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Improving Nutrition Outcomes for Children in Sri Lanka's Estate Sector

THE POSITIVE DEVIANCE APPROACH

Sri Lanka

Improving Nutrition Outcomes for Children in Sri Lanka's Estate Sector THE POSITIVE DEVIANCE APPROACH

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Health, Nutrition and Population Global Practice



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EXECUTIVE SUMMARY

BACKGROUND AND JUSTIFICATION

In recent decades, most health indicators for Sri Lankan children have improved, but the prevalence of undernutrition has stagnated and inequities among sub-populations, particularly those in Sri Lanka's estate sector, persist. Despite some improvement in the nutritional status indicators for children in the estate sector from 2006 to 2016, the stunting prevalence for children under five years was 31.7 percent in 2016. Undernutrition among young children is the result of a complex interaction between social, behavioral, economic, health, and other related factors. A multisectoral nutrition assessment in Sri Lanka's estate sector, for example, identified low birth weight, sub-optimal child care practices, and lack of dietary diversity as key factors contributing to undernutrition.

Many nutrition studies, including the multisectoral nutrition assessment, focus mainly on problems and barriers that prevent children from reaching their full potential rather than exploring practices that help achieve good nutrition outcomes in a given context. Positive deviance nutrition studies identify successful practices and behaviors associated with a 'satisfactory level of nutrition' among young children, and promote these practices to other community members.

The objective of this study was to explore the practices and behaviors of mothers and caregivers that enable them to achieve better nutritional outcomes in their young children – six to 59 months of age (i.e., positive deviants (PD) who show normal growth with a height-for-age Z score >0), compared to children with poor nutritional outcomes (i.e., non-positive deviants (NPD) who are short for age with a height-for-age Z score <-2) in the same neighborhood of the plantation sector.

METHODS

The study was conducted in two estates within the Nuwara Eliya district on a purposive sample of children in the age group six to 59 months (i.e. PD and NPD). Various qualitative research methods were used to identify the successful behaviors and practices, including (i) focus group discussions among mothers; (ii) in-depth interviews with mothers/other care givers; (iii) key informant interviews with various health staff categories (field level staff, supervisory staff, administrative staff etc.); (iv) observational visits to homes of a sub-sample of children; and (v) observational visits to child development centers. The study focused on identifying the intentional and unintentional behaviors and practices of caregivers and the strategies that enable them to achieve better nutrition outcomes for their children. Data analysis compared the findings of the two groups (PD and NPD) based on a modified nutrition conceptual framework developed by the United Nations Children's Fund.

KEY RESULTS

Underlying Factors Influencing Dietary Intake

The study found that families who followed universally recommended nutrition practices achieved good nutrition and health outcomes for their children even in a resource-constrained environment like the estate sector. Most PD mothers practiced exclusive breastfeeding for six months irrespective of their working status, and avoided giving other milks and food during this period. Working mothers in the PD group reported that they expressed breast milk and kept the containers at the Community Development Centre (CDC) when working far away from the CDC. Some working mothers also came to CDC and breastfed their infants on the premises.

Most PD mothers provided appropriate and timely complementary feeding as well as introducing a variety of food items. PD families introduced protein rich foods especially from animal sources earlier and more frequently than the control families: they provided lentils, sprats, fish, chicken, and egg

from seven months, three to four times per week, as compared to control families who introduced these foods after nine months and only once or twice per week. PD families usually provided three rice meals with accompaniments, including vegetables, animal proteins, and thripasha or samapasha in the evening. On the other hand, a proper meal at night was frequently missed among the NPD families.

PD families paid special attention to food preparation and feeding by (i) using a variety of food preparation methods and presenting food in an attractive manner to encourage eating; (ii) serving “normal” foods to the extent possible and preparing special foods that children found appealing during illness; and (iii) introducing foods that allowed and encouraged self-feeding. Most families with PD children made homemade snacks and savories, and far less inclined to purchase prepared foods which they viewed as poor quality.

Underlying Factors Influencing Health

PD mothers usually comply with the recommended visits to the health clinics and also independently contact health care providers whenever they need advice. Thus, they seem to have a close relationship with the health care providers and are more receptive to inputs from health service personnel, in comparison to the controls. Furthermore, these mothers proactively seek information, from multiple sources, related to feeding and child care and put the information to use.

The caring practices among the PD families are based on the decisions of the mother or mother jointly with the father/other family members, irrespective of the mother's employment status. Fathers of PD children are also actively involved in the actual child care responsibilities, especially in food preparation and feeding.

Basic Factors Influencing Dietary Intake and Health

There are socio-cultural practices and myths in the estate community that influence feeding and caring practices. When children do not receive an otherwise balanced diet these food-related practices can have a significant impact on nutrition outcomes.

PD families tend to have fewer members in each household and have sufficient funds to purchase food and other commodities; possibly due in part to limited spending on alcohol, in contrast to the control families. In most PD families, mothers are responsible for cash management in the family.

Once again, the father's role played an important part in better outcomes. In most PD families, fathers were very supportive, even though some of them worked outside the estate. Some fathers assisted in feeding the children at night, some helped with cooking and preparing different food items the child likes, and some had a good knowledge about child care. Interactions of fathers in the control group were limited to activities like helping children dress and taking them to school, playing, and sometimes taking them on outings. The father's support for feeding or food preparation was not observed in the control group

CONCLUSIONS AND RECOMMENDATIONS

The findings of the study identified practices and behaviors that are conducive to better nutritional status of children. These findings can be used to guide interventions and build capacity to improve nutrition outcomes for children across Sri Lanka's estate sector. The Government of Sri Lanka has already used the key preliminary findings to develop a simple action plan. The findings could contribute towards the National Multisector Nutrition Action Plan being developed by the National Nutrition Secretariat at the Presidential Secretariat of Sri Lanka. The recommendations could also be incorporated into the national nutrition policy document and the policy framework for estate health.

The estate sector already has state-provided health services, social programs, and systems for identifying and tracking malnourished children, and therefore, it would be prudent to build capacity within the existing system to improve nutritional outcomes. Creating education opportunities for the various types of caregivers (mothers, fathers, grandparents, extended family members) that highlight best practices from PD families can make a difference. Education sessions should be hands-on opportunities to improve: (i) feeding and care practices; (ii) information seeking behavior and service utilization; and (iii) practical financial resources management. In doing so, the programs should focus on encouraging father's participation in feeding and child care practices.

The health care workers are an important resource for the estate community. It will be important to provide training programs for health care providers at the field level to identify PD behaviors and practices of families with better-nourished children. Increasing Public Health Midwives availability in the estate and strengthening their role, by providing additional education and supports, can positively impact the community and improve nutrition outcomes. If capacity building programs are to be successful, it is necessary to implement them using innovative approaches, such as focused interactive sessions and demonstrations.

The CDC seems a logical place for educational opportunities for family caregivers. Support groups and education sessions could be established at the CDCs where mothers/care givers go daily. The Child Development Officers (CDO) could be trained to identify families in need of support and encourage participation in programs that would provide the needed support.

Given the importance of fathers' participation in child care, a support group model could be used to enable PD fathers to share successful personal practices. This could be facilitated through an initiative made by the health and welfare staff of the estate with support from the estate management team and the community leaders.

In order to make sure all key stakeholders, from the households to the national government officials, support the behavior changes necessary to improve nutrition outcomes, it is recommended that the social and behavior change communication strategies and tools are reviewed, updated, and applied using a mix of communication channels (e.g., mass media, interpersonal communication, community media, etc). Advocacy and social mobilization components should be included in communication efforts to ensure societal buy-in and increase the possibility of sustainable changes to children's nutrition status.

The study revealed that families with similar environmental, financial, and educational challenges can still have very different nutritional outcomes for their children. The positive behaviors identified in the study including adequate infant and young child feeding (exclusive breast feeding for six months, healthy complementary feeding practices, and adequate introduction of animal proteins to children's diet), information and health service seeking behaviors, regular health service utilization, and father's involvement in feeding and child care, provide practical recommendations to help improve nutrition outcomes for Sri Lanka's most vulnerable population.

ABBREVIATIONS

CDC	Child Development Centre (formerly known as crèche)
CDO	Child Development Officer
DCS	Department of Census and Statistics
DHS	Demographic and Health Survey
EBF	Exclusive breastfeeding
EMA	Estate Medical Assistant
FGD	Focus Group Discussion
HAZ	Height-for-Age Z score
IDI	In-Depth Interview
KII	Key Informant Interview
MCH	Maternal and Child Health
MO-MCH	Medical Officer -Maternal and Child Health
MOH	Medical Officer of Health
NPD	Non-Positive Deviant
PHDT	Plantation Human Development Trust
PD	Positive Deviant; Positive Deviance
PHM	Public Health Midwife
RPC	Regional Plantation Company
UNICEF	United Nations Children's Fund
WHO	World Health Organization

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BACKGROUND & JUSTIFICATION



1. Background & Justification

NUTRITIONAL STATUS OF YOUNG CHILDREN IN THE ESTATE SECTOR

The residents of Sri Lanka's estate sector remain the poorest and most disadvantaged in Sri Lanka. The total population that live in the estate sector is approximately 0.9 million or 4.3 percent of the total population in the country (Department of Census and Statistics (DCS), 2012). The residents of Sri Lanka's estate sector are mostly descendants of imported labor from Southern India during the colonial period. They live in sub-standard dwellings with insufficient sanitation and poor water supply. During the past few decades living conditions have begun to improve, but continued improvements and change are necessary to support improved health outcomes in this marginalized population. During the early years, the educational status of this population, especially among females, was at a lower level compared to those at national level, but has shown improvement from about 1980s onwards (Vidyasagara, 2001; Weerasinghe and Bandara, 2015).

The prevalence of undernutrition has stagnated and inequities among sub-populations, particularly those in Sri Lanka's estate sector persist. (Ministry of Health, Nutrition and Indigenous Medicine, 2015). In 2016, the stunting, wasting, and underweight rates for children under five years of age were 17.3 percent, 15.1 percent, and 20.5 percent (DCS, 2017a), which highlights a lack of improvement since 2006 (17.3 percent, 14.7 percent, 21.1 percent, respectively). In the estate sector, the stunting, wasting and underweight rates for children under five years were 31.7 percent, 13.4 percent, and 29.7 percent. Despite some improvement in the nutritional status indicators for children in the estate sector from 2006 to 2016, these indicators remain unacceptably high (DCS, 2008; 2017a).

Nutrition National Aggregates

Children under 5 years



Multiple factors affect the poor nutrition status of children in the estate sector. It is well documented that undernutrition among young children is the result of a complex interaction between social, behavioral, economic, health, and other related factors (Black et al., 2008). The World Bank multisectoral nutrition assessment in Sri Lanka's estate sector identified the problem of undernutrition and its determinants (The World Bank, 2017). The key determinants of undernutrition among children below five years of age include low birth weight, sub-optimal child care practices, and inadequate diet such as lack of dietary diversity. The working status of the mother was also considered as an important factor because children of working mothers are significantly associated with lower nutritional status.

HEALTH AND WELFARE SERVICES IN THE ESTATE SECTOR

The population living in the estate sector has access to free curative and preventative health services and other support services provided by the state. Historically, the estate management was responsible for providing health care to the residents. During the past two to three decades, the government gradually assumed responsibility for health service provision in the estate sector, and a separate unit, Estate and Urban Health, was established at the Ministry of Health (Ministry of Health, 2015a; 2015b). The health care team at the estate level consists of an estate medical assistant (EMA), public health midwives (PHMs), welfare officers, child development officers (CDOs), dispensers, and other support staff. The EMA leads the team under the direction of estate management. The PHM is responsible for providing maternal and child health (MCH) services at field-based clinics and through home visits. Childcare is provided for working mothers at child development centers (CDC). Each CDC is run by a female CDO with special training in child care and development. CDOs play an important role in child care because of their frequent interactions with mothers and children, and are considered an intermediary between mothers and PHMs.

In addition, the plantation community in the estates, managed by the Regional Planation Companies (RPCs), receives the benefits of social development programs implemented by the Plantation Human Development Trust (PHDT). This organization is a tripartite association of the Government of Sri Lanka, RPCs, and Plantation Trade Unions and was formed to implement social development programs to improve the quality of life of the planation community (Weerasinghe and Bandara, 2015). The types of programs provided in the estate are infrastructure development projects, housing development projects; water, sanitation, and hygiene projects; and youth empowerment activities.

POSITIVE DEVIANCE APPROACH

The positive deviance (PD) approach has been successfully used in different settings across the world to improve health and nutrition outcomes in disadvantaged communities (Lafontant, 2002; Lapping, 2002; Schooley, 2007; D'Alimonte, 2016). Many nutrition studies, including the recently completed multisectoral nutrition assessment in Sri Lanka's estate sector, focus mainly on problems and barriers that prevent children from reaching their full potential. In contrast, the PD approach is rooted in the concept that "in every community or organization, there are a few individuals who have found uncommon practices and behaviors that enable them to achieve better solutions to problems than their neighbors who face the same challenges and barriers" (Zeitlin, 2004; Marsh et al., 2004).



What is a positive deviant?

"In every community or organization, there are a few individuals who have found uncommon practices and behaviours that enable them to achieve better solutions to problems than their neighbours who face the same challenges and barriers."

(Zeitlin, 2004; Marsh et al., 2004)

The PD nutrition analysis enables the key stakeholders to identify successful adaptive behaviors associated with a 'satisfactory level of nutrition' that exist in the target communities (e.g., a setting where the prevalence of undernutrition is high and many children have poor health and nutrition outcomes) and design and implement strategies and programs that promote the successful behaviors to the target population. This approach is particularly appropriate for the plantation sector, which has complementary health services, social programs, and systems for identifying and tracking malnourished children. The PD approach involves several steps: (i) defining the problem and desired outcome; (ii) identifying positive (and negative) deviants; (iii) determining common practices and discovering uncommon but successful behaviors and strategies used by positive deviants; (iv) designing a plan of action based on the findings; and (v) implementing the action plan. The Improving Nutrition Outcomes for Children in Sri Lanka's Estate Sector report focuses on the first three steps of the PD approach to support the Government of Sri Lanka in designing and implementing a plan of action to tackle nutrition issues. The study focused on identifying the intentional and unintentional behaviors and practices of caregivers and the strategies that enable them to achieve better nutrition outcomes for their children.



METHODS



2. Methods

STUDY DESIGN

A qualitative research design was used to explore the successful adaptive behaviors and practices of mothers and caregivers with well-nourished children as compared to those with malnourished children in the Sri Lanka's estate sector using the PD approach.

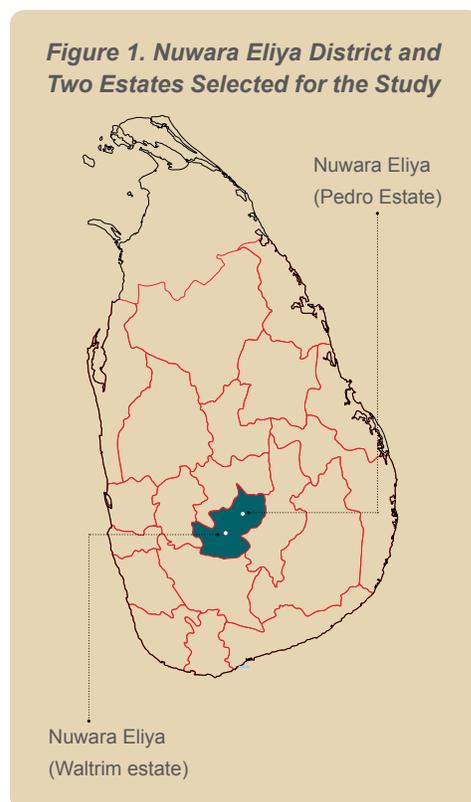
Multiple qualitative methods were used to identify 'good and culturally acceptable behaviors' of positive deviants (PDs) and the social support network in their communities. The methods included: focus group discussions (FGDs) and in-depth interviews (IDIs) with mothers and caregivers, key informant interviews (KIIs) with service providers, and direct observations of households and CDCs. Guidelines and/or checklists for each method were developed. Special emphasis was given to understanding the practices and behaviors of the PDs that enabled them to overcome or prevent problems that may have interfered with infant and young child feeding and caring practices.

STUDY SETTING

The study was conducted in the estate sector. The selection of the study setting was carried out purposively, in three stages.

Step 1: District Selection. The criteria for district selection included the number of children under five years of age and basic nutrition information. Nuwara Eliya district in the Central province was chosen because it has the highest estate population and the highest prevalence of stunting among children less than five years of age. According to the Demographic and Health Survey (DHS) 2016, the stunting, wasting, and underweight rates in Nuwara Eliya district were 32.4 percent, 11.8 percent, and 29.6 percent respectively. These statistics are also somewhat similar to the overall rates of the estate sector (DCS, 2017a). The district has a population of 711,644 of whom 385,745 (55.6 percent) belong to the plantation sector (DCS, 2017b). The district is sub-divided into 13 areas, each of which is managed by a Medical Officer of Health (MOH) responsible for the preventive and promotive health services in the area.

Figure 1. Nuwara Eliya District and Two Estates Selected for the Study



Step 2: Estate Selection. The research team, in consultation with key stakeholders, identified two tea estates (i.e., Pedro estate and Waltrim estate) from the district of Nuwara Eliya. The criteria for estate selection included the number of children under five years of age, availability of children's nutritional status data, and availability of health staff and CDC. Each of the estates comprised of seven geographically demarcated divisions. Figure 1 shows the locations of the two estates selected for the study.

Box 1. Characteristics of Selected Estates¹

Pedro estate is situated close to the city of Nuwara Eliya and occupies a land area of approximately 524 hectares, of which about 521 hectares are under tea cultivation. The resident population in the estate is approximately 7,300. The estate is sub-divided into seven areas. Four divisions were included in the study; Mahagastota upper, Mahagastota lower, Lover's Leap, and Pedro divisions. The estate has seven CDCs (each is run by a CDO), one EMA, and two PHMs. Pedro is within the Nuwara Eliya MOH area.

Waltrim estate is located in Lindula area and occupies a land area of approximately 502 hectares, of which about 400 hectares are under tea cultivation. The resident population in the estate is approximately 4,800. Four out of the seven divisions were included in this study; Lindula, Waltrim, Lent Thomas, and Connon A. The estate has seven CDCs (each is run by a CDO), one EMA, and three PHMs. All PHMs were working in an 'acting' capacity at the time of the study. Waltrim is in the Lindula MOH area.

¹ An estate is defined by the Department of Census and Statistics as land that is over 20 acres in size. According to the latest census of estates in 2013/14, there are 1676 tea estates, occupying 242,481 acres of land area in the country (Department of Census and Statistics, 2013-14). These estates are managed or owned by the regional plantation companies (RPC), the state, and private establishments or individuals. The number of estates managed by RPCs is approximately 400.

Step 3: Community Selection. The research team, in consultation with the estate health staff, identified four divisions within each estate. Criteria for participant selection included families residing in the division area for more than two years, and with a child aged between six to 59 months.

IDENTIFYING POSITIVE DEVIANTS AND CONTROLS

Anthropometric data, recorded during the 'nutrition month' of June 2017, on length/height-for-age were obtained for all children aged six to 59 months in the selected divisions. Ideally, the study team would have measured all children aged six to 59 months in the selected eight divisions of the two estates, however this approach was not feasible due to resource constraints and other logistic considerations. PHMs provided participant identification data (i.e., name, address, and employment status of mother, and sex and date of birth of the child). Height-for-age Z (HAZ) scores were generated using WHO Anthro software.¹

¹ Children with HAZ <-6 or >6 were excluded as per the new cut-offs for data exclusion recommended by WHO as these observations are deemed vulnerable to measurement error. Infants below the age of six months were excluded since the duration to evaluate feeding practices and behaviors is insufficient in this category.

As the mean HAZ score of children under five in Nuwara Eliya District is -1.5 (DHS, 2016), a list of positive deviants (PDs) and non-positive deviants (NPDs, control) was prepared according to the following criteria:²

- ❖ PDs: Children six to 59 months of age with HAZ > 0.
- ❖ NPDs/Control: Children six to 59 months of age with HAZ < -2

Table 1. Number of Children 6-59 months in Selected Estate by PD status

Estate	PD children	NPD/Control children	Total number of children 6-59 months
Pedro	31	123	361
Waltrim	62	30	206
Total	93	153	577

SAMPLING STRATEGY

The mothers and caregivers included in these assessments were identified through purposive sampling and are the primary respondents. A purposive sample, based on age, gender, and PD/NPD designation of mothers and caregivers within each of the four categories (above) was selected for FGDs and IDIs. Each FGD included approximately six to eight mothers. To the extent possible, FGDs included mothers of children belonging to a similar age category. Mothers who participated in the FGDs were not included in IDIs. An age-representative sub-sample of children in the four categories was selected for home visits. Direct observations were conducted in select CDCs. Service providers and decision makers were also selected for KIIs from the list of all CDOs, welfare officers, PHMs, and other key decision makers (where relevant). The number of discussions and interviews depended on the information saturation and diversity of the participants.

A total of 17 FGDs with mothers; 43 IDIs, which included 33 IDIs with mothers and 10 with other caregivers; and 17 KIIs with service providers, were conducted. Four discussions were also held with the managers of the two estates, Medical Officer-Maternal and Child Health (MO-MCH), and PHDT Regional Manager. The discussions with the decision makers were not structured, and depended on the role of the decision maker in influencing the health and nutrition status in the community. Table 2 provides a snapshot of data collection methods by participant groups.

² As low birth weight was a key determinant of poor nutritional status in young children (The World Bank, 2017), the two groups, PDs and NPDs, were further stratified by their birth weight, i.e. low-birth weight (those weighing <2,500 grams) and normal birth weight (\geq 2,500 grams), which created four sub-groups. However, there were no notable differences in practices and behaviors between those with low birth weight and normal birth weights within PDs and NPDs. Thus, the report focuses on the differences between the PD and NPDs only.

Table 2. Number of FGDs, IDI, KII, and Direct Observation by Category

Category	FGDs with mothers	IDIs with mothers	IDIs with caregivers	Home visits	CDC visits	KIIs with service providers	Discussions with decision makers
PDs	9	19	6	4	8	2 MOH 5 PHM 8 CDO	1 MO-MCH 2 Estate Managers
NPDs	8	14	4	4		1 HR Manager 1 EMA	1 PHDT Regional Manager
Total	17	33	10	8	8	17	4

Note: KIIs with service providers and observational visits to CDC are not classified by participant category since these are common to all.

DATA COLLECTION

Under the guidance of the lead researchers, Professor Dulitha Fernando and Professor Upul Senarath, and under the supervision of the project coordinator, the two research assistants moderated the FGDs, IDIs, and KIIs and collected data. Before data collection, they were adequately trained by an expert in qualitative research. A single observer conducted all direct observations and used a checklist to ensure data collection was consistent. Permission to record interviews was obtained from all participants; responses were transcribed and translated to English.

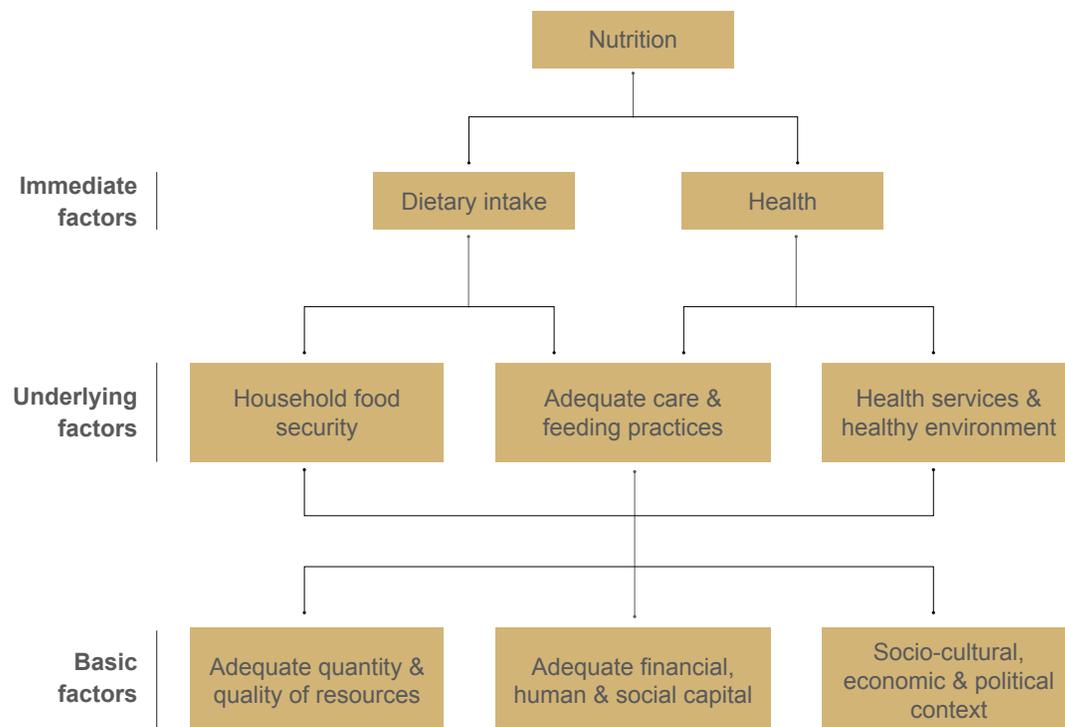
DATA ANALYSIS

The main approach to data analysis was to compare the findings of the two groups (PD and NPD) based on a modified nutrition conceptual framework developed by the United Nations Children's Fund (UNICEF) as shown in figure 2. The lead researchers and the research assistants read all interview transcripts in order to develop a comprehensive coding structure. The team collaborated on identifying final themes and important quotations to ensure validity and balanced representation.

ADMINISTRATIVE ARRANGEMENTS

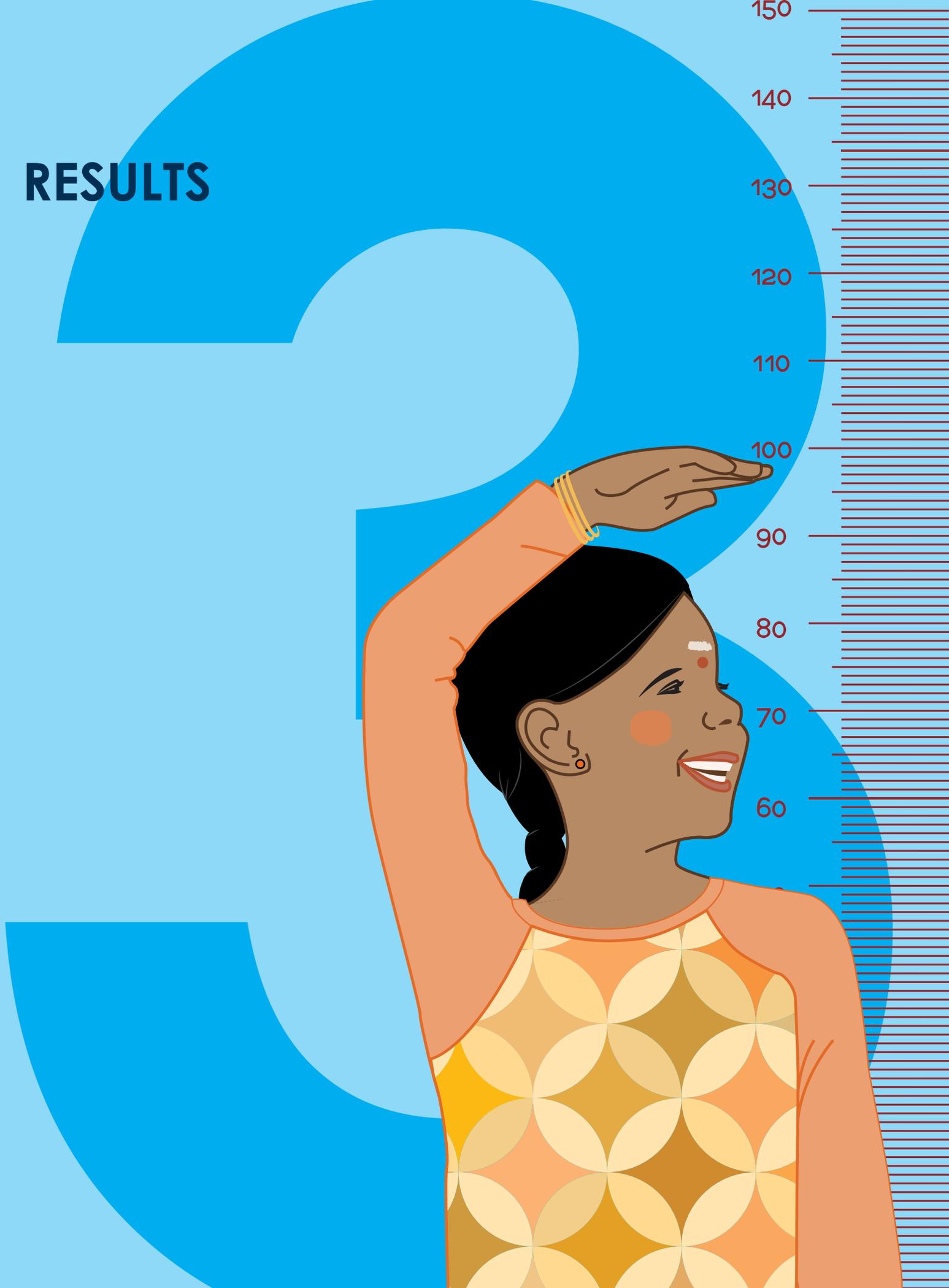
The research team obtained clearance from the Ministry of Health, Nutrition and Indigenous Medicine and the PHDT to conduct the study in the two estates. Preliminary discussions were also held with the representatives of the two estates to implement the study in these sites. Ethics clearance was obtained from the Ethics Review Committee of the Faculty of Medicine, University of Colombo.

Figure 2. Modified UNICEF's Conceptual Framework of Determinants of Child Nutrition



Source: Modified from the framework in UNICEF, 2015.

RESULTS



3. Results

UNDERLYING FACTORS INFLUENCING DIETARY INTAKE

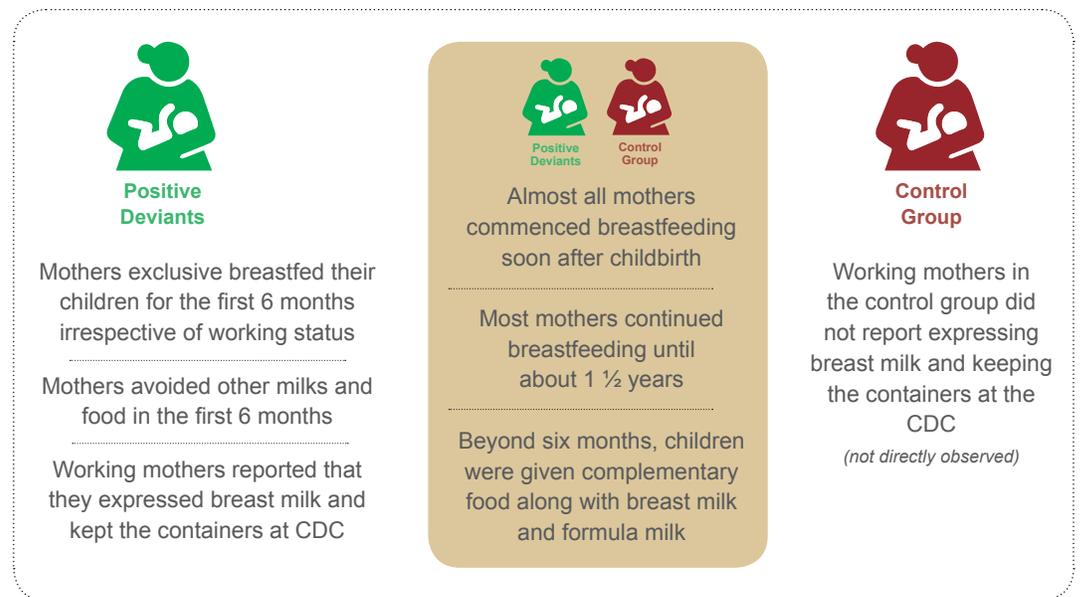
Breastfeeding

The importance of breastfeeding has been well established, particularly in areas where child nutrition indicators lag. Almost all mothers commenced breastfeeding soon after childbirth, though the mothers did not specifically mention whether they gave colostrum. However, there was a difference in exclusive breastfeeding (EBF) duration between the PD and control mothers, especially among working mothers. Most PD mothers practiced EBF for six months irrespective of their working status. In contrast, working mothers in the control group gave liquids and foods other than breast milk, such as formula milk, rusks, and cereals, towards the latter part of the first six-month period. Typically, once the mother returned to work, breast milk was given in the morning and at night only. The child was given formula milk during the day while the mother was working.

Usually, a CDC is open for children of mothers who work in the estate. Sometimes mothers, employed as tea pluckers on the estate, must travel a distance away from the CDC to perform their job. Mothers in the PD group who worked far away from the CDC expressed breast milk into a clean container and kept it at the CDC. This practice was not reported among the mothers in the control group. During observational visits to the CDCs, working mothers came and breastfed their infants on the premises. However, storage of expressed breast milk in the CDC was not seen during the limited number of observational visits.

Children of non-working mothers in both PD and control groups were fed breast milk on demand. Use of formula milk was not reported during the first six months among non-working mothers in both groups.

- ❖ Almost all mothers in both PD and control groups commenced breastfeeding soon after childbirth.
- ❖ Most PD mothers practiced exclusive breastfeeding for six months irrespective of their working status, and avoided giving other milks and food during this period.
- ❖ Working mothers in the PD group reported that they expressed breast milk and kept the containers at the CDC (but not directly observed during the study). Working mothers in the control group did not report this practice.
- ❖ Most mothers in both PD and control groups continued breastfeeding until about one and a half years. Beyond six months, children were given complementary food along with breast milk and formula milk.



Complementary Feeding

PD and control groups began complementary feeding (giving solid or semi-solid food items other than milk) after six months, except for some working mothers who reported introducing solid food such as infant cereals, porridge, and fruits around the fifth month.

Most mothers in both PD and control groups used boiled rice (mashed and mixed with breast milk) as an introductory food. Most PD mothers, in contrast to control mothers, also gave commercially prepared cereal-based food that was purchased from a market, as a food supplement.

PD families introduced animal source proteins, such as sprats, earlier than the control families—around seven months. The PD group introduced chicken and fish around seven to eight months; the control group introduced similar foods after nine months. Also, animal source foods were eaten more frequently by PD families (e.g., three to four times per week), as compared to the control families (once or twice per week).

Both groups introduced eggs after nine months. Eggs prepared with ‘butter’ (verified as margarine) were served more often (i.e., three or four days per week) to children in the PD group. Children in the control group were served eggs about once per week. Among the control group there were myths about feeding eggs to children (i.e., too heavy for the infant to digest, inducing phlegm).

Early introduction of dhal during complementary feeding was a common practice among the PD children. Some mothers in the PD group gave other lentils such as green gram, gram, or cowpea during the snack times between main meals.

A mother of a two-year-old child in the PD group from the Pedro estate in an IDI said,



I started the complementary feeding by six months, as advised by the PHM, with mashed rice and vegetables; I also added some lentils like grams, green grams or cowpea to it.

Another mother of a one-and-a-half-year-old child in the control group from the Waltrim estate stated in an IDI that,



I started to give complementary feeds by six months to my child, firstly I gave Cerelac but PHM said it is not good to start with it. So, I stopped it and gave mashed rice and vegetables.

- ❖ PD families gave protein rich foods especially from animal sources earlier and more frequently than control families.
- ❖ Serving eggs prepared with butter or margarine was a common practice among the PD families compared to control families who served eggs less often, due to myths.
- ❖ Early introduction of dhal was a common practice among PD children. Some mothers in this group also gave other lentils, such as green gram or cowpea as snacks.

Introduction to Family Diet

In both groups, children were introduced to the normal family diet around one year. Children of the PD families were served three main meals mostly consisting of rice and accompaniments. According to a mother of a three-year-old child in the PD group from Pedro estate,

“I introduced family meal firstly by boiling and mashing the vegetables and meat items with rice, and later I prepared them in a way the child will pick and eat. I also ask from other mothers the different food items they give, and prepare the food that way to my child who likes it.”

The typical PD family meal pattern is as follows:

- ❖ Morning- for breakfast they are given items such as rice, rice kanji (porridge) with green leaves, thriposha and/or fruits;
- ❖ Mid-day- rice along with potatoes and dhal, mixed vegetables (e.g., carrots, beans) with an animal protein (e.g., sprats, fish, dry fish, eggs or chicken);
- ❖ Evenings - thriposha³ or samaposha⁴; and
- ❖ Night- rice with some vegetable in the form of curries.

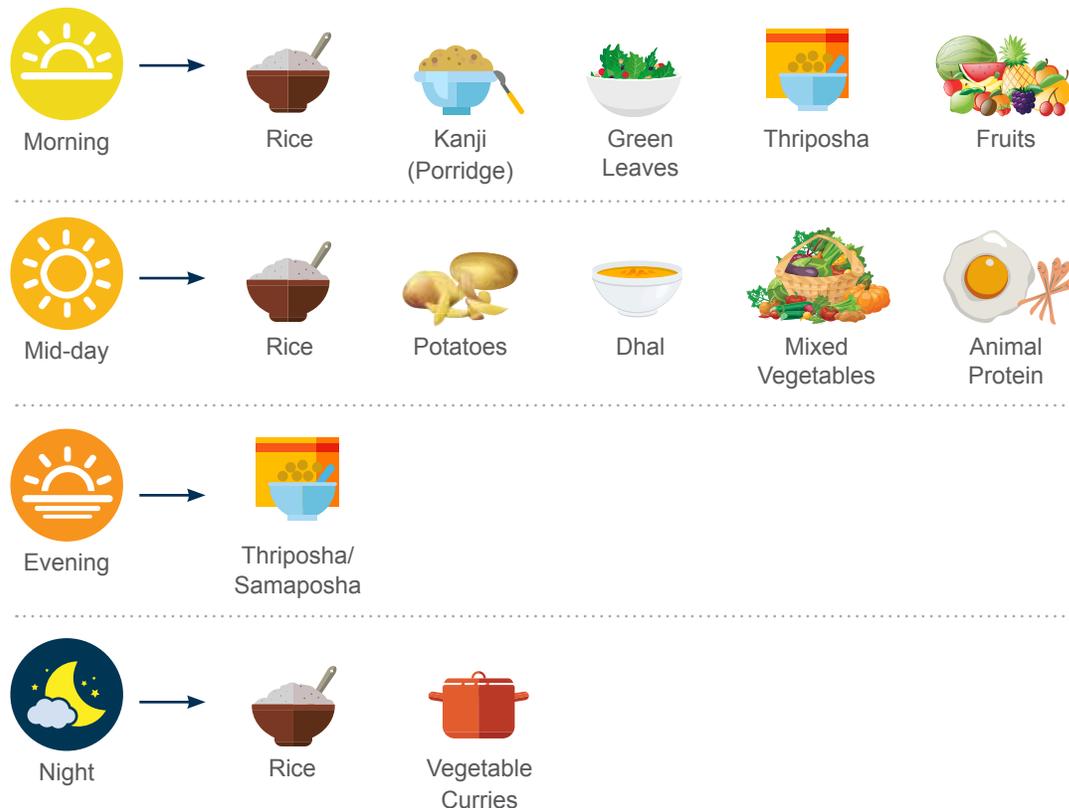
In addition to the meals above, children were breastfed once or twice in the morning and the night, and sometimes given formula milk during the daytime.

The control group also had a similar pattern of meals during the day. Children in the control group were often given flour-based products (e.g., string hoppers and roti, which may be made with rice flour or wheat flour) or lentils (e.g., green gram, cowpea, grams) for breakfast and dinner.

³ Thriposha is a precooked food supplement distributed through the CDC or Child Welfare Clinics through PHM.

⁴ Commercially available food supplement; the composition is nearly similar to thriposha.

PD Family Meal Pattern



In addition to the meals above, children were breastfed once or twice in the morning and the night, and sometimes given formula milk during the daytime.

There is a greater tendency for control families to give instant noodles for breakfast without any accompaniments. Missing a proper meal at night was common; hence, frequent breastfeeding in the night has become regular practice.

Typically, the family member dropped off the mid-day meal with the child attending the CDC. Alternately, some working mothers came and took their children home for lunch. Occasionally, i.e., once a month, the CDC provides meals for children. There was no difference in the mid-day meal by estate or between PD and control groups.

- ❖ PD children have an established pattern of meals as a part of their family diet, which includes three rice meals with accompaniments as well as thriposha or samaposha in the evening.
- ❖ Even though the control group reported a similar family meal pattern, in practice a proper meal at night was frequently missed; frequent breastfeeding in the night has become a common practice.

Food Preparation/Feeding Practices

Children are primarily fed by the mother in both PD and control groups. Working mothers may pick their child up from the CDC and take them home for lunch or if necessary, the child will eat a family-prepared meal at the CDC.

Mothers with PD children prepared food using different methods and presented them in an attractive manner. The following quotes express the views and practices of some mothers from the Pedro estate.

A mother of a one-and-a-half-year-old child from the Pedro estate said, “I arranged the food plate for child with items presented in different shapes and colors.”

A mother of a three-year-old child from the Pedro estate expressed the view that, “if we take time properly and make food in a way that the child really likes to eat, then he/she will get the required nutrients.”

In the PD families, the mother, sometimes with grandmother, is the main decision maker regarding feeding. Typically, they allowed the child to do an activity that the child likes (e.g., watching a cartoon or playing with toys) and then fed the child. Some mothers practiced a reward system for good behavior, which included successful feeding. These families also facilitated the meal settings for the child so that they eat with siblings or other children.

Other positive behaviors observed in the PD group included varied food introduction; an effort to prepare less spicy food for the young palates; presentation of food items such as carrot sticks, which allowed children less than one year to begin self-feeding; and identifying separate spaces for eating. These behaviors were not observed or common in the control group.

Decision Making on Feeding

The mother or grandmother is the primary decision maker regarding feeding.



Additional PD mothers' comments and observations regarding feeding practices are below.

A mother of a two-year-old child from the Waltrim estate expressed her view that,

“Some mothers do not keep a proper time to feed children and they feed at different times and do not know whether the child is actually hungry or not. There has to be a tentative time schedule for feeding the child so that the child gets used to such practice.”

A mother of a one-year-old child from the Pedro estate said,

“I know that giving sweets too early is a bad habit as they get used to the taste and avoid other foods. Therefore, I did not get my child used to taking sweets as yet.”

A mother of a three-and-a-half-year-old child from the Waltrim estate stated, “Giving the same food always makes the child fed up with that food and avoid eating the same again. She further mentioned that, “I attempt to make food in different ways and present them differently and the knowledge I gained from different sources help me to adopt such practices.”

The same mother mentioned that, “Frightening children as a means of getting them to eat is not an effective way of promoting proper feeding. I show pleasant things to the child order to make him like the food and eat it happily.”

A mother of a two-year-old child from the Pedro estate said,

“We have to do what the child likes to do, and then give food. It is the practice that I have adopted.”

“I give food in a small plate in small quantities allowing my child to request for more,” said a mother of a two-and-a-half-year-old child in the Pedro estate.

- ❖ PD mothers prepared food using different methods and presented them in an attractive manner.
- ❖ PD mothers allowed the child do activities that the child likes before meals.
- ❖ Food items given to the children in the PD families varied regularly, in comparison to the control families.
- ❖ With the introduction of complementary feeding, PD mothers introduced foods, which allowed and encouraged the children to self-feed. Such practices were not commonly seen among the control group.

Food from Outside

Providing quality and safe food in a time- and resource-constrained setting can be difficult. Among families with PD children, the practice of serving food purchased from outside (e.g., Chinese rolls⁵, salted crackers) was uncommon. These prepared foods are considered unhygienic and believed to interfere with main meals. Mothers considered homemade food as hygienic in that it does not cause problems with digestion, which interferes with the intake of main meals. In these families, the mother or grandmother prepares homemade snacks (e.g., wadai, murukku⁶, and other savories) for the children. The mother's employment status did not affect these behaviors.

In the control group, children are given prepared food purchased in shops (e.g., Chinese rolls, patties, chocolates, buns, salted crackers, etc.). The fathers frequently served these foods when they come home after work.

❖ Most families with PD children make homemade snacks and savories rather than purchasing prepared/packaged items from shops; they believe that food bought from outside is unhygienic and interferes with the intake of main meals.

Feeding During Illness

Most children in both PD and control groups have a history of frequent upper respiratory infections/respiratory symptoms. In both groups, the mother was the main care provider for the child during illness. Mothers with PD children, offered normal food to their children during illness, which included a variety of food (e.g., rice, string hoppers, chicken, vegetables, milk, and yogurt). Food preparation was also varied and included items like porridge, fried foods, sandwiches, and soup. Modifications were made to dishes to encourage the children to eat.

In contrast, mothers in the control group primarily fed biscuits and milk, supplemented by other snacks, to their children during an illness.

Mothers in the PD group expressed the following views:

"When the child is sick, we have to make what the child asks for, rather than feeding them what they dislike forcefully," said a mother of two-year-old child from the Waltrim estate.

“ I think giving the child a normal family meal like ‘rice and curry’ is good when they are sick. I make rice and curry in a different way when children are sick since they don’t like to eat,

said a mother of four-year-old child from the Waltrim estate.

5 Chinese roll is a type of pastry, which contains vegetable/fish mixture enclosed, covered, and deep fried.

6 Traditional crunchy 'snacks' prepared by this community (from the Tamil and Kerala cuisine of India and Sri Lanka). Wadai/Vada is a savoury fried snack made from different ingredients, ranging from legumes to potatoes. Murukku is a deep-fried dough typically made from rice and urad dal flour.

A mother of a one-year-old child from the Pedro estate said, “It is an important time where the mother should look after the child with love and affection when child falls sick, as it itself will make the child feel half cured already.”

- ❖ During illness, meals in PD households consisted of a variety of food items including “normal” dishes; dishes were also prepared in ways to please the child.
- ❖ In the control group, meals during illness consisted mainly of biscuits and milk.

Food Security - Availability and Accessibility of Food Items

In these areas, availability and accessibility of fresh fish, poultry, and other meats is limited. Those available in the market are commonly frozen. Many mothers, especially those in the control group, question the quality of frozen meats and are reluctant to feed it to their children. Some mothers live far from marketplaces, making it difficult to travel often to buy chicken, fish, and other meats. As a result, they give these food items to children less frequently (e.g., only once a week). Many seafood items are prohibitively expensive in this region. Mothers in the control group mentioned the limited availability and accessibility to food items, more frequently.

- ❖ Availability and accessibility to food seem to be relatively better in PD families than the control families, even though a detailed economic assessment was not undertaken in this study.

UNDERLYING FACTORS INFLUENCING HEALTH

Health Services and Health Information Seeking Behavior

There is no difference in the health care services provided by the state health services to the families of the PD and control groups. Mothers and health staff identified frequent and easy access to health services provided by PHMs as a useful and positive input. PD mothers were generally more consistent in utilizing health care services, interacting with the PHMs, and complying with the services and recommendations provided through the health system.

A key observation in this assessment was that mothers of PD children proactively seek information regarding child care and nutrition from multiple sources (e.g., PHM, CDO, relatives, friends, TV, newspapers). These mothers often put the learned behaviors into practice. In contrast, the mothers in control group did not show any inclination to seek such information.

Discussions with the PHMs also revealed that mothers of PD children were more receptive to receiving preventive and promotive health and nutrition education and promotion messages provided by the health sector compared to the mothers in the control group. Some mothers actively sought assistance from health staff. According to one PHM,

“Mothers are more educated, and most of them have studied up to GCE (ordinary level⁷). Hence it is easier to explain things to them. However, there are many mothers who have to work according to the elders⁸, who have different views regarding feeding, specially feeding during illness.”

7 GCE (ordinary Level) examination is held after 11 years of schooling.

8 Elders (e.g., grandmother, mother-in-law, aunts etc.) do have different views about feeding and child care. When they are present in a household, the mother of the child (usually a younger person) often must listen to the elders to show their respect for the elder's views.

- ❖ PD mothers consistently utilized the health system, interacting with the PHMs and complying with the services provided through the health system, compared to the mothers in the control group.
- ❖ Mothers in families with PD children proactively seek information regarding child care and nutrition from multiple sources (e.g., PHM, relatives, CDO, friends, television, newspapers).
- ❖ PD mothers often utilized this information in practice.

Water, Sanitation and Hygienic Facilities

The Sri Lankan estate sector has poor water facilities and an insufficient sanitation infrastructure, which impacts all residents. The water supply and quality is irregular and often unsafe. Water is routed from streams through pipelines into yards and homes and not purified.

Direct observations through home visits revealed blocked drainage systems, improper garbage disposal facilities, inadequate space in the house (overcrowding), and unhygienic sanitation facilities. Such observations were commonly seen in most families. No differences were observed between households with PD children and control children.

Child Care Practices

Non-working mothers are the primary care giver for their children. Mothers working in the estate utilize CDCs or those working outside rely on other family members, often an older female relative like a grandmother, for daytime childcare.

Most mothers are aware of the need for proper child care, and expressed the following views.

A mother of one-year-old PD child from the Pedro estate said,



Child's good development depends on mother's care and love; when we take extra care, they grow up well. Especially when they are sick, we should take extra care.

"Mother is the person responsible for the child care. Working with dedication helps a lot in the healthy growth of the child," said a mother of a two-year-old PD child from the Waltrim estate.

Mothers in both groups take a strong role in child-care decision making. In the PD group, fathers/other family members often take a joint role in decision making. Fathers are actively involved in child care regardless of the mother's employment status. In the control group, mothers are the primary decision makers and there is more variation in decision making. For example, mothers in the control group often make decisions with grandmothers or other family members who help care for the children. Discussion with PHMs indicated that grandmothers tend to provide relatively limited early stimulation activities.



Grandmothers tend to provide relatively limited early stimulation activities.

Child care among PD families included teaching children healthy hygiene habits such as hand washing before meals and in conjunction with toilet use, and the use of slippers. Mothers and family members were also observed singing songs, encouraging children to listen to music, and introducing children to colors and shapes. Play activities are not restrictive and include outdoor play or playing with sand. Families with PD children are conscious of safety issues and take care to watch children carefully as they play. The mothers/care givers in the control group practiced similar safety precautions too.

The children who are cared for at the CDCs are exposed to all activities at the CDCs irrespective of their group.

- ❖ Among the families with PD children, the caring practices are based on the decisions of the mother or mother jointly with the father/other family member, irrespective of the mother's employment status.
- ❖ Father's active involvement in child care was commonly observed among PD families.

BASIC FACTORS INFLUENCING DIETARY INTAKE AND HEALTH

Socio-cultural Practices and Myths

Socio-cultural values and practices can have a significant impact on diet. For example, beef is avoided for religious reasons and other types of meat are limited in observance of various customs at specific times. Socio-cultural views related to gender also impact feeding practices. When children do not receive an otherwise balanced diet these food-related practices can have a significant impact on nutrition outcomes.

Mothers frequently shared consistent views and knowledge regarding feeding and child care, however there were instances where views diverged. A mother of a three-year-old child in the control group from the Waltrim estate said,

“Some mothers have said that they do not wish to discuss about their children who are growing well with others, thinking that they will cast an evil eye on her child.”

One mother of a four-year-old PD child from the Waltrim estate discussed the concept of gender discrimination in an IDI.



I don't discriminate between the girl child and boy child, I see them the same; But I have heard before that giving breast milk to the boy child for longer time is better, and if given to a girl child, like that, it makes her dull and lazy; But I don't trust those and I feed them both the same way.

The influence of religious beliefs on feeding practices is illustrated in the following IDI statement from a care giver grandmother of a two-and-a-half-year-old child in the PD group of the Waltrim estate.

“We don’t eat beef as it is against our Hindu religion; But many says it is good for the child’s growth, but we don’t give it, instead we give him fish and chicken.”

Some mothers felt that “farm eggs” cause diseases (e.g., respiratory illness and cancers), and preferred to serve only “country chicken eggs” to their children. The price of the preferred eggs is high, and so they are only served once or twice a week. This practice was seen mainly in the control group.

- ❖ There are socio-cultural practices and myths in this community that influence feeding and caring practices. Such aspects should be taken into consideration when implementing interventions.

Family Size

The number of individuals per household limits the amount of money to purchase food and limits the time available to feed young children. Family size was higher in control families than in the PD families and thus may affect the availability of foods and time to care for children.

One mother from the control group with a two-and-a-half-year-old child in the Waltrim estate said,



when there are many children with short age gaps in the family, it is difficult to look after each of them individually, especially when the mother is working.

Economic Status

There was a difference in the cash management between the two groups. In most PD families, mothers were responsible for family cash management. Further, PD families reported that funds were available to purchase food and other commodities. In contrast some control families reported limitations in the availability of funds to purchase food items. Spending on alcohol seems to be limited in PD families, in contrast to the control group.

- ❖ In most PD families, mothers were responsible for cash management in the family.
- ❖ Funds were available for purchase of food and other commodities in PD families.
- ❖ Spending on alcohol seems to be limited in PD families, in contrast to the control group.

Employment

In the plantation sector, it is possible for adult women to find employment within the estate as tea pluckers or as workers in the tea factory. In recent years, women have sought employment opportunities outside the plantation. For example, the Pedro estate is situated in a more urbanized environment, which provides the residents, especially male family members, better occupation options outside the estate. These employment options may permit some mothers to work outside the estate or some to remain at home with their children. Discussions with mothers, health staff, and estate staff revealed

that unemployed women opted not to work despite available employment opportunities. In contrast, the Waltrim estate is situated in a more rural setting with fewer employment opportunities outside the estate. Thus, the majority of Waltrim residents were employed within the estate. Table 3 illustrates mothers' employment status and highlights a significant difference between the Pedro (46.3 percent employed) and Waltrim estates (78.2 percent employed).

Table 3. Maternal Employment Status, by Estate, by Division

Estate Division	Total no. of children 6-59 months	Employment status of mother		
		Working in the estate No. (%)	Working outside No. (%)	Non-working No. (%)
Pedro estate	361	112 (31.0)	55 (15.2)	194 (53.7)
Lovers' Leap	82	7 (8.5)	18 (22.0)	57 (69.5)
Mahagastota Lower	83	48 (57.8)	2 (2.4)	33 (39.8)
Mahagastota Upper	84	24 (28.6)	4 (4.8)	56 (66.7)
Pedro	112	33 (29.5)	31 (27.7)	48 (42.9)
Waltrim estate	206	158 (76.7)	3 (1.5)	45 (21.8)
Connon A	56	53 (94.6)	0 (0)	3 (5.4)
Lindula	63	41 (65.1)	1 (1.6)	21 (33.3)
Lent Thomas	39	30 (76.9)	1 (2.6)	8 (20.5)
Waltrim	48	34 (70.8)	1 (2.1)	13 (27.1)

As discussed above, the employment status of the mother is shown to have an influence on feeding and child-care practices.

A mother of a three-and-a-half- and one-and-a-half-year-old, from the Waltrim estate said,

“ I feel a difference between the two children. The first child had some weight problems because I went to work at that time, so his grandmother looked after him. I found that after he drank milk, he slept for about five hours, and the grandmother did not wake him up to give food, so the child was not eating properly.

“ For the second child, I quit my work, so that I can care for him well.

Further stratification of working status by PD vs. control group, as shown in Table 4, indicated that the percentage of working mothers was markedly lower in the PD families (25.8 percent) than control families (45.6 percent) in the Pedro estate. Such difference was not observed in the Waltrim estate.

Table 4. Maternal Employment Status in Positive Deviant and Control Groups, by Estate

Estate Nutrition status	Total no. of children 6-59 months	Employment status of mother		
		Working in the estate No. (%)	Working outside No. (%)	Non-working No. (%)
Pedro estate	361	112 (31.0)	55 (15.2)	194 (53.7)
PD children (HAZ>0)	31	7 (22.6)	1 (3.2)	23 (74.2)
Control children (HAZ<-2)	123	43 (35.0)	13 (10.6)	67 (54.5)
Waltrim estate	206	158 (76.7)	3 (1.5)	45 (21.8)
PD children (HAZ>0)	62	47 (75.8)	0 (0)	15 (24.2)
Control children (HAZ<-2)	30	22 (73.3)	0 (0)	8 (26.7)

Father's Role

In most PD families, fathers were very supportive, even though some of them worked outside the estate. Some fathers assisted in feeding the children at night, some helped with cooking and preparing different food items the child likes, and some had a good knowledge about child care.

Mother of a PD child aged one year and nine months, from Pedro estate discussing the father's role.

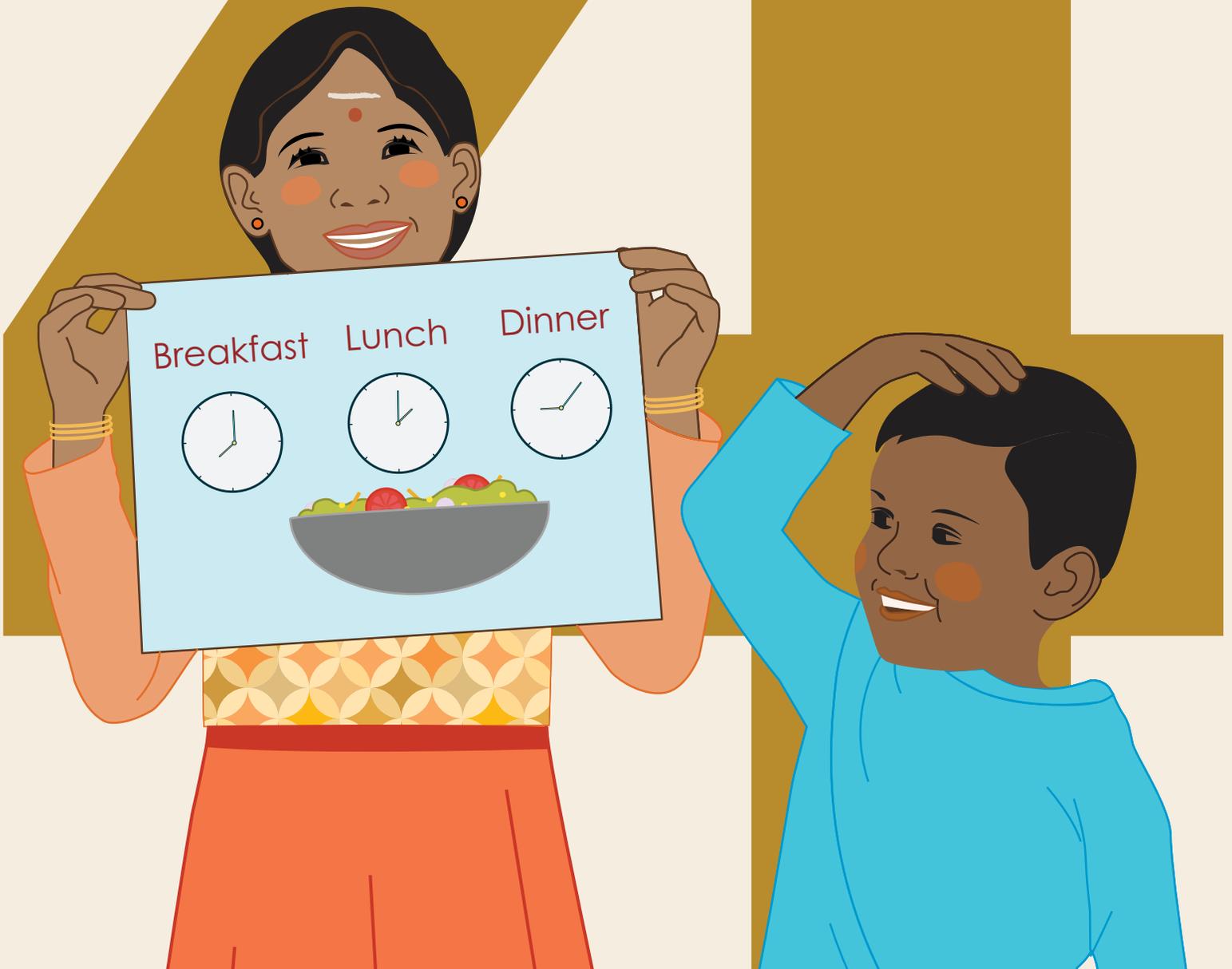


My husband helps to feed the child at night, and the child likes it; and that encourages child to interact with father and eat well. I am more relaxed and I can concentrate on preparing food when my husband takes care of child in the evening.

In many of the families in the control group, the father was available only for a limited period during the day, and some worked outside cities (e.g., in Colombo). Interactions of fathers in the control group were limited to activities like helping children dress and taking them to school, playing, and sometimes taking them on outings. The father's support for feeding or food preparation was not observed in the control group.

❖ In most PD families, fathers were very supportive of child care and feeding, even though some of them worked outside the estate. Some even assisted in feeding children at night and assisted in cooking and preparing different food items for children.

CONCLUSIONS



4. Conclusions

The study identified practices and behaviors that were different between the PD and NPD/control groups. The field health staff and the CDOs were aware of key factors that influence the nutritional status of children in the estates, and their views during the interviews referred to all children in the estate in general. However, on further enquiry, they could differentiate practices between the children who were comparatively better nourished.

Comparison of the two groups highlighted the following key positive deviant practices and behaviors with respect to feeding of infants and children:

1. Most PD mothers practiced exclusive breastfeeding for six months irrespective of their working status, and avoided giving other milks and food during this period.
2. Working mothers in the PD group took expressed breast milk in containers to the CDC for their children during day care. Working mothers in control families gave liquids and foods other than breast milk, such as formula milk, rusks, and cereals, towards the latter part of the first six-month period.
3. Positive deviant families served animal proteins early and more frequently than the controls. Serving eggs mixed with butter or margarine was a common practice among the PD families as compared to control children who ate eggs less often due to myths.
4. Early introduction of protein rich foods such as dhal was a common practice among PD families. Some PD mothers also gave other lentils, such as green gram and cowpeas as snacks.
5. With the introduction of complementary feeding, PD mothers prepared and served a variety of food items and introduced methods to encourage children to self-feed.
6. In both groups, children were introduced to the normal family diet, around one year. Children in the PD group were served three main meals mostly consisting of rice and accompaniments. In the control group, missing a proper meal at night was reported; hence, frequent breastfeeding at night is common practice.
7. Most mothers of PD children prepared foods that the children liked, especially during illnesses.
8. PD mothers gave their children homemade snacks and savories, while the practice of giving food bought from outside was common in control group.

Additional positive deviant practices and behaviors are listed below.

9. PD mothers consistently utilized the health system, interacting with the PHMs and complying with the services provided through the health system, compared to the mothers in the control group.
10. Mothers in families with PD children proactively seek information regarding child care and nutrition from multiple sources (e.g., PHM, relatives, CDO, friends, television, newspapers) and utilized this information in practice.
11. In most PD families, fathers were very supportive even though some of them worked outside the estate. They often provided assistance in feeding children at night. Sometimes fathers supported in preparing and cooking favorite food items for children.
12. In most PD families, mothers were responsible for cash management in the family. More funds were reported to be available for the purchase of food and other commodities. Spending on alcohol appears to be limited in PD families, in contrast to the control group.

RECOMMENDATIONS



5. Recommendations

The findings of the study identified practices and behaviors that are conducive to better nutritional status of children. These findings can be used to guide interventions and build capacity to improve nutrition outcomes for children across Sri Lanka's estate sector. The Government of Sri Lanka has already used the key preliminary findings to develop a simple action plan. The findings could contribute towards the National Multisector Nutrition Action Plan being developed by the National Nutrition Secretariat at the Presidential Secretariat of Sri Lanka. The recommendations could also be incorporated into the national nutrition policy document and the policy framework for estate health.

The estate sector already has state-provided health services, social programs, and systems for identifying and tracking malnourished children, and therefore, it would be prudent to build capacity within the existing system to improve nutritional outcomes. Educating the caregivers including mothers, fathers, and grandparents through real life examples from PD community members, on ways to improve nutrition and health outcomes for children can make a difference. Education sessions should be hands-on opportunities to improve: (i) feeding and care practices in areas such as improved food preparation, diversification of foods and feeding frequency; (ii) information seeking behavior and service utilization; and (iii) decision making or practical financial resources management, including purchasing food items. In doing so, the programs should focus on encouraging father's participation in child care and feeding practices.

The health care workers are an important resource for the estate community. It will be important to provide training programs to identify PD behaviors and practices of families with better-nourished children for health care providers at the field level. Providers should be empowered to share best practices with families of similar background to improve their knowledge/beliefs, reduce myths, and improve caring and feeding practices (e.g., feeding during illness). The PHM can be particularly influential in areas like healthy early feeding practices and encouraging information seeking behaviors and health service utilization. Increasing PHMs availability in the estate and strengthening their capacity, by providing additional education and supports, can positively impact the community and improve nutrition outcomes. If capacity building programs are to be successful, it is necessary to implement them using innovative approaches, such as focused interactive sessions and demonstrations.

The CDC is a logical place for educational opportunities for family caregivers. Daycare is provided free of charge at the child development center to working mothers in the estate. Support groups and education sessions could be established at the CDCs, which mothers/care givers go to daily, during drop-off and pick-up times. The CDOs could be trained to identify families in need of support and encourage participation in programs that would provide the needed support.

Given the importance of fathers' participation in child care, a support group model could be used to enable PD fathers to share successful personal practices and could ultimately lead to the establishment of community groups for caregivers. This could be facilitated through an initiative made by the health and welfare staff of the estate with the support from the estate management team. The PHM can also serve as an important link to the estate management and other staff.

In order to make sure all key stakeholders, from the households to the national government officials, support the behavior changes necessary to improve nutrition outcomes, it is recommended that the social and behavior change communication strategies and tools are reviewed, updated, and applied using a mix of communication channels (e.g. mass media, interpersonal communication, community

media, etc) to “tip over barriers to change” at the individual, community, and social levels (C-Change 2012). Advocacy and social mobilization components should be included in communication efforts and mass media programs, to ensure societal buy-in and increase the possibility of sustainable changes to children’s nutrition status.

The study revealed that families with similar environmental, financial, and educational challenges can still have very different nutritional outcomes for their children. The positive behaviors identified in the study including adequate infant and young child feeding (exclusive breast feeding for six months, healthy complementary feeding practices, and adequate introduction of animal proteins to children’s diet), information and health service seeking behaviors, regular health service utilization, and father’s involvement in feeding and child care, provide practical recommendations to help improve nutrition outcomes for Sri Lanka’s most vulnerable population.

- ❖ Build capacity within the existing system to improve nutritional outcomes.
- ❖ Educating caregivers including mothers, fathers and grandparents through real life examples from PD community members, on ways to improve nutrition outcomes for children.
- ❖ Empowering providers to share best practices with families of similar background to improve their knowledge/beliefs, reduce myths, and improve caring and feeding practices.
- ❖ It is necessary to implement capacity building programmes using innovative approaches, such as focused interactive sessions and demonstrations.
- ❖ The CDC is a logical place for educational opportunities for family caregivers.
- ❖ It is recommended that social and behaviour change communication strategies and tools are reviewed, updated, and applied using a mix of communication channels (e.g. mass media, interpersonal communication, community media, etc) to “tip over barriers to change” at the individual, community and social levels.



LIMITATIONS OF THE STUDY



6. Limitations of the Study

- ❖ Results are specific to local context, and may vary in other estates.
- ❖ Study was not designed to estimate infant and young child feeding indicators, dietary intake, or food security in a quantitative manner.
- ❖ Basic determinants (contextual factors) were not explored much since focus was on addressing underlying factors that affects immediate determinants of nutrition, especially dietary intake.
- ❖ Findings are subject to information bias, particularly due to the fact that participants may have overemphasized the favorable behaviors in the presence of peers, or at interviews.

REFERENCES

- Black, R.E., Allen, L.H., Bhutta, Z.A., Caulfield, L.E., De Onis, M., Ezzati, M., Mathers, C., Rivera, J. and Maternal and Child Undernutrition Study Group. 2008. Maternal and child undernutrition: global and regional exposures and health consequences. *The Lancet*, 371(9608), pp.243-260.
- C-Change. 2012. C-Change Modules: A Learning Package for Social and Behavior Change Communication (SBCC). Washington, DC: C-Change/FHI 360
- D'Alimonte, M. R., Deshmukh, D., Jayaraman, A., Chanani, S., & Humphries, D. L. 2016. Using Positive Deviance to Understand the Uptake of Optimal Infant and Young Child Feeding Practices by Mothers in an Urban Slum of Mumbai. *Maternal and child health journal*, 20(6), 1133-1142.
- DCS. 2013-14. Summary Report on Estates. Census of Economics in Sri Lanka 2013-14. Colombo: DCS.
- DCS 2008. Sri Lanka Demographic and Health Survey 2006/07. DCS, Colombo.
- DCS 2017a. Sri Lanka Demographic and Health Survey 2016. DCS, Colombo.
- DCS 2017b. Statistical data sheet 2017. <http://www.statistics.gov.lk>, accessed 12-12-2017.
- Karin Lapping, David R. Marsh, Julia Rosenbaum, Eric Swedberg, Jerry Sternin, Monique Sternin, Dirk G. Schroeder. 2002. The Positive Deviance Approach: Challenges and Opportunities for the Future. *Food and Nutrition Bulletin Vol 23, Issue 4_suppl2*, pp. 128 - 135
- Lafontant, J. G., Mackintosh, U. A. T., Marsh, D. R., Schroeder, D. G., Marsh, D., Albalak, R. & Dearden, K. 2002. The positive deviance approach to improve health outcomes: experience and evidence from the field. *Food and Nutrition Bulletin*, 23(4).
- Marsh, D.R., Schroeder, D.G., Dearden, K.A., Sternin, J. and Sternin, M. 2004. The power of positive deviance. *BMJ*, 329(7475), pp.1177-1179.
- Ministry of Health, Nutrition and Indigenous Medicine. 2015. Annual Health Bulletin 2015. MOHNIM, Colombo.
- Schooley J & Morales L. 2007. Learning From the Community to Improve Maternal–Child Health and Nutrition: The Positive Deviance/Hearth Approach. *J Midwifery Women's Health*. Jul-Aug;52(4):376-83.
- The World Bank, 2017. Multisectoral Nutritional Assessment in Sri Lanka's estate sector. The World Bank, Washington DC.
- United Nations Children's Fund. 2015, UNICEF's approach to scaling up nutrition for mothers and their children. Discussion paper. Programme Division, UNICEF, New York
- Weerasinghe, M.C. & Bandara, S. 2015. Health and socio-economic determinants of malnutrition in the plantation sector of Sri Lanka. Colombo: Institute of Policy Studies.
- WHO. 2002. WHO global strategy on infant and young child feeding.
- Zeitlin M, Ghassemi H. & Mansour M. 1990 Positive deviance in child nutrition—with emphasis on psychosocial and behavioral aspects and implications for development. Tokyo: United Nations University.



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