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Enablers of successful dissemination of uncommon practices in positive deviance studies for nutrition: A scoping review

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Abstract

Background The positive deviance approach identifies uncommon yet successful practices within communities to address malnutrition through context-specific solutions. While it identifies locally effective practices, a critical gap remains in understanding how these practices are translated into structured interventions for broader dissemination. This scoping review aimed to identify key enablers in positive deviance nutrition interventions that support the transition from identifying positive deviant practices to their active dissemination through structured interventions.

Methods We conducted a systematic search across five electronic databases (PubMed, Web of Science, PsycINFO, Science Direct, CINAHL) and grey literature. We included original research of all study designs published in English from January 1st, 1990, to December 2, 2024. Then, we conducted a narrative synthesis to account for heterogeneity among the studies.

Results Out of 259 positive deviance studies, 13 identified and then disseminated uncommon but successful practices. Among these, twelve studies included comparison groups and demonstrated improved nutrition outcomes. We identified six overarching themes that capture the key enablers of effective dissemination: integration with existing programs, ongoing capacity and skill building, active participant engagement, adaptable and modifiable practices and activities, cost-effective strategies, and cross-sectoral collaboration and partnership.

Conclusion This scoping review identified six themes that summarize enablers for effectively disseminating uncommon yet successful practices. These enablers not only align with successful criteria for scaling up conventional interventions but also reflect the principles of positive deviance. They highlight the value of integrating local knowledge and resources with external efforts to design tailored approaches to tackling malnutrition. Cross-sectoral collaboration and partnerships emerged as particularly important for scaling interventions. However, these enablers alone may not guarantee success, highlighting the need for future research to explore additional facilitators and barriers to optimize long-term implementation of positive deviance interventions in nutrition.

Protocol registration CRD42020180396.

Keywords Positive deviance, Hearth, Nutrition, Nutrition intervention, Scaling-up, Scoping review

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Background

Malnutrition remains a critical global public health challenge, affecting 733 million people across diverse socioeconomic and geographic contexts [1–3]. It refers to deficiencies or excesses in nutrient intake or nutrient imbalances, encompassing both undernutrition and overnutrition (e.g., obesity and diet-related noncommunicable diseases) [1]. Despite decades of interventions, malnutrition persists due to a complex interplay of social, economic, environmental, and political factors that influence dietary behaviors, food security, and healthcare access [4–6]. Traditional top-down nutritional interventions often overlook context-specific barriers within communities [7, 8], prompting calls for innovative, community-driven approaches—such as positive deviance—that leverage local knowledge and resources to develop sustainable, culturally appropriate solutions.

One promising strategy is positive deviance, an asset-based, problem-solving, and community-driven approach [7]. It involves a positive deviance inquiry to identify the behaviors that enable certain individuals or groups to achieve better outcomes than their peers, despite facing similar or greater challenges and having access to the same resources [8, 9]. By focusing on existing successful behaviors and practices within communities, a positive deviance approach offers a practical alternative to traditional interventions that impose externally developed solutions. Previous interventions using positive deviance have improved breastfeeding practices [10], childcare behaviors [11], and anemia prevention [12] by identifying and promoting locally effective behaviors. Unlike many intervention models that require extensive external resources, positive deviance empowers communities to implement sustainable, low-cost solutions based on their knowledge and assets.

While the positive deviance approach has demonstrated effectiveness in identifying locally effective behaviors, a critical gap remains in understanding how these behaviors transition from discovery to structured interventions that are actively disseminated for broader application [13–15]. Systematic reviews on positive deviance in nutrition have highlighted the benefits of integrating complementary methodologies, such as big data analytics, to enhance intervention effectiveness [14, 16, 17]. However, no existing review has systematically examined the enablers for successful dissemination of positive deviance practices beyond the initial identification stage. Addressing this gap is crucial to translating localized behavioral success into community-driven interventions that promote improvements in nutritional outcomes.

This scoping review aimed to identify key enablers in positive deviance nutrition studies that facilitate the transition from identifying positive deviant practices to actively disseminating these practices through structured interventions. By synthesizing findings from studies that move from identification to intervention, this review provides insights into how uncommon, yet successful nutritional behaviors and practices can be scaled within communities.

Methods

Although this study was initially registered as a systematic review (PROSPERO registration number : CRD42020180396), the iterative process of data extraction and synthesis revealed significant heterogeneity in study designs, interventions, and outcomes, making a systematic synthesis challenging. Consequently, the review was adapted into a scoping review to better map the available evidence, identify key concepts, aligning with the methodological flexibility of scoping reviews. We conducted the scoping review following the methodological framework proposed by Arksey and O'Malley [18] and further by Levac et al. [19]. We report on our findings in accordance with the PRISMA Extension for Scoping Reviews addition (Additional file 1, PRISMA checklist) [20].

Search strategy

We systematically searched electronic databases and websites to identify nutrition studies using the positive deviance approach. Our search strategy included free-text words and Medical Subject Headings (MeSH), specifically: "Positive deviance" OR "Positive deviants" OR "Positive deviance/Hearth" OR “Positive Outliers” AND "Nutrition." We applied Boolean operators (AND/OR) as appropriate to optimize the retrieval of relevant studies. Additional file 2 provides full search details. We also searched additional grey literature using the websites of relevant non-governmental organizations, and international agencies and via Google Scholar. The keywords in the grey literature search were: “Positive deviance”, “Positive deviance/Hearth and nutrition”, “Positive deviance/Hearth in nutrition” across databases. Handsearching organizational websites proved more effective, with using the key word ‘positive deviance/hearth’ sufficient to return relevant results. A language restriction was applied, and only studies published in English were screened and included.

Data sources

We conducted a systematic search in the following electronic databases for published articles: PubMed/MEDLINE, Web of Science, PsycINFO, Science Direct, and CINAHL. For grey literature, we used databases such as OAIster, OpenGrey, GreyNet International, Google scholar and Science.gov and organizational websites. The initial search was conducted on April 8, 2020, and repeated on December 2, 2024.

Eligibility criteria

We used the following criteria to select studies that: (i) used the positive deviance approach in nutrition; (ii) identified and disseminated uncommon practices as part of an intervention; (iii) were published in English between January 1, 1990, and November 30, 2024; and (iv) were available in full text. We included all populations regardless of study designs, age, sex, or geographical location. We excluded conference abstracts, reviews, protocols, editorials, expert opinions, guidelines, and single case reports.

Key concepts and definitions

Positive deviance (PD), is an asset-based, problem-solving, and community-driven approach to behavioral and social change. It is based on the observation that within every community, some individuals or groups adopt uncommon behaviors and strategies that enable them to achieve better outcomes than their peers, despite having access to the same resources and facing similar or greater challenges [7].

Hearth refers to a 10- to 12-day nutrition rehabilitation and education session for underweight and moderately wasted children and their primary caregivers [7].

Uncommon but successful practices are behaviors or strategies observed among a minority of individuals or households in resource-poor settings who achieve better nutrition and health outcomes than others living under similar conditions. These practices are considered 'uncommon' because they diverge from prevailing community norms, yet 'successful' because they are associated with tangible improvements in nutritional and health status [7].

Selection and data collection process

One reviewer (SC) conducted a preliminary search in PROSPERO for similar reviews before registering the protocol. Three reviewers (NJ, SC, KA) collaboratively selected keywords and databases. NJ and SC developed a predefined search strategy in PubMed using appropriate MeSH terms and free-text words, which we adapted for the other databases. For grey literature, we searched the keywords both in combination, or independently across the databases and websites. We exported the retrieved articles to Endnote, where we removed duplicates. We then uploaded the remaining studies to Rayyan software, which supported manual screening by the three reviewers by providing a collaborative platform with blinding and duplicate detection functionalities. The three reviewers (NJ, SC, KA) independently screened all titles and abstracts ('titles and executive summaries' or 'titles and full text' for reports) to assess eligibility. Subsequently, all reviewers independently reviewed the full texts of articles that had passed the initial screening. We examined reference lists of the included articles to identify additional studies. We resolved any discrepancies through discussion.

Table 1 Steps in positive deviance approach [7]

Category	Steps	Positive deviance process
Identification stage	1	Define the problem, its causes and common practices, and the desired outcome
	2	Determine whether positive deviants exist
	3	Discover uncommon but successful behaviors and strategies through inquiries
Intervention stage	4	Develop activities based on the inquiry findings. Disseminate positive deviant practices beyond pilot communities to enable others to access and practice new behaviors
	5	Monitor and evaluate the results

Data extraction

The three reviewers (NJ, SC, KA) pre-tested a standardized data extraction tool on three randomly selected articles from the included studies to ensure reliability before the full data extraction process began. We extracted data on: (1) study setting, (2) location, (3) study population, (4) data collection methods, (5) study duration, (6) sample size, (7) steps in the positive deviance methodology, (8) positive deviance practices, (9) interventions, (10) primary outcome, and (11) results. Three reviewers (NJ, SC, KA) independently extracted data into an excel sheet, ensuring each article was extracted by at least two reviewers. No adjustments were made to the tool, as it comprehensively captured all required data. We resolved any discrepancies by discussion or, if necessary, by consulting additional reviewers (KICO, AS, WT).

Synthesis methods

Three reviewers (NJ, SC, KA) conducted a narrative synthesis to account for heterogeneity across the included studies [21]. First, we checked whether each study followed the five steps of the positive deviance approach, as outlined in Table 1 [7]. We grouped the five steps into two stages: identification, and intervention. Studies in the identification stage identified uncommon but successful practices and behaviors; in the intervention stage, studies moved from discovering uncommon but successful practices to disseminating them as an intervention. Second, we summarized the studies and categorized them according to predefined sub-groups: context (income level of the country), target group, outcome, and study design. Finally, through an iterative process, the three reviewers (NJ, SC, KA) independently reviewed the extracted data, identified recurring factors, and grouped them into overarching themes that captured the enablers of disseminating uncommon yet successful practices. Discrepancies were resolved through discussion until consensus was reached, and coding and theme development were

conducted manually. If a study was part of a larger intervention, we referred to previously or subsequently published literature to extract relevant information [22–25].

Results

Study selection

Figure 1 shows the study selection process, following the 2020 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [20, 26]. We identified 259 studies through our search strategy, including 236 from databases and 23 from grey literature. After removing 74 duplicates, we excluded 108 studies based on their titles and abstracts because they were not related to nutrition or the positive deviance approach. We further excluded 64 studies at the full-text screening stage because they focused only on identifying uncommon practices or were abstracts, commentaries, or guidelines. We ultimately included 13 positive deviance intervention studies in nutrition, consisting of 11 peer-reviewed publications and two grey literature.

Study characteristics and outcomes of positive deviance intervention studies in nutrition

Figure 2 and Table 2 summarize the characteristics of the included studies. Eight of the thirteen studies were conducted in low-income countries. Eleven studies focused on child undernutrition or anemia in pregnant women [27–34]. All studies reported improved outcomes for pregnant women and children (Table 2). Seven studies showed higher mean scores among participants receiving positive deviance interventions for child wasting [27, 31, 32, 35, 36] and severe or moderate malnutrition [33, 34]. One study reported a reduction in anemia prevalence among pregnant women in the intervention group compared to the control group [28].

Five studies conducted in middle- and high-income countries aimed to reduce the prevalence of low birth weight [37], childhood malnutrition [35, 36, 38], and adult weight control [39]. Three studies in middle-income countries reported moderate to high positive outcomes in the intervention areas [35–37]. For example, in Egypt, pregnant women in the intervention area experienced increased birth weight compared to the control area [37]. In Ecuador, the prevalence of severe underweight among

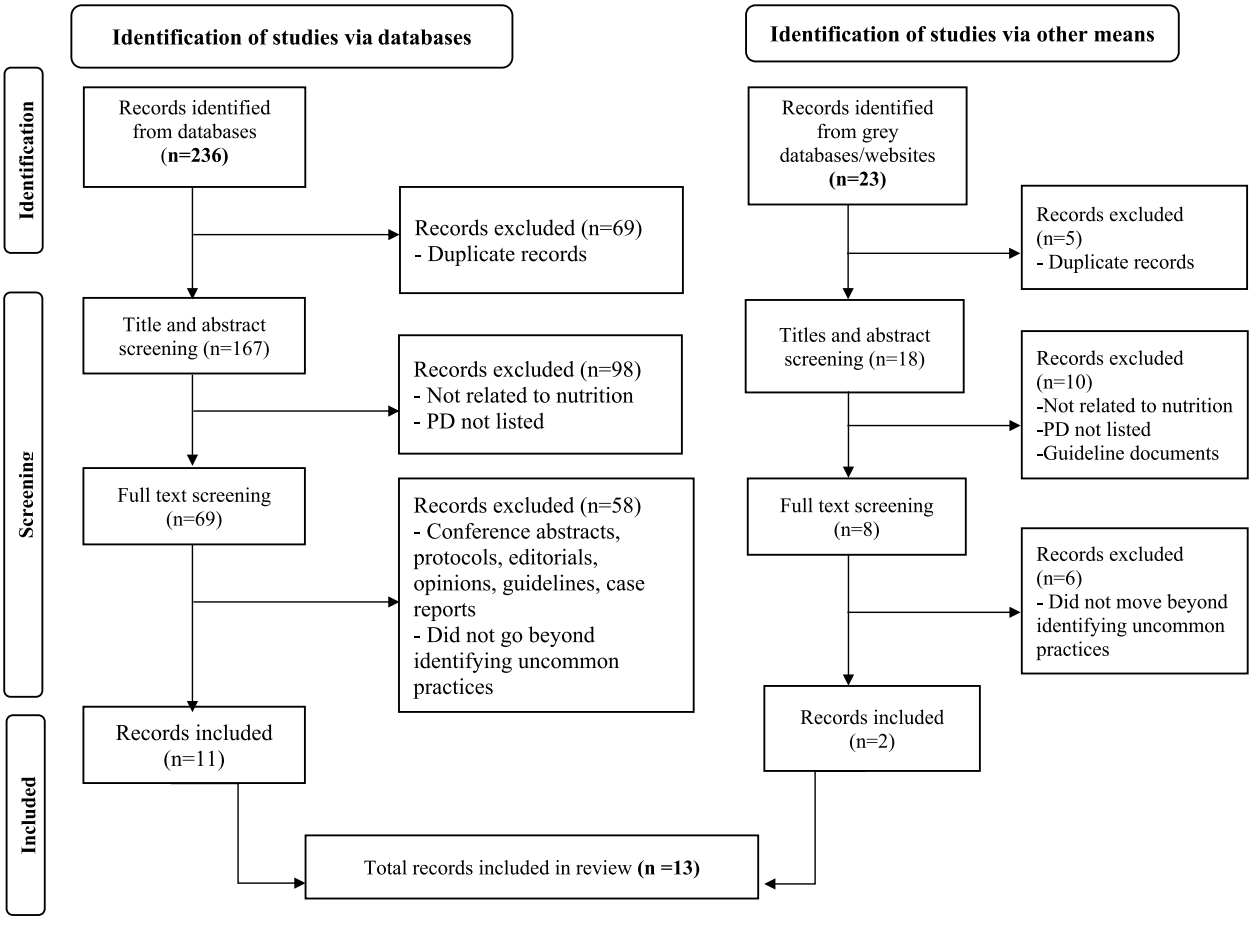

Fig. 1 PRISMA Flow diagram summarizing the study selection process

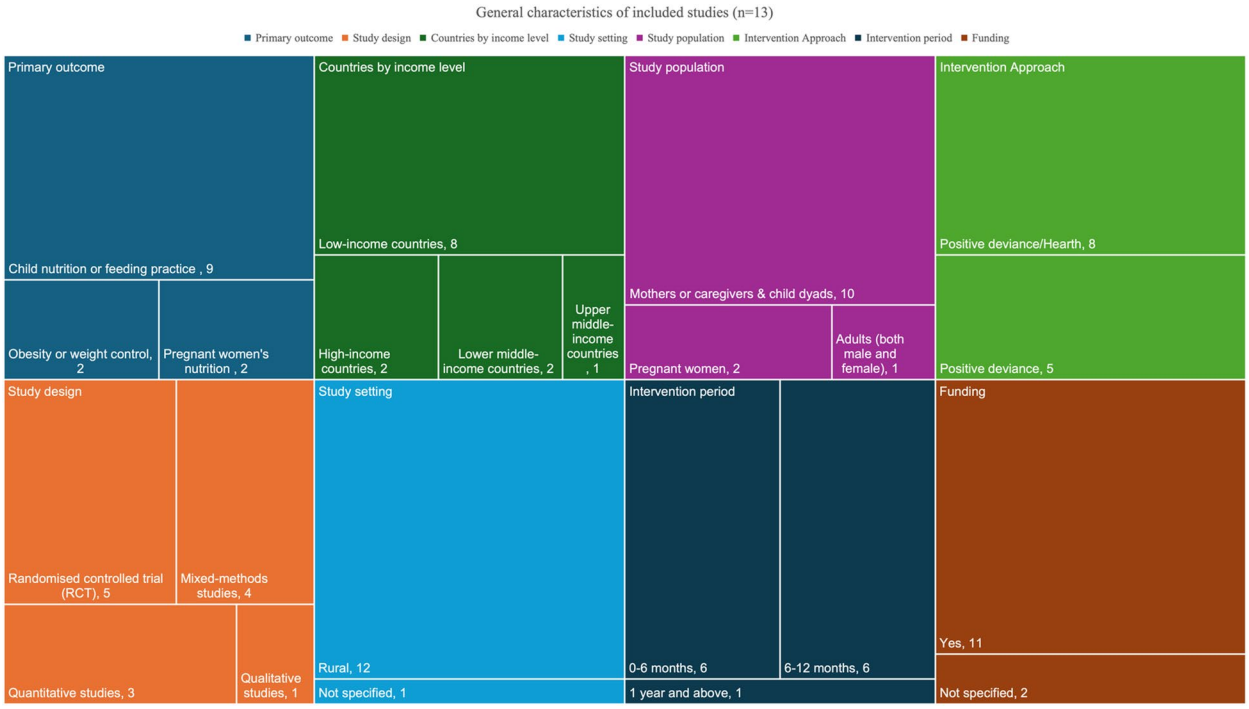

Fig. 2 Tree map summarizing the general characteristics of included studies ($n = 13$)

children decreased in the intervention group, while it increased in the control group [36]. Two studies in high-income settings reported moderate improvements in child obesity [38] and weight loss [39], likely due to the shorter duration of interventions.

Regarding study design, five studies were randomized controlled trials [29, 31, 32, 38, 39], four employed mixed methods [30, 33, 34, 37], three were quantitative [28, 35, 36], and one was qualitative [27]. Twelve studies were conducted in rural areas [27–38], while one did not explicitly specify its setting [39]. In eight studies with comparison groups, the intervention groups had better outcomes than the control groups [27–29, 31, 36–39]

All studies designed and implemented scale-up activities after identifying uncommon practices (Table 3). Scale-up efforts related to developing and disseminating desired practices (Positive Deviance Step 4) were: action plan development, activity design (e.g., defining roles and responsibilities), hands-on learning, and community engagement. One study that adopted the individual approach did not use community engagement activities [39]. For the monitoring and evaluation stage (Positive Deviance Step 5), studies incorporated progress monitoring (e.g., tracking feeding practices and cleanliness), culturally relevant communication, and regular evaluation at set intervals (e.g., one-month, three-month, and six-month follow-ups). However, studies provided limited details on community-driven indicators, particularly how communities participated in indicator development, despite the active involvement of trained volunteers/select community members in data collection and extraction. Additionally, none of the studies explicitly reported how they planned to or disseminated the impact of their interventions to the wider community.

Evidence synthesis

We performed a narrative synthesis of the evidence from the included intervention studies and identified 19 factors that facilitated the dissemination of uncommon yet successful practices (Table 4). We considered a factor common if it appeared in at least six studies. Of the 19 factors, 14 were implemented in at least six or more studies. We grouped related factors into broader themes based on their conceptual similarities and interactions in the studies. The main themes we identified were: integration with existing programs, ongoing capacity and skills building, active participant engagement, adaptable and modifiable practices/activities, cost-effectiveness strategies, and cross-sectoral collaboration and partnerships.

Integration with existing programs

Nine studies integrated the positive deviance approach within existing community programs and networks. Of these, seven studies incorporated existing health programs, such as vaccinations, deworming, hygiene, iron supplementation, and antenatal care, as part of their intervention activities [27–30, 33, 34, 37]. For example, in rural Senegal, community health volunteers distributed

Table 2 Individual characteristics of included studies ($n = 13$)

Author, year	Study design	Context	Country, income level	Study population	Period (months)	Nutrition topic	Outcome	Key findings
Ahrari M et al., [37]	Mixed methods	Rural	Egypt, lower-middle	Pregnant women	6	Maternal undernutrition; Birth outcome	Mothers' diets; Reduction in birthweight	Birth-weights increased 2.2 times more in target mothers than in comparison mothers, with a greater reduction in low birth-weight prevalence in target villages. Target at-risk women were significantly more likely to report increased food intake, meat and vegetable consumption, daytime rest, and avoidance of second-hand smoke during pregnancy
Bolles K et al., [27]	Qualitative	Rural	Haiti, low	Mother/caregiver-child dyads	6	Child undernutrition	Prevalence of child weight gain/growth	Six months post-Hearth program, 100% of children in eight villages and 66% in the remaining five villages maintained or exceeded the international standard median for weight gain
Dickey VC et al., [30]	Descriptive	Rural	Vietnam, low	Mother/caregiver-child dyads	9	Child undernutrition	Improved weight gain/growth	Intervention program was linked to improved dietary intake, enhanced growth in younger undernutrition children, and lower rates of acute respiratory infections
Foster BA et al., [38][1]	RCT	Rural	USA, high	Mother/caregiver-child dyads	6	Child overnutrition	Improved weight loss and diet pattern	There was no significant difference in BMI z-score change by randomization group at the end of the intervention. Both the parent mentor group and the community health worker group showed significant BMI z-score reductions from baseline. The decrease in adiposity was consistent with observed diet and activity changes, which stabilized between the six-month and twelve-month follow-up, reflecting weight maintenance
Gizaw AT et al., [31]	RCT	Rural	Ethiopia, low	Mother/caregiver-child dyads	6	Child undernutrition	Improved child feeding and improved weight gain/growth	The intervention significantly improved breastfeeding and complementary feeding outcomes. The intervention group showed greater increases in breastfeeding knowledge, attitude, and self-efficacy compared to the control group. Similar improvements were observed for complementary feeding, with higher knowledge, more positive attitudes, and greater self-efficacy among mothers in the intervention group. At the six-month follow-up, children in the intervention group had a lower prevalence of underweight compared to those in the control group

Table 2 (continued)

Author, year	Study design	Context	Country, income level	Study population	Period (months)	Nutrition topic	Outcome	Key findings
Kraschnewski JL et al., [39]	RCT	Not stated	USA, high	Adults	3	Adult overnutrition	Improved weight loss	Intervention participants experienced an average weight loss, while control participants showed a slight weight gain, resulting in a significant difference between the groups
Kim Y et al., [35]	Quantitative	Rural	Bangladesh, lower-middle	Mother/caregiver-child dyads	6	Child undernutrition	Improved weight gain/growth	From enrollment to six-month follow-up, mean weight-for-age z-score (WAZ) improved, and the percentage of underweight children decreased. However, older children at enrollment had slower WAZ improvements and lower probabilities of rehabilitation at six months, with the likelihood decreasing further with age
Management Sciences for Health, [34]	Mixed methods	Rural	Uganda, low	Mother/caregiver-child dyads	38	Child undernutrition	Improved weight gain/growth	Cure rates for children with undernutrition improved from 59.5% in the first year to 72.7% in the third year
Marsh DR et al., [29][2]	RCT	Rural	Vietnam, low	Mother/caregiver-child dyads	10	Child undernutrition	Improved weight gain/growth	While the integrated nutrition program did not lead to statistically significant overall growth improvements, younger and more undernourished intervention children experienced less deterioration than their counterparts. Among children under 15 months with undernutrition at baseline, intervention participants showed significantly smaller declines in WAZ compared to the comparison group
Maslowsky S et al., [33]	Mixed methods	Rural	Guinea, low	Mother/caregiver-child dyads	12	Child undernutrition	Improved weight gain/growth	The prevalence of moderate undernutrition significantly decreased, while the prevalence of well-nourished children significantly increased
Ndiaye M et al., [28]	Quantitative	Rural	Senegal, low	Pregnant women	9	Nutrition deficiency	Reduced risk of anemia; improved iron supplements	After nine months, the mean hemoglobin levels increased in the PD Micah group, while no significant change was observed in the Micah group. Improved accessibility to iron supplements and monthly pregnancy promotion sessions contributed to higher supplementation coverage. Logistic regression analysis indicated a significantly reduced risk of anemia in the PD Micah area

Table 2 (continued)

Author, year	Study design	Context	Country, income level	Study population	Period (months)	Nutrition topic	Outcome	Key findings
Roche ML et al., [36]	Quantitative	Rural	Ecuador, upper-middle	Mother/ caregiver-child dyads	6	Child undernutrition	Improved weight gain/ growth	Mothers in the intervention were significantly more likely to feed their children the promoted foods, and intervention children consumed higher percentages of recommended intakes for key nutrients. At follow-up, they showed improvements in weight-for-age z-scores and had a lower likelihood of being underweight
Seetha A et al., [32]	RCT	Rural	Malawi, low	Mother/ caregiver-child dyads	21 days	Child undernutrition	Improved weight gain/ growth	The comprehensive training had a positive and statistically significant impact on Z-scores for wasting and underweight, with effects steadily increasing over the 21-day period. While impacts on stunting were not significant within this timeframe, significance began to emerge after two weeks, suggesting that stunting may improve over a longer duration

[1]Follow-up data was extracted from Foster BA et al., 2016 [24]

[2]Follow-up data was extracted from Schroeder DG et al., 2002 [25]

iron supplements, reducing anemia prevalence from 85.4% to 55.0% over nine months [28]. In the United States, parent mentors in a Head Start program successfully engaged parents of obese children to address early childhood obesity [38].

Ongoing capacity and skills-building

All studies reported in-person training for key personnel to disseminate uncommon but successful practices [27–39]. Staff included community health workers, positive deviant mothers, parent mentors, and volunteers. Six studies adapted or developed new training tools for trainers, including manuals and registers [27, 29–31, 38, 39]. For example, one US study developed a parent-mentor manual based on obesity prevention guidelines that highlighted positive deviant practices [38]. In Haiti, program staff and health workers designed a child register incorporating vaccination, deworming, and home visit records as well as a certificate program for trainees [27]. Moreover, four studies implemented structural improvements to support and sustain their interventions [27, 30, 34, 37].

Active participant engagement

Almost all studies (12/13) employed a mix of group and individual activities [27–38], with one study [39] relying exclusively on individual activities. Among those using mixed activities, seven studies initiated intervention with group sessions, before transitioning to individual tasks [28–34]. In seven studies, participants attended 2–3 h sessions in manageable groups of 6–12 people daily [27, 30, 32, 34–37]. Studies in Guinea and Uganda indicated that pre-determining optimal group sizes and holding sessions near participants' homes enhanced engagement [33, 34]. Five studies [28, 31, 33–35] conducted home visits and monthly meetings, while two used phone calls and email reminders [28, 39]. A study that used an individual approach relied exclusively on emails and website logins for weight loss training [39].

Adaptable and modifiable practices/activities

All studies tailored interventions to leverage local resources, including food and human capital. Seven studies accounted for community-specific factors, such as culturally appropriate terminologies and posters [27, 31], gender roles and responsibilities [29], and seasonal or geographical conditions like harvesting periods, rainy seasons, or market prices [29–31, 33, 34, 36]. In Haiti, for example, the flexible scheduling of group sessions, such as reducing group session frequency from five to three times per week, allowed broader family involvement [27]. Group sessions in Ecuador promoted healthy eating using local foods [37]. In Ethiopia, the distribution of culturally suitable posters detailing the proper preparation of enriched flour and recommended breastfeeding practices

Table 3 Select activities implemented under the Positive Deviant (PD) intervention stages 4 and 5 in included studies ($n = 13$), based on PD facilitators guide [7]

Author, year	Select intervention activities based on PD guide								
	Step 4				Step 5				
	Action plan (*based on PD inquiry results*)	**Activity design (to practice desired behaviors)**	**Hands-on learning**	**Community engagement**	**Progress monitoring**	**Community driven indicators (development & monitoring)**	**Culturally relevant communication**	**Regular evaluation**	**Impact sharing with audiences**
Ahrari M et al., [37]	Yes	Yes	Yes	Yes	Yes	Partly (involved in monitoring not indicator development)	Yes	Yes	Not specified However, government and international NGOs scaled up to additional districts
Bolles K et al., [27]	Yes	Yes	Yes	Yes	Yes	Yes (consulted health worker supervisors in design, volunteers for monitoring)	Yes	Yes	Not specified
Dickey VC et al., [30]	Yes	Yes	Yes	Yes	Yes	Partly (involved in monitoring not indicator development)	Yes	Yes	Yes, meal home-delivery to caregiver's doorsteps for family members to witness
Foster BA et al., [38]	Yes	Yes	Not specified. Mentoring sessions were given	Yes	Yes	Partly (involved in monitoring not indicator development)	Yes	Yes	Not specified
Kraschnewski JL et al., [39]	Yes	Yes	Not specified. Participants watched role model videos	No, individual weight loss activities	Yes	No, individual driven indicators used	Yes	Not specific, only English used	Not specified. Website goal was to disseminate practices in future
Management Sciences for Health, [34]	Yes	Yes	Yes	Yes	Yes	Yes, (involved in monitoring)	Yes	Yes	Not specified However, government and international NGOs partnered to scale up practices
Marsh DR et al., [29]	Yes	Yes	Yes	Yes	Yes	Yes, representatives from district involved in planning	Yes	Yes	Yes, home delivered meals to non-attendees No wider dissemination method specified
Maslowsky S et al., [33]	Yes	Yes	Yes	Yes	Yes	Not specific, community members involved in monitoring	Yes	Yes	Yes, invited government officials to participate in key events
Ndiaye M et al., [28]	Yes	Yes	Yes	Yes	Yes	Partly (involved in monitoring not indicator development)	Yes	Yes	Not specified
Seetha A et al., [32]	Yes	Yes	Yes	Yes	Yes	Not specified	Yes	Yes	Not specified
Roche ML et al., [36]	Yes	Yes	Yes	Yes	Yes	Not specified	Yes	Yes	Not specified

Table 3 (continued)

Author, year	Select intervention activities based on PD guide								
	Step 4				Step 5				
	Action plan (*based on PD inquiry results*)	Activity design (to practice desired behaviors)	Hands-on learning	Community engagement	Progress monitoring	Community driven indicators (development & monitoring)	Culturally relevant communication	Regular evaluation	Impact sharing with audiences
Gizaw AT et al., [31]	Yes	Yes	Yes	Yes	Yes	Not specified	Yes	Yes	Not specified
Kim Y et al., [35]	Yes	Yes	Yes	Caregivers	Yes	Partly (involved in monitoring, and secondary data extraction)	Not specified	Yes	Not specified

supported desired behaviors at home [31]. Interventions across multiple settings (Guinea, Egypt, Haiti, Vietnam, Ecuador, Ethiopia, Uganda, and Senegal) also engaged key decision-makers, including men, mothers-in-laws, and other respected members, to reinforce community participation [27–29, 31, 33, 34, 36, 37].

Cost-effective strategies

All studies minimized operating costs by leveraging community assets [27–39]. Cost-saving initiatives included tailoring recipes to local seasonality and resources [27, 31, 33, 35], considering optimal locations for group sessions to reduce transportation expenses [31, 33–35], and substituting food ingredients for prepared meals [37]. In Bangladesh, each caregiver contributed to a meal by bringing food, ingredients, utensils, and firewood, further lowering costs [35]. Ten studies also formed partnerships with health departments [27, 28, 31, 33, 37], microcredit institutions [27], and international organizations [27, 29, 30, 34, 35]. However, only three studies reported the total costs associated with disseminating the positive deviance approach [29, 33, 37].

Cross-sectoral collaboration and partnerships

All studies collaborated with government departments, NGOs, hospitals, private institutions, and universities [27–39]. Five studies reported intensive, relatively long-term partnerships with businesses, government departments, and civil society [27, 30, 33, 34, 37]. For example, in Vietnam, NGOs, institutions, and the government established management steering committees to address child malnutrition [29], while in Ethiopia, health professionals were trained to supervise and provide feedback to positive deviant mothers implementing the intervention [31]. In Egypt, a partnership between Save the Children and the Maternal and Child Health Department led to health facility upgrades and project expansion across governorates [37]. Overall, cross-sectoral collaboration proved critical for disseminating uncommon practices and implementing large-scale projects.

Discussion

Our scoping review shows that the positive deviance intervention is effective in improving nutrition outcomes across diverse settings by disseminating uncommon yet successful practices. We identified and grouped the key enablers facilitating the dissemination of uncommon practices into six broad themes: integration with existing programs, ongoing capacity and skill building, active participant engagement, adaptable and modifiable practices/activities, cost-effective strategies, and cross-sectoral collaboration and partnership.

Intervention studies integrated the positive deviance approach into existing programs, aligning with

Table 4 Key themes and enablers for dissemination of uncommon yet successful practices in included studies ($n = 13$)

Themes	Facilitating factors	Frequency	Studies
Integration with existing programs	Diffuse interventions into existing models and networks (e.g., peer mentoring and community empowerment)	9	[27–30, 32–34, 37, 38]
	Complement government programs (e.g., vaccinations, iron supplementation, hand hygiene)	7	[27–30, 33, 34, 37]
Ongoing capacity and skills-building	Community-level skills building: Train community health workers, peer educators, and positive deviant individuals in successful practices	11	[27–34, 36–38]
	Upgrading existing infrastructure and systems (e.g., antenatal services, data collection tools, training manuals)	8	[27, 29, 31–34, 37, 38]
	Individual level skills building: Develop practical skills such as making homemade soap, preparing a birth kit, and utilizing self-management and weight loss website	7	[28–30, 32, 37–39]
Active participant engagement	Employ individual follow-up and feedback mechanisms (e.g., home visits and phone calls), and incentivize participants through gifts and certificates for participation, facilitation, and successful practices	9	[27–29, 31, 33, 36–39]
	Organize intensive group activities (weekly/monthly) led by respected community members to establish a routine	9	[29–32, 35–39]
	Engaging participants in short, convenient sessions while encouraging the sharing of available food or ingredients	8	[27, 30–33, 35, 36, 39]
	Form manageable group sizes and prioritize locations that are close to training sessions	4	[27, 32–34]
Adaptable and modifiable activities	Utilize local resources to develop recipes, menus, and other inputs, including booster positive deviance inquiries	10	[27–31, 33–37]
	Involve respected community members (e.g., husbands, mothers-in-law, community health networks, or religious leaders)	8	[27–29, 31, 33, 34, 36, 37]
	Adapt culturally acceptable terminologies, posters, and seasonal activities (e.g., avoid undressing children during cold weather)	7	[27, 29–31, 33, 34, 36]
	Allow flexibility in activity duration and group sizes based on participant availability	5	[27, 30, 32, 36, 39]
	Provide participants with options (e.g., different weight loss activities or alternative forms of participation)	3	[27, 29, 39]
Cost-effective strategies	Leverage local resources (human and input resources)	9	[27, 29, 31, 33–37, 39]
	Implement creative initiatives such as substituting food ingredients for prepared meals, establishing partnerships with micro-credit institutions, or subsidizing supplement prices	5	[27, 28, 36, 37, 39]
Cross-sectoral collaboration and partnerships	Foster community-level collaborations	10	[27–33, 36, 37, 39]
	Establish partnerships with international and national programs, including private research institutions	8	[27–30, 33–35, 37]
	Engage in regional and provincial collaborations	5	[27, 28, 32, 37, 38]

established policies, programs, and health systems regardless of their primary approach. This finding is consistent with existing literature, which highlights the critical role of infrastructure in scaling-up and sustaining interventions [40]. Additionally, stakeholder support has been shown to enhance the dissemination and adoption of interventions [41, 42]. However, two studies in our review found that uncommon practices were more effective in small villages or towns with minimal non-government involvement [27, 29]. In these areas, limited external project activity encouraged local ownership and self-reliance, whereas communities with greater exposure to outside assistance were more likely to develop dependency, hindering the adoption of new practices.

The nature of skill-building activities influenced attendance, volunteerism, and behavior change. Hands-on activities, such as making soap, birth kits, and newborn clothing, reinforced positive deviant behaviors related to hygiene and parenting. Several studies in our review developed culturally appropriate materials, including illustrated posters on proper flour preparation and porridge thickness, while others developed or updated training manuals, and resources that can be replicated or adapted to sustain behavior change. Skill-building initiatives not only enhance personal control and motivation but also foster community ownership, which is essential for long-term adoption [43]. These findings align with existing literature on tool-based learning [44–46], highlighting the importance of interactive, practice-oriented approaches in promoting sustained behavior change.

Dissemination activities in the included studies were facilitated by participant selection and engagement strategies. Studies that included participants meeting predefined criteria yielded significant results. For example,

implementing positive deviance practices in communities with malnourished children demonstrated that a viable solution already existed within the community. Moreover, factors such as gender roles, seasonal variations, and proximity to training centers influenced participation and volunteer engagement. Volunteerism is a key driver of social participation [47, 48].

Included studies adopted uncommon practices to fit community needs, ensuring greater relevance and acceptance. Rather than relying on a single positive deviance inquiry, some studies conducted booster positive deviance inquiries in each village to identify additional uncommon practices and local assets. The success of these inquiries and their implementation process was linked to the involvement of trusted community members, including local and religious leaders, community older adults, health workers, and family influencers such as mothers-in-law and husbands. Additionally, follow-up and peer support enabled participants to practice and master new behaviors. Prior research indicates that individuals excluded from the initial inquiry often struggle to adopt or adapt uncommon practices, especially when these practices contradict conventional norms [16, 17]. However, our review identifies key facilitators that support community adoption and long-term sustainability of new behaviors, including building trust and conducting booster inquiries during the scale-up process [15, 43, 49, 50].

Collaborations and partnerships across sectors played an important role in disseminating uncommon practices. Partnerships with microcredit institutions, government departments, and regional and international organizations created unique opportunities for cost-effectiveness implementation [27–31]. These collaborations contributed in three key ways. First, they provided the financial resources necessary to scale interventions beyond the pilot stage [46]. Second, they distributed roles and responsibilities among actors based on their expertise, reducing the complexity of dissemination activities [16, 40, 51–53]. Third, they fostered a sense of ownership among key stakeholders, enhancing long-term commitment [52, 54]. As a result, multi-sectoral partnerships are more effective than isolated initiatives in expanding successful interventions.

While scale-up activities were implemented, gaps remained in community-driven monitoring and evaluation. Communities participated in data collection but had limited involvement in indicator development. Additionally, sharing intervention outcomes with the wider community was often overlooked. One study highlighted the challenge of choosing indicators that strike a balance between usefulness and feasibility. For instance, health volunteers tended to deprioritize the usefulness of 'message delivery' in favor of more impactful active learning such as cooking [29]. Piloting and consultation can help refine indicators for greater relevance. Future efforts should prioritize community-led monitoring and establish structured strategies for impact dissemination [55].

All 19 enablers identified in positive deviance intervention studies contributed to the spread of uncommon yet successful practices. The findings also align with key factors for scaling-up conventional public health interventions [42]. Moreover, the identified enablers were interconnected rather than mutually exclusive (Table 4).

This scoping review has several limitations. First, we restricted our search for positive deviance studies in nutrition to those using specific terms such as "Positive Deviance/Hearth," "Positive Deviant," or "nutrition." While this approach ensured a focused analysis, it may have excluded relevant studies that described positive deviance using different terminology. For example, we did not use "Hearth" as an independent term but rather in conjunction with "Positive Deviance" ("Positive Deviance/Hearth"), potentially omitting earlier studies that used "Hearth" without explicitly referencing positive deviance. Second, we excluded studies that did not progress to the intervention stage. Future review studies should incorporate comparators to better assess facilitators and barriers influencing the adoption and sustainability of positive deviance interventions. Third, as this was a scoping review, we did not conduct a formal critical appraisal or risk of bias assessment. The included studies were heterogeneous in design and methods, and our synthesis relied on descriptive information rather than systematic evaluation of intervention implementation. As a result, some key enablers may not have been fully captured in this review. Lastly, most studies were conducted in rural low-income settings, which limits the generalizability of the identified themes and enablers to urban or high-income settings. To strengthen future positive deviance interventions, implementation strategies should be developed alongside the inquiry process to ensure contextually grounded design. In addition, both implementation and impact evaluation should be conducted and reported to support replicability and scaling across diverse settings.

Conclusion

This scoping review identified key enablers successfully disseminating uncommon practices in positive deviance nutrition studies. These enablers not only align with the successful criteria for scaling up conventional interventions but also reflect the principles of positive deviance. The resulting overarching themes include integration with existing programs, ongoing capacity and skill building, active participant engagement, adaptable practices, cost-effective strategies, and cross-sectoral collaboration and partnership. However, while the identified enablers

are essential, they may not be sufficient on their own to guarantee success. Future research should investigate additional facilitators and barriers to further optimize the implementation of positive deviance interventions in nutrition.

Abbreviations

BMI	Body Mass Index
N/A	Not Available
NGO	Non-governmental Organization
N/R	Not reported
PRISMA	Systematic Reviews and Meta-Analyses
SD	Standard Deviation

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s40795-025-01200-4.

Additional file 1. Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping ReviewsChecklist.

Additional file 2. Search strategy.

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Authors' contributions
NJ, SC, and KA: designed and conducted the scoping review; JN, SC, KA: performed data analysis and interpretation under the supervision of KICO, AS WT; JN, SC, and KA: wrote the manuscript: KICO, AS, WT, MJ: reviewed the manuscript; AS: had the primary responsibility for the final content. All authors critically reviewed and approved the final manuscript.

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