Empowering Communities for Child Health: Advancing Nutrition and Development in COVID-19 Recovery (Project completion Report)

Project Title: Improving Child Health Including Nutrition Through Community Empowerment in COVID-19 Recovery in the Plantation Sector

Report to the World Health Organisation

Submitted by the Plantation Human Development Trust

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Implementing Agency

Plantation Human Development Trust

of the Ministry of Plantation and Community Infrastructure

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Abbreviations

WHO – World Health Organization

PHDT – Plantation Human Development Trust

ECD – Early Childhood Development

ECCD – Early Childhood Care and Development

DHS – Demographic and Health Survey

JICA – Japan International Cooperation Agency

NPP – Noncommunicable Disease Prevention Project

GOSL – Government of Sri Lanka

RPCs – Regional Plantation Companies

TUs – Trade Unions

FHP – Foundation for Health Promotion

TWG – Technical Working Group

CDO – Community Development Officer

PFWO – Plantation Family Welfare Officer

HACM – High Accomplished Mother

CDC – Child Development Center

PHM – Public Health Midwife

PHNS – Public Health Nursing Sister

RHM – Regional Health Manager

HPB – Health Promotion Bureau

E&UH – Environmental & Occupational Health Unit

FGD – Focus Group Discussion

NCD – Non-Communicable Disease

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Introduction and Background

The project titled **"Improving Child Health, Including Nutrition, Through Community Empowerment in COVID-19 Recovery in the Plantation Sector"** was funded by the WHO and implemented by Plantation Human Development Trust (PHDT) in collaboration with the Foundation for Health Promotion (FHP), Sri Lanka. Its primary aim was to enhance child health, nutrition and Early Childhood Development (ECD), in the plantation sector by empowering communities through a holistic approach grounded in health promotion principles.

The initiative focused on building the capacity of grassroot health staff and promoting active community participation across plantation divisions. Key goals included improving financial management, promoting ECD, and raising awareness about nutrition and micronutrient needs. This project was conducted in 2 phases and this report provides a comprehensive summary of the activities carried out from June to November 2024.

Theoretical Background

ECD focuses on the holistic development of the child with emphasis on skill nurturing broadly involving motor (gross and fine motor), language, social/emotional, and cognitive development (UNICEF 2023) [1]. This period from conception to eight years of age is an important transformative phase where children progress from dependent to independent state in accomplishing basic needs. This period is characterised by establishment of primary central neuronal circuits forming the foundational brain architecture on which future remodelling and adaptation occurs. Also, the higher degree of neuroplasticity makes the developing brain amenable to restructuring influenced by the interactions and experiences it receives translating to greater learning potential far exceeding other stages of an individual's lifespan. Hence, ECD forms the foundation for better education and attaining one's full potential which positively impacts an individual's social and economic standing in adulthood [2,3].

ECD requires a stimulating environment under attentive and well-informed caregivers. Furthermore, adequate nutrition plays a pivotal role in achieving optimal growth and development with attention to both macro and micronutrients. Expectantly, childhood exposure to toxic micro- and macro-environments and malnutrition can hinder these outcomes. Approximately 250 million children in lower middle-income countries (LMICs) under 5 years of age are at risk of falling behind their developmental capacity with monumental consequences leading to intergenerational progression of poverty and under development [4]. Hence, application of preventive strategies during early childhood is prioritised and recognised in the Sustainable Development Goals.

Early childhood is defined by multiple distinct phases with the first 1000 days of life (conception to 24 months) identified to be the most crucial involving rapid brain development where coordinated health promotion efforts yield the most benefits [5]. Early Childhood Care and Development (ECCD) is the provision of essential supports namely health, nutrition, education, social services, care and protection to children in these formative years especially targeting the most vulnerable and disadvantaged (UNICEF 2014) [6]. These efforts prepare the child to enter school seamlessly and

secure lasting impact on wider national interests including health, education, economic, and social standards.

The Status Quo

The plantation community of Sri Lanka represents an underserved community with high rates of childhood malnutrition which underscores the current efforts to improve the national indices of child health and development in Sri Lanka. The demographic and health survey (DHS) conducted in 2016 highlights the stark contrast in rates of stunting, wasting and underweight children less than 5 years of age in this community which is well above the national, rural and urban figures [7].

According to the data published by the Department of Census and Statistics of Sri Lanka in 2016 25.4% of the estate sector reported a low birth weight which was 10% above the national figure. Childhood stunting (height for age below -2SD) in the under 5 year age group was at 31.7% which was almost double that of the national and rural population statistics. Childhood malnutrition was also rampant within this community with approximately 30% of children below 5 years of age being underweight (weight for age -2SD) a 10% lead from the national figure and wasting (weight for height below -2SD) comparable with rural populations of Sri Lanka [8]. Interestingly the lower wasting percentage reflects the underlying childhood stunting to be a far greater issue. In the multi method global study by Akseer et al focusing on the economic impact of childhood stunting in lower middle income countries pertaining to the private sector Sri Lanka was estimated with 22% reduction in income generation per stunted individual with an estimated 95 million USD loss per month overall [9]. These observations were regionally comparable with more women predominantly being affected.

Child health including early childhood nutrition and development in the estate sector remains sub-par with the national indices leading to impaired overall health and development of the community with significant economic impact. The determinants of poor health outcomes that were directly and indirectly affected by the COVID-19 pandemic require conscious efforts to evaluate and improve through outcome-oriented and sustainable processes to achieve recovery from the pandemic.
The underlying determinants contributing to poor health outcomes in the plantation communities are heavily ingrained within the community structure stemming from low literacy levels, heavy dependence on tobacco, alcohol and illicit substances and prevailing poverty combined with poor work-life balance [10,11]. Women's health disparities are closely entwined especially with poor child health outcomes contributing to the onslaught of low birth weight and persisting childhood malnutrition.

One of the downstream determinants is the lack of awareness among mothers, who are the primary caregivers, about the importance of early childhood development, including adequate nutrition during this period. This deficiency contributes to poor cognitive and psycho-social development in these children. In 2016, in the estate community close to ¼ th of women in the reproductive age group were underweight compared to just 7% in other regions whilst close to 15% were short in stature which was twice as high as the national figure (DHS 2016) [7].

What Problem Did the Project Try to Solve?

The role of community empowerment programs in achieving health and well-being outcomes by influencing down- and mid-stream determinants have been explored successfully in the literature. The health promotion programs conducted by the Japanese volunteers in Sri Lanka in parallel to the Japan International Cooperation Agency's (JICA) Noncommunicable Disease Prevention Project (NPP) noted significant positive health outcomes through the engagement and empowerment of the communities [12]. Communities were engaged in the planning and implementation stages of these health promotion programs. However, the program suffered sustainability-related issues beyond the involvement of facilitators and funding availability.

The Alma-Ata declaration of 1978 emphasized the importance of community engagement in planning and implementation of health care initiatives with focus on self-reliance and self-determination. It was further reiterated in the Ottawa charter of health promotion [13]. Although both the Millenium Development Goals and subsequent Sustainable Development Goals accepted by the world leaders recognise its role at a broader policy level, grassroot community empowerment programs are seldom conducted employing sustainable approaches.

The goal of this project was to build capacities of grassroot level health staff in the plantation sector to improve child health using holistic approach through community empowerment employing health promotion principles to enable COVID-19 recovery. The estate community belonging to the plantation areas under the regional plantation companies represent approximately 1,000,000 population with about 250,000 families. Over 50% of this community reside in the Nuwara Eliya district mainly Nuwara Eliya and Hatton regions representing the up country. Low country plantation communities hold distinct socio-cultural characteristics from up country, and therefore, two pilot project areas representing both these communities were selected from areas governed by the regional plantation companies.

The PHDT served as the implementing agency of the project. PHDT is a semi-governmental tripartite organization comprising the Government of Sri Lanka (GOSL), Regional Plantation Companies (RPCs), and Plantation Trade Unions (TUs). It was established by the GOSL to execute social development programs aimed at improving the quality of life for the one million people living in plantation communities on estates managed by the RPCs. PHDT's primary goal is to enhance human development in these communities through initiatives such as constructing individual housing, establishing community water supply systems, maintaining integrated child development centres, promoting community empowerment, and supporting estate worker cooperative societies to mitigate reliance on microfinancing.

Why Health Promotion for Program Planning and Implementation?

According to the WHO, health promotion is the process of enabling people to increase control over and to improve their health. In other words, it is the process by which we empower people to take ownership of the determinants of health thereby improving health.

The health promotion process employed in this project followed a community-led approach designed to empower individuals and stimulate active engagement in addressing the conditions that shape their

well-being. Building on established frameworks such as the Ottawa Charter (1986) and local resources like the Health Promotion Process (Diyanath, 2011), the intervention focused on enabling, mediating, and advocating for health through multi-sector collaboration, participatory processes, and supportive environments [13]. The project targeted three key action areas: creating supportive environments, strengthening community action, and developing personal skills [13].
Health promotion has unique features that make it impactful, sustainable, and applicable across different settings and issues. Unlike conventional public health and medical models, which typically target individuals, health promotion often focuses on communities or societies as a whole. This approach is more cost-effective for disease prevention, as targeting individual behaviours is less efficient compared to broader health promotion strategies.

One of the main objectives of health promotion is to achieve progress effectively and efficiently, which is why it commonly targets communities rather than individuals. Additionally, when considering the determinants of health behaviours, individuals can only change a limited number of factors on their own. For instance, healthy eating at home, physical activity within the neighbourhood, access to clean drinking water, and sanitation in the community are often determined by factors outside the individual's control. In essence, societal influences play a significant role in shaping individual behaviours and values.

An important aspect of health promotion is its focus on the daily well-being of individuals. When we consider our lives as a whole, well-being reflects how we live; healthful living should not be restricted to a short period or specific occasions. Health promotion significantly differs from the traditional physician-patient relationship based on the biomedical model, where the patient is often a passive recipient of information, advice, and instructions. In contrast, as we discussed earlier, health promotion encourages the client or patient to be an active participant in the process of change, empowering them to take ownership of their health.

The health promotion process involves identifying the root causes of health issues, challenges, and diseases. Health education and advice aim to help people understand these causes and recognize the need for change to achieve better health. However, a key assumption in this approach is that individuals will act on this advice during health crises and afterward when they are in better health. Unfortunately, this is often not the case. Rather than simply providing knowledge and creating awareness, we can achieve more significant progress by studying the root causes of behaviours associated with diseases and poor health outcomes. For example, understanding the influence of peers and social situations, along with developing a practical action plan for someone who smokes, can be more effective than just offering health education or advice.

Health promotion emphasizes community ownership of the process. It encourages individuals affected by specific health issues to take initiative in addressing those issues, supported by facilitators who help them develop the necessary skills for this change. Understanding and accurately measuring progress are essential elements of the change process in health promotion. These steps require guidance and support from an outside expert or facilitator. It is vital to develop skills for identifying sensitive indicators of success or failure, measuring these indicators, and responding effectively to the findings within the communities.

What is the Health Promotion Process?

Health promotion is a process, and this aspect is particularly evident when exploring community-based health promotion. The primary goal of the health promotion process is to improve health and well-being. But what does it mean to improve these aspects? It involves creating positive changes within the community. The first step in this process is to initiate it. For health promotion to be effective, ownership must remain within the community; this begins with the initiation of the process. The community decides where to start, how to proceed, and what steps to take, etc - all of these are controlled and determined by the community itself.

While the community has the autonomy to decide, lead, and maintain ownership, progress requires support from a health promotion facilitator. The facilitator plays a threefold role throughout the health promotion process: 1) to stimulate the community and society; 2) to address areas where the community lacks knowledge and skills; and 3) to guide the community in evaluating, reviewing, and progressing as a group. At the beginning of the process, the health promotion facilitator works to promote enthusiasm within community members about pursuing a vision or goal in life. This vision could encompass various aspects, such as enhancing health and well-being, improving children's education, or raising living standards.

A good health promoter or health promotion facilitator has the ability to ignite enthusiasm among community members and assess the existing level of enthusiasm to effectively tailor the health promotion process. Additionally, an effective health promoter can measure the level of enthusiasm and maintain momentum that aligns with the community's pace. Understanding the intermediary and root causes of the issues the community wants to address is a crucial part of this process. A more comprehensive and accurate understanding of these causes will help the community make better decisions for progressing on these issues. If progress is lacking or not as expected, we need to re-examine our root causes to ensure they have been accurately and completely identified.

The next step in the process is to create a simple plan with guidance from the health promoter or health promotion facilitator to measure outcomes. Before starting any activities to address identified causes, we should establish sensitive indicators to measure our progress towards the outcomes and impacts we envisioned from the very beginning. This approach makes the process more effective and efficient by investing time in understanding the causes, identifying relevant activities, selecting indicators, and deciding on the measurement criteria before launching into the activities. Once these steps are complete, we can proceed with the chosen activities.

The subsequent step is to evaluate the outcomes based on the established indicators and assess how to respond to successes and failures. When we experience positive results, it is important to celebrate these successes and consider exploring other areas or new ideas for continued health promotion. Conversely, if we face negative results or failures, we must return to the basics, review our approach, and seek to better understand the reasons behind the shortcomings in order to redirect our efforts toward more effective strategies.

The Theory of Change

The Theory of Change (ToC) outlined the pathways through which the intervention aimed to improve ECD and nutrition in plantation communities. Grounded in participatory principles and well-established health promotion frameworks, the ToC emphasized community empowerment, capacity-building, and the need to address key health determinants in a dynamic and responsive manner [13,14].

The ToC in this project is rooted in Antonovsky's salutogenic model [15,16]. It recognizes health as a dynamic, heterostatic process shaped by an individual's ability to mobilize resources and adapt to changing conditions. This perspective aligns with the complexities of community-led interventions, which involve diverse stakeholders, evolving priorities, and interconnected outcomes [17]. The project also drew on the principles of the Ottawa Charter for Health Promotion, which emphasized enabling, mediating, and advocating for health through participatory and multi-sectoral collaboration [13]. By focusing on these principles, the ToC provided a flexible framework for designing and evaluating the intervention to achieve its intended outcomes.

The project began with extensive community engagement, where plantation communities were viewed as active participants rather than passive beneficiaries. A Technical Working Group (TWG) comprising stakeholders such as the PHDT, regional plantation companies, and community representatives guided the planning and implementation of the intervention. Through participatory dialogue, the TWG facilitated the identification of local health priorities, determinants, and barriers to ensure the intervention was culturally sensitive and contextualized. These processes created a foundation that promoted ownership and accountability among the community members.

One of the primary mechanisms of change involved capacity-building initiatives targeting caregivers, including Child Development Officers (CDOs), Plantation Family Welfare Officers (PFWOs), local leaders, community members, and health workers. Training sessions focused on skill development to address the priorities identified by the community, such as improving caregiving practices, fostering responsive parenting, and ensuring adequate child nutrition. Caregivers were equipped with the knowledge and skills needed to combat protein-energy malnutrition and micronutrient deficiencies while supporting cognitive, social-emotional, and motor development in children. The intervention also employed practical approaches, such as training women to enhance household dietary diversity through home gardening and promoting locally available food resources. These integrated efforts aimed to tackle malnutrition and developmental delays simultaneously, reinforcing the interconnectedness of child nutrition and development.

The intervention's long-term impacts were to encompass multiple dimensions of health and well-being. At the child level, improvements were anticipated in physical and cognitive development, social-emotional skills, and motor function. Additionally, significant reductions in stunting, wasting, and micronutrient deficiencies were targeted, contributing to better nutrition outcomes among children. By addressing these critical health determinants, the intervention aimed to lay a foundation for improved educational performance, greater resilience, and enhanced productivity later in life.

At the community level, the project sought to create sustainable processes that empowered community members to continue health promotion efforts beyond the intervention's duration [18]. Women, in particular, were positioned as agents of change, with their empowerment leading to ripple effects such as improved financial management, reduced reliance on harmful coping mechanisms, e.g., alcohol and tobacco, and strengthened social cohesion within family units and among community members. These outcomes aligned health promotion frameworks, which highlighted the importance of promoting health literacy, empowerment, capacity-building, healthy environments, and societal transformation.

Overview of the Selected settings

For this project, three Regional Plantation Corporations (RPC) namely Maskeliya, Horana and Kelani Valley plantation companies were selected. Estates under these RPC located in Hatton and Kegalle districts, representing both up and low country respectively, were chosen to understand and capture the socio-cultural differences in these estate communities that may influence the outcomes and impacts of this project. An overview of the selected communities and their respective trainees are outlined in Table 1.

In phase 1, a total of 72 CDOs and PFWOs were recruited from these selected estates and underwent training and capacity building in health promotion methods. Stringent evaluation of their progress including serial self-ratings, peer ratings, and ratings by the resource panel of both individuals and groups were continued in this phase as well. This ensured a high standard of training and evaluation was maintained throughout the program. The evaluation process including the format is included in Figure 1 and 2.

Trainees were tasked with creating community settings in various locations in their division to deploy their training for the development of the children. At the end of phase I hundred such settings were created which were maintained in phase II. Among the groups created included parents with children under 5 years of age who were the core target group in this initiative. Each group consisted of 6-14 members. Although at the beginning these were mother groups with time we saw the gradual participation from fathers as well as support from youth groups in the activities organised. Certain mother groups expanded their programs to include every child in the village motivated by the knowledge that improvement in the whole village would positively boomerang back to affect one's own child.

CDOs selected the most improved and skilled mothers from their community groups. At the onset of phase I, 31 such highly accomplished mothers (HACMs) were selected from both Hatton and Kegalle. Later the number of HACMs increased to 53 in both regions. These selected mothers were sent to neighbouring divisions to share their knowledge, diffuse innovation, and improve the wellbeing of children and families in those divisions. A total of 18 new community settings were accrued by this process without the direct involvement of CDOs and PFWOs. HACMs were involved in eight four community settings out of the 118 which was a significant victory.

Table 1: Structural details related to selected Regional Plantation Companies (RPCs) and trainees

RPC	SN	Estate	Division	Team No	PFWO / CDO	Name of PFWO / CDO
MASKELIYA	**HATTON**					
	1	Glentilt	Glentilt	H1	CDO	P.Mageshwary
	2	Glentilt	Maskeliya	H1	CDO	R.Rajapakkiyawathi
	3	Glentilt	Lanka	H1	CDO	S.Vijayaletchumi
	4	Glentilt		H1	PFWO	K.Pasupathy
	5	Moray	Forres	H1	CDO	N.Umadevi
	6	Moray	Corfu	H1	CDO	S.Kesawani
	7	Moray	Valadoli	H1	CDO	V. Sivarani
	8	Moray	Moray	H1	CDO	Irangani
	9	Moray	Area full	H1	PFWO	T.Krishnaveni
	10	Moray	Rajamala	H1	CDO	Stella
	11	Moray	Curfe	H1	CDO	Wasanthamalar
	12	Troup	Coreen	H2	CDO	S.Ambigawathy
	13	Troup	Troup	H2	CDO	S.Reeta
	14	Talawakelle	Talawakelle	H2	CDO	Reetamma
	15	Talawakelle	Nanuoya	H2	CDO	K.Valarmathi
	16	Talawakelle	Lower division	H2	CDO	Yadushika
	17	Mousakelle	Mousakellie	H3	CDO	V.Malani
	18	Mousakelle	Ekolsund	H3	CDO	S.Thilagarani
	19	Mousakelle	Nayanza	H3	CDO	M.Devika

	20	Mousakelle	Nayanza	H3	CDO	Jesminmery
	21	Mousakelle	Luccombe	H3	CDO	M.Peres
	22	Mousakelle	Rutherford	H3	CDO	K.Sarathadevi
HORANA	23	Mahanilu	Mahanilu	H1	CDO	R.Thirumahal
	24	Mahanilu	Mahagalla	H1	CDO	K.Jessichristina
	25	Fairlawn	Fairlawn	H4	CDO	P.Sivapakkiyam
	26	Fairlawn	Bargany	H4	CDO	L.Vimaladevi
	27	Fairlawn	Sooriyakanda	H4	CDO	A.Gowry
	28	Fairlawn	miniglane	H4	CDO	G.Sivasangary
	29	Fairlawn	Blairavon	H4	CDO	M.Valliyamma
	30	Fairlawn		H4	Office staff	Christina
	31	Alton	Kingora	H4	CDO	M.Rajaletchumi
	32	Alton	Bcconsaield	H4	CDO	R.Susila
	33	Gouravilla	Gou-A	H5	CDO	M.Pathmawathi
	34	Gouravilla	Gou-B	H5	CDO	K.Kokiladevi
	35	Gouravilla	Upper Cruden	H5	CDO	M.Panjawarnam
	36	Gouravilla	Bargrove	H5	CDO	R.P.Irangani
	37	Stockholm	Stockholm	H5	CDO	S.Vithyashini
	38	Stockholm	Scarborough	H5	CDO	A.Sivashakthy
	39	Stockholm	Lower Cruden	H5	CDO	M.Dayabari
	40	Stockholm		H5	PFWO	Muththuletchami
	41	Stockholm	Scarborough	H5	A/CDO	Clara

	42	Stockholm	Stockholm	H5	A/CDO	Dilani Dilrukshi
KEGALLE						
KELANI -VALLEY	1	Kelani	Factory Division	K1	PFWO	S.A.Wasana Sabaragamuwa
	2	Kelani	Factory Division	K1	CDO	R.Sivaranjani
	3	Kalupahena	Kalupahena	K1	PFWO	S.M.Priyanka Kumari
	4	Kalupahena	Kalupahena	K1	CDO	S.Priyadarshini
	5	Kalupahena	Waharaka	K1	CDO	M.Mageshwary
	6	Panawatta	Panawatta	K2	PFWO	P.U.Nirosha Damayanthi
	7	Panawatta	Lower Division	K2	CDO	S.Shasikala
	8	Panawatta	Pan.2-Division	K2	CDO	R.Vasanthi
	9	Panawatta	Upper Division	K2	CDO	H.T.P.Gangakumary
	10	Panawatta	Pan.1-Division	K2	EMA	W.Ranjani Fernando
	11	Weoya	No-1,Division	K3	CDO	K.A.Kamani Sirisena
	12	Weoya	Weoya	K3	PFWO	R.A.Sandamali
	13	Weoya	Upper Division	K3	CDO	A.Krishnakumary
	14	Dewalakanda	Dunedin	K3	CDO	P.Thakshila
	15	Dewalakanda	Dewalakanda	K3	PFWO	H.A.Niluka Bandara
	16	Dewalakanda		K3	CDO	Ganeshwary
	17	Lavent	Lavent	K4	PFWO	M.Lalanthi
	18	Lavent	Upper Division	K4	CDO	R.A.Chanrawathi
	19	Lavent	Lower Division	K4	CDO	N.Manjula

	20	Kitulgala	Upper Division	K4	CDO	R.Sakunthala
	21	Ederapalla	West	K5	CDO	P.Chandralatha
	22	Ederapalla	East	K5	CDO	K.K.Manjuladevi
	23	Urumiwella	Urumiwella	K5	PFWO	M.D.T.E.Muthumali
	24	Urumiwella	Lewalla	K5	CDO	R.D.Anoja
	25	Urumiwella	Managalla	K5	CDO	K.Vijeyakumari
	26	Kiriporuwa	Kiriporuwa	K6	PFWO	M.C.Udeni Premarathna
	27	Halgolle	Halgolle	K6	PFWO	M.Sagunthaladevi
	28	Halgolle	Weweltalawa	K6	A/CDO	A.Dewanayagi
	29	Ganepella	Upper&Lower	K6	CDO	S.R.Pushpa Jeewan
	30	Ganepella		K6	CDO	K.Pushpalatha
	31	Ganepella		K6	CDO	K.Dharshani

Figure 1: Evaluation of CDOs and PFWOs – the format used for self-rating and peer-rating (Sinhala)

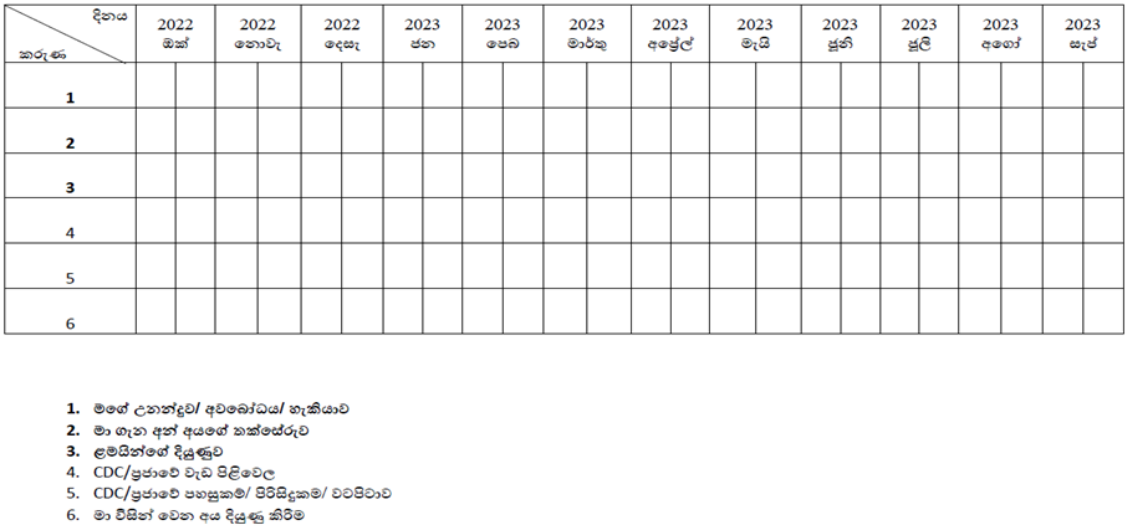
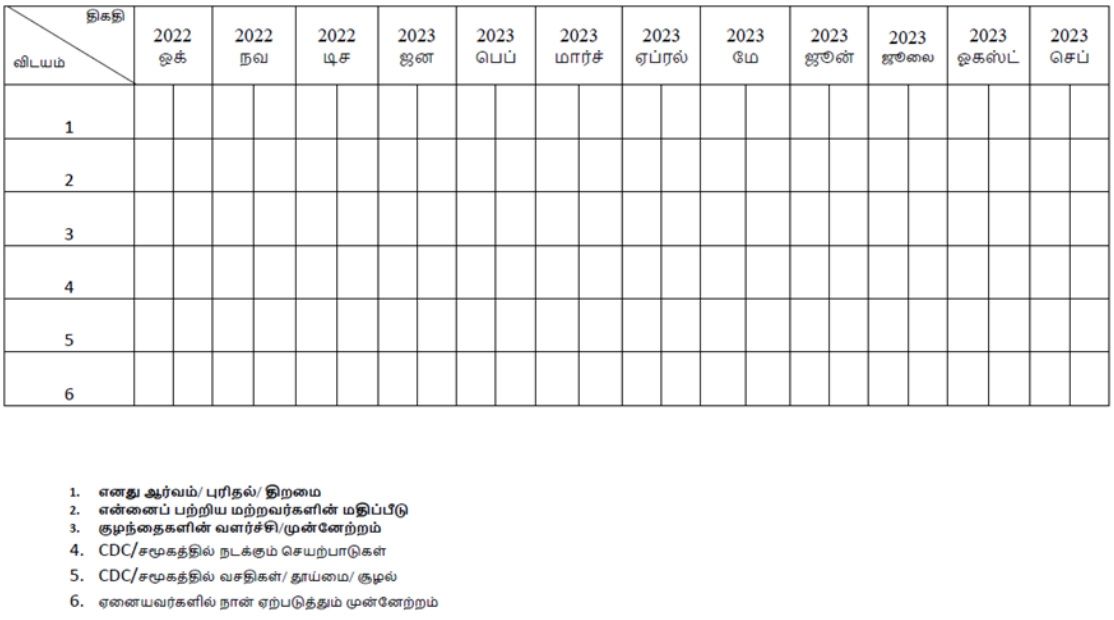


Figure 2: Evaluation of CDOs and PFWOs - the format used for self-rating and peer-rating (Tamil)



Phase 1

A Brief Account of Activities

The main goal of Phase 1 was to improve the capacity of Community Development Officers and Plantation Family Welfare Officers as facilitators to apply health promotion principles for the improvement of nutrition and psychosocial development among communities located in selected plantation sector regions to help them in recovery of COVID-19 pandemic. The phase 1 of the health promotion project, titled "Improving Child Health Including Nutrition Through Community Empowerment in COVID-19 Recovery in the Plantation Sector," aimed to build the capacity of CDOs

and PFWOs as facilitators, following a structured sequence of activities designed to achieve specific objectives related to early childhood development and childhood nutrition.

The objectives of Phase 1 of the project focused on building foundational capacities and promoting sustainable community-led health promotion processes. The first objective was to equip CDOs, PFWOs, two PHMs, two PHNSs, and four RHM with the necessary skills to apply health promotion principles in facilitating improvements in child nutrition, psychosocial development, and community health. Second, to enhance the functioning of CDCs and community settings by integrating health promotion principles into their operations. Third, to strengthen the capacities of facilitators to monitor community engagement, enthusiasm, and participation effectively. Fourth, to increase the number of communities employing self-developed indicators to track and assess the progress of their health development initiatives. These objectives collectively aimed to empower facilitators and communities, laying the groundwork for sustainable health improvements.

In the planning stage (Stage 1), the project established a TWG. Key activities of the TWG included developing training programs, identifying monitoring indicators, and selecting resource personnel. Representatives from the target communities, including CDOs, PFWOs, and health managers, were actively involved to ensure the interventions were community-led and aligned with local and cultural needs. This stage directly addressed the first specific objective by laying the groundwork to build relevant skills and create a framework for the program's health promotion principles.

In the second stage (Stage 2: Initial Training and Follow-Up), initial and follow-up training sessions were conducted to equip participants with essential skills and knowledge. These sessions were iterative, with each building on the previous one, allowing participants to practice and internalize health promotion concepts. This stage enhanced participants' abilities to function effectively in child development centres and community settings.

The next stage (Stage 3: Field Visits by Resource Persons) concerned field visits conducted by skilled facilitators to provide practical guidance and feedback. These visits demonstrated community engagement processes and monitored participants' progress in real-world applications. By offering hands-on support, this stage strengthened the facilitators' capacity to monitor community involvement and enthusiasm, contributing to the second and third specific objectives.

In the fourth stage (Stage 4: Collecting Information, Analysis, and Documentation), data collection and analysis were integrated into the program to track progress and guide subsequent activities. Indicators for assessing outcomes were developed during implementation through the communities involved in the project, ensuring a results-oriented approach. This stage aligned with the fourth specific objective by empowering communities to use self-developed indicators to monitor health development and adjust activities accordingly.

Next (Stage 5: Evaluating and Documenting Interventions), the internal evaluation measured the program's outcomes and impacts at the trainee and community levels. Key outcomes included improved nutrition, reduced non-communicable disease risks through behaviour changes, enhanced family well-being, and capacity building in the communities. By documenting these results, the

program validated its effectiveness in achieving its overarching and specific objectives, particularly in improving the capacities of facilitators and the health status of target communities.

The last stage of phase 1 (Stage 6: Coordination, Communication, and Reporting) involved regular meetings to ensure effective communication and coordination among stakeholders, including WHO representatives. Progress updates were shared during these meetings. The final report of Phase 1 documented the program's impacts and lessons learned. This stage consolidated the status of objectives through a collaborative process ensuring transparency (Annexure 1).

Each stage of the project played a crucial role in achieving the goals and objectives. From planning and skill development to implementation, monitoring, and reporting, the structured approach established a solid foundation for Phase 2. It introduced the health promotion process, promoted knowledge and skills, and enhanced self-efficacy and community capacity-building efforts preparing each region for the Phase 2.

Summary of Outcome and Evaluation Results

The qualitative evaluation of Phase 1 of the project examined the outcomes and impacts of the capacity-building program on grassroots health workers and members of mother support groups. This evaluation focused on participants' acquisition of knowledge, attitudes, and practices in key areas such as child development, nutrition, and resource management. The summary below presents the key findings from Phase 1 to inform Phase 2 of the program.

The qualitative component of the study involved 90 participants, comprising 55 officers (CDOs and PFWO) and 35 members of mother support groups. Participants were recruited from regional offices or Child Development Centers (CDCs) and organized into focus group discussions (FGDs). A total of eight FGDs were conducted.

Knowledge Acquired from the Capacity-Building Program

Participants gained critical insights into early childhood brain development, particularly during the "Thousand Golden Days," emphasizing cognitive and sensory growth from conception to age two and a half. Health workers and mothers learned to implement Five Sense Stimulation Training, integrating sensory engagement into daily routines to enhance developmental outcomes. The program also strengthened participants' understanding of childhood nutrition, equipping them with knowledge about essential nutrients and practical strategies for preparing cost-effective, balanced meals. Health workers acquired foundational principles of the health promotion process, enabling them to implement community-driven strategies to address local health challenges effectively.

Attitude Change Through the Program

The program promoted positive shifts in participants' perspectives. Many mothers embraced the idea of experiential learning and sensory engagement, allowing their children to participate in hands-on activities such as playing with soil and water. This openness extended to promoting curiosity in children, enabling them to ask questions and explore their surroundings, which participants linked to cognitive and linguistic growth. Mothers became more proactive in monitoring their children's nutrition and growth, reinforcing the importance of weight and dietary habits. Additionally, participants adopted cost-conscious attitudes, prioritizing health and education over unnecessary

expenses, as reflected in changes such as replacing extravagant celebrations. The program also inspired a sense of collective responsibility, with mothers and health workers actively sharing knowledge and promoting better health practices within and beyond their immediate communities.

Practices and Skills Acquired from the Program

Participants implemented Five Sense Stimulation techniques, integrating touch, sound, and vision activities into daily routines to support cognitive and sensory growth. Mothers and health workers monitored development using charts and introduced visual aids to enhance home learning. Nutrition practices improved significantly, with families preparing nutrient-dense point-of-use fortificants using locally available ingredients and adopting communal eating to ensure balanced diets enriched in micronutrients. Resource management skills were enhanced through home gardening, poultry raising, and cost-effective cooking strategies, leading to improved household food security and financial resilience. The shift from powdered milk to fresh milk further exemplified sustainable, health-conscious decision-making at home.

Phase 2: Overview

General Objective

To improve the capacity of Community Development officers (CDO) and Plantation Family Welfare Officers (PFWO) as facilitators to apply health promotion principles for the improvement of nutrition and psycho-social development among children belonging to the communities located in the 'plantation sector' to help them in recovery of covid-19 pandemic.

Specific objectives

1. To build the relevant skills among CDOs and PFWOs as well as grassroot level public health field workers inclusive of 2 PHMs, 2 PHNs and 4 Regional Managers of Health as facilitators to apply health promotion principles to improve nutrition and psycho-social development of children and overall health of communities.
2. To enhance the functioning of child development centres and utility of community settings using health promotion principles.
3. To improve capacities of facilitators to monitor the progress of community engagement, their enthusiasm and participation.
4. To increase the number of communities using self-developed indicators to monitor the progress of their health development.

Description of overall activities

To optimize the impact of Phase 2, the HPF proposed strategies aimed at enhancing the skill sets of CDOs, PFWOs, and community members who had demonstrated their ability to apply health promotion principles effectively. These individuals had already contributed to significant improvements in child nutrition, psychosocial development, resource management, and overall community health. Building on this foundation, Phase 2 focused on elevating the most proficient participants - those ranked as Level A and B within a grading system ranging from A to D - to take on roles as trainers and resources within the PHDT network. Additionally, other officers were provided opportunities to voluntarily participate in Phase 2 activities, enabling them to further develop their skills and contributions.

As discussed earlier, the best-performing estate health facilitators, categorized as Level A and B, from the pilot regions of Hatton and Kegalle, received continued training and professional development. These facilitators also mentored Level C and D officers, who participated without financial compensation. Similarly, Phase 2 identified highly accomplished mothers (HACMs) and community members from the pilot areas and empowered them as community mobilizers (CMs). These CMs played a vital role in the health promotion process through training and empowering their peers. All CDOs and PFWOs received further training to consolidate their expertise, while community groups comprising families were formed to enhance nutrition, health, and self-evaluation practices.

Efforts focused on encouraging PFWOs, CDOs, and high-performing community members (CMs) to share best practices with regions that had shown limited progress. These individuals took on formal training roles, initially with the support of the FHP resource persons, and eventually operated independently under FHP oversight. The PHDT aimed to expand its reach to new districts and estates by leveraging the expertise of FHP resource persons, CDOs, PFWOs, and community members to train new participants who implemented health promotion activities in their respective locales. Remote feedback through WhatsApp groups was incorporated as it had been in Phase 1, with regular, periodic site visits conducted by resource persons to provide direct, practical support.

The transition to independent leadership by successful PFWOs and CDOs involved progressively increasing their roles in training, monitoring, and providing feedback. Resource persons and trainee health promotion facilitators conducted site visits to mentor participants and ensure effective implementation. These high-performing individuals eventually formed a specialized resource pool within the PHDT. Planning meetings were held to develop training programs, monitoring strategies, and evaluation tools, ensuring the alignment of personnel, expertise, and resources with program goals.

Classroom training sessions were conducted for Level A and B facilitators, newly selected CDOs and PFWOs, and active mothers. These sessions included initial and follow-up training to build skills incrementally. In addition, field training and feedback visits by resource persons strengthened the capacity of high-achieving mothers and Level A and B facilitators, ensuring they could support health promotion activities in new divisions. Monthly progress review meetings helped redirect efforts and maintain momentum, while ongoing collection, analysis, and documentation of information ensured activities were results-oriented. These insights contributed to this report that informally evaluated the enhanced capacities of trainees and progress in health and other indicators within the targeted communities.

Plantation Company-level community symposia were organized to share experiences and lessons learned, encouraging collaboration among estate sector officials, community members, and the general public. These efforts sustained and expanded the achievements of Phase 1, while establishing a solid foundation for future health promotion initiatives. To extend the program's impact, selected high-achieving mothers from Phases 1 and 2 were planned to visit neighbouring communities to train new groups.

Phase 2: Implementation

The project focuses on building capacities for community empowerment through a health promotion approach, ensuring sustainable and measurable results. The project conducted its activities under the following phases:

Planning

The planning phase was pivotal in establishing the foundation for the project. A Technical Working Group (TWG) was set up, comprising representatives from WHO, FHB, HPB, and E&UH. This group was tasked with developing the program's activities, monitoring progress, and conducting periodic reviews. A comprehensive desk review followed, where past experiences were analysed to identify effective interventions. This phase also involved creating training programs, monitoring tools, and evaluation frameworks. Additionally, a framework and resource allocation plan was developed, which included identifying training schedules, anticipating potential obstacles, setting priority indicators, and assessing personnel needs. Close collaboration with FHB and HPB ensured alignment with national health policies during the planning, monitoring, and evaluation phases.

In Phase 2, the project successfully incorporated the recommendations from Phase 1 by leveraging mother resource groups from the Hatton and Kegalle regions to facilitate the dissemination of awareness, knowledge, and skills across new health promotion settings in plantation divisions and regions. This approach, proven effective in Phase 1, was employed to enhance community empowerment and develop skilled CDOs and PFWOs. By adopting this strategy as a program-related policy, PHDT and FHP aimed to further strengthen self-empowered estate communities and ensure the sustainability and scalability of health promotion initiatives across additional regions.

Training and capacity building

Training activities were aimed at equipping participants with the skills and knowledge required for community empowerment using health promotion principles. Initial training sessions targeted estate CDOs, PFWOs, health managers, and grassroots health workers. These sessions focused on foundational skills and theoretical understanding. Following this, follow-up training sessions were conducted to reinforce learning, address challenges, and incorporate real-world experiences. To complement the theoretical training, field visits were organized where resource persons and skilled facilitators demonstrated community engagement processes. Participants received practical feedback to enhance their on-ground application of concepts.

Monitoring and feedback

An ongoing monitoring mechanism was integrated into the project to collect and analyse data in real-time. This approach ensured that activities remained aligned with project objectives and allowed for timely course corrections. Internal evaluation activities were conducted continuously to assess the outcomes and impacts of interventions. Communities co-developed indicators to guide activities and measure results, fostering ownership and relevance in the evaluation process.

Documentation and reporting

Documentation played a crucial role in capturing the project’s progress and outcomes. Community-developed teaching and learning materials were refined for broader use in future training programs.

A comprehensive final report documented the outcomes and impacts at individual and community levels, detailing improvements in health indicators and the progress achieved by trainees.

Phase 2: Outcomes

This section assesses the project's real-world effectiveness on community health and empowerment in relation to the project objectives. Through root cause analyses, communities identified key factors such as financial constraints and lack of awareness, leading to targeted interventions. A structured measurement framework was established, incorporating both outcome and process indicators to assess the effectiveness of these interventions. Intermediate outcomes, including household savings, happiness levels, healthy food preparation practices, etc were tracked using innovative tools such as the happiness and kitchen calendars. Child growth monitoring, particularly weight-for-age assessments, provided key insights into nutritional improvements. The health promotion process was evaluated through participation rates, expansion of health promotion settings, and engagement levels. By integrating community-driven data collection and analysis, the project ensured that interventions were adaptive, evidence-based, and sustainable. The results were both qualitative and quantitative.

Community approach to outcomes measurements

Upon identifying childhood nutrition and development-related issues of concern within the communities, root cause analyses were conducted by the community members themselves, with facilitation from CDOs and PFWOs.

For instance, during the root cause analysis of childhood nutrition-related issues, the communities identified two key contributing factors: lack of financial resources and lack of awareness. The financial constraints were further linked to unnecessary household and individual expenses, such as the purchase of unhealthy processed or junk foods, as well as non-essential spending on clothing items. The underutilization of accessible ingredients for healthy food preparation and the use of home-grown ingredients emerged as some of the reasons for purchasing unhealthy food. Additionally, alcohol consumption emerged as a significant factor in reducing the financial capacity to invest in childhood nutrition (Figure 3a). The communities have employed an inductive reasoning process which involves drawing general conclusions from specific real-world observations and/or heuristically-derived evidence.

Beyond financial limitations, the lack of awareness was associated with insufficient interest among mothers and a general lack of knowledge about preparing nutritious meals. The disinterest among mothers was attributed to two primary reasons: a lack of overall happiness among mothers and a lack of understanding of how to maintain a happy and healthy family environment. Communities, under the guidance of the facilitators, conducted similar root cause analyses for other outcomes.

Figure 3a: An illustration of the root cause analysis (translated to English) conducted by the communities for the specific issue of childhood malnutrition

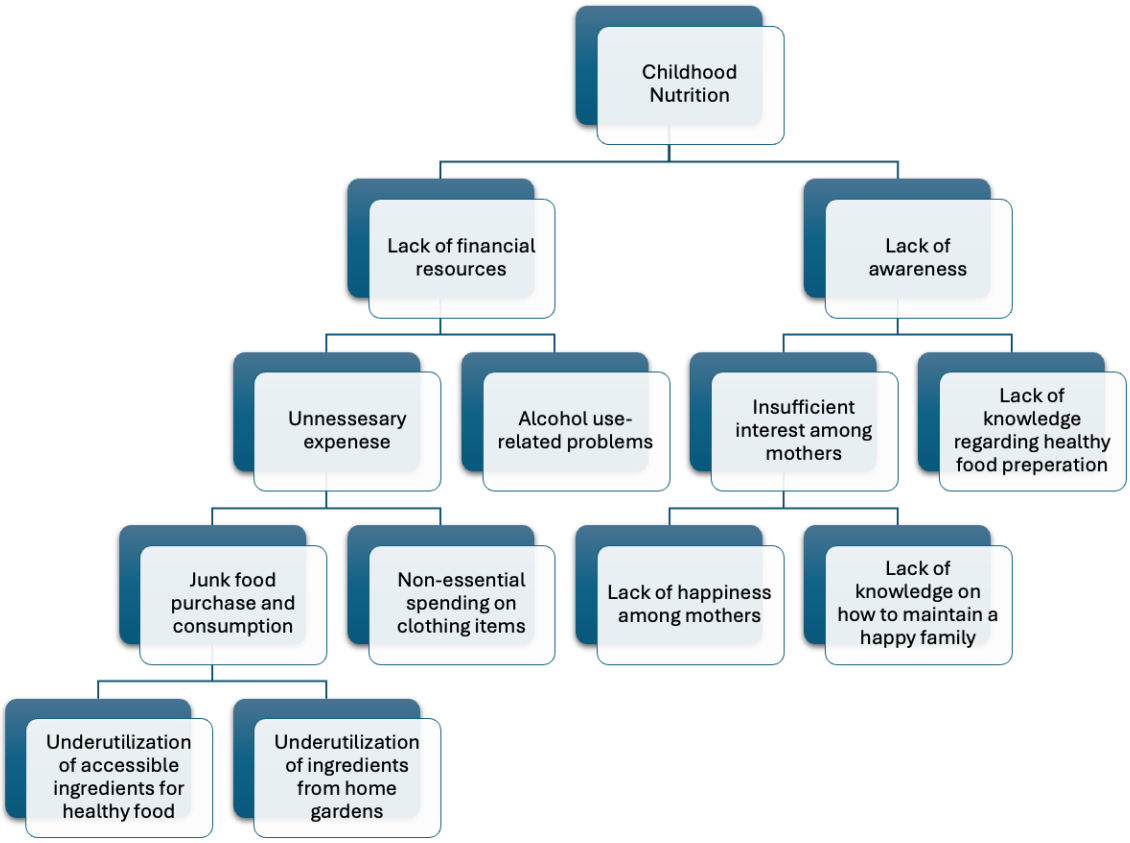
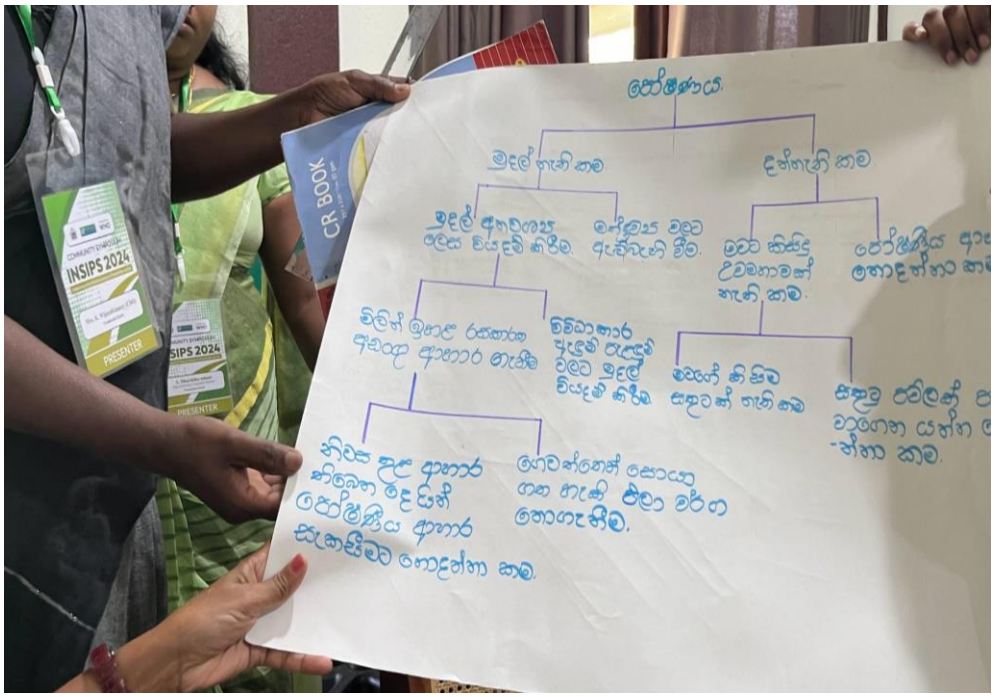


Figure 3b: A photograph of the root cause analysis (in Sinhalese) conducted by the communities for the specific issue of childhood malnutrition

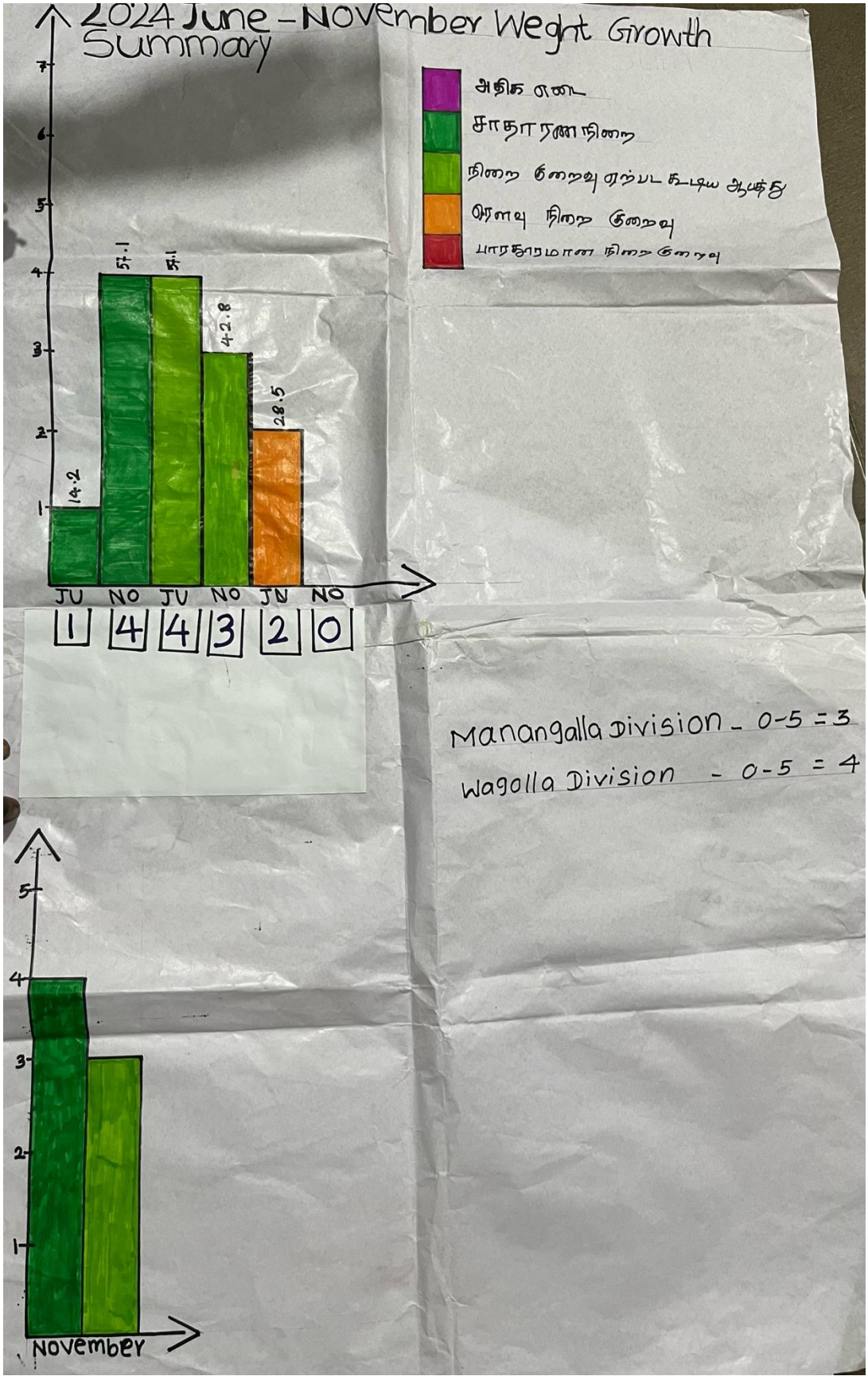


Measuring the progress

Following the identification of root causes, the communities implemented targeted interventions to address key issues. As part of this health promotion process, they also established indicators to measure and evaluate the effectiveness (and in some cases the longer-term impact) of these interventions. These indicators fell into two main categories: outcome indicators, which assessed the impact and results of the interventions, and process indicators, which tracked the implementation and progression of the project and the employed health promotion process.

The outcome indicators measured both intermediate and primary outcomes. Intermediate outcomes included changes in household expenses and savings, improvements in overall happiness at home, and trends in healthy food preparation practices in household kitchens. Additionally, indicators related to childhood development were monitored, such as the amount of sensory stimulation each child received and sleeping hours with data recorded using dates and frequency counts at individual/family level. At both household and community levels, cumulative results were analysed using summary statistics. The primary outcome indicator for childhood nutrition was the change in weight-for-age given its sensitivity to interventions in the short time frame, measured in standard deviation categories (e.g., above -1 SD, -1 to -2 SD, and -2 to -3 SD), for children under the age of five (Figure 4). Figure 5 (in the next section) explains the results shown in figure 4.

Figure 4: A summary table highlighting the number of children in weight-for-age standard deviation categories before and after the program in a small community in Manangalla and Wagolla divisions.



To effectively collect, record, analyse, and interpret data for each outcome indicator, the communities employed innovative approaches in this community-driven data collection process. Household expenses and savings were recorded by mothers in structured tables, with summary statistics calculated to track total monthly expenses, savings, and spending trends. Happiness levels were measured using self-reported indicators, represented through a traffic light color-coded system (red, yellow, and green), where red indicated unhappy days, yellow represented neutral days, and green signified happy days for each family member. This was called the happiness calendar. Similarly, kitchen food preparation habits were monitored by tracking the use of sugar, oil, and salt, comparing consumption levels against baseline data. Any improvements were documented using the same traffic light system in what became known as the "kitchen calendar."

Child growth monitoring was a crucial component of the evaluation process. Weight-for-age measurements were taken at midwives' clinics and documented by mothers and facilitators within each estate. By adopting these participatory data collection methods, communities could systematically monitor progress, make necessary adjustments to interventions and the direction of the interventions, and sustain improvements in childhood nutrition and development.

Measuring the health promotion process

When measuring the health promotion process, the communities utilized various indicators, including the number of members participating in each health promotion setting over time, the total number of health promotion settings within each estate over time, and the level of enthusiasm among group members. The number of participants and settings were measured using simple counts and recorded in tables. In some cases, flow charts and diagrams were used to visually represent the data, such as estate maps illustrating the sequence in which households were incorporated into the health promotion program, demonstrating the program's reach and progression.

Figure 6 illustrates the conceptual framework of a key process indicator as understood by the trainers and the community members, showing how trainers educate others, facilitating knowledge and skills transfer and extending the program's impact to household levels through the diffusion of innovation. Figure 7 highlights how communities monitored the expansion of the health promotion program across estate households, using a field map to visualize membership growth and track the program's spread.

Figure 6: An illustration of a process indicator expanding community impact through trainer-to-trainer and trainer-to-community knowledge and skills transfer.

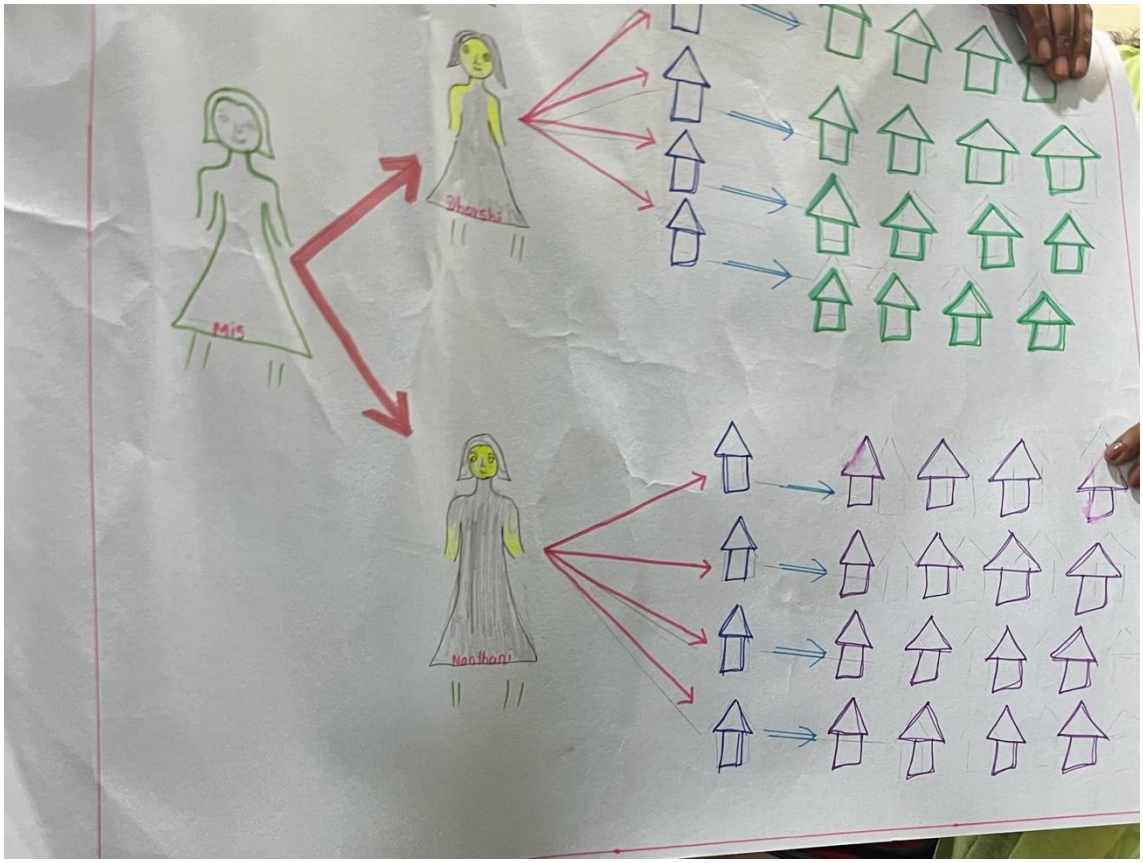


Figure 7: Tracking the expansion of health promotion across estate households

Measured Real-World Outcomes

As outlined in the previous sections, data on health and health promotion process indicators were collected, processed, analysed, and synthesized by the communities. To facilitate the discussion of the results, we categorize the outcomes into two distinct groups: intermediate outcomes and primary outcomes.

Intermediate outcomes refer to specific results that occur along the impact pathway, which contribute to the achievement of the program's primary objectives. These outcomes include measurable behaviour changes and early indicators, such as improved household financial management, e.g., reduced spending on alcohol and unhealthy foods, increased sensory stimulation for children, and healthier meal preparation practices. These intermediate outcomes are considered the building blocks that drive the program's broader impacts.

Primary outcomes, on the other hand, represent the long-term, desired impacts of the program, such as improvements in children's nutritional status, enhanced community health, and stronger family and community cohesion. These are the measurable benefits that the program aims to achieve, as defined by its objectives.

In this report, we have analysed the available data at both the household and community levels to assess how the intermediate outcomes have contributed to the primary outcomes. This process helps us understand potential causal links between the changes in behaviours and practices (intermediate outcomes) and the final health and community improvements (primary outcomes).

Qualitative Outcomes

1. Knowledge Transformation in Nutrition and Early Childhood Development

The plantation community experienced a significant transformation in their understanding of nutrition and early childhood development through the health promotion project. Initially, substantial knowledge gaps existed among parents regarding proper nutrition and child development practices.

Prior to the intervention, many parents viewed eating primarily as a means to eliminate hunger, with rice and dhal being the staple diet. They lacked awareness of macro and micronutrient requirements for optimal child development. Cultural misconceptions influenced food choices, with beliefs that certain nutritious foods like fresh cow's milk and peanuts were harmful. One CDO noted, "In the past, eating peanuts was uncommon in our estate, especially in Moray Estate. People used to believe that peanuts caused 'pitha' (acid reflux)."

Parents heavily relied on processed foods and powdered milk, perceiving them as more nutritious due to advertising and convenience. A CDO observed, "Before we started this initiative, many parents lacked knowledge about what was healthy and unhealthy food for their children. They just bought and provided whatever was available without thinking about how their money was being spent."

Regarding early childhood development, families were unaware of the critical 'golden 1000 days' concept, where 80% of brain development occurs from conception to a child's second birthday. A CDO remarked, "Previously, parents only started planning for their child's nutrition after the baby was born. But now, as soon as they hear about the 'First 1000 Days' concept, they become very interested in learning about it."

Parents did not recognize the importance of sensory stimulation and emotional well-being for brain growth. Children were often left isolated without proper stimulation, resulting in low attendance at CDCs at the project's start. The community also lacked understanding about monitoring children's growth, as one CDO explained: "Previously mothers used to just get the weight measured of the child and go, I also didn't put my mind into it. Now I have displayed the weight progress at the CDC and the mother's are attentive of their child's weight progress."

Through the health promotion process, PFWOs, CDOs, and high accomplished mothers (CMs) served as primary change agents, disseminating knowledge throughout the community. Continuous engagement via WhatsApp provided real-time support, promoting resilience and strong partnerships between facilitators and the community.

2. Attitudinal Shift and Community Engagement

The health promotion process catalyzed a remarkable shift in community attitudes, transforming passive participation into proactive engagement. This was evident in the community's approach to planning and implementing activities, parenting practices, and overall community cohesion.
A CDO highlighted this change: *"Previous activities on nutrition were done by the estate management or sourced from outside. There was no help from the parents. Now, after this initiative we get a lot of support from parents. They get together on their own and plan activities (food distribution)."* Another facilitator noted, *"Previously we had to spend our money and put immense effort to get the community involved but now since they are fully engaged and committed to complete the task there is less burnout on us."*

A significant shift occurred from individualistic mindsets to a collective approach in childcare. Families began working together voluntarily, recognizing the benefits of shared responsibility. One CDO observed, *"They were reluctant to share their children's food with others. If any child received food from another, complaints were made to the CDC. But after this program, people have become more open to sharing."*

Social barriers dissolved as estate workers and non-workers began participating without restrictions. As one CDO mentioned, *"Previously, there was a distinction between workers and non-workers, but we have eliminated this division. The CDC used to be separate for each group, but now, everyone works together."*

The concept of responsibility evolved significantly, with child-rearing, once considered solely a mother's duty, now involving greater participation from fathers. One CDO described, *"Before, the men who worked in the estate didn't talk (to me) much. But now, they are the ones coming to talk to me, saying, 'Teacher, is there a program to reduce chewing betels or 'Isn't this making a difference?'"*
Children emerged as important change agents, actively contributing to the health promotion process. A facilitator noted, *"More than the mothers, it was the children who supported us the most. They would come to us with ideas and say, 'Akka (older sister), let's do this or that.' They were deeply engaged and excited to be part of the process."*

3. Root Cause Identification and Community-Led Solutions

The facilitators employed participatory discussions to help mothers identify underlying factors contributing to poor child nutrition and development. Initially challenging due to possible distrust and low participation, these sessions eventually gained momentum through persistent engagement at homes and in the community.

Two primary root causes emerged across all estate divisions, poverty and lack of awareness. Further exploration revealed that financial mismanagement was a significant factor behind poverty that could be addressed (Figure 3a and 3b). Mothers identified unhealth foods, avoidable purchases such as alcohol and betel chewing, and ostentatious practices as areas for improvement. Another barrier was inadequate time for working mothers to attend to their children's meals, leading to unstructured feeding and reliance on processed foods. As one CM described, *"One of the biggest challenges parents faced was time. Since many of them worked during the day and returned home late, feeding the children at the right time became an issue."*

Mothers also explored reasons for the knowledge gap in nutrition and ECCD, focusing on internal factors such as poor motivation stemming from unhappiness in family life. Discord between spouses, domestic quarrels, and lack of meaningful discussions among family members were identified as core issues. Through this health promotion process, the community demonstrated strong commitment to improving their children's health and future potential. Highly accomplished mothers emerged as role models, helping maintain momentum and training others. Collective actions targeting all at-risk children, rather than individual children, became popular, aligning with health promotion principles.

4. Financial Resource Management and Home Food Preparation

Financial illiteracy was identified as a major factor limiting purchasing power for essential nutrition. The facilitators provided insights into major pitfalls in financial management, enabling the community to derive meaningful solutions without external resources.

Strategies included rational spending, reducing unnecessary expenses, budgeting, tracking expenses, and planning grocery lists. A CDO noted, *"In the past, usually, one person in the household - especially the father - would make a shopping list and go to the store to buy the necessary items. However, when you really look at it, many of the things bought were unnecessary. After this new process was introduced, both husband and wife now discuss together what needs to be bought and what is unnecessary."*

Reducing spending on alcohol and betel leaves was another impactful strategy. One CDO commented, *"The children mark betel chewing and drinking alcohol on the home calendar exposing and motivating the fathers' to seek help from us on how to reduce this habit, now people who drank for LKR 10,000 has reduced it to LKR 5000 which is a great achievement."* Families shifted from processed foods to economical protein sources. "*Many families would purchase biscuits for their children's morning and evening tea, spending around 500 rupees a day. However, after this program, people have gradually reduced unnecessary spending on biscuits and processed foods.*"

Home cultivation became popular, with many families growing vegetables in their gardens or even in small bags filled with soil. One CDO shared, *"I also encouraged every household to plant a moringa tree. Now, many homes in the Kalupahana Division have planted moringa trees."* Pooling of resources to create nutrient-dense food supplements such as protein-rich whole grain flour or Moringa leaves and anchovy head powder reduced the individual financial burden while meeting children's nutritional needs. As one CDO explained, *"After starting this program and introducing the concept of sharing, we were able to distribute moringa leaves, dried fish powder, and similar items to everyone."*

5. Innovative Strategies for Child Nutrition and Development

The community identified four key strategies to tackle nutritional and developmental challenges: communal feeding initiatives to enhance food sharing, homemade nutrient-rich supplements from local ingredients, a happiness calendar to monitor family well-being, and sensory stimulation activities with locally made materials to promote early brain development.

5.1 Communal feeding activities

The community transformed its perception of sharing resources through communal feeding activities at CDCs. This arrangement reduced the individual burden on working mothers and provided a workable roster for meals. Children were noted to eat more in groups, as companionship encouraged better food intake. One mother commented, *"Over time, mothers realized that when children ate together, they ate more and got all the necessary nutrients. So, they began cooking in groups, each bringing a couple of ingredients to contribute. They even shared eggs when they were scarce."*

5.2 Home-Made Supplements and Feeding Techniques

Facilitators introduced mothers to techniques for improving the nutrient density of food. Home-made protein supplements like moringa leaf and anchovy head powder were adopted successfully. Protein-rich whole grain flour was used to make nutritious 'aggala', and sprats powder was mixed with coconut to make a nutritious sambol that children enjoyed.

"When making nutritious flour at home, families contributed small amounts of various grains, like chickpeas, mung beans, and cowpeas. Since it was difficult for individual households to purchase all these grains separately, pooling resources from six families at a time allowed them to make highly nutritious food together."

Appetizing cooking strategies by mother groups resulted in children consuming more nutritious food with various colors and textures. *"By presenting food attractively, the children ate more. Additionally, while preparing and feeding them, little playful activities were introduced to keep them engaged."*

5.3 The Happiness Calendar

The happiness calendar tracked family well-being, leading families to communicate and share emotional burdens. It exposed problematic behaviors, particularly in men, compelling them to take action against unhealthy activities and behaviors. As one mother shared, *"My father used to drink a lot of alcohol, though he loved his grandchildren dearly. One day, my daughter showed him the 'happiness calendar'... After that, he was the first one to start feeding her. He also stopped bringing candies and chocolates from the store and instead started bringing nutritious food."*

5.4 Sensory Stimulation Activities

Mothers implemented five-sense stimulation techniques to enhance brain development. Baby rooms designed to improve visual and auditory stimuli were created with volunteers from the community, especially older children. *"In our CDC we started making play materials using waste items instead of spending money. Old tires, coconut husks, and other discarded materials were used to create playthings for children... These handmade toys were what they played with the most."* Parents began prioritizing time for their children, interacting through storytelling or singing. They also became open to children going outdoors and interacting with nature, understanding the importance of group playtime.

6. Monitoring Mechanisms and Measurable Outcomes

The community engaged in monitoring activities using self-identified indicators with guidance from facilitators. Substantial progress was observed over time through monitoring. These activities focused on both qualitative and quantitative measures, capturing early behavioral changes that would contribute to primary outcomes.

A key intermediate outcome was the use of the Happiness Calendar, a tool to track the daily happiness levels of family members, recorded numerically and marked on a calendar. Beyond tracking happiness, families recorded events that contributed to distress or sadness, such as alcohol consumption or domestic disputes. This brought problematic behaviors into focus for the entire family, helping raise

awareness of issues that needed attention. In addition to emotional well-being, families began monitoring their children's sensory experiences as an important part of early childhood development. Parents recorded the type and number of sensory stimuli their children received daily. As one facilitator noted, *"When children were given a new experience, they began marking which senses were being stimulated."* This practice helped ensure that children received balanced sensory stimulation for optimal brain development during the critical early years.

Financial monitoring was another cornerstone of the community's transformation, focusing on tracking expenditures related to groceries, alcohol and betel use, milk powder, and processed foods. By monitoring their spending, families were able to recognize the financial drain of unhealthy habits and redirect resources toward more nutritious food options. Families also developed nutrition-related indicators, such as tracking homemade protein supplements and comparing them with subsequent weight changes in children. They also monitored post-lunch sleep patterns and their correlation with weight gain, as well as the nutrient content of daily meals. As one CDO observed, *"Whenever nutritious meals were provided, they kept track of what nutrients were included in each meal. These measurement activities became a regular practice in every home."*

These intermediate outcomes contributed to several significant primary benefits across the community. There was a marked improvement in underweight children, with some divisions even eliminating low birth weight. A CDO from the Minicinland division proudly reported, *"When I first came to this division, there were nine children in the orange category (mild underweight). But now, only two children remain in that category."* Family financial management improved, with resources being directed toward nutritious food instead of processed items. Early childhood sensory stimulation, particularly during the first 1000 days, increased, and CDC attendance grew substantially. One facilitator noted, *"At the CDC, I even set up a small playhouse outside. This encouraged mothers who had never sent their children to the CDC to start bringing them."* Family and community cohesion improved, contributing significantly to the emotional well-being of children.

Beyond these primary outcomes, several secondary benefits emerged, demonstrating further community-level impact. Consumption of highly processed foods, milk powder, biscuits, and instant noodles decreased significantly. One facilitator observed, *"Families that previously bought 10–12 packets of milk powder were now buying just one or two - some had even stopped buying it entirely. This was a huge success in financial management."* The community also increased its intake of nutritious whole foods like peanuts, leafy vegetables, and fish. One CDO noted, *"In our estate, children used to eat a lot of unhealthy snacks like 'TipiTip.' Now, they have completely stopped and use that money to buy peanuts instead."* Additionally, families began preparing low-cost, nutritious flour-based foods at home, incorporating root vegetables like sweet potatoes and carrots into their diets.

The indicator monitoring process also revealed increased paternal engagement in child-rearing and nutrition, with fathers becoming more involved in food preparation and childcare activities. Resource sharing among families became more common, with collective efforts to promote child nutrition and development replacing previous individualistic approaches. Most significantly, the monitoring showed reduced alcohol consumption and fewer domestic arguments, contributing to more stable home environments, which is crucial for children's emotional and psychological development. These shifts in behavior, at the individual, household, and community levels, align with the intermediate outcomes that have driven the primary improvements in child health, emotional well-being, and community cohesion.

7. Community Empowerment and Sustainable Change

The health promotion process ultimately led to community empowerment and sustainable change. Trust in CDOs and PFWOs increased due to visible results in child health. Knowledge sharing expanded

beyond CDCs, using local language for better understanding. As one CDO noted, *"Especially in workplaces, parents discussed these practices, which led to more participation."*

The community shifted from viewing child development as an individual responsibility to a shared community goal, with a greater willingness to share resources and engage in group activities. Most importantly, the community developed the capacity to continue the health promotion process independently, ensuring long-term sustainability. As one CDO observed, *"Nowadays, the community itself makes decisions. Most of the time, it is the community members who take the lead in making choices."* This community empowerment represents the ultimate success of the health promotion project, demonstrating the achievement of its general objective to improve the capacity of community facilitators to apply health promotion principles for improving nutrition and psychosocial development among children in plantation communities.

Quantitative Outcomes

We analysed the available quantitative data at both the household and community levels to assess these outcomes.

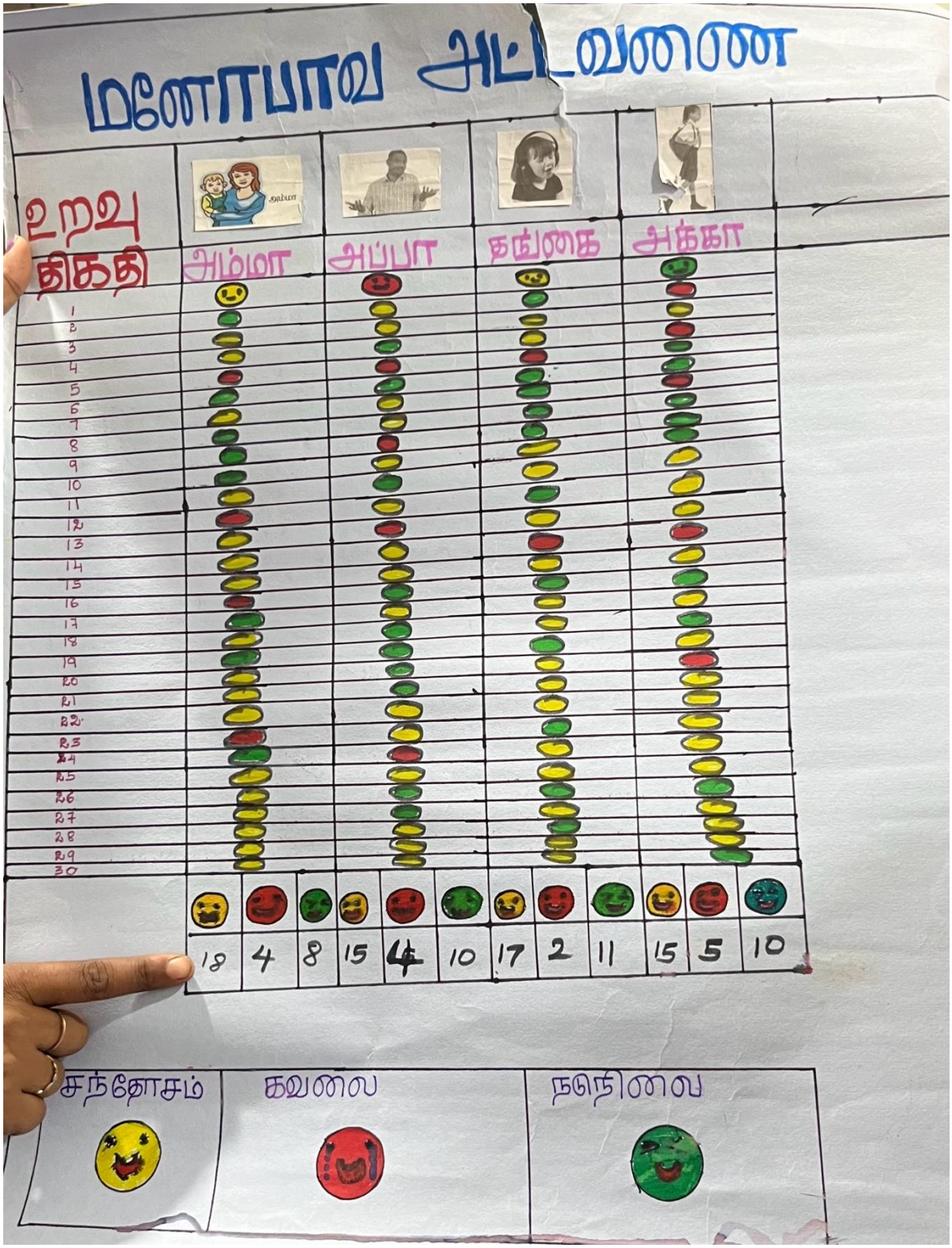
Intermediate outcomes

The communities collected intermediate outcome data related to childhood nutrition, including happiness levels in households using happiness calendars, healthy meal preparation at home through kitchen calendars, and non-essential spending, such as alcohol-related expenses, tracked through frequency tables and summary statistics (total expenses and percentages). Additionally, ECD outcomes were measured, such as the number of stimulations within the first 1,000 days of life, documented at the individual, household, and community levels.

The happiness and kitchen calendars were introduced to health promotion in Sri Lanka by the program designers [19]. These tools have proven to be sensitive and reliable in capturing indicators. A sample happiness calendar from a family in Kegalle is shown below for reference (Figure 8). This figure demonstrates how family members tracked their happiness levels over time, using a green happy face, a red sad/angry face, and a yellow neutral face to represent the daily emotions of each family member – father, mother, and two daughters – over the course of one month during the program.

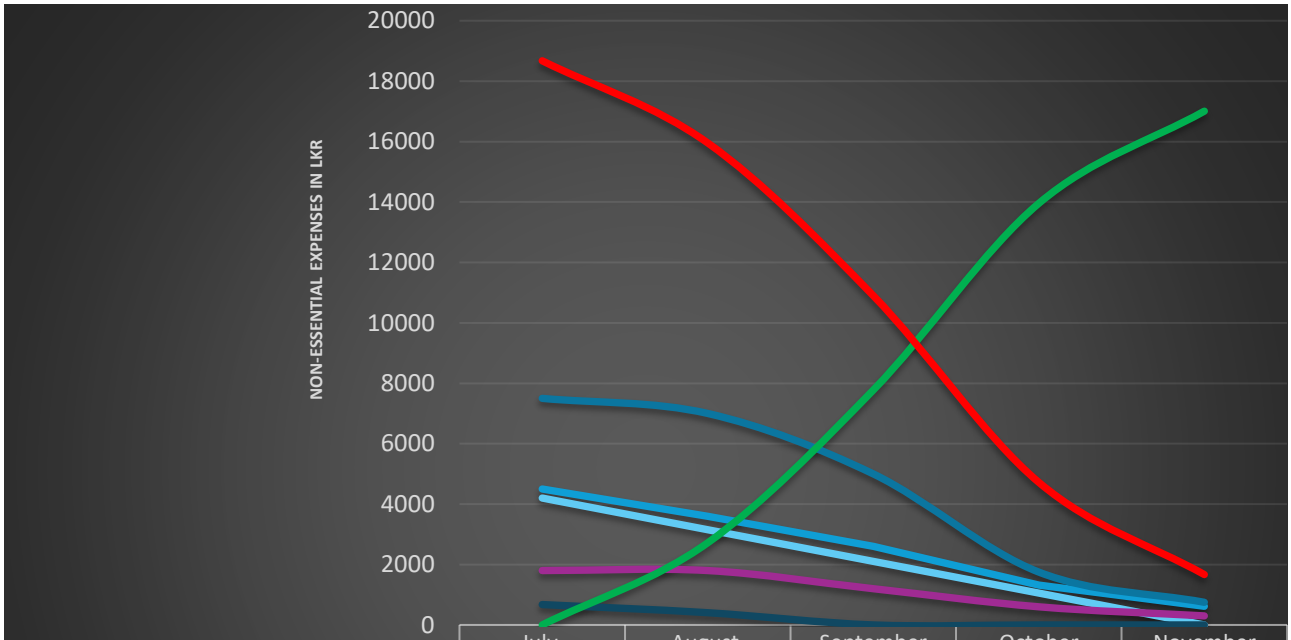
Similarly, a kitchen calendar was used to monitor healthy meal preparation, specifically focusing on three key indicators: salt, sugar, and oil consumption. After collective agreement within the community, guided by facilitators, the healthy consumption levels of these ingredients for a household with 3-4 members were defined. The communities tracked their consumption patterns over time, typically monitoring salt, sugar, and oil purchases weekly or monthly. Based on the initially agreed-upon healthy levels, participants assessed whether their kitchen consumption was "extremely unhealthy" (red), "somewhat unhealthy" (yellow), or "healthy" (green). The ultimate goal for each household was to achieve a "green" kitchen, indicating optimal consumption levels of salt, sugar, and oil.

Figure 8: A sample happiness calendar employed by one of the families in Kegalle during the program, indicating the level of happiness among family members over the course of one month.



Household expenses related to non-essential items, unhealthy foods, and alcohol were also monitored by participants at the household level. Non-essential items included extravagant celebrations, as indicated in the figure by "Other Expenses," while unhealthy foods (junk food) comprised items such as instant noodles, milk powder, and biscuits. Additionally, alcohol-related expenses were tracked by the communities (Figure 9). One household reported a total of LKR 18,675 in expenses per month at the beginning of the monitoring period (July, 2024), which decreased to LKR 1,668 per month by the end of the program (November, 2024). This monthly change represents a 91.1% reduction in total non-essential expenses (including non-essential items, unhealthy foods, and alcohol). Compared to the projected total expenses of LKR 93,375, the actual expenses amounted to LKR 51,918, reflecting a 44.4% decrease. The changes in each monitored item over time are presented in Figure 9.

Figure 9: Household expenses on unhealthy food and alcohol from July to November 2024. The red line represents total avoidable expenses, while the green line indicates the potential savings each month.



	July	August	September	October	November
Expenses: Milk Powder	4200	3150	2100	1050	0
Expenses: Biscuits	4500	3600	2600	1320	618
Expenses: Maggi Instant Noodles	675	405	0	0	0
Expenses: Alcohol	7500	7000	5000	1750	750
Expenses: Other	1800	1800	1200	600	300
Total Possible Savings	0	2720	7775	13955	17007
Total Expenses	18675	15955	10900	4720	1668

ECCD was a key focus of the program, particularly emphasizing the importance of stimulating children's five senses during the critical first 1000 days of life. Stimulation activities, including play and sensory engagement were captured at both individual and community levels using frequency charts that tracked daily occurrences of these activities. This monitoring approach allowed for a complete understanding of how frequently children were receiving sensory stimulations, such as touch, sight,

hearing, taste, and smell, and how these indicators improved over time as a result of conscious efforts by the mothers and family members.

The program also emphasized the importance of nutrition, focusing on the preparation of balanced meals that include micronutrient-rich foods and promoting collective feeding within communities. Weight-for-age was monitored as the primary outcome indicator, enabling the evaluation of children's growth and development, which will be discussed in the next section on the program's outcomes.

Primary outcomes

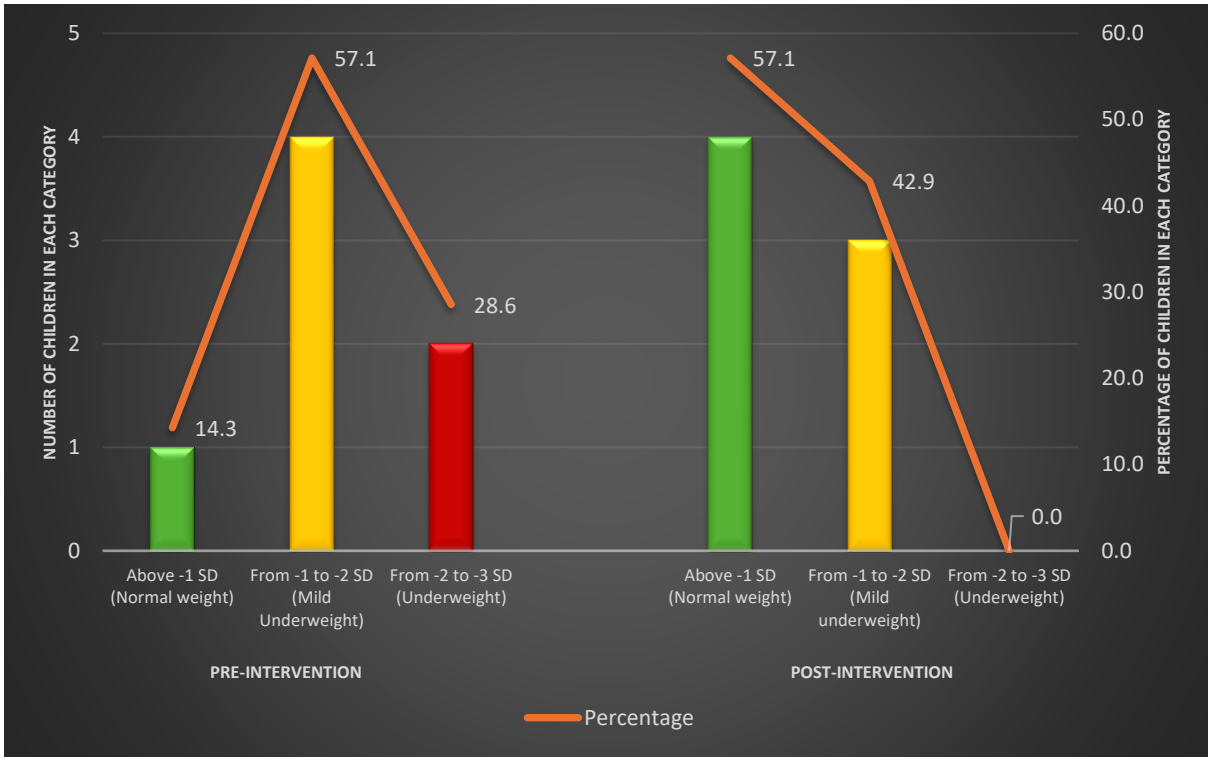
Weight-for-age data was collected at the community level, with mothers recording measurements for children under five years old during routine visits to Maternal and Child/Family Planning Health Services clinics. These data were then aggregated and analysed at the community level (Figure 5). Figure 5 presents data from a small community in Kegalle, comprising two divisions, tracking weight-for-age status before and after program implementation. This case study highlights changes in both the number and percentage of children classified as underweight and severely underweight, demonstrating the impact of the intervention.

Collected data were returned to the FHP for centralized processing at the estate level. For this report, we obtained data snapshots from a limited number of estates, as delays in data return prevented access to information from all estates across the three plantation companies enrolled in the program. The bar chart and bubble chart depict the pre-/post-intervention weight trends of children under five in Fairlawn Estate in Hatton, categorized by standard deviation (SD) ranges.

Children’s weight-for-age was classified into three SD categories. Those with > -1SD were considered to have normal weight, indicating adequate growth and nutrition. Children in the -1SD to -2SD range were categorized as at risk of underweight (mild underweight), meaning they were vulnerable to undernutrition but not yet severely malnourished. Those in the -2SD to -3SD range were classified as underweight, indicating significant undernutrition and a need for intervention.

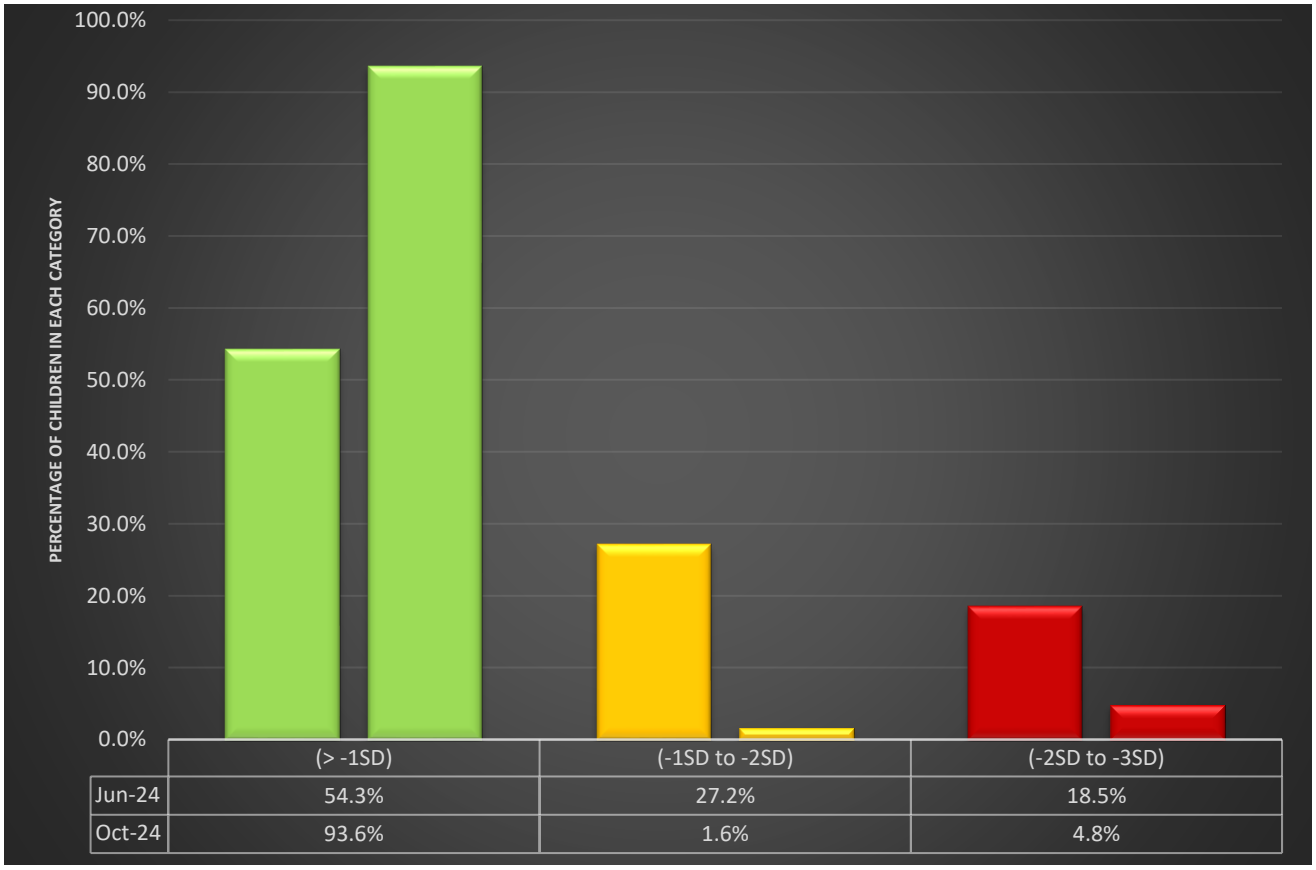
The aggregated data reveal a substantial increase in the number of children in the normal weight category (> -1SD) and a corresponding decrease in the number of children classified as at risk of underweight (-1SD to -2SD) and underweight (-2SD to -3SD) after the program. These results were statistically significant (Chi-square = 54.6, $p < 0.0001$). For better visualization, the findings are presented in a bubble chart to illustrate the shifts across weight-for-age SD categories, highlighting the program’s positive impact on childhood nutrition and growth.

Figure 5: Pre- and post-intervention changes in weight-for-age categories among children under five. The bar chart represents the number of children in each category, and the orange line indicates the percentage of children within each group.



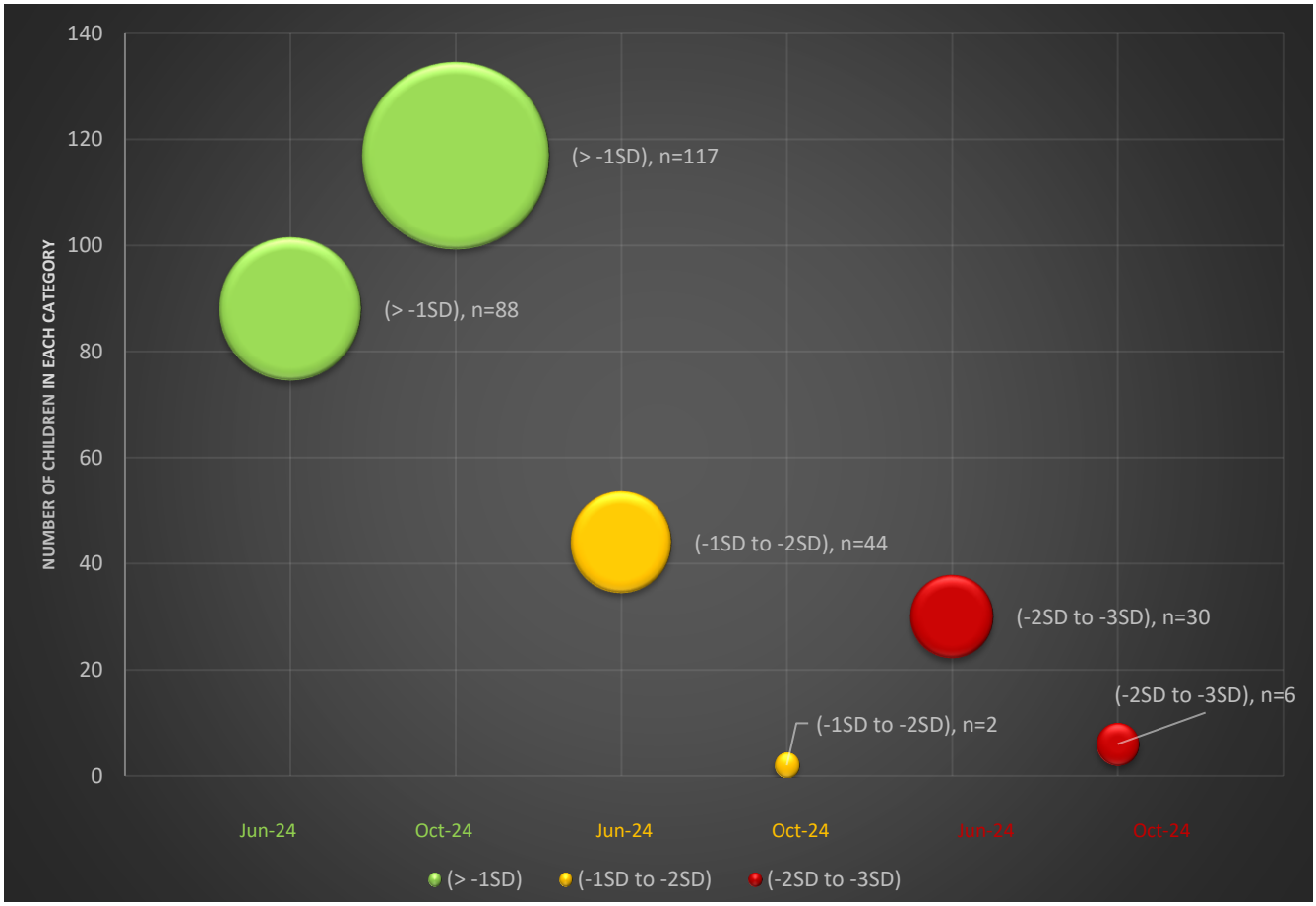
	Pre-Intervention		Post-Intervention	
	Count	Percentage	Count	Percentage
Above -1 SD (Normal weight for age)	1	14.3%	4	57.1%
From -1 to -2 SD (Underweight)	4	57.1%	3	42.9%
From -2 to -3 SD (Severe underweight)	2	28.6%	0	0.0%
Total	7	100.0%	7	100.0%

Figure 10: The proportion of children under the age of five in each weight-for-age category, classified by standard deviation (SD), before and after the health promotion program (June 2024 – October 2024) in Fairlawan estate, Hatton.



	(> -1SD)	(-1SD to -2SD)	(-2SD to -3SD)
Jun-24	54.3%	27.2%	18.5%
Oct-24	93.6%	1.6%	4.8%

Figure 11: Bubble chart depicting the pre- and post-intervention weight trends of children under five in the Fairlawan community, Hatton, categorized by standard deviation (SD) range. The color of each bubble corresponds to a specific SD category, while the bubble size represents the proportion of children within that category during the pre- (June 2024) and post-intervention (October 2024) periods. The X-axis distinguishes the time periods for each SD category, and the Y-axis indicates the number of children in each category before and after the intervention.



The initiative led to notable improvements in nutrition and child development. It also targeted the determinants of NCDs and encouraged better financial management, including reduced spending on tobacco and alcohol leading to indirect effect related to childhood nutrition. Additionally, the project improved the use of local facilities like cooperative societies, healthcare centers, and schools. The expected outcomes were driven by community-focused activities.

Secondary outcomes

At the plantation and estate levels, secondary data on childhood nutrition, including weight-for-age and birth-related information, was routinely collected. However, this data, designed to meet organizational needs at the PHDT, was not suitable for secondary data analysis due to two key issues: 1) the data was aggregated, rather than collected at the individual level, and 2) key variables required for program evaluation methods were missing. These limitations represented a missed opportunity to perform a robust analysis of the program's impact on childhood nutrition and health outcomes, as they made it difficult to directly link the data to the program's specific objectives and outcomes.

Phase 2: Impacts

The program potentially led to several positive impacts aligned with its objectives, such as community empowerment, health and social improvements, and capacity building. Families and community members were empowered to monitor and assess their progress, facilitating greater involvement of parents, children, and youth groups in addressing local issues and improving family well-being. Significant health improvements were observed in nutrition and child development. Financial management practices improved, including reduced spending on tobacco and alcohol. The program also enhanced the utilization of local facilities such as cooperative societies, healthcare centers, and schools. However, to fully assess the program's impact, a formal evaluation is required after the program to measure long-term outcomes and determine its sustainability at individual, organizational, and community levels. This evaluation will help ensure that the health benefits are maintained, program activities are adapted and sustained over time, and communities are empowered to continue delivering these benefits beyond initial funding.

Sustainability of Phase 2

Sustainability in health promotion programs is essential to ensure that the positive outcomes endure beyond the duration of the program itself. This program demonstrated several key predictors of sustainability, which were assessed and integrated throughout its implementation. These factors include organizational capacity, partnerships, strategic planning, funding, fit/alignment, program evaluation, capacity building, and the presence of program champions (Table 2). By focusing on these elements, the program was designed to ensure that its results would be both achievable and sustainable in the long term.

The program was supported by strong partnerships between community members, facilitators, and local organizations. The CDOs and PFWOs played a central role in facilitating activities and building local capacity to manage and sustain interventions. These partnerships were crucial for ensuring that the community took ownership of the program's outcomes, which is essential for long-term sustainability. By working closely with local stakeholders, the program was able to leverage existing resources, ensuring continuity even after its formal conclusion [20].

Strategic planning was an integral part of the program's success. The program's objectives were clearly aligned with the needs of the community, particularly regarding childhood nutrition and development. Root cause analyses conducted by the community helped identify key issues such as financial constraints and lack of awareness. The program was designed to address these issues by providing targeted interventions. "Fit/alignment" refers to the alignment between the program and both the community's needs and the organization's mandate, which was essential for ensuring the program's effectiveness and sustainability [21]. The interventions implemented through the health promotion process were also adaptable, allowing them to evolve based on changing community needs over time.

Program monitoring and evaluation played a critical role in the sustainability of the program by tracking both outcome and process indicators. A robust evaluation framework ensured that interventions were evidence-based and continuously refined based on real-time data. Key outcomes such as household savings, improved nutrition practices, and child growth monitoring were regularly assessed using innovative tools like happiness and kitchen calendars. This data-driven approach

allowed the communities to adjust interventions as needed, ensuring that improvements were maintained and further enhanced over time [22].

Capacity building was another important element in ensuring the program's sustainability. The program focused on creating sustainable skills and organizational structures that could continue to support health promotion activities beyond initial funding. Community members were trained to monitor and evaluate their progress, which empowered them to independently sustain health improvements. Facilitators also used a trainer-to-trainer model to expand the program's reach, ensuring that the knowledge and skills gained were passed on to others, thereby supporting the program's continuation across households [23].

The presence of community champions, also known as highly accomplished mothers, was a vital factor in potentially improving the program's sustainability. These champions acted as advocates. Their enthusiasm and advocacy were crucial for maintaining community engagement, which is necessary for long-term behaviour change and health promotion efforts [24].

Table 2: Factors related to sustainability of community-based health promotion programs [24]

Tier 1	**Organizational capacity**
	Partnerships
	Strategic Planning
	Funding
	Fit/alignment*
	Program Evaluation
	Capacity Building*
	Champion*
Tier 2	Communications
	Program Implementation*
	Political Support

	Program Adaptation
	Public Health Impacts
	Socio-economic/political factors*
Tier 3	Program access factors
	Funder priorities
	Policy
	Affordance
	Tailored activity plans for individual clients

*

Discussion

This program aimed to address several objectives centered around building capacity, improving community engagement, and enhancing health outcomes related to nutrition and psycho-social development among children belonging to the communities located in the plantation sector.

1. Evidence of success

In phase one, a strong emphasis was placed on building the knowledge and skills of CDOs, PFWOs, and high-performing mothers in the plantation sector. Training focused on health promotion principles, ECD, nutrition, and psychosocial development. Through established CDCs and mother support groups, these individuals became trainers, passing on their knowledge to the wider community. Phase Two sought to build on the success of Phase One. Interviews with facilitators revealed significant growth in their understanding of early childhood care and nutrition. This newfound knowledge catalyzed a shift in their roles from passive participants to active community leaders. This attitude shift was a critical driver of motivation, as facilitators saw the tangible results of their efforts, which further fueled their commitment.

Additionally, community mobilization extended beyond mother groups to include a broad cross-section of the community, including children and elders. This extensive engagement suggests that the dissemination of knowledge was effective, particularly due to the clarity of the messages in the local language. Facilitators also utilized virtual platforms like WhatsApp, ensuring consistent communication and engagement, which enhanced group motivation and facilitated continuous information sharing.

CDCs, which traditionally functioned as daycare centers, saw their roles expand significantly as a result of the program. Originally serving the basic needs of ECD, these centers evolved into hubs for community-driven activities. Facilitators observed increased attendance at CDCs across all divisions, including an influx of children from other preschools. This rise in attendance continued into phase two, underscoring the increasing utility of CDCs as focal points for health promotion. In addition to their traditional role, CDCs became centers for sensory stimulation activities, communal feeding and cooking spaces, play areas, and training hubs. The incorporation of health promotion principles into these centers created multi-functional spaces that contributed to the overall community development.

Another objective was to improve facilitators' capacity to monitor the progress of community engagement. Facilitators were trained to track enthusiasm, participation, and the broader impacts of the program. This data collection process was vital for assessing progress and helped facilitators adjust strategies to maintain community engagement. However, the lack of standardized, centrally processed data limited the comprehensive assessment of outcomes, which is a noted challenge. One significant achievement was the increased use of self-developed indicators by communities to monitor their health development. These indicators, developed by the communities themselves, tracked various aspects of health and nutrition, offering a more localized and relevant measure of success. However, the lack of centralized data collection made it difficult to aggregate these efforts and assess them on a larger scale.

2. Challenges in evaluating health promotion programs

Evaluating the success of health promotion programs presents several challenges. One of the key issues in this program, and any similar program in general, was the heterogeneity of activities across different communities. The diversity in activities and outcomes makes it difficult to measure and compare their success. For instance, communities engaged in a variety of interventions such as communal feeding activities, household expenditure monitoring, and the use of home-grown ingredients, which yielded different types of results either in isolation or in combination and across distinct communities. There is a need for innovative approaches to measure program success using more comparable indicators and outcome measures. However, this falls outside the scope of this program. Program implementers and funders may consider incorporating these elements in future planning to enhance health promotion practices and contribute to the existing literature.

Second, another challenge was the varying perceptions and attitudes of community members, which influenced their participation and the sustainability of interventions. While some communities demonstrated high levels of engagement, others showed less enthusiasm in sustaining their involvement due to socio-cultural factors. A follow-up evaluation with a specific focus on evaluating the level of enthusiasm may help identify these elements. Second, gender disparity in community engagement was noted, although the increased involvement of fathers towards the end of the program helped improve male participation. However, these demographic factors have not been consistently captured during the program. This is a potential consideration for future programs. Third, the diffusion of knowledge and skills, particularly through a trainer-to-trainer model, raised concerns about the quality of training in downstream communities. This method facilitated broad dissemination; however, it remains unclear whether these communities received consistent training,

which could impact the effectiveness of the interventions. This is another aspect to consider in future monitoring and evaluation frameworks.

3. Secondary data analyses and addressing data gaps

As discussed previously, efforts to analyze secondary data and identify gaps in the data collection process were considered during report writing. Improvements to routine organizational data collection formats and the inclusion of additional variables without overwhelming ground-level staff could significantly improve the utility of routinely collected data for secondary data analyses directed toward program evaluation. Consultation with staff to ensure collective decision-making would further enhance the efficiency and relevance of data collection.

4. Strengths and weaknesses

The program demonstrated several strengths, including the involvement of estate management, which facilitated collaboration and addressed logistical issues such as the time constraints faced by working mothers. Estate management's active participation also helped drive community adherence to the program's changes. Furthermore, the program's optimization of community resources, such as the training of CDOs and PFWOs, ensured that health promotion efforts were sustained at the grassroots level. Second, the strengthening of community cohesion and capacity building promoted self-sufficiency. Capacity building at individual and community level, boosted their self-esteem and engaging them in meaningful community development work. Third, the participant-centred process, without significant financial support from ground-level authorities to sustain ongoing motivation, relied on self-motivation, promoting non-incentivized community empowerment to achieve outcomes with minimal financial input. Furthermore, the significant health-related outcomes that were consistent with the participants' expectations served as incentives.

There were weaknesses related to the lack of centralized data collection and the challenges associated with aggregating and processing community-driven data. The absence of broader quantitative outcome measurements hindered an objective assessment of the program's effectiveness. To address this, several steps can be taken. First, facilitators can be supported to capture and enter data submitted through WhatsApp groups into a format that is conducive to analysis. Since the WhatsApp groups were effective in training, the same method could have been considered for data collection and processing. However, several factors may have hindered this, including 1. language barriers, 2. time constraints on facilitators, and 3. fragmented self-reported data and the absence of a standardized model. While this is a complex challenge, refining community-driven data collection methods could improve future efforts. Second, an external evaluation of the program can be conducted within 6-12 months after the completion of Phase 2.

It is important to note that emphasizing individual-level data collection within the communities through community-driven approaches may be counterproductive, as it does not immediately provide clear insights into the program's success to community members. Individual-level data requires analysis and synthesis, whereas aggregated data is more effective in providing feedback to the communities in real time. Therefore, repurposing the current community-driven data collection process must be done with care. It is crucial to avoid overwhelming the communities with additional data collection tasks and instead find a reasonable balance. This approach would help maintain community motivation while enabling program evaluators to assess success using objective measures.

5. Addressing challenges through qualitative and quantitative methods

While the qualitative interviews provided valuable insights into the challenges faced during the program, the lack of triangulation with quantitative data points limited the ability to fully assess the program's outcomes. Selection and confirmation biases in the interviews may have skewed some findings, highlighting the need for improved data collection methods moving forward.

Recommendations

It is important to develop more comparable indicators and measures across communities to enhance the effectiveness and sustainability of future programs. However, the existing literature reveals a lack of robust models for this purpose. Future programs may explore innovative experimental models and methods to employ comparable indicators and/or outcome measures that can be applied across diverse settings and demographic groups. Additionally, economic evaluations from both societal and private-sector perspectives should be considered in parallel with future studies to assess the cost-effectiveness and cost-benefit ratios of implemented programs, providing decision-makers with valuable insights for fund allocation.

Given the lack of centralized data collection, a key recommendation is to implement real-time data capture methods, such as utilizing WhatsApp groups for data entry and/or other technology and mobile health-driven methods, which can be directly integrated into analysis-friendly formats. Periodic external evaluations should be considered, focusing on health, health-related, social, and economic outcomes to address data inconsistencies and gaps. In the meantime, a follow-up external evaluation, including a control arm where feasible, will provide valuable insights into the long-term impact of the program.

Finally, the emphasis on capacity building, community mobilization, the use of the health promotion process, and self-sufficiency should continue to be a focal point, as these strategies have been key drivers of success. Strengthening facilitators' roles and promoting self-motivation within communities will help sustain outcomes with minimal financial input, making the program more resilient in the long term.

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Annexures

Annexure 1: The number of new children attending CDCs in each division (Phase I)

Estate	Division	New child enrollments
Mahanilu	Mahanili	2
	Magalla	3
Glentilt	Glentilt	2
	Maskeliya	0
	Lanka	0
Moray	Foress	5
	Geddes	0
Troup	Coreen	4
	Troup CDC 1	7
Thalawakele	Troup CDC 2	6
	Nanuoya	1
Mousakelle	Mousakelle	
	Ekolsund	2
	Nayanza Lower	0
	Luccombe	0
	Rutherford	2
	Nayanza Upper	1
Fairlawn	Fairlawn	0
	Sooriyakanda	

	Miniglane	
	Bargany	2
	Blairavon	3
Gouravila	Gouravila A	2
	Gouravila B	1
	Upper Curden	5
	Bargrove	
Stockholm	Scarborough	1
	Stockholm	
	Lower Cruden	0
Hatton total		49
Kelani	Factory division	1
Kalupahana	Kalupahana	3
	Waharaka	0
Panawatta	Lower division	4
	Panawatta 2	
	Upper division	
Weoya	Number 1 division	2
	Upper division	0
Lavant	Lavant	0
	Upper division	

	Lower division	5
Edurapola	East division	4
Urumiwala	Managalla	3
	Levela	2
Ganepalla	Upper division	4
	Lower division	
Dewalakanda	Dunadin	0
	Dewalakanda	3
Kithulgala	Upper division	
Kiriporuwa	Kiriporuwa	
Halgolla	Halgolla	
	Wewalthalawa	
Kegalle total		34
Hatton and Kegalle total		83