in age, marital status, education level, PDH hearth groups, and child nutritional status and recovery outcomes. The PDH intervention was delivered over 12 days, followed by a six-month post-intervention follow-up to assess adoption and sustained practice of PDH-recommended behaviors. Participants were recruited to a point where no new relevant information, themes or insights emerged from additional interviews.

Data Collection Tools and Procedures

Data were collected from participants using in-depth interviews (IDIs) and focus group discussions (FGDs) guided by validated, contextually customized and pretested semi-structured interview guides. These tools were designed to explore caregivers' motivations, challenges faced, and factors influencing their participation and sustained adoption of PDH recommended behaviors. FGDs captured shared community perspectives and group norms, while IDIs provided in-depth individual

experiences and personal insights. Comparing findings from both sources enabled triangulation and strengthened the credibility of the results. The tools were developed based on existing literature on PDH programs, behavior change and social cognitive theories (Chek et al., 2022; Cohen et al., 2020; David et al., 2023). The questions were open ended and order flexible to enable the interviewer to pursue new and relevant emerging issues or topics brought by the participants to saturation (Braun & Clarke, 2021). The guide was designed to probe self-efficacy, social support, social norms, and structural constraints influencing PDH practice and maintenance. Interview guides went through comprehensive review by two nutrition and two public health experts, translated to Kipsigis (local dialect) and Kiswahili and back to English to ensure consistency while the copies were retained in local dialect, and contextual adjustments were incorporated. Research experienced and local dialect native qualitative interviewers (data collectors) were trained for four days on ethical participants recruitment strategy, interview and discussion process, quality audio-recording, and data management. The interviewers sought to create trustful rapport with the selected participants (Coleman, 2022). The interviewers conducted self-introduction to the participants before the interviews commenced, and aim of interviews were explained to the participants. Out of 14 conducted interviews, seven were FGDs composed of 5-8 participants and seven were in-depth interviews derived from each FGD group. The interviews and discussions were conducted in participants' language of preference, predominantly combination of Kipsigis (local dialect), Kiswahili and English. They were conducted at a neutral ground to facilitate freedom to speak in absence of PDH program implementors. Each participant in FGD and interview were assigned non-identifier codes, particularly numbers. The IDIs and FGDs lasted averagely 38 minutes and 57 minutes, respectively. All interviews and discussions were digitally audio-recorded with participants' consent and transcribed verbatim by the first author (GK) and an external experienced transcriber. The interviewers supplemented recordings with detailed field notes during and after the interviews or discussions to capture immediate reflections, non-verbal cues and contextual observations. The transcripts were neither returned to the participants for corrections nor comments and no repeat interviews were conducted. However, the participants were provided with a description of the coding framework adopted by the study. The study methods and reporting were guided by the Consolidated Criteria for Reporting Qualitative Research checklist (COREQ) (Braun & Clarke, 2025).

Data Management and Analysis

The verified transcripts were coded and analyzed using NVivo version 14 software (QRS International). Data were analyzed using an inductive reflexive thematic analysis approach, allowing themes to emerge directly from the data without being constrained by pre-existing theoretical frameworks. Data analysis consisted of four-step thematic analysis to identify, code, and categorize main emerging themes from the text. The initial patterns and recurrent categorizes were identified after an immersive reading of the verified transcripts by principal investigator (GK) and other two experienced qualitative experts (Lochmiller, 2021). Subsequently, similarities and differences between participants' accounts were explored and identified. Finally, line-by-line coding was conducted to generate initial codes from the data. These codes were iteratively compared and grouped into two broader categories and sub-themes through constant comparison and refinement within NVivo. Coding was done independently by three qualitative researchers. Word frequency analysis was conducted to explore relationships among the identified concepts. Emerging patterns were compared for data triangulation. Methodological robustness was established through comprehensive engagement and peer debriefing. Emerging discrepancies were discussed and resolved through consensus meetings. Interviews and discussions were stopped when additional data did not lead to emergence of new themes or information.

Ethical Consideration

Ethical approval was obtained from the University of Eastern Africa, Baraton Institutional Scientific and Ethical Review committee (UEAB/ISERC/07/08/2024), and permit/license from the National Commission for Science, Technology and Innovation (License No. NACOSTI/P/24/39809). Similarly, permission was obtained from Bomet County Department of Health Services (CGB/HS/Research/10/2024). Written informed consent was obtained from all participants, with provisions for illiterate participants using witnessed thumbprints. Participation was voluntary, and confidentiality was ensured through anonymization and use of unique identifiers. All data were securely stored in password-protected systems and locked cabinets, accessible only to the research team, and will be retained for 2-3 years before secure deletion.

RESULTS OF STUDY

Table 1. Socio-demographic characteristics of participants

Variable	Frequency (n)	Percentage (%)
Age		
18 – 29	14	30.4
30 – 39	23	50.0
40 +	9	19.6
Mean ± S.D.	30.7 ± 7.5	
Gender		
Female	34	73.9
Male	12	26.1
Highest education level		
Primary	21	45.7
Secondary	13	28.3
College/university	6	13.0
Marital Status		
Single	5	10.9
Married	38	82.6
Divorced/Separated	2	4.3
Widowed	1	2.2
Number of under-five children (Mean ± S.D)	1.86 ± 1.03	

A total of seven focus group discussions and seven in-depth interviews were conducted, involving total of 46 participants. As shown in Table 1, the participants aged 30.7 ± 7.5 years, 73.9% were females, 45.7% attained primary education while 82.6% were married. Thematic analysis identified two key themes, namely facilitators (or enabling factors) and barriers were identified to influence the impact of the PDH program (Figure 1 and Figure 2). These major themes were supported with subthemes and

verbatim quotations to demonstrate contextual insights and participant perspectives. Narrative patterns showed subtle variations by caregiver role, marital status, and occupation, although core experiences were largely shared across participants.

Facilitators of the PDH Intervention

Most participants expressed that various factors promoted their involvement and consistency in the program and implementation of learnt lessons. This theme entailed facilitating factors that enhanced their active participation, improvement or change in feeding practices, and visible child recovery and health improvement among the caregivers in the intervention group. Three subthemes emerged from this major theme included improved nutrition knowledge and caregiving practices, observable child well-being improvement, and peer learning and community motivation.

Enhanced Nutrition Knowledge and Caregiving Practices

The majority of the participants expressed that they had acquired of key practical skills and contextual nutrition knowledge regarding child dietary practices, food preparation, food hygiene, and age-appropriate feeding through PDH sessions. Some participants described that the sessions provided that transformative learning environments as they were able to improve understanding of child nutrition particularly through experimental demonstrations and participatory approaches, resulting to adoption of improved dietary practices and diversify diets using locally available foods.

"*Before I participated to this program [the hearth sessions], I used to give my child any soft food without understanding specific needs for my child ..... mostly ate carbohydrates such as 'kangumu', ugali, tea and kales, but now I know how and need to ensure my child eats balanced diet for better well-being.*" (FGD 3, Female caregiver)

"*These sessions have helped us understand the right food portions and hygiene, I never knew that poor hygiene and sanitations could be a risk factor for underweight, I only knew inadequate feeding or foods are ..... my child used to get sick more often, now he eats well and rarely falls sick.*" *(FGD 1, Male caregiver of 32 months child)*

"..... *I used to think that local foods were not much beneficial (nutritive) in addressing childhood malnutrition, ... but these [PDH] sessions have improved my understanding, now I ensure they are [locally available foods] utilized appropriately.*" *(IDI 3, Female caregiver)*

Peer Learning and Community Motivation

Caregivers reported that PDH's participatory approach cultivated mutual encouragement, solidarity, and collective responsibility for child nutrition and general hygiene and sanitation. Some participants expressed that witnessing fellow peers participating in the program, motivated them and provided a shared experience to reduce stigma associated with child malnutrition [underweight] and provided space for normalized discussion about child feeding problems. Additionally, caregivers reported that the program fostered social accountability which was key to strengthen adherence and sustainability of PDH practices at household level.

"*At start I feared but seeing other mothers participating in this program, especially cooking and feeding of children, encouraged me to consistently participate and bring my child ..... sometimes we remind and supported each other in participating in the program.*" *(FGD 4, Mother of 11 months child)*

"..... *the program has made us a family. If one mother was absent, we checked on her and shared food ideas and ensures the child made it to the program.*" *(FGD 2, Female caregiver)*

"*When I visit others [caregivers'] homes, and we motivate each other and even compete to ensure adherence to knowledge and skills gain [from hearth session] for improved child health...*" *(IDI 1, Female caregiver)*

Observable Child Recovery and Reinforcement

Caregivers reported that they had witnessed tangible improvements in children's health and physical appearance over time during their continued participation in the PDH program. This motivated them to sustain their consistent participation. Some caregivers expressed that they had witnessed measurable gain in weight, improved appetite and activity levels since their participation in the program, demonstrated credibility of the program and boosted self-efficacy. Some caregivers outlined that PDH's feeding intervention provided opportunity for improved diet they could not afford, thus boosted adherence. In addition, follow-ups reinforced adoption of positive dietary practices, hence sustained observable child recovery.

"*Initially, my child was weak, small and sickly, but now she plays, eats more, and even looks stronger. That gives me hope to continue.*" *(FGD 2, Male caregiver)*

"*Before the PD hearth session, my child would frequently get sicker and ill, and after participating in a PD hearth session, my child usually has been immune to disease and can fight back disease, as she (child) makes recovery very quick.*" *(FDG 3, Female caregiver)*

"*When I saw my grandson gaining weight after just two weeks, I knew the PDH sessions were working.*" *(FGD 5, Grandmother of 18 months child)*

"*When sometimes I was in need of assistance and clarifications, continued regular follow-ups really helped me. I remember my husband was able to understand why I should keep participating in the program ....., he [husband] also got involved and supported me financially and emotionally*" *(FGD 7, Female caregiver)*

Barriers to Effective Implementation

Despite the program's success, caregivers identified several various barriers that significantly influenced optimal participation, implementation and sustainability of PDH practices. These barriers were categorized into three subthemes such as food insecurity and economic limitations, caregiver workload and competing domestic roles, and cultural beliefs and intra-household resistance.

Food Insecurity and Economic Limitations

Most caregivers cited household poverty and unstable food supply as major barrier to implementation and sustainability of PHD practices. Even though locally available, caregivers cited that financial constraints were hindered affordability of recommended foods, as some had only one meal per day. Similarly, they expressed difficulty maintaining the recommended dietary diversity due to competing financial needs, seasonal variability and limited animal-source foods. Additionally, some expressed

concerns over difficulty to access some of recommended foods due to rural residence and predominant tea farming.

"..... Sometimes I know what and how to cook, but the problem is that there is no food in the house ..... We usually take one meal except for the kid who normally rely on breastfeeding and porridge..." (FGD 1, Female caregiver)

"Due to competing financial priorities, we cannot always afford fruits, eggs or animal-source proteins. We rarely use animal-source proteins ..... almost four to five times annually." (FGD 2, Male caregiver)

"We do not have land to cultivate neither vegetables nor other foods ..... we rely on purchasing from the market. Sometimes we miss specific food stuffs we want to purchase in the market as most people cultivate tea and seasonal variations." (FGD 4, Female caregiver)

"We live far from any market, sometimes it' s challenging to travel to nearest market due to distance and transportation issues. So, I normally opt to feed my child with what is available ....." (IDI 7, Female caregiver)

Caregiver Workload and Competing Domestic Roles

Some caregivers reported that multiple caregiving, domestic roles and income-generating roles constrained their time to fully participate in the program and adhere to PDH practices. Many expressed difficulties in balancing farm work, as most were involved in tea plucking jobs. Similarly, some caregivers expressed difficulties balancing household chores and recommended child feeding, especially in single-parent or low-support households, where a parent (caregiver) was fully focus in income generation.

"During PDH sessions, we are told to feed the child many times as possible or at least thrice, but sometimes I leave early for the farm [tea plucking] and return late..... making it really difficult to cope with work and caregiving demands." (IDI 2, Female caregiver)

"..... It is really time consuming to prepare food based on recommendations, particularly after difficult and tiresome day, as I have other children to care for. So, I sometimes overlook food preparation recommendations..... sometimes I normally forget handwashing prior food preparation" (IDI 3, Female caregiver)

"As a single parent, balancing limited financial resources I hardly earn with competing financial needs is a major dilemma ..... I do not have support .... And I have other children to take care of also...." (FDG 2, Single parent mother of 36 months child)

Cultural Beliefs and Intra-household Resistance

Some caregivers cited difficulties to fully adopt PDH practices due to cultural norms regarding child nutrition, gender roles and intergenerational authority. Similarly, some experienced resistance from their husbands or mother-in-law who viewed the program as shameful in the community, and unconventional or economically unsustainable. Additionally, some caregivers encountered opposition from family members who cited that the program was meant for disadvantage community members only, hence their participation was mockery to the family.

"My mother-in-law says a child should only take ugali, porridge, Mursik, milk tea and breastfeeding until two years; she refuses when I mix other foods, particularly balanced diet." (FGD 1, Female caregiver)

"My husband complains that we are wasting food by cooking balanced diet, meant for child..... Sometimes he complains that I embarrass him and the family by participating in this [PDH] program." (FGD 4, Female caregiver)

"Some families have strong cultural beliefs that affect their dietary practices and health-seeking behaviour. I remember one grandmother who was a caregiver of under-five year child, bluntly refusing to take the child for immunization services" (IDI 5, Male caregiver)

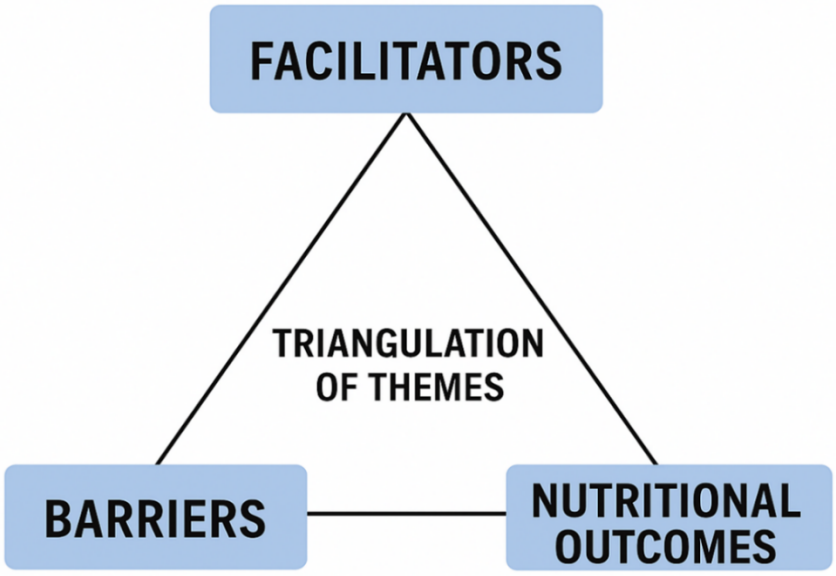

Figure 2. Triangulation of themes derived from FGDs and IDIs

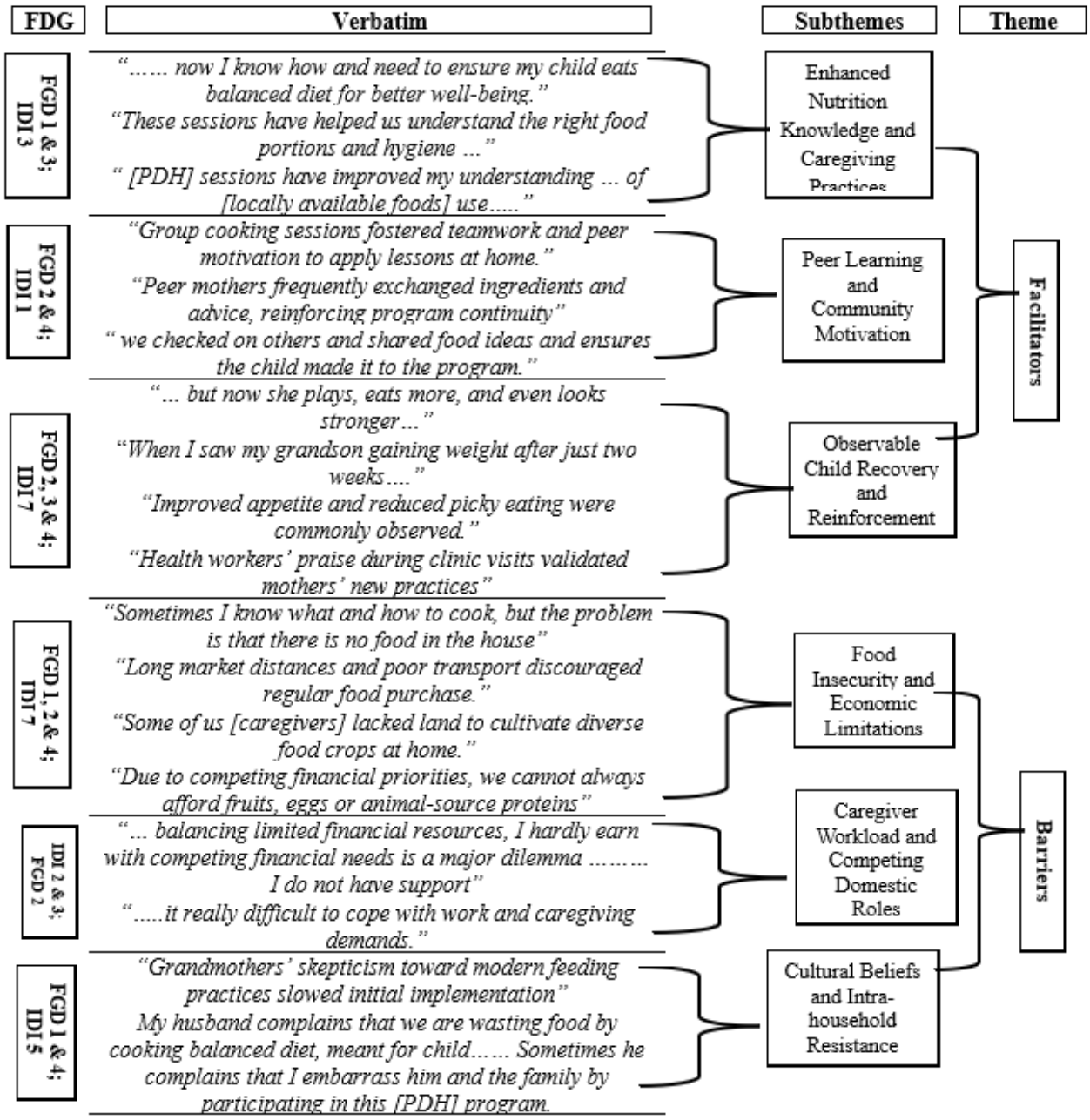

Figure 1. Excerpts of the verbatims recorded, subthemes and themes generated after FGDs and IDIs

DISCUSSION

This is the first qualitative study to our knowledge to investigate caregivers' experiences and perspectives on adopting and sustaining Positive Deviance Hearth practices for underweight children under five after program completion. The qualitative findings demonstrated that caregivers' participation and sustained engagement in the PDH program were driven by a coherent set of enabling mechanisms that aligned closely with the theoretical foundations of Positive Deviance Hearth and with patterns observed across global evaluations. The PDH program fundamentally transformed their understanding of child nutrition, household hygiene, food preparation, and age-appropriate feeding. This finding was consistent with previous studies that revealed that PDH's practical, demonstration-based pedagogy is among its strongest catalysts of behaviour change (Hanifa et al., 2025; McGuire et al., 2018). Participants described the sessions as a shift from general awareness to actionable, contextually grounded knowledge, enabling them to replace carbohydrate-heavy diets with diversified, balanced meals prepared using locally available foods. These self-reported improvements mirror randomized and quasi-experimental studies in Bangladesh, Cambodia, and Vietnam, where PDH participants exhibited significant gains in nutrition knowledge and adoption of recommended feeding practices due to hands-on, participatory models of learning (Nguyen et al., 2025; Putri et al., 2024; Young et al., 2021). The findings also highlighted the centrality of peer learning and collective motivation; caregivers consistently referred to mutual support, shared responsibility, and

normalization of discussing undernutrition factors. A study in Sierra Leone reported that caregiver solidarity and social accountability were key determinants of program adherence and continuity (Tafese & Anato, 2021). Moreover, participants underscored that observing visible changes in children improved appetite, weight gain, energy, reduced illness episodes served as emotionally compelling reinforcement that sustained commitment. This dynamic parallels PDH impact studies in Bangladesh, and Kenya, where early child recovery acted as a positive feedback loop that validated the intervention and strengthened caregiver self-efficacy (Angwenyi et al., 2024; Zongrone et al., 2018). Home follow-ups further enhanced program credibility by providing individualized encouragement, clarification of feeding skills, and household-level monitoring, echoing multi-country reports that PDH effectiveness increases when follow-up mechanisms reduce attrition and reinforce learning. It further shows that visible child recovery functions as a powerful reinforcement loop, where improvements in appetite, weight gain, and energy act as emotionally salient feedback that sustains caregiver commitment and self-efficacy. These facilitators present a consistent narrative as the PDH model effectively operationalizes community knowledge, peer reinforcement, and experiential learning to cultivate sustainable caregiving behaviour changes. The convergence between participants' experiences showed that PDH's core mechanisms such as contextual skill-building, social cohesion, and visible child recovery, remain powerful drivers of nutritional improvement across diverse settings. These mechanisms enhance caregivers' self-efficacy and reinforce behavior change through practical learning and peer support, facilitating the maintenance of recommended practices.

Despite these strong enabling factors, caregivers identified structural and socio-cultural barriers that constrained full implementation and long-term sustainability of PDH practices, reflecting a pattern widely reported in global PDH and community nutrition evaluations. Food insecurity and household poverty remain major barriers in fight against child undernutrition. Consistently with a study by Wandia et al. (2026) these key barriers have manifested as limited of financial capacity to purchase recommended foods, encountering seasonal shortages, and relying on a single daily meal. Similar constraints have been documented across sub-Saharan Africa and South Asia, where PDH households often understand recommended feeding practices but are unable to execute them due to unstable food supply, market distance, or competing household expenditures (Harding et al., 2018; Paulo et al., 2024). Similarly, studies shows that PDH impact is strongest when households have minimally stable access to diverse foods, and significantly weaker when poverty limits the procurement of fruits, vegetables, or animal-source proteins (Kapur et al., 2024; Thompson, 2022; Wandia & Wanzala, 2025). The second major barrier involved caregiver workload and competing domestic responsibilities; participants reported intensive farm labour demands, especially tea-plucking, early departures from home, and childcare burdens that restricted their ability to prepare recommended meals, maintain feeding frequency, or adhere to hygiene practices. This aligns with findings from studies that reported "time poverty" among low-income mothers substantially weakens consistency of feeding routines and limits adoption of nutrition counselling (Chaudhuri et al., 2021; Marter-Kenyon et al., 2023; Wandia & Wanzala, 2025). Studies show that interventions requiring intensive meal preparation or close supervision often fail to translate into daily practice when caregivers balance agricultural work, household chores, and childcare with minimal support. The third barrier identified was cultural norms and intra-household resistance, reveals the sociological complexity of nutrition behaviour change. Participants described husbands and mothers-in-law discouraging the adoption of diversified diets, perceiving PDH participation as shameful, unnecessary, or economically wasteful. Such resistance reflects findings from a study by Nepali et al. (2024) where entrenched beliefs regarding child feeding, age-based food restrictions, gendered decision-making, and intergenerational authority restrict uptake of nutrition interventions. Studies have emphasized that unless male household members and senior female authorities are engaged, caregivers often face internal pushback that undermines adherence (Cardador et al., 2022; Domínguez-Castillo et al., 2025; Tessema et al., 2025). PDH effectively builds knowledge, motivation, and self-efficacy. However, structural constraints persist. Poverty, food insecurity, caregiver time burdens, and socio-cultural factors disrupt this pathway. As a result, improved knowledge is not always translated into consistent household-level practices.

Strengths and Limitations of the Study

This study fills existing research gap on understanding caregivers' experiences and perspectives on adopting and sustaining PDH recommended behaviour after completion of the program, especially in effort to address child undernutrition. The study provides in-depth qualitative insights into caregivers' live experiences with the PDH interventions, highlighting real issues caregivers face in PDH implementation. The study employed both FGDs and IDIs which strengthened data triangulation and quality of the findings. Additionally, conducting this study post-intervention enabled exploration of sustainability-related perspectives rather than immediate program reactions. Despite these strengths, this study had several limitations. These might include social desirability bias, translation-related meaning loss, and lack of member checking, which may affect interpretation, despite mitigation through triangulation and peer debriefing. The study relied on self-reported experiences which might have been affected by social desirability and/or recall bias. The study was conducted in a single county and post one PDH intervention potentially limiting generalizability of findings to other contexts. Additionally, seasonal food variability and household dynamics might not be fully captured in the study, hence influencing caregivers' accounts on barriers and facilitators.

CONCLUSION

This qualitative study highlights caregivers' experiences with the positive deviance hearth intervention. The study demonstrated that participatory, demonstration-based learning, peer interaction, and household follow-up were perceived as central to the adoption and attempted maintenance of recommended child feeding and caregiving practices. Caregivers described enhanced practical understanding of nutrition and hygiene, reinforced through social support and observable child improvements, which collectively strengthened motivation and self-efficacy. Nonetheless, the study reveals that the translation of acquired knowledge into sustained household practice is profoundly shaped by structural and

socio-cultural constraints. Chronic food insecurity, limited household resources, intensive labor demands, and intra-household power dynamics, particularly resistance from male partners and senior family members, were consistently identified as impediments to long-term adherence. These findings underscore that PDH-related behavior change does not occur in isolation but is embedded within broader economic and social systems. PDH can trigger behavior change, but sustainability requires an enabling environment (food access) and household engagement. To enhance sustainability, PDH programming should be strategically integrated with food security initiatives, livelihood and social protection mechanisms, and inclusive household engagement approaches. Such integration is essential for enabling caregivers to operationalize learned practices beyond the intervention period and across diverse resource-constrained settings.

DECRALATION

Ethics approval and consent to participate

The study obtained ethical approval from the Institutional and Scientific Review Board of the University of Eastern Africa, Baraton (UEAB/ISERC/07/08/2024), and a permit from the National Commission for Science, Technology, and Innovation (NACOSTI/P/24/39809). Permission to conduct the study in Konoin Sub-County, Bomet County was obtained from the Bomet County administration. The objective of the study was explained to the participants, and written consent was obtained from the participants before data collection. The right of the participants who do not want to participate in the study was respected. The study observed privacy and confidentiality throughout the study.

Acknowledgement

The authors acknowledge the cooperation and support of the Bomet County administration, the Konoin Sub-County leadership, and local health providers in the study implementation. Finally, we appreciate Mr. Joel Wanzala for contributing and leading this qualitative field inquiry.

Artificial Intelligence-Assisted Technology

Not applicable

Consent for publication

Not applicable.

Availability of data and materials

The data are available from the corresponding author on reasonable request.

Conflicts of interest Statement

The authors declare that they have no competing interests.

Funding

This study has not received any funding.

Authors' Contributions

Conceptualization: Gladys C. Koskei; Methodology: Gladys C. Koskei; Formal analysis and investigation: Gladys C. Koskei, Simon Kamau, Zipporah W. Ndungu & Calvince O. Anino; Writing - original draft preparation: Gladys C. Koskei; Writing - review and editing: Simon Kamau, Zipporah W. Ndungu & Calvince O. Anino; Resources: Gladys C. Koskei.

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REFERENCES

Amelia, V., Arief, Y. S., & Wahyuni, S. D. (2025). Community-Based Intervention for Malnutrition in Children Under Five: A Scoping Review. *Jurnal Berita Ilmu Keperawatan*, *18*(1), 138–147. https://doi.org/https://doi.org/10.23917/bik.v18i1.6192

Angwenyi, V., Abubakar, A., Kabue, M., Njoroge, E., Nasambu, C., Ssewanyana, D., Mulupi, S., Marangu, J., Ombech, E., &

Mokaya, M. M. (2024). Caregiving experiences and practices: qualitative formative research towards development of integrated early childhood development interventions targeting Kenyans and refugees in Nairobi's informal settlements. *BMC Public Health*, *24*(1), 1-15. https://doi.org/10.1186/s12889-024-20018-6

Braun, V., & Clarke, V. (2021). To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qualitative Research in Sport, Exercise and Health*, *13*(2), 201–216. https://doi.org/10.1080/2159676X.2019.1704846

Braun, V., & Clarke, V. (2025). Reporting guidelines for qualitative research: A values-based approach. *Qualitative Research in Psychology*, *22*(2), 399–438. https://doi.org/10.1080/14780887.2024.2382244

Cardador, M. T., Hill, P. L., & Salles, A. (2022). Unpacking the status-leveling burden for women in male-dominated occupations. *Administrative Science Quarterly*, *67*(1), 237–284. https://doi.org/10.1177/00018392211038505

Carvalho, M. C. da C., Ribeiro, S. A., de Sousa, L. S., Lima, A. Â. M., & Maciel, B. L. L. (2025). Undernutrition and Intestinal Infections in Children: A Narrative Review. *Nutrients*, *17*(9), 1–32. https://doi.org/10.3390/nu17091479

Chaudhuri, S., Roy, M., McDonald, L. M., & Emendack, Y. (2021). Coping Behaviours and the concept of Time Poverty: a review of perceived social and health outcomes of food insecurity on women and children. *Food Security*, *13*(4), 1049–1068. https://doi.org/10.1007/s12571-021-01171-x

Chek, L. P., Gan, W. Y., Chin, Y. S., & Sulaiman, N. (2022). A nutrition programme using positive deviance approach to reduce undernutrition among urban poor children under-five in Malaysia: A cluster randomised controlled trial protocol. *Plos One*, *17*(10), e0275357. https://doi.org/10.1371/journal.pone.0275357

Cohen, R., Gesser-Edelsburg, A., Singhal, A., Benenson, S., & Moses, A. E. (2020). What distinguishes positive deviance (PD) health professionals from their peers and what impact does a PD intervention have on behaviour change: a cross-sectional study of infection control and prevention in three Israeli hospitals. *Epidemiology & Infection*, *148*(1), 1–7. https://doi.org/https://doi.org/10.1017/S0950268820002484

Coleman, P. (2022). Validity and reliability within qualitative research for the caring sciences. *International Journal of Caring Sciences*, *14*(3), 2041–2045. http://www.internationaljournalofcaringsciences.org/

David, V., Ngure, K., Musita, C., Muhamud, C. C., & Kerich, M. (2023). Effectiveness of the Positive Deviance Hearth Model in Enhancing Nutritional Status among Children in Kilifi County. *African Journal of Health Sciences*, *36*(5), 610–620. https://www.ajol.info/index.php/ajhs/article/view/274574/259212

Domínguez-Castillo, P., Bonilla-Campos, A., & Pujal i Llombart, M. (2025). "We can't allow ourselves to fall ill": Health and (self-) discipline in female family caregivers from a gender perspective. *Journal of Women & Aging*, *37*(1), 15–34. https://doi.org/10.1080/08952841.2024.2372913

Gizaw, A. T., Sopory, P., & Sudhakar, M. N. (2024). Effectiveness of a positive deviance approach to improve appropriate feeding and nutritional status in South West Region, Ethiopia: A study protocol for a cluster randomized control trial. *Plos One*, *19*(1), e0266151. https://doi.org/10.1371/journal.pone.0266151

Hanifa, I. N., Limavady, A., & Fewtrell, M. (2025). Exploring factors influencing complementary feeding practices in Asia from parents' and caregivers' perspectives: A qualitative systematic review. *Nutrition & Dietetics*.83 *(1)*, 1-16. 10.1111/1747-0080.70031

Harding, K. L., Aguayo, V. M., & Webb, P. (2018). Hidden hunger in South Asia: a review of recent trends and persistent challenges. *Public Health Nutrition*, *21*(4), 785–795. https://doi.org/10.1017/S1368980017003202

Kapur, M., Peña, A. N., Sreeram, N., Bloem, M. W., & Drewnowski, A. (2024). What Is the Likely Impact of Alternative Proteins on Diet Quality, Health, and the Environment in Low-and Middle-Income Countries. *Current Developments in Nutrition*, *8(1)*, 1-6. https://doi.org/10.1016/j.cdnut.2023.102064

Kim, Y., Biswas, J. P., Hossain, M. I., Baik, D., Reinsma, K., Min, S., & Kang, Y. (2021). Age differences in the impact of a Positive deviance/Hearth programme on the nutritional status of children in rural Bangladesh. *Public Health Nutrition*, *24*(16), 5514–5523. https://doi.org/10.1017/S1368980021003189

KNBS, & ICF. (2023). *Kenya Demographic and Health Survey 2022*. https://dhsprogram.com/pubs/pdf/FR380/FR380.pdf

Korir, A. K., Omboto, P., & Musebe, R. (2022). Effect of Natural Capital on Food Security among Smallholder Tea Farmers in Bomet County, Kenya. *Current Journal of Applied Science and Technology*, *30*(41), 14–21. https://doi.org/10.9734/cjast/2022/v41i3031803

Lochmiller, C. R. (2021). Conducting thematic analysis with qualitative data. *The Qualitative Report*, *26*(6), 2029–2044. https://doi.org/10.46743/2160-3715/2021.5008

Marter-Kenyon, J. S., Blakeley, S. L., Banks, J. L., Ndiaye, C., & Diop, M. (2023). Who has the time? A qualitative assessment of gendered intrahousehold labor allocation, time use and time poverty in rural Senegal. *Frontiers in Sustainable Food Systems*, *7*, 1-21. https://doi.org/10.3389/fsufs.2023.1198290

McGuire, J., Gallegos, D., & Irvine, S. (2018). Infant feeding nutrition policies in Australian early childhood education and care services: a content and qualitative analysis. *International Journal of Child Care and Education Policy*, *12*(1), 1-27. https://doi.org/10.1186/s40723-018-0053-2

Morales, F., Montserrat-De la Paz, S., Leon, M. J., & Rivero-Pino, F. (2023). Effects of malnutrition on the immune system and infection and the role of nutritional strategies regarding improvements in children's health status: A literature review. *Nutrients*, *16*(1), 1-16. https://doi.org/10.3390/nu16010001

Nepali, B., Jackson, T., & Johns, C. (2024). Exploring the potential of agriculture diversification as a pathway to an improved smallholder livelihood dietary system in Nepal. *Sustainability*, *16*(21), 1-18. https://doi.org/10.3390/su16219384

Nguyen, S. P., Tran, H. T., Nguyen, D. D., & Nguyen, B. X. (2025). Caregiver Perceptions, Practices, and Challenges in Accessing Rehabilitation Services for People with Disabilities in Rural Vietnam. *Disabilities*, *5*(2), 1-13. https://doi.org/10.3390/disabilities5020044

Paulo, H. A., Andrew, J., Luoga, P., Omary, H., Chombo, S., Mbishi, J. V., & Addo, I. Y. (2024). Minimum dietary diversity behaviour among children aged 6 to 24 months and their determinants: insights from 31 Sub-Saharan African (SSA) countries. *BMC Nutrition*, *10*(1), 1-14. https://doi.org/10.1186/s40795-024-00967-2

Putri, N. K., Wardhani, L. P., & Ernawaty. (2024). Positive deviance/hearth intervention in collaboration between academia and NGOs: a realist evaluation. *BMC Public Health*, *24*(1), 1-11. https://doi.org/10.1186/s12889-024-20632-4

Suryawan, A., Jalaludin, M. Y., Poh, B. K., Sanusi, R., Tan, V. M. H., Geurts, J. M., & Muhardi, L. (2022). Malnutrition in early life and its neurodevelopmental and cognitive consequences: a scoping review. *Nutrition Research Reviews*, *35*(1), 136–149. https://doi.org/10.1017/S0954422421000159

Tafese, Z., & Anato, A. (2021). Application of the positive deviance model for Sustainable reduction of open defecation (OD) practice in rural, Ethiopia. *Int. J. Adv. Res. Community Health Nurs*, *3*(1), 15–23. https://doi.org/10.1371/JOURNAL.PMED.1000363

Tessema, K. F., Yihune, M., Boti, N., & Hailemariam, Z. (2025). Socio-Cultural Barriers Affecting Women's Decision on

Child Feeding in Rural South Ethiopia: Perspectives of Caregivers and Key Figures. *SAGE Open*, *15*(2), 1-15. https://doi.org/10.1177/21582440251339887

Thompson, C. (2022). Dietary health in the context of poverty and uncertainty around the social determinants of health. *Proceedings of the Nutrition Society*, *81*(2), 134–140. https://doi.org/10.1017/S0029665121003657

UNICEF, WHO, & The World Bank. (2025). *Levels and trends in child Malnutrition: UNICEF / WHO / World Bank Group Joint Child Malnutrition Estimates. Key findings of the 2025 edition.* https://data.unicef.org/wp-content/uploads/2025/07/JME-Brochure-UNSDG-regions-2025-v23.pdf

Wandia, F., & Wanzala, J. (2025). Bridging the Compliance Gap: An Assessment of Dietary and Physical Activity Adherence Among Type 2 Diabetes Patients in Kericho County, Kenya. *Journal of Diabetes Research*, *2025*(1), 1–12. https://doi.org/10.1155/jdr/1357263

Wandia, F., Wanzala, J., & Chepngetich, I. (2026). Adherence to Dietary Recommendations and Associated Factors Among Adults Aged 40 Years and Older with Type 2 Diabetes: A Cross-Sectional Study at Kericho County, Kenya. *Journal of Current Health Sciences*, *2026*(1), 1–10. https://doi.org/10.47679/jchs.2026146

World Vision. (2025). *Positive deviance Hearth*. World Vision International. https://www.wvi.org/nutrition/positive-deviancehearth

Young, M. F., Baik, D., Reinsma, K., Gosdin, L., Rogers, H. P., Oy, S., Invong, W., Hen, H., Ouk, S., & Chhorvann, C. (2021). Evaluation of mobile phone-based Positive Deviance/Hearth child undernutrition program in Cambodia. *Maternal & Child Nutrition*, *17*(4), 1–13. https://doi.org/10.1111/mcn.13224

Zongrone, A. A., Menon, P., Pelto, G. H., Habicht, J.-P., Rasmussen, K. M., Constas, M. A., Vermeylen, F., Khaled, A., Saha, K. K., & Stoltzfus, R. J. (2018). The pathways from a behavior change communication intervention to infant and young child feeding in Bangladesh are mediated and potentiated by maternal self-efficacy. *The Journal of Nutrition*, *148*(2), 259–266. https://doi.org/10.1093/jn/nxx048

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