Positive Deviance Inquiry Final Report

Food and Nutrition Security, Enhanced Resilience (FANSER) Zambia

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I. Introduction

Background and Context

From February 2015 to March 2025, the German Agency for International Cooperation (GIZ) is leading the implementation of the Food and Nutrition Security, Enhanced Resilience (FANSER) project on behalf of the German Ministry for Economic Cooperation and Development (BMZ). The project is part of the Zambian Scaling Up Nutrition (SUN) movement as well as BMZ's cross-country special initiative, "One World No Hunger," which aims to eradicate hunger and malnutrition. Knowledge for Nutrition (K4N)—a five-year programme co-financed by the European Commission (EC) and BMZ—focuses on how BMZ and the EC´s nutrition-related programmes and policies can build on their existing foundations, using effective approaches and evidence-based strategies to expand coverage and intensify results. A key challenge of BMZ nutrition-relevant programmes is how to effectively change behavioural practices to achieve better nutrition and health outcomes in the populations they support.

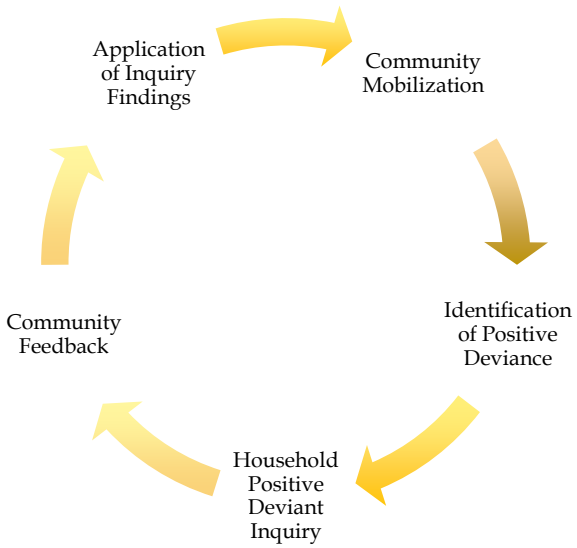
The overall goal of FANSER is to improve the nutritional situation of people living in food and nutrition insecure households in selected districts of Luapula and Eastern provinces of Zambia, in particular women of reproductive age and children under the age of two years. The project aligns with the minimum service package of interventions across health and nutrition, water, hygiene and sanitation (WASH), agriculture, and economic dimensions developed by Zambian government's National Food and Nutrition Commission (NFNC).

To achieve its goal of improving the nutritional status of vulnerable households, the project focuses on improving knowledge, attitudes, and practices, increasing the availability of nutrient-rich foods through nutrition-sensitive agriculture efforts, developing improved strategies for households to manage their productive resources, and strengthening nutrition governance at district, provincial and national levels. A key challenge across health and nutrition development programs globally, inclusive of those sponsored by BMZ, is how to effectively change household-level behaviours in the midst of adversity and challenging contexts to attain improved health and nutrition outcomes. Traditional top-down nutrition programs rely on outside predetermined solutions that do not always succeed in a complex environment. Yet, there is growing attention towards participatory, strength-based approaches that leverage the solutions and best practices that already exist in a local community.

Positive Deviance (PD) is one such approach—a self-discovery, community-led, strength-based methodology grounded in the fact that there are individuals and groups in every community whose uncommon but successful behaviors and strategies have enabled them to achieve positive outcomes while facing the same challenges and having access to the same resources as their neighbors. Since its initial conceptualization in the 1960s, the application of the PD approach has been implemented by more than 100 organizations across 45 countries for a variety of sectors, from public health and nutrition to education to business.

During a PD Inquiry targeting childhood malnutrition, members from the community and project staff identify healthy children living in poverty and observe the practices of these "positive deviant" households that enable them to have a well-nourished child despite low resources. Positive Deviants overcome the odds as they often apply uncommon and even unconscious practices. These unique practices are then shared with rest of community. The following steps outline the PD process.

- **DEFINE** the problem and desired outcome by engaging and building trust among stakeholders
- **DETERMINE** Positive Deviants through data collection or review of existing secondary data
- **DISCOVER** their uncommon, effective behaviors and strategies via semi-structured household inquiry observations
- **DEVELOP** an action plan with community feedback to develop tailored interventions for promoting and practicing promising actions
- **DISCERN** plans for monitoring progress, evaluating results, and disseminating lessons learned



Positive Deviance Study Objectives and Scope

A mid-project survey on maternal and young child nutrition indicators indicated that FANSER project interventions had a positive impact on WASH actions and nutrition outcomes such as individual dietary diversity score among women (IDDS-W), minimum dietary diversity among women (MDD-W), minimum acceptable diet (MAD) among children, and the household food insecurity experience scale (HFIES) early in the project. Yet these positive results declined between 2018-2020 to rates closer to baseline figures, ostensibly due to the negative environmental, social, and economic impact of the global COVID-19 pandemic. Since indicator values in comparison control areas declined too compared to baseline, it is possible that the project still helped mitigate the negative effects of broader downward trends. However, the FANSER Project team identified consistent discrepancies between the increased knowledge on nutrition and hygiene best practices and actual behavior adoption. Global health experts have indicated that this type of "know–do gap may be the biggest hurdle to achieving health equity around the world."[1] Investment is needed in identifying and promoting uncommon practices which are already successfully implemented by households that lead to optimal nutrition of mothers and children. The evidence-based PD approach was thus used to tailor program activities to specifically target the context-specific barriers and enablers of social and behavior

[1] Madeline Drexler. (2020) *Bridging the Know-Do Gap.* Harvard Public Health. Available at: https://www.hsph.harvard.edu/magazine/magazine_article/bridging-the-know-do-gap/#:~:text=As%20a%20result%2C%20millions%20of,health%20equity%20around%20the%20world.

change. Results from the PD pilot in Zambia will be used to strengthen recommendations for applying the PD approach across GIZ nutrition programs and other sectors.

The scope of the PD pilot process for FANSER Zambia included: engaging district and local stakeholders and establishing a community resource team in one to two selected communities in Petauke District; mobilizing the team to define the problem, current environment, and desired outcomes; identifying positive deviants and inquiring into their uncommon practices or behaviors; designing tailored interventions for promoting promising actions based on the inquiry results and allowing community members to practice the discovered behaviors; and monitoring, documenting, and disseminating progress and lessons learned to facilitate next steps and future application. Ultimately, the pilot aimed to derive evidence-based recommendations to improve the effectiveness of behavior change components in BMZ-funded nutrition-relevant programs, based on the PD approach.

II. Community Mobilization

Target Communities Selected

Through a collaborative review of existing nutrition/growth monitoring data, geographic maps, population statistics, and malnutrition data, the FANSER project staff identified the Bangwe Zone as the target area for the Positive Deviance Inquiry, which met the following criteria:

- Strong presence of committed community leadership
- Population of at least 200 children under age two years
- Data indicating high rates of maternal and child malnutrition along with the presence of potential positive deviance, verified through secondary data
- Largely disadvantaged in terms of socio-economic status/wealth
- Geography feasible to navigate by consultants and volunteers

The staff noted that the target area is close to a main road (Great East Road), which give households easy access to the boma, perhaps contributing to a larger proportion of well-nourished children. Additionally, the community is situated on a mission area run by the Catholic church, which occasionally provides temporary jobs at the mission hospital for some community members.

Stakeholders Engaged

In September 2022, FANSER project staff met with district-level leaders through the District Nutrition Coordinating Committee (DNCC) to build trust and buy-in among all stakeholders, to introduce the concept of the PD approach, and to gain important insights to malnutrition in the district. The team explained the PD approach ideology and steps that would be conducted.

What is Positive Deviance?

Positive Deviance is a self-discovery, community-led, strength-based approach grounded in the fact that there are individuals and groups in every community whose uncommon but successful behaviors and strategies have enabled them to overcome malnutrition while facing the same challenges and having access to the same resources as their neighbors. During a Positive Deviance Inquiry, members from the community and project staff identify healthy children and observe the practices of these “positive deviant” households that enable them to have a well-nourished child despite low resources.

Inception meeting with CLTN committee members in Bangwe zone

Five Ministry of Health divisions were represented—Ministry of Health, Ministry of Agriculture, Petauke Council (WASH), Ministry of Fisheries and Livestock, and the DNCC’s Monitoring and Evaluation Technical Working Group. Together, this District Resource Team shared that while malnutrition levels have improved due to increased stakeholder involvement and nutrition/WASH interventions, malnutrition remains a challenge in Petauke communities. Households are too dependent on project support, resulting in a lack of resilience once the project ends. Representatives also shared the lack of convergence of activities in the project and the difficulty in identifying household who are participating in and benefiting from agriculture, nutrition, and WASH interventions.

Keyhole or backyard gardens were cited by district representatives as practices some families use to combat malnutrition, as well as participation in cooking demonstrations in which mothers learn to prepare nutritious, locally-available foods for young children. WASH activities—such as use of tippy tap handwashing stations, dish racks, and sanitation facilities—were also seen to contribute to improved nutrition.

At the community level, the staff subsequently met with representatives from the Community Led Total Nutrition committee to similarly introduce the PD concept and solicit local insights into common nutrition practices and challenges. The committee shared that while malnutrition rates have declined due to education under the FANSER project and under-five clinics, cases of malnutrition persist due to food shortages. Changes in rainfall patterns over the years have resulted in more pronounced food shortages. The committee noted a lack of knowledge of good nutrition practices as well as a lack of commitment by parents to engage in positive child care practices and lack of male involvement. Lack of time, particularly during farming season or due to work responsibilities, results in poor food preparation. Many households also produce only staple foods or sell off of their produce, leaving none for the family's consumption. Diseases such as malaria are common, contributing to malnutrition, and there is poor health service seeking behavior for taking children to the hospital when ill.

Committee members discussed several positive practices that some households have adopted to combat high rates of malnutrition such as regular breastfeeding and feeding children three times a day from various food groups, growing an array of nutrient-rich foods at the household level, and using climate smart agricultural practices. Engaging in positive household hygiene and sanitation behaviors is understood to lead to good nutrition as well as joint decision making and cooperation between parents. Planning ahead and budgeting for the purchase of resources such as food, medicines, and hygiene products were also attributed to improved nutrition outcomes.

Wealth Ranking Criteria Established

With input from the district and community stakeholders, the project staff established simple, culturally appropriate, and objective wealth categories of "poor" or "non-poor."

	POOR	NON-POOR
	House is constructed of mud and thatched roof	House is constructed of cement, iron rooting, and glass windows; more than two bedrooms Has conveniences such as solar panels, electricity, smartphone, television set
	Livelihood sustained through farming, mostly used for household consumption of staples	Farming is not the only source of income
	Female-headed households	Male-headed households
	Lack of multiple sources of income Does not own or rent land; works on other people's farms for income	Stable source of income through employment or steady business such as rearing chickens for sale or maintaining a grocery shop/ vegetable stall Owns land

	Unable to have three meals a day most times of the year	Generally able to have three meals a day throughout the year
	Only livestock owned is chicken	Owns diverse livestock such as goats, cattle, pigs, and chickens

Seasonal Calendar Exercise Conducted

Project staff facilitated a session with community representatives to establish a Seasonal Calendar—a visual representation of month-by-month food availability, weather, workload, events, and disease prevalence due to seasonal changes over the course of a year. Participants were highly engaged in the process and provided significant detail. The unavailability of food in certain months was notable.

Consultants and CLTN committee members during the seasonal calendar activity

Bangwe Zone Seasonal Calendar												
Area	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
FOOD 	Wild berries Wild roots Guaves Maize Pumpkins Pumpkin leaves Bondwe Cucumbers Groundnuts Cow peas Sugar cane Grasshoppers Inswa (termites) Fulufute (insects) Chicken Goat meat Pork Guinea fowl Doves One Meal is eaten per day	Wild berries Wild roots Guaves Fresh maize Pumpkins Pumpkin leaves Cucumbers Groundnuts Cow peas Sugar canes Grasshoppers Inswa (termites) Fulufute (insects) Mushroom Chicken Goat meat Pork Doves One meal is eaten per day	Wild berries Wild roots Guaves Watermelons Fresh maize Pumpkins Sweet potatoes Pumpkin leaves Cucumbers Groundnuts Cow peas Sugar canes Grasshoppers Inswa (termites) Fulufute (insects) Mushroom Chicken Goat meat Pork Doves One meal is eaten per day	Wild berries Wild roots (Musepo) Guaves Watermelons Fresh maize Pumpkins Sweet potatoes Pumpkin leaves Cucumbers Groundnuts Cow peas Sugar canes Sunflower (cooking oil) Grasshoppers Inswa (termites) Fulufute (insects) Mushroom Chicken Pork Goat meat Doves Three meals are eaten per day (done with harvesting)	Mabuyu Mandalena (nuches) Maize Pumpkins Dry pumpkin leaves Oranges Guaves Lemons Groundnuts, Cow peas Sugar canes Chili sunflower (cooking oil) Three meals are eaten per day (harvesting period)	Mabuyu, Mandalena (nuches) Maize Pumpkins Dry pumpkin leaves Dry okra Oranges Guaves Lemons Groundnuts Cow peas Sugar canes Chili sunflower (cooking oil) Three meals are eaten per day (harvesting period)	Dry maize Pumpkins Dry pumpkin leaves Pumpkin seeds Dry okra Dry groundnuts Peanut rape Cabbage Tomatoes Spinach Bondwe (gardens are made since they are home) Mbeba (rat) Pork Goat meat Chickens Fish Sausage (pigs/goats are slaughtered after harvest sells) At least three meals are eaten per day	Traditional drinks (Munkoyo and Tobwa) Sugar cane Oranges Bananas Dry maize Pumpkins Dry pumpkin leaves Pumpkin seeds Dry okra Dry groundnuts Peanut Cowpeas Cooking oil Rape Cabbage Tomatoes Spinach Bondwe Mbeba (rat) Pork Goat meat Chickens Kapenta Fish Sausage At least three meals are eaten per day	Dry pumpkin Leaves Pumpkin seeds Dry okra Cowpeas Cooking oil Rape Cabbage Tomatoes Spinach Bondwe Mbeba (rat) Pork Goat meat Chicken Kapenta Sausage At least three meals are eaten per day; By the end of the month 2 meals are eaten	Dry pumpkin leaves Pumpkin seeds Dry okra Cowpeas Cooking oil Rape Cabbage Tomatoes Spinach Bondwe Reduction in food availability (less water) At least two meals are eaten per day	Dry pumpkin leaves Wild okra Rape Spinach Mangoes Bananas Food becomes scarce At least one to two meals are eaten per day	Nshima Inswa (termites) Fulufute (fat) Mbeba (rat) Mangoes Bananas Bondwe Pumpkin leaves One meal is eaten per day
WEATHER 	Rain	Rain	Rain	Rain	Winter	Winter	Winter	Hot	Hot	Hot	Rain	Rain

Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
EVENTS 	New Year	Usual church activities	Way of the Cross (Catholics) Women's Day (8th)	Good Friday Traditional marriages	Labour Day (1st) Show day (selling and show casing harvested foods) African Freedom Day (25th)	Traditional marriages	NIL	Normal church activities	NIL	Tuwimba traditional ceremony (14th) Independence Day (18th) National Day of Prayers (24th)		Christmas Day (25th)
MIGRATION 	New Year Celebration	Camping near farms continues (October - June)	Camping near farms continues (October - June)	Camping near farms continues (October - June)	Some are done with harvesting, move from farms to home	Moving from the farms to home		Visiting relatives in other towns or provinces		Land preparation starts	Land preparation starts	Move for Christmas Celebrations
SCHOOL 	Attending class	Attending class	Attending class	School break	Attending class	Attending class	Attending class	Closed	Attending class	No school attendance for some children due to relocation during farming	No school attendance for some children due to relocation during farming	Closed

III. Positive Deviant Identification

Identification of PD, ND, and NPD Households

Length of a child being taken by district nutritionist

FANSER project staff reviewed the most current Community Led Total Nutrition anthropometric records for children 6-24 months. The Bangwe Zone has a total population of 2,899 and 232 children under two years. Age, weight, and length data was available for 90 children. Using the World Health Organization (WHO) Standard Weight-for-Age Reference Table, the project consultant classified each child's nutrition status as normal, mild or moderate, or severe. After narrowing the list to children who were well-nourished (>1 weight-for-age Z-score) or severely malnourished (≤2 weight-for-age Z-score), further information on the child's birth order and household wealth ranking was obtained by project staff for 36 children. Only and first born children were eliminated due to the potential of additional care and resources allocated to them. Based on the nutrition status and wealth ranking, the children were classified as positive deviant (PD), negative deviant (ND), or non-positive deviant (NPD). A total of eight households were selected for the inquiry—four PD, two ND, and two NPD. The nutritional status of children was confirmed by taking weight and height measurements at the home.

Positive Deviance Classifications

- **PD = Positive Deviant** = Poor households with a child with a well- nourished child (>-1 Weight for Age z-score)
- **ND = Negative Deviant** = Non-Poor households with a malnourished child (<-2 Weight for Age z-score)
- **NPD = Non-Positive Deviant** = Poor households with a malnourished child (≤-2 Weight for Age z-score).

IV. Positive Deviant Inquiry

Household Visits Conducted

Positive Deviance Inquiry team taking maternal weight and height during a household inquiry visit

Project staff coordinated with the Community Resource Team to arrange a visit to each selected PD, non-PD, and ND household, planning for a full day in each household and capturing the times that caregivers prepare meals and feed their children. To make the family feel most at ease, a FANSER project Nutrition Volunteer was assigned to accompany the PD consultants who facilitated the visit and asked questions while the Nutrition Volunteer focused on observation and notetaking. The household inquiry teams arrived early in the day, by 7am, and stayed 4-5 hours to capture a large portion of the daily routine. The pair greeted the family and introduced themselves. They stated the purpose of the visit and informed the family that they were visiting several families in the community to observe and learn from them how they feed and care for themselves and their children. Families were not be informed of their nutrition classification status, but rather the visit was presented simply as an information gathering observational visit. Using the *Guided Child PDI Questionnaire*, the PD consultants talked with caregivers about their household practices related to food and feeding practices, care taking practices, hygiene practices, and health seeking practices.

Documentation of PD Inquiry Reflections

After each PD inquiry household visit, the teams met to compare and make note of reflections and observations. Using the *Observation Worksheet*, record was made of positive practices (or unique negative practices for ND households) observed in the following categories: feeding practices (use of particularly nutritious foods, amount, and frequency), caring practices (the ways in which family members and children interact), hygiene and sanitation practices (body, food, safe drinking water, and environmental), and health care practices (preventative health practices, home management of illness and use of health services).

V. Key Findings from the Positive Deviance Inquiry

After completion of all PDI household visits, the PD consultants and international consultant reviewed the behaviors/practices that were discovered through the PDI processes. Behaviors were compared between PD and ND/NPD households and were analyzed for the feasibility of other households to adopt the behaviors with very limited resources.

Images of Local Positive Deviance Inquiry Consultants conducting PD Inquiry Household Visits

Promising Practices Identified in Positive Deviant Households

Food and Feeding Practices	
Monitors child food intake	*Uses designated bowls to measure child portions of food. Child has his or her own bowl rather than a shared bowl or plate. Consistently observes content and quantity of food child consumes as well as signs of hunger and fullness.*
Adapts consistency of food appropriately for child's age	*Monitors cooking times to ensure well-cooked, soft food that is palatable to young children. Modifies the child's portion to make the consistency appropriate. Adds soup to nshima to make it softer / easier to swallow for young children; cooks porridge until groundnuts turns brown; mashes vegetables to soft consistency.*
Provides a variety of foods and/or varies food preparation methods	*Introduces new vegetables and prepares a variety of recipes to motivate children to eat new and additional foods. Offers child different types of relish based on what is available (e.g. rape, dry-pumpkin leaves, cowpeas) with nshima maize meal.*
Maintains a home garden for home consumption. Attempts to give child a variety of vegetables.	*Established a small home garden, constructed with minimal inputs and watered with discarded cooking water. Offers a variety of vegetables for the child from the home garden. Regularly adds vegetables to the relish. When home garden vegetables are not available, considers how to obtain preserved vegetables or market produce such as rape, dry pumpkin leaves, okra, cabbage, chines cabbage, spinach, tomatoes, onions, eggplant, oranges, bananas and mango to feed to children.*
Employs various strategies as needed to encourage children to both breastfeed and eat solid food	*As a strategy to ensure young children get both breastmilk and solid foods, encourages older sibling or grandmother to feed the solid food to young children who may be inclined to only breastfeed over eating solid food if it is offered by the mother.*
Establishes meal plans	*Plans consistent meal times and plans daily menus ahead of time to ensure children are fed at predictable, regular schedules with sufficient food. Instructs others who care for the child how much and when the child needs to eat. Ensures that the child does not miss meals.* *Sample day's menu:* ▪ *Morning meal of breast milk followed by porridge, which is initiated when a child is 6 months old. The porridge contains salt and sugar for taste, as well as a palm measurement of pounded groundnuts that are observed to be well cooked by monitoring color and thickness.* ▪ *Mid-day and evening, the child is offered nshima with different types of relish (dry pumpkin leaves, rape, or cowpeas with added cooking oil)* ▪ *Child is breastfeed between feedings from morning until going to sleep at night*
Breastfeeds child exclusively for six months and continues to breastfeed beyond one year along with complementary foods;	*Gradually introduces soft, solid foods to children at 6 months old, while maintaining regular breastfeeding. Feeds the child three times a day, with breastfeeding before and between meals.*

Consistently breastfeeds child between meals	
Increases consumption of protein-and nutrient-rich foods such as groundnuts	*Adds greater amounts of ground nuts to foods such as pumpkin. Adds cooking oil, pounded groundnuts, tomatoes, and onions to relish to increase the nutritional value.*
Stores maize / groundnut meal for porridge in plastic containers	*Avoids open containers or those that lead to spoilage.*
Preserves vegetables for future use	*Identifies strategies for reserving a portion of harvested crops for preservation.*
Avoids feeding children non-nutritious snacks	*Avoids feeding children packaged snack foods (e.g., "jiggies" corn snacks, puffs, biscuits, sweets, and super shakes)—high in salt and sugar, without nutritional value—regularly as they may replace their appetite for nutritious meals.*
Properly covers and warms leftover food	*Prevents food spoilage and contamination of leftover food by covering food tightly, using it within a short window of time, and thoroughly re-heating before serving.*
Mother ensures her own proper nutrition to support adequate breastfeeding	*Eats nutrient-rich foods several times a day to enable proper caring for children.*
Care Taking Practices	
Gives the child individual attention	*Plays and engages with the child, including playing and singing. Involves other caretakers, such as grandmothers, to give attention the child(ren). Gives the child sufficient attention which increases the knowledge of when the child is hungry or not feeling well. Stays attuned to the child's needs.*
Encourages children to eat well	*If the child refuses to eat, tries new foods or strategies to encourage increased intake such as giving the child additional attention, talking or singing to the child while feeding.*
Father supports taking child to clinic as needed	*Engages all caretakers, particularly male caregiver partners, in the attention to danger signs that require immediate medical attention.*
Avoids leaving young children in the care of other children	*Does not leave children in the care of siblings who may be too young themselves to adequately care for the feeding needs of the infant or young child. Mothers who take their young children with them when traveling outside of the home ensure that the child can be breastfed whenever the child needs to.*
Increases breastfeeding when a child is ill	*Due to the increased nutritional needs when a child is ill, aims to increase their intake. If the child has a decreased appetite for solid foods, increase the frequency of breastmilk feeding.*
Rarely leaves child in the care of others; as needed, leaves detailed instructions on child feeding needs to other caregivers	*When a child is left with another caregiver, ensures clear instructions on what and how much the child should eat.*

Hygiene Practices	
Ensures good hygiene for both mother and child	*Washes hands well with soap and water before preparing food or feeding a child. Bathes child daily.*
Ensures clean home environment and cooking area	*Ensures kitchen, plates, and cooking supplies are clean. Keeps latrines clean to avoid bad smells and flies.*
Takes time to properly treat and store water	*Boils water as a method of water treatment and covers water containers to prevent contamination.*
Health Seeking Practices	
Consistently takes children under-five years to well-checks every month	*Father engages in joint decision making and paternal support of consistent growth monitoring and health visits.*
Takes the child to a clinic or hospital whenever the child is sick	*Is familiar with danger signs that require immediate medical attention.*
Ensures child sleeps under a mosquito net	*Makes sure the child sleeps regularly under a mosquito net to prevent malaria.*
Set aside emergency money	*Emergency funds in place to pay for hospital fees such as growth monitoring or hospital care when a child is sick.*
Monitor the child's wellbeing closely at home	*Careful monitoring of the child can ensure the mother notices a rising body temperature or sickness that requires a visit to a health center.*

Transferability of Results

During review of the findings, the local consultants reviewed each of these uncommon, promising practices against the following questions:

- Can it be practiced by poor families?
- Is it feasible / easy to adopt?
- Is it critical for addressing malnutrition?
- Can it be sustained by caregivers?
- Is it widely scalable?
- Is it only applicable in this community?
- Is it only appliable for this particular household?

All of the aforementioned practices were adopted by poor families and were deemed applicable for households and communities outside of the research catchment. The vast majority of the practices were considered feasible and both easy to adopt and to sustain with the proper support. The potential exception was the practice of a home garden, which was noted to be more challenging for some households to adopt due to the labour-intensive nature of construction and dependence on inputs and availability of water.

The high transferability of these results is reinforced by noting how the FANSER project results mirror several comparative PD studies conducted throughout Zambia. World Vision Canada, in

its *Maternal and Newborn Health in Zambia* project initiative in 2010[2], identified numerous similar promising practices among positive deviant households: continued breastfeeding through two years, three meals and snacks given to children daily, active and supervised feeding, father involvement in food preparation and feeding when mothers are away, and mothers take young children with them to the fields or ensure proper supervision by an older child or family member. Hygiene and health seeking practices of PD households were also reflective of the results identified in the FANSER project—specifically regular hand washing, proper water treatment and storage, early detection and treatment of childhood illness, and increased breastfeeding during illness.

Likewise, USAID's Feed the Future Zambia Mawa project (2012-17)[3] in Chipata and Lundazi Districts in Eastern Provide utilized a lean season PD inquiry to focus on adapting local recipes for Community Complementary Feeding and Learning Sessions as well as informing action cards that illustrate project-promoted behaviors to maximize nutritional value of meals, including micronutrients and protein. Key findings included the importance of exclusive breastfeeding and the participation of all household influencers on infant and young child feedings, such as a grandmothers and husbands.

Similarly, People in Need, which has used the PD/Hearth approach to promote positive Infant and Young Child Feeding practices and improve nutrition in its countries of implementation, identified numerous parallel practices in its *Women in Innovation* project in Western Province, Zambia (2018-19).[4] PD caregivers were observed to actively supervise feeding and encourage the child to eat; incorporate a variety of nutrient-rich foods such as a nuts (groundnuts, local Mungongo nuts), small fish, dark green leafy vegetables (amaranthus and pumpkin leaves), tomatoes, cow peas and other local "traditional" peas, hibiscus (sindambi/lumanda) as well as staples (nshima made of ground maize or cassava). The father was noted to be engaged in the nutrition of the child by ensuring availability of nutritious food, supervising the child eating if the mother is busy, and interacting and playing with the child. PD households maintained a clean home environment, practiced proper disposal of child feces, and provided correct treatment of childhood illnesses and continued breastfeeding.

Steps for PD Adaptation

While the FANSER Positive Deviance findings are largely transferrable and can be applied throughout the FANSER Zambia project areas of Luapula and Eastern provinces, the following complementary activities are recommended to enhance local ownership and impact:

- Conduct the Community Mobilization steps of the PD approach to sensitize local stakeholders in new areas on the PD approach, to share the promising practices

[2] World Vision Canada. (2012) Impact: Positive Deviance/Hearth.
[3] Weiss I, Stepanovic S, Chinyemba U, Bateman J, Hemminger C, and Burrows E. (2016) Use of a Nutrition Behavior Change Counseling Tool: Lessons from a a Rapid Qualitative Assessment in Eastern Zambia. *Frontiers in Public Health, 31 August 2016 Sec. Public Health Education and Promotion.* https://doi.org/10.3389/fpubh.2016.00179
[4] People in Need. (2019) Positive Deviance for Nutrition: a grassroots approach to reduce and prevent malnutrition.

revealed in the Bangwe Zone PD study, and to solicit perceptions of the causes, common challenges and constrains specific to their community.

- Consider facilitating some of these additional participatory activities in new areas, which can provide context-adaptation to the PD results as needed:

    - **Discovery and Action Dialogues** use a semi-structured group conversation to stimulate creativity in the formation of new ideas for how promising PD practices can be integrated, practiced, and sustained in the community.

    - **Participatory Sketching** uses collective drawing in a group dynamic to solicit detailed narratives of positive practices. Participants are divided into small groups with a large paper and drawing materials and are instructed to jointly sketch how they envision the uncommon practices identified in the PD study being modelled in a tangible way at the household level.

    - **Community Mapping** invites a group to draw a map—using natural materials such as sticks and stones or flipchart paper and markers—of the community's resources, infrastructures, and layout of any components that may impact a household's ability to adopt the promising nutrition behaviors and outcomes identified in the PD process.

    - **Seasonal Calendar** mapping can be repeated as needed in new project areas if growing seasons, rainfall, water access, or cultural events may be distinct from the calendar developed in the Bangwe Zone.

Even with highly transferrable practices, it is important to note that there may be additional effective behaviors unique to other project areas that would only be discovered through facilitation of another local Positive Deviance inquiry. In the instance that the roll-out of the proposed practices into new project areas yield insufficient changes in behavior adoption, additional PD studies may be warranted. This could be conducted formally with a team of consultants similar to what was done in the Bangwe Zone, or could be implemented by 2-4 Nutrition Volunteers trained in the approach by the FANSER project's Advisor for Nutrition and Social Behaviour Change using the Step-by-Step PD Guide and training materials developed by the international consultant.

Even without conducting a Positive Deviance research study, project staff—such as Care Group Promoters and Nutrition Volunteers—can be trained to have a "positive deviance mindset," looking out for uncommon, unique practices that households may be practicing to effectively prevent child malnutrition. Using the initial background and methodology slides of the PD training deck developed by the international consultant can be incorporated into ongoing, in-service training of community health staff to encourage a curious inquiry of unique practices when interfacing with poor households that have well-nourished children.

VI. Applying PD Inquiry Findings

Roll-Out Strategy for PD Inquiry Results-Informed Project Activities

The PD consultants, international consultant, and nutrition-relevant project staff reviewed and discussed the Positive Deviant behaviors that were discovered through the PDI processes in order to identify areas in which project activities could be enhanced or modified to specifically target promising practices. ***A key theme to consider is that while many target practices are already being addressed in the project, additional attention given to quality and coverage could greatly enhance impact.*** The following table outlines the international consultant recommendations and proposed roll-out next steps.

Food and Feeding Practices	
Recommendation	**Proposed Roll-Out Strategy**
Promote careful monitoring of child food intake by caregivers, including using a designated bowl or plate for the child with demarcations for age-appropriate serving size as well as consistent observation and tracking of content and quantity of food child consumes.	▪ In some project areas to date, Nutrition Volunteers used designated, calibrated bowls during nutrition lessons to teach caregivers how to appropriately measure child portions of food. As possible, consider allocating project funds towards the purchase of sufficient standard feeding bowls to cover the newer wards in the project area and/or advocate with the Ministry of Health to obtain an additional supply of these bowls. ▪ In the absence of standardized feeding bowls, introduce the use of a standard tablespoon or other locally available standard measure that can be adopted by the project to address the challenges of not having calibrated feeding bowls. Nutrition Volunteers can facilitate discussion maong caregivers during nutrition lessons and/or cooking demonstrations to identify an appropriate standard measurement tool. Reinforce the portion sizes needed for each age range (6-9 months, 9-12 months, 12-24 months).
Promote a wide variety of food types in child meals and adapt the consistency of food appropriately for child's age. In addition to demonstrations for caregivers, invite caregivers with growth faltering children to practice preparing food with suitable nutritional diversity and palatable consistency under the support and supervision of	▪ Caregivers are currently taught during monthly lessons and cooking demonstrations how to prepare food for the children and feed them during the stipulated times depending on the age of the child. Lessons includes the ideal consistency for each age as well as which nutrient-rich foods can be added. In order to enhance this learning and build action efficacy, modify monthly lessons and cooking demonstrations to allow for each caregiver to practice these food preparation steps under the support and supervision of the Nutrition Volunteer and to "teach back" these practices to her peers or in her own home. ▪ In areas or seasons in which attendance to cooking demonstrations is low, consider providing modified in-home cooking demonstrations by Nutrition Volunteers for targeted families—particularly those who have been identified with a child whose growth is faltering. Specifically address and

Nutrition Volunteers. Hold practice cooking sessions in both seasons of high and low food availability and conduct in-home cooking support as needed.	watch the caregiver practice modifying consistency of food and adding seasonally-available nutrient-rich foods (e.g., adding greater amounts of ground nuts to foods such as pumpkin; adding cooking oil, pounded groundnuts, tomatoes, and onions to relish to increase the nutritional value). Review the season calendar with caregivers to discuss the best nutrient-rich options for each season, emphasizing recipes with local-available foods.
Provide targeted, intensive, therapeutic treatment of malnutrition for children identified as growth-faltering during growth monitoring.	▪ Consider introducing community-led complementary feeding and learning sessions (CCFLS) or Positive Deviance (PD) Hearth, alongside routine growth monitoring and cooking demonstration sessions, targeting specific children detected with faltering growth (i.e., < -2 SD weight-for-age or height-for-age). ▪ Use a census-based approach to ensure growth monitoring of all children in the catchment area.
Encourage home gardens for household consumption and preservation of nutrient-rich vegetables. Showcase successful home gardens that have been constructed with minimal inputs and watered with discarded cooking water.	▪ Identify and provide culturally-appropriate community recognition of households that have successfully constructed a small home garden with minimal inputs and have mitigated challenges related to initial construction labor, watering, and protection against pests. Invite neighboring households to visit these gardens firsthand and ask questions about how their own perceived barriers were overcome. ▪ Collaborate with the project agricultural team to enhance beneficiary household knowledge and skills on establishing backyard and keyhole gardens. Attend to specific hesitations and barriers that have been identified, such as the labour intensiveness of initial construction and inadequate water supply and the perceived uncleanliness of using discarded water from household activities. ▪ Promote small, consistent savings among beneficiary households—including membership in microfinance groups such as Savings and Internal Lending Communities (SILCs)—to invest in agricultural inputs (e.g., seeds).
Promote establishment of meal times and daily menus planned ahead of time to ensure children are fed at predictable, regular schedules with sufficient food. Emphasize the need to instruct others who care for the child how much and when the child needs to eat.	▪ Develop a “story line” of a mother who makes a detailed meal plan the night before the next day. Share this story as an example to complement teachings on meal planning during monthly nutrition lessons and cooking demonstrations. A suggested example: *Before going to bed, Ruth plans out the meals for her family for the following day. She want to make sure each of her children are eating well, particularly her one year old boy whose growth has been faltering. She plans to wake early enough to give him breast milk before making the family porridge. The porridge contains salt and sugar for taste, as well as a palm measurement of pounded groundnuts that are observed to be well cooked by monitoring color and thickness so that the consistency is soft enough for even her infant. After the morning meal and tidying the home, she plans to offer breast milk again to her youngest son, knowing every little bit of nutrition helps.*

	Ruth knows that tomorrow she needs to leave the house to go to market mid-day and will leave her children with her sister. She makes a plan to provide detailed instructions to her sister, Layla, about what times her children should eat. She will provide Layla with nshima with different types of relish (dry pumpkin leaves, rape, or cowpeas with added cooking oil) and ask her to use a special bowl for each child to ensure they each are eating the right portion for their age and growth. *When she returns from market, Ruth immediately breastfeeds her youngest child. She will make sure to have premix ready the night before so that the evening meal preparations are not so burdensome. Ruth recently learned about adding ground fish to the nshima to increase the protein content. She knows this will help her children grow. She talks with her husband about helping with the other children after the evening meal so she can make sure to breastfeed him again before he goes to sleep. Ruth feels confident about her full day tomorrow because she has planned ahead.* ▪ Prioritize procurement of meal and feeding cue cards (i.e., menu and nutrition games, food groups charts, etc.) in the new project areas that have not received these items. ▪ Continue to incorporate family-centered lessons so that spouses and other family members learn the value of meal planning and will provide support to the caregiver. Encourage taking young children with the caregiver when traveling outside of the house or leaving the child with a responsible family member who can carefully follow feeding instructions. ▪ During cooking demonstrations, invite a caregiver to give a personal testimonial from a Positive Deviant household of budgeting tips and basic meal planning skills. Encourage a "question and answer" session in which participants can voice challenges and barriers to meal planning and offer one another solutions, including stimulating good eating when a child shows low appetite.
Continue to promote exclusive breastfeeding for children for six months and complementary feeding through 24 months. Add emphasis and support to address common myths and barriers.	▪ Continue to teach promote breastfeeding children exclusively for six months and continued breastfeeding along with complementary foods until 24 months or more through household-centered monthly lessons, songs that reinforce behaviors, and community-wide breastfeeding promotion campaigns. ▪ During household visits, inquire in detail about any perceived barriers to these practices and provide refutation of common myths (e.g., children need solid food by 3-4 months; mothers cannot produce sufficient milk for their child's needs) as well as practical support for frequent challenges (e.g., appropriate latching; introducing soft foods while maintaining regular breastfeeding, lack of support from family members). Emphasize that if the child has a decreased appetite for solid foods during periods of illness, increase the frequency of breastmilk feeding. ▪ Identify "breastfeeding champions" who have had success in recommended breastfeeding and/or complementary feeding practices. Invite champions to speak at small gatherings of caregivers or

	cooking demonstrations to share their practical advice and personal experiences of strategies to overcome common barriers.
Encourage increased consumption of protein-and nutrient-rich foods such as groundnuts or fish products.	▪ During monthly nutrition lessons and in cooking demonstrations, give special emphasize to the impact that regularly adding small amounts of protein- and nutrient-rich food can make on a child's nutritional status. Consider using visual images and personal testimonies or storytelling to link these small, consistent changes in meals to better growth and development outcomes. Use the seasonal calendar to discuss which protein- and nutrient-rich foods can be added during each month, even during lean seasons. Promote animal sources that may be obtained without cost, such as small rodents and insects. ▪ In project areas that have access to water sources such as dams, consider collaboration with Fish for Food (F4F-GIZ) to integrate fish preparation lessons, including the incorporation of fish powder that can serve as a good protein source for young children.
Enhance training in food processing and preservation. Incorporate practical, hands-on lessons on food storage and strategies for long-term conservation of nutrient-rich foods.	▪ Complement current project activities with additional hands-on "workshops" on food processing and storage to support households' ability to prevent food spoilage and enhance access to nutrient-foods even in the lean season. Hold family-centered sessions that demonstrate how to avoid open containers or those that lead to spoilage and proper storage of food such as maize and groundnut meal in plastic containers. Invite Positive Deviant households to share technologies they have used for storage of preserved food in the absence of additional inputs, such as a cleaned used oil container. ▪ Coordinate with agriculture experts to identify local-appropriate strategies for reserving a portion of harvested crops for preservation such as solar dryers.
Incorporate a lesson on how to prepare "easy, healthy snacks" for young children to avoid feeding children non-nutritious, packaged snacks.	▪ Continue to incorporate messages and songs discouraging packaged snack "junk foods" (e.g., "jiggies" corn snacks, puffs, biscuits, sweets, and super shakes) that are high in salt and sugar, without nutritional value. Emphasize avoiding feeding children these foods regularly as they may replace their appetite for nutritious meals. ▪ Incorporate simple messages on how to prepare easy, simple snacks that children can eat independently in between planned meals. Examples may include cut bananas or oranges, wild berries, or boiled/roasted pumpkin seeds. ▪ Implement the PD Participatory Learning & Action activity on Snacking Practices.

Health Seeking Practices	
Recommendation	**Proposed Roll-Out Strategy**
Track coverage of monthly under-five years well-checks to target unreached children.	▪ Emphasize the importance of regular growth monitoring and wellness checks during monthly nutrition lessons. ▪ Consider using census data to identify households who do not regularly attend well-checks to make targeted home visits in which Nutrition Volunteers can reinforce messages at the home level and encourage participation in well-checks. Ask about specific barriers using Barrier Analysis and offer support to overcome challenges.
Promote clear, household-wide understanding of danger signs for early detection and seeking medical attention as needed. Encourage joint decision-making among male and female caregivers and combined support to take child to clinic as needed.	▪ Re-insert the lesson on “Catching Child Problems Early” to engage all caretakers in the attention to danger signs that require immediate medical attention. ▪ Consider establishing Savings and Internal Lending Communities (SILCs) specifically for health related expenses and medical emergencies. ▪ During monthly lessons, facilitate groups of caregivers to make a song or chant on danger signs that require immediate action. Take time to ask caregivers one by one to describe her personal plan for action to seek help when needed and discuss how to troubleshoot. Ask the questions: o Where will you seek medical attention for the child with a danger sign? o How will you get there? o Who will accompany the child and who will stay with the other children? o Are there reserved funds to cover the costs of an emergency? ▪ Consider establishing a referral plan for designed Nutrition Volunteers or Community Health Workers to be “on call” and trained to facilitate the link to health facilities when danger signs are identified via WhatsApp or call. ▪ Include gender transformative language in health-seeking monthly lessons to promote male partner involvement in the early detection and treatment of childhood illnesses.

Hygiene Practices	
Recommendation	**Proposed Roll-Out Strategy**
Address the challenges of proper hand hygiene for both mother and child by encouraging innovative means of	▪ During the monthly handwashing lesson, incorporate a hands-on demonstration workshop on constructing durable tippy-taps that cannot be easily spilled or stolen (e.g., use of a pole or strong limb base).

handwashing station construction and use of ash.	▪ Encourage households to save money to buy soap that is held by the tippy tap on a string. Additionally, promote the use of ash as a handwashing agent as a substitute for soap in cases of unavailability or unaffordability. Ash is more effective than water alone for removing bacteria.
Promote a clean home environment and cooking area.	▪ Continue to disseminate the "Sanitation" monthly lesson on cleaning the household environment including rubbish pits, dish racks, latrines, and establishing cattle corrals for dung management. ▪ Consider designating a "model hygienic home" for neighbors to visit for inspiration.
Promote proper treatment and storage of water.	▪ Continue to disseminate the "Water Handling, Treatment, and Storage" monthly lesson on proper water management. Incorporate a "troubleshooting" session in which caregivers can voice challenges and collaboratively offer solutions to overcome these barriers. ▪ Facilitate advocacy by the Community Resource Team for water sources such as boreholes from relevant authorities to increase access.

Care Taking Practices	
Recommendation	**Proposed Roll-Out Strategy**
Promote engagement with young children during mealtime and playtime to enhance their cognitive growth and overall development.	▪ Continue to roll-out the lessons "Smart, Healthy, and Strong" and "Best Start to Life—Child Growth and Development" to give knowledge and skills to caregivers on developmental milestones and on promoting early childhood development through play, song, and individual attention. ▪ Emphasize child engagement strategies—by adding these messages into monthly lessons—that can be done without any additional inputs, even while tending to work or household responsibilities: ○ Singing to the child while preparing food or feeding the child ○ Looking into the child's eyes while changing or dressing the child and tell a story ○ Count fingers and toes out loud ○ Play "peek-a-boo" or make silly faces to encourage the child to laugh ○ Hide an object in the home and encourage the child to find it ○ Offer a spoon and bucket to the child to make an "instrument" ○ Provide the child with a set of objects he can stack into a tower and knock down ▪ Hold a "toy making workshop" in which caregivers can bring scrap and discarded objects (e.g., small pieces of fabric, plastic bottles, smooth stones) to make age appropriate toys such as puppets or dolls made of scrap fabric filled with legumes or grains, rattles, drums or balls made of used containers, and building stacks or household objects. ▪ Resources with ideas for simple, homemade toys and early child stimulation activities can be found by Hesperian and CRS

Feedback to the Community

After the complete results and recommendation are reviewed by the FANSER project team, work with the Community Resource Team to plan a time for presenting the PD inquiry findings to the larger community to cultivate continued local ownership and to enable community members to immediately access malnutrition solutions that are already at work in their village. Allow the Community Resource Team to determine the best time, place, and approach for presenting the findings to the community, but consider the following guidance:

- Summarize the values of the PD approach again, particularly local community ownership and leveraging existing solutions that exist in the community.
- Share the basic steps of the PD inquiry process that were conducted without giving any names or personal details of the households who were visited.
- Highlight the behaviors/strategies that were identified in Section V as being unique to the positive deviants, who are distinct in their ability to overcome malnutrition despite facing the same challenges as other community members.
- Emphasize that “small, doable actions” are often minor modifications in behavior that, when practiced consistently and correctly, will lead to positive health outcomes.
- Amplify the voices of positive deviants by inviting them to share “success stories” of how they have adopted promising practices and overcome common challenges.
- Present two skits—one showing a family with children who are sick, demonstrating poor behaviours contrary to the PD promising practices (e.g., caregivers goes to the field in the morning without feeding the child, father states that infant is too old to still breastfeed, preparing food without washing hands), and another showing a family with happy, healthy children demonstrating positive PD practices (e.g., feeds a variety of nutrient-rich foods, washes hands, engages with a child and gives her a separate bowl, feeds child when ill).
- Discuss how the project will monitor and evaluate new or modified project activities.

Establish a Monitoring Mechanism

In collaboration with project leadership, the Community Resource Team, and District Advisory Team, develop a guideline for the project to monitor and evaluate the priority activity modifications selected from the recommendations in Sections VI and VII. Plan to:

- Modify the existing FANSER Detailed Implementation Plan and Gantt chart to incorporate new activities and revise current activities according to recommendations
- Use household and child registration tracking forms to monitor attendance and coverage of services such as growth monitoring and promotion, and cooking demonstrations.

- Monitor supportive supervision and health worker skills through quality assurance scores
- Utilize the rapid Knowledge, Practice, Coverage (KPC) survey tool[5][6] to conduct small population household surveys to measure progress towards the programme objectives every 6 months. Customize module-specific questionnaires, indicators, and tabulation plans to the technical areas of the program as needed.
- Schedule a “check-in” with the community every three to six months to follow-up on progress made and to adapt strategies as needed.

[5] https://www.mcsprogram.org/resource/knowledge-practice-coverage-tool/
[6] https://s3.amazonaws.com/rghbookstore/Handbooks+and+Reports/PHI_RapidHealth.pdf

VII. Conclusions

The FANSER Zambia Positive Deviance inquiry project has the potential to be a catalyst for behaviour change through the processes of community mobilization, identification of effective solutions to achieving positive child nutrition outcomes amidst low resources and food insecurity, and establishment of an impetus to overtly modify the determinants of critical household-level nutrition actions. Current FANSER project activities address many of the unique promising practices identified in PD households, however, addressing gaps in quality and coverage is essential to achieve greater behaviour adoption and ultimately impact on health and nutrition outcomes. In addition to the behavior-specific modifications to existing project activities, several broad-reaching themes emerged from the Zambia FANSER PD research, which are recommended for consideration in FANSER and across BMZ health and nutrition programmes that utilize behaviour change approaches to achieve impact. Critical factors for successful implementation have been grouped into four broad categories: target faltering, outlier, and marginalized beneficiaries; invest in human capital and prioritize quality assurance; increase participatory, practical approaches; and identify and address context-specific barriers through adaptive management.

1. Target Faltering, Outlier, and Marginalized Beneficiaries—

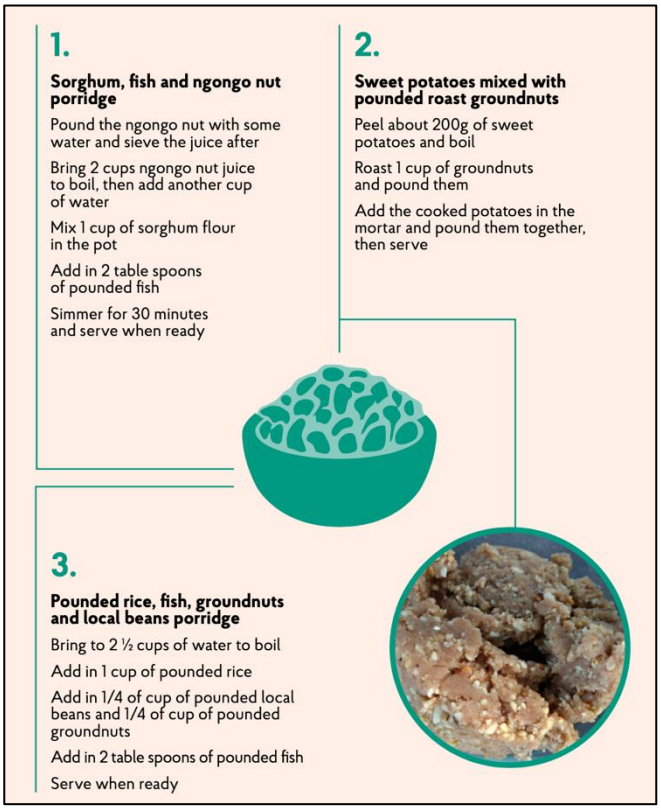
In additional to community-wide behavior change communication and activities, increase the emphasis on identification and targeting of messages and services *specifically* for growth-faltering children. Health and nutrition programmes often target a critical mass of a population, but neglect the narrow proportion of high-risk, difficult-to-reach populations who are the least likely to engage in programme activities. These groups are frequently the most marginalized, are less educated, have fewer available resources, and have weaker social ties and inferior social status. By targeting additional programme efforts towards specifically reaching those beneficiaries who have the poorest outcomes, are most vulnerable due to intrinsic or external circumstances, or are marginalized and not accessing programme services—in addition to maintaining community-wide initiatives—programme activities will reach and impact those who need them the most. In the case of child malnutrition, by monitoring the growth of *all* children in a catchment region and incorporating supplementary services for children identified as growth faltering or for households not participating in project activities on their own accord, community-wide nutrition outcomes will improve.

→ Promising Interventions:

Census-Based, Impact-Oriented Methodology (CBIO)

The CBIO methodology is an approach to health care service provision that allows programme personnel to better understand, more effectively address, and accurately measure outcomes and impacts for the most commonly found causes of unnecessary morbidity and mortality communities. CBIO, which is accompanied by Care Groups for social behaviour change communication, aims to reduce inequities in maternal and child health by working with the community to identify and maintain routine contact with *every* household in the target area and to use locally acquired data to identify and target those with the greatest health needs. By using a census to guide programme coverage, CBIO ensures that all targeted households—particularly those who may be significantly disadvantaged or marginalized—are reached. CBIO is considered a highly cost-effective intervention at a cost of USD $4.99-$5.80 per capita per year and $257 per year of life saved and per disability-adjusted life-year (DALY) averted, due to its reduction in maternal and child mortality in addition its other notable benefits for improved nutrition, women's empowerment, and enhanced social capital.[7]

Positive Deviance/Hearth Approach



The PD/Hearth approach builds on PD research to target rehabilitation services for growth-faltering children with the successful practices and strategies identified among positive deviant households. In a two-week intensive behavior change initiative (Hearth workshops), volunteers and caregivers prepare and feed a recuperative meal of locally available foods and learn and practice affordable, acceptable, effective, and sustainable feeding and care taking practices. The meal ingredients are provided by participating families in order to leverage accessible and affordable foods. Families are followed up with targeted home visits after graduating from the Hearth session to ensure continued growth. While PD/Hearth is an intensive, time-laden intervention, the targeted services specifically for malnourished children ensures that the most vulnerable beneficiaries are reached and promotes improved community-wide

[7] Perry H, Stollak I, and Valdez M. (2022) *Reducing inequities in maternal and child health in rural Guatemala through the CBIO+ approach of Curamericas: 10. Summary, cost effectiveness, and policy implications. International Journal for Equity and Health.* In press.

outcomes. The inset image illustrates recipes developed by through a PD/Hearth process by People in Need in food insecure contexts in Western Zambia as a part of its *Women in Innovation*. Estimated cost of monthly PD/Hearth ranges from USD $2.00-$9.10 investment cost per child rehabilitated from moderate acute malnutrition, which is considered cost-effective, particularly compared to community management of acute malnutrition (CMAM) interventions using ready-to-eat therapeutic food (RUTF) at home for uncomplicated cases and inpatient care for severe cases with medical complications, which can reach up to USD $200 per child.[8][9][10] Cost-effectiveness is comparable to estimates of nutrition counseling (USD $6.12 per child per year)[11] and growth monitoring and promotion programmes (USD $0.11-$9.26 per child per year). [12]

2. Invest in Human Capital and Prioritize Quality Assurance—

Quality assurance and supportive supervision of key personnel and volunteers has been identified as a key component of successful community health programmes. Implementation of best practices for improving health and nutrition outcomes alone is not sufficient to impact community-wide change without attention to quality of serviced provided and communication delivered as well as close adherence to evidence-based methodologies. In order to avoid these pitfalls, invest heavily in human capital, via ample preparation and guidance for the role at hand and utilize quality assurance tools to provide regular supportive supervision to identify and improve gaps in effectiveness.

→ Promising Interventions:

Quality Improvement Verification Checklists (QIVC)

Quality Improvement and Verification Checklists (QIVCs) are used in many countries globally to improve key processes and ensure quality programming. QIVCs provide a detailed and systematic check of development workers' performance on their key responsibilities in order to monitor and improve their performance, identify and troubleshoot any inherent problems, and to provide supportive guidance and encouragement. Too often, there is insufficient investment in training and quality assurance because of perceived time and resource constraints. Furthermore, it is common to see a dilution of messaging from the highest programme level to the household level. However, the establishment of an effective supportive monitoring and supervision system to

[8] McNulty J. Technical Advisory Group Meeting Report, CORE Group PD/Hearth Meeting. February, 2009. Available at: http://www.coregroup.org/storage/PDHearth/PD_Hearth_TAG_Meeting_Report_2_6_09.pdf.
[9] People in Need. (2019) Positive Deviance for Nutrition: a grassroots approach to reduce and prevent malnutrition.
[10] Horton S, Shekar M, McDonald C, et al. Scaling Up Nutrition: What Will It Cost? Washington, DC: The World Bank; 2010.
[11] Waters HR, Penny ME, Kanashiro HC, et al. The cost-effectiveness of a child nutrition education programme in Peru. Health Policy and Planning. 2006; 21(4):257–264.
[12] Griffiths M, Dickin K, Favin M. Promoting the Growth of Children: What Works. Nutrition Toolkit Module, Number 4. Washington DC: The World Bank; 1996. Available at: http://go.worldbank.org/CKQ154B1P0.

ensure quality programming can prevent breakdown in the specific processes known to change behavior. Supportive supervision has been identified by researchers as being critical to the implementation of community health worker programmes.[13] Ideally, health and nutrition counselling should address the specific needs of each mother and her child, which is challenging if health workers lack the necessary knowledge, skills and insight to analyze the situation and deduce appropriate action to address context-specific barriers. While cost effectiveness studies specific to QIVC have not been conducted to date, it is estimated that the additional investment in supervisory staff time is significantly offset by improvements in effectiveness of behavior change communication.

[13] Hill Z, Dumbaugh M, Benton L, Källander K, Strachan D, Ten Asbroek A, Tibenderana J, Kirkwood B, Meek S. (2014). Supervising community health workers in low-income countries –a review of impact and implementation issues. Global Health Action. 7(1):24085. DOI: 10.3402/gha.v7.24085

3. Increase Participatory, Practical Approaches—

Expand the use of hands-on, workshop-style learning sessions in which caregivers can actively practice new behaviors under the support of peers and project personnel to more deeply embed learnings. Focus on experiential learning over didactic learning.

→ Promising Interventions:

Hands-On, Demonstration Workshops

Core behavioural science tenants and evidence from systematic reviews of community-based nutrition education programme effectiveness indicates that provision of information alone is ineffective to bring about behavioural change. Pairing nutritional knowledge with practical demonstrations and the opportunity for individuals to personally practice what they have learned under the guidance and support of others allows individuals to more effectively embed practices into their daily life.[14] To produce significant changes in household-level behaviours, it is recommended to provide education at frequent intervals (e.g., one to two times a week) and utilize applied learning methods.[15] Examples of applied participatory methods include simple steps such as asking each participant in an education group to voice a personal commitment at the end of a lesson, making a home visit to support a caregiver trying out a new practice, or holding hands-on cooking demonstration workshops that provide opportunities to practice a rotation of new skills such as meal planning, food preparations, and child feeding practices. Enhancing the quality and reach of FANSER's current cooking demonstrations has the potential to increasingly translate knowledge to practice for more households.

The effectiveness of cooking demonstrations can be enriched by shifting from the traditional technical-centered approach to the emerging concepts of "cooking competence" and "food literacy," which merge knowledge and skills to enable nutritious meal preparations while also incorporating aspects of planning, budgeting, cooking skills, food storing, child feeding techniques, and waste disposing.[16] This holistic approach addresses practicalities needed to meet nutrition recommendations: planning, management, selection, preparation, and consumption. Similarly, incorporating hands-on demonstration workshops or group practice sessions for other desired behaviors (e.g., construction of a stable, sustainable tippy tap; properly treating and storing water; engaging

[14] Michie S, Jochelson K, Markham WA, Bridle C. Low-income groups and behaviour change interventions: a review of intervention content, effectiveness and theoretical frameworks. *J Epidemiol Community Health.* 2009;63(8):610–22. doi: 10.1136/jech.2008.078725.
[15] Ajamanda J, Maureen D, Munkhondia TM, and Carrier J. (2014) The Effectiveness of Community-Based Nutrition Education on the Nutrition Status of Under-five Children in Developing Countries. A Systematic Review. Malawi Medical Journal; 26 (4): 115-118 December 2014.
[16] Condrasky MD, Hegler M. How culinary nutrition can save the health of a nation. J Ext. 2010;48:2COM1.

responsively to a young child during feeding) will reinforce behaviors that messaging alone cannot achieve.

4. Identify and Address Context Specific Barriers through Adaptive Management—

Behaviour uptake is dependent on both barriers and facilitators that are context- and person-specific. Relying on universal approaches to promote behaviour change fails to reflect the fact that human behaviours are complex, dynamic, and person-specific. Use an iterative Barrier Analysis process or a motivational interview process to identify the obstacles and enablers to adopting promoted behaviours that are particular to the target population. Target the Barrier Analysis for groups or households who are not participating in program activities and/or have growth faltering children. For programmes to be effective, implementers must be able to adapt activities in response to new information and changes in context. Thus adaptive management is needed to continuously seek to understand and minimize obstacles and incentivize behaviour change.

→ Promising Interventions:

Barrier Analysis

The Designing for Behavior Change (DBC) Approach helps programme designers and implementers think more critically when developing a behaviour change strategy. The approach includes establishing a DBC Framework to adapt project strategies and activities according to local barriers to behavior change. To inform the framework, a Barrier Analysis study uses a series of questions asked at the household level to identify which barriers and motivators have the most significant impact on whether or not the household currently practices the desired behaviour. The Barrier Analysis includes a “Doer/Non-Doer” methodology that consists of interviewing 45 people who already do the behaviour (Doers) and 45 people who have not adopted the behaviour yet (Non-Doers). The differences between their answers reveal the specific barriers and motivators to practicing the studied behaviour for a particular group of people. Barrier Analysis can be critical to identifying underlying social influences—such as gender norms—that may indicate the need to include gender transformative approaches to address the roots of gender-based inequalities by engaging men and women together as agents of change. The Barrier Analysis has been used by more than 20 relief and development organisations across 50 countries.

Positive Deviance research can be used in diverse settings with minimal resources to enhance programme impact. **This community-driven process increases the potential to achieve better health and nutrition outcomes through identification of solutions that are compatible with the social and cultural context, easy to adopt and replicate, and sustainable.**

Special thanks to Malumbo Machimu, Benson Bwalya, and Mwila Kapembw
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FANSER project and GIZ team members for their leadership and support throughout the process.

Annex A: Wealth Classification Criteria Template

Wealth Status	Wealth Classification Criteria
Poor	- - - - - - -
Non-Poor	- - - - - - -

Annex B: Guided Positive Deviance Inquiry Questionnaire—Child

(Introduce each member of the team.) Thank you very much for taking the time to talk with us today. As (*name of community member*) may have explained to you, we are trying to learn more about malnutrition in this community—specifically among women of childbearing age and children under two years. We want to talk to you about your experience raising and feeding your under two-year-old child—(*name of PD, non-PD, or ND child)*—to better understand household practices that could help others in the community. We are visiting a few other households as well.

We hope to chat as you go about your normal day. We do not want to interrupt your routine, but rather learn from your daily activities. Let us know if we can lend a hand with anything you are doing. We plan to stay between 2-3 hours.

Your participation is completely voluntary, and if, at any time, you would like to stop, please tell us. There will be no problem. We are unable to pay you anything for your participation, but we hope the information you give us can help improve maternal and child nutrition in our community. Feel free to express your honest opinions. We will be taking notes of things you share and practices we observe, but we will not share your name with anyone in the community outside of our inquiry team. Does this sound alright to you? Do you have any questions before we begin?

Basic Family Information

1. Mother's Name: _____
2. Father's Name: _____
3. Child's Name: _____

   Child's PD Status (Circle One): PD non-PD ND
   Do <u>not</u> indicate the status of the child to the household. Record for notetaking purposes only.

4. How many other children do you have and what are their ages?: _____

   _____

5. Who else lives with you in this household? _____

24-Hour Dietary Recall

1. What is the first thing the child ate yesterday after waking up?
2. How much did you give (of each feed)? How much of it did the child eat? Can you show me the bowl the child used?
3. How did you prepare the food? Fried? Boiled? Steamed?
4. What did you add? Any oil? Vegetables?
5. Did the child eat anything else?
6. Did the child drink anything?
7. What is the next time the child ate? What was it? How much? How was it prepared? What else did the child eat?
8. Did the child get anything else between first and second meal?
9. What was the following meal? Did the child eat anything between second and last meal? (Note: food quantity, frequency and consistency).
10. Did the child have anything else to eat or drink before going to sleep at night?

Good Food/Feeding Practices

1. Is the child breastfeeding? If not, at what age did the mother wean the child?
2. What foods is the child being fed today?
3. Who decides what the child will eat? What role do other family members play in child feeding decisions?
4. What is your child's favorite food? When is the last time he or she had that food?
5. How many times did you see the child eat or drink?
6. Where does the family buy food? Who buys the food? How much money is spent on food each day?
7. How many meals and snacks does the child eat a day?
8. How often do you buy a snack for your child? What kind of snack is it?
9. How do you know if the child is hungry or has had enough to eat?
10. Does your child have his or her own bowl or share a bowl? How much does the child finish from their portion?
11. If you give the family meal to your child, do you do anything different for what you give to your child?
12. Are there any foods the caregiver does *not* give the child?
13. During the rainy season, what kind of food(s) do you feed your child after the harvest? What are the differences when it is not the rainy season?
14. Are there any foods you gather for free? If so, what and from where?
15. Do you grow any foods in the garden that you feed your child? If so, what kinds of food? What other agricultural practices affect what food you give your child?
16. What kinds of food do you feed your child that are bought from the market?
17. Are there foods that you feed your child that you have preserved (i.e., drying, smoking, or salting)?

Good Child Care (try to observe first without asking)

1. Who is the primary caregiver of the child?
2. What roles do other family members play in caring for the child?
3. Who is in the house during the day?
4. What kind of activities does your child enjoy?
5. Does the caregiver talk or sing to the child during feedings?
6. Does the caregiver or others play with the child? How? How often?
7. Who takes care of your child when you are gone?
8. When you leave your child with someone, what do you ask them him or her to do for your child?
9. If you bring your child along when you are outside of the home, what do you feed him or her if he or she gets hungry?
10. How is the child disciplined? By whom?
11. What does the caregiver do to encourage the child to eat if he or she doesn't want to?

Good Healthcare

1. How do you know when your child is sick?
2. Was the child sick in the past six months? If so, how many times?
3. What illnesses has the child had?
4. When the child was sick, what did you do?
   Did you feed the child anything differently?
5. What steps do you take to prevent illnesses?
6. When do you take your child to the health center? If you don't go, why not?
7. Do you have money set aside for emergencies such a when a child gets sick or during hungry season?
8. Do you participate in a women's group or savings group? If so, what do you do?

Good Hygiene

1. *Observation Only* - Is the house clean? Is the kitchen clean?
2. *Observation Only* - Are the people clean?
3. *Observation Only* - If there is a latrine, how does it look?
4. *Observation Only* - Is there a bathing shelter? If so, is it clean?
5. *Observation Only* – Are there lids on water containers?
6. Is there a space for handwashing? When do caregivers wash their hands?
7. Where is water source for cooking and drinking?
8. Do you treat your water for cooking and drinking?
9. Do pigs, mules, dogs or other animals go in and out of the house?

Thank you very much for your time. It is obvious that you care very much about your children, and we appreciate you letting us join a portion of your day. In the coming weeks, we will have a community meeting to discuss what we have learned about household practices that impact nutrition in the community, and you are welcome to attend!

Annex C: Guided Positive Deviance Inquiry Questionnaire—Mother

24-Hour Dietary Recall

1. What is the first thing you ate yesterday after waking up?
2. How much of each food did you eat? Can you show me the bowl you used?
3. How did you prepare the food? Fried? Boiled? Steamed?
4. What did you add? Any oil? Vegetables?
5. Did you eat anything else?
6. Did you drink anything?
7. What is the next time you ate? What was it? How much? How was it prepared? What else did you eat?
8. Did you get anything else between first and second meal?
9. What was the following meal? Did you eat anything between second and last meal? (Note: food quantity, frequency and consistency).
10. Did you have anything else to eat or drink before going to sleep at night?

Good Food/Feeding Practices

1. What foods will you preparing today?
2. Who decides what foods will be prepared? What role do other family members play in food and meal decisions?
3. How do the types of food and quantity you eat compare to other family members?
4. Where does the family buy food? Who buys the food?
   How much money is spent on food each day?
5. How many meals and snacks you usually eat a day?
6. Are there any foods you do *not* eat?
7. How often do you buy yourself a snack? What kind of snack is it?
8. During the rainy season, what kind of food(s) do you eat after the harvest? What are the differences when it is not the rainy season?
9. Are there any foods you gather for free? If so, what and from where?
10. Do you grow any foods in the garden that you eat? If so, what kids of food? What other agricultural practices affect what food you eat?
11. What kinds of food do you eat that are bought from the market?
12. Are there foods that you eat that you have preserved (i.e., drying, smoking, or salting)?

Good Hygiene

1. Is the house clean? Is the kitchen clean?
2. Are the people clean?
3. Is there a bathing shelter? If so, is it clean?
4. If there is a latrine, how does it look?
5. Is there a space for handwashing? When do you wash your hands?
6. Make observations about the water source. Are there lids on water containers?
7. Where is water source for cooking and drinking?

8. Do you treat your water for cooking and drinking?
9. Do pigs, mules, dogs or other animals go in and out of the house?

Good Healthcare

1. Were you sick in the past six months? If so, how many times?
2. What illnesses have you had?
3. When you were sick, what did you do? Did you eat differently?
4. What steps do you take to prevent illnesses?
5. Did you receive antenatal or postnatal care during your last pregnancy?
6. When do you go to the health center? If you don't go, why not?
7. Do you have money set aside for emergencies such a when a child gets sick or during hungry season?
8. Do you participate in a women's group or savings group? If so, what do you do?

Good Self Care (try to observe first without asking)

1. Do you work outside of the home? If so, describe your work.
2. In addition to child caregiving, what household responsibilities do you have?
3. What roles do other family members play in chores and caring for the child(ren)?
4. Who is in the house during the day?
5. How do you rest, during the day and at night?

Thank you very much for your time. It is obvious that you care very much about your own health and wellbeing and that of your family and we appreciate you letting us join a portion of your day. In the coming weeks, we will have a community meeting to discuss what we have learned about household practices that impact nutrition in the community, and you are welcome to attend!

Annex D: Positive Deviance Observation Checklist

Circle the appropriate household visit classification:
PD = Positive Deviant non-PD = non-Positive Deviant ND = Negative Deviant

Record unique practices in the following categories: feeding practices (use of particularly nutritious foods, amount, and frequency), caring practices (the ways in which family members and children interact), hygiene and sanitation practices (body, food, safe drinking water, and environmental), and health care practices (preventative health practices, home management of illness and use of health services).

Food/Feeding	Caring	PD Hygiene	PD Health Seeking

Annex E: Matrix for Analyzing Positive Deviance Inquiry Data[17]

PD = Positive Deviant non-PD = non-Positive Deviant ND = Negative Deviant

PD Food/Feeding	PD Caring	PD Hygiene	PD Health Seeking
Non-PD/ND Food/Feeding	**Non-PD/ND Caring**	**Non-PD/ND Hygiene**	**Non-PD/ND Health Seeking**

[17] Adapted from: World Vision International. (2014) Training of Master Trainers for Positive Deviance/Hearth.

Annex F: Comparison Interpretation of Positive Deviance Inquiry Data[18]

PD = Positive Deviant non-PD = non-Positive Deviant ND = Negative Deviant

Differences between PD and non-PD/ND Households
Challenges Community Members face in Positive Nutrition Behavior Adoption
Local Solution(s) PD Households are doing to Address these Challenges

[18] Adapted from: World Vision International. (2014) Training of Master Trainers for Positive Deviance/Hearth.

Categorize Positive Deviant Behaviors

PD Behavior	Can be practiced by poor families? (Y/N)	Feasible/easy to adopt? (Y/N)	Critical for addressing malnutrition? (Y/N)	Can be sustained by caregivers? (Y/N)	Widely scalable? (Y/N)	Only applicable in this community? (Y/N)	Only applicable for particular household? (Y/N)