Food and Agriculture Organization of the United Nations

IMPROVING COMPLEMENTARY FEEDING IN NORTH-WESTERN CAMBODIA

Lessons learned from a Process review of a food security and nutrition project

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Acknowledgements

This report provides a summary of a process review that was conducted under the Food and Agriculture Organization of the United Nations (FAO) project entitled: “Improving the dietary intakes and nutritional status of infants and young children through improved food security and complementary feeding counselling” (IMCF) (2010–2015) funded by the German Federal Ministry of Food and Agriculture (BMEL) (GCP/INT/108/GER) on the FAO project entitled: “Improving market linkages for smallholders in Oddar Meanchey and Preah Vihear” (MALIS) (2011–2015). The MALIS project was implemented by FAO Cambodia in collaboration with the General Directorate of Agriculture (GDA), Ministry of Agriculture, Forestry and Fisheries (MAFF) with funding from the European Union (EU) under Project: OSRO/CMB/101/EC. Nutrition education activities were carried out by Malteser International and Farmer Livelihood Development in the Provinces of Oddar Meanchey (OMC) and Preah Vihear (PVR), respectively.

This study was initiated by Ms Ellen Muehlhoff, Team Leader of the Nutrition Education and Consumer Awareness Group in the Nutrition Division, with the aim of developing lessons learned to inform food security and nutrition education programming and policy development.

Dr Elizabeth Westaway, FAO International Nutrition Consultant, was the primary investigator of the process review, who facilitated the study in Cambodia.

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This report was written by Ms Theresa Jeremias, who collaborated in primary data collection in her role of FAO Cambodia Nutrition Officer[1] and also undertook the review of secondary data sources. The qualitative data analysis was conducted by Ms Julia Garz, FAO Junior Nutrition Consultant. The report was edited by Dr Elizabeth Westaway and finalized by Ms Ellen Muehlhoff and Esther Evang.

[1] Ms Theresa Jeremias worked for FAO Cambodia from November 2013–October 2014 as Associate Nutrition Officer.

Acronyms

BBC	Behaviour Change Communication
BFCI	Baby-Friendly Community Initiative
CARD	Council for Agriculture and Rural Development
CDHS	Cambodia Demographic and Health Survey
COMB	Communication for Behavioural Impact
CNP	Community Nutrition Promoter
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
GDA	General Directorate of Agriculture
HKI	Helen Keller International
IEC	Information, Education and Communication
IMCF	Improving the dietary intakes and nutritional status of infants and young children through improved food security and complementary feeding counselling
IYCF	Infant and Young Child Feeding
JLU	Justus Liebig University (Giessen, Germany)
KAP	Knowledge, Attitudes and Practices
MALIS	Improving food security and market linkages for smallholders in Oddar Meanchey and Preah Vihear
MNP	Micronutrient Powder
MAFF	Ministry of Agriculture, Forestry and Fisheries
MoH	Ministry of Health
NGO	Non-Governmental Organization
NSFSN	National Strategy for Food Security and Nutrition
OMC	Oddar Meanchey
PDA	Provincial Department of Agriculture
PDoWA	Provincial Department of Women's Affairs
PHD	Provincial Health Department
PVR	Preah Vihear
SUN	Scaling Up Nutrition
TIPs	Trials of Improved Practices
UN	United Nations
WHO	World Health Organization of the United Nations

Executive summary

The Food and Agriculture Organization of the United Nations (FAO) in Cambodia implemented a 42-month food security project entitled: "Improving food security and market linkages for smallholders in Oddar Meanchey (OMC) and Preah Vihear (PVR)" (MALIS) (2011–2015) with funding from the European Union (EU). The MALIS project was one of two FAO food security projects (the other in Malawi), which integrated a nutrition education component with the aim of improving Infant and Young Child Feeding (IYCF) practices, particularly complementary feeding, and family diets using locally available foods. There is increasing interest in linking agriculture with nutrition interventions ("agriculture-nutrition linkages", "nutrition-sensitive agriculture") by various United Nations (UN) agencies and Non-Governmental Organizations (NGOs). Although there are general recommendations on how to link nutrition with agriculture and food systems, there is a dearth of more specific lessons and guidance for agriculture/food security programmes, which focus on IYCF; particularly complementary feeding.

Parallel to the MALIS project, a 5-year research project entitled: "Improving the dietary intakes and nutritional status of infants and young children through improved food security and complementary feeding counselling" (IMCF) (2010–2015) was implemented by Justus Liebig University (JLU) Giessen, Germany and Mahidol University, Thailand, with support from FAO and funding from the German Federal Ministry of Food and Agriculture (BMEL). IMCF aimed to assess the effectiveness of MALIS project activities on children's dietary intake, micronutrient status and growth, and to determine the nutrition outcomes of combining agricultural production and nutrition education.

A process review of the MALIS project [2] was conducted during June–July 2014 with the aim of providing answers to a number of questions related to project implementation. The objectives were to: (1) collect data on the nutrition education component of the MALIS project, and the linkages between the food security and nutrition education interventions in order to establish what had and had not worked well; (2) identify best practices; and (3) develop lessons learned to inform future programme and policy development. The process review is intended to complement the quantitative and qualitative research findings of the IMCF project, and enhance our understanding of nutrition-sensitive agriculture interventions.

In Cambodia, chronic undernutrition continues to be a major problem with implications for future population health and development. Key contributory factors to undernutrition, particularly stunting, are poor IYCF practices including insufficient quantity and quality of complementary foods, poor hygiene and sanitation, and lack of awareness, knowledge and skills among service providers, mothers and other family members. Hence, the first 1 000 days of life provide a "window of opportunity" to address and prevent stunting, and ensure that children can develop their full potential through: exclusive breastfeeding for the first 6 months; continued breastfeeding up to 2 years of age; and adequate, safe and appropriate complementary feeding from 6–. months. In order to reduce undernutrition in Cambodia, there is a need for effective nutrition interventions; particularly with regard to nutrition education.

The MALIS project commenced in January 2012 and closed in June 2015, and was funded under the Food Security Thematic Programme of the EU. The General Directorate of Agriculture (GDA), Ministry of Agriculture, Forestry and Fisheries (MAFF), was the main government implementing partner and approximately 7 500 vulnerable rural households were targeted. The overall objective of the MALIS project was to improve the food security and nutrition of vulnerable rural families

[2] A similar process review was conducted in the FAO food security and nutrition project in Malawi, and general programming lessons for programme managers will be developed following the FAO/JLU Technical meeting "Linking agriculture and nutrition education for improved young child feeding," which was held at FAO headquarters, Rome, Italy on 6–8 July 2015.

in Oddar Meanchey (OMC) and Preah Vihear (PVR) Provinces that primarily depended on agriculture for their livelihood. The specific objectives were enhanced agricultural productivity, income, nutritional status and resilience to external shocks for vulnerable smallholder farmers.

The nutrition education component was integrated with farming systems improvements and consisted of a community-based nutrition intervention to teach groups of mothers/ caregivers with children aged 5–18 months improved IYCF practices through the promotion of nutritious recipes for complementary food using locally available foods in a course of IYCF nutrition education sessions and participatory cooking sessions, and nutrition modules in farmer field schools. The main service providers for nutrition were NGOs – Malteser International and Farmer Livelihood Development in OMC and PVR Provinces, respectively, in collaboration with staff from the Provincial Health Department (PHD) and Provincial Department of Women's Affairs (PDoWA) as well as staff from district health centres in both provinces.

The process review involved primary data collection in Cambodia and a review of secondary data sources undertaken at FAO headquarters. Purposive sampling was used to select districts, villages and participants for the study. Questions for individual interviews and focus group discussions (FGDs) with different stakeholders related to agriculture-nutrition linkages, the nutrition education component, involvement of government staff, socio-cultural issues related to childcare and feeding as well as sustainability and scaling up. At the end of the primary data collection, a workshop was held with MALIS project staff to consolidate preliminary findings.

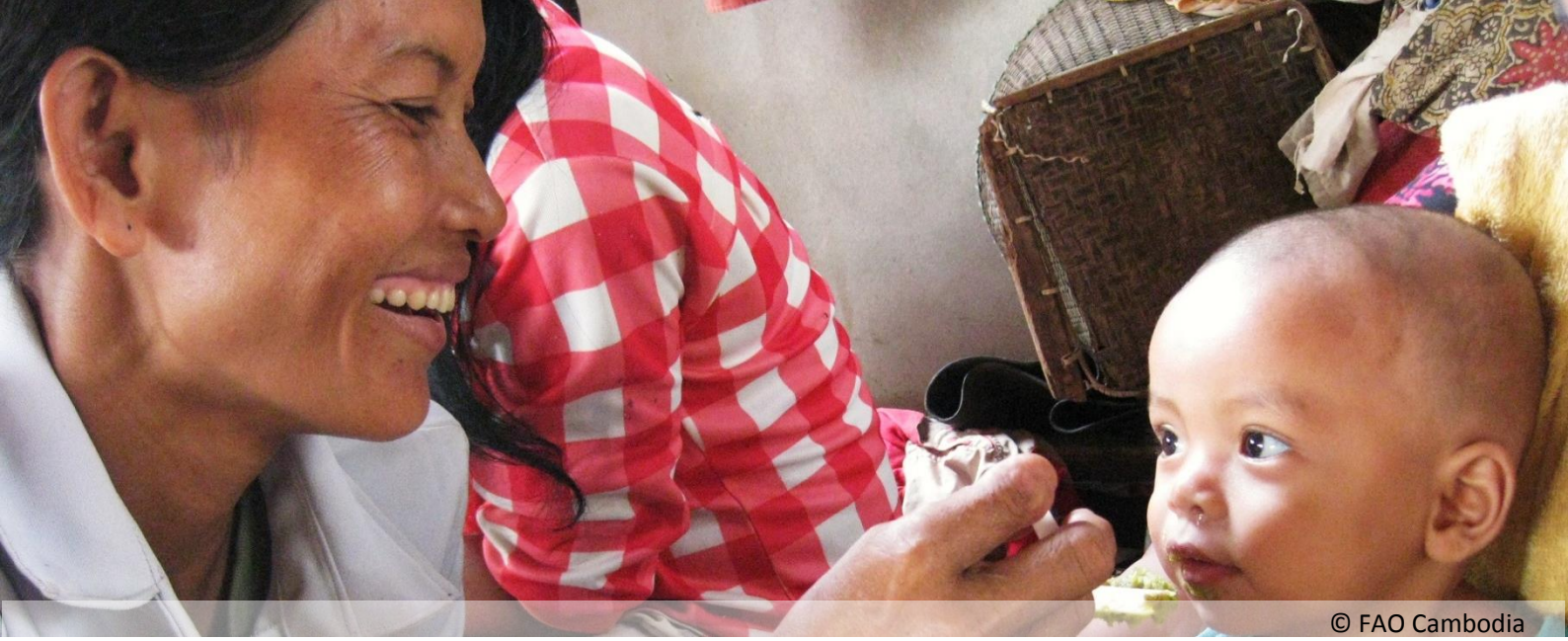
Findings covered the following key themes: (1) training environment; (2) IYCF sessions; (3) family environment; (4) monitoring and evaluation; and (5) coordination across sectors and partners.

Key lessons learned focused on challenges and successes of the MALIS project. Challenges included: (i) linking nutrition education and agriculture; (ii) capacity and motivation of trainers; (iii) implementation; and (iv) supervision and reporting. With regard to implementation challenges, these involved: recruitment of men, particularly fathers; preparation of age-appropriate quantities of *bobor khap krop kroeung* (improved porridge); technical issues with the agriculture/food security and nutrition education interventions; and capacity of farmer field school facilitators in conducting nutrition education sessions. Successes included**:** (i) the 7-day free *bobor khap krop kroeung* distribution; (ii) nutrition education in farmer field schools, farmer field days and agricultural fairs; (iii) government role in capacity building; and (iv) implementation. In terms of implementation successes, these involved: having a practical learning environment, participation of grandmothers and provision of cooking equipment.

Conclusions were made for (i) national and provincial government levels, and (ii) community level. At national and provincial government levels, there is: variable NGO cooperation with the government; no agriculture extension system with potential agents for dietary diversification; no payment (apart from Daily Subsistence Allowance (DSA) and incentives) for community health volunteers within the health extension system; no specific targeting of mothers/ caregivers with children aged 6–23 months by agriculture/food security interventions; and low overall nutrition capacity of government staff. At the community level, mothers/caregivers have low knowledge levels of complementary feeding; women face heavy workloads and have time constraints for childcare; there is a need to address hygiene and sanitation issues; and gender issues prevent the sharing of new knowledge and skills with grandmothers, and limit the involvement of fathers with childcare.

As a way forward, it is important to: (i) encourage better cooperation and coordination between NGOs, government and village health support groups, and across sectors; particularly agriculture, health, education and social protection, which are important for nutrition; (ii) ensure capacity building in nutrition/nutrition education at all government levels, incorporate nutrition education in school curricular and

deepen nutrition science at tertiary level; (iii) strengthen the extension system; particularly through pre-service training in nutrition and facilitation skills for staff in the agriculture and health sectors at all levels; (iv) improve rural infrastructure, support mechanization, encourage innovation and strengthen agricultural cooperatives; (v) empower women to change their roles and provide nutrition education to all family members and generations involved with childcare and feeding; (vi) undertake monitoring to generate evidence on what activities work and to show that mothers/ caregivers apply knowledge on improved child feeding into their daily practices; (vii) strengthen the role of the Commune Focal Point for Women and Children in order to reach every village with nutrition education and improve sustainability of the IYCF trainings; (viii) ensure free access of Information, Education and Communication (IEC) materials and share lessons learned on entry points for nutrition education; and (ix) allocate government funding for nutrition interventions, and ensure effective monitoring and evaluation.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1 Introduction

1.1 What was the purpose of the process review?

The Food and Agriculture Organization of the United Nations (FAO) in Cambodia implemented a 42-month food security project entitled: "Improving food security and market linkages for smallholders in Oddar Meanchey and Preah Vihear" (MALIS) (2011–2015) with funding from the European Union (EU). The MALIS project was one of two recent FAO food security projects,[3] which had integrated a nutrition education component with the aim of improving infant and young child feeding (IYCF) practices, particularly complementary feeding, and family diets using locally available foods. There is increasing interest in linking agriculture with nutrition interventions ("agriculture-nutrition linkages", "nutrition-sensitive agriculture") by various United Nations (UN) agencies and Non-Governmental Organizations (NGOs). More general recommendations exist [4] on how to achieve these linkages in programmes; however, there is a dearth of more specific lessons and guidance for agriculture/food security programmes, which focus on IYCF; particularly complementary feeding.

Parallel to the MALIS project, a 5-year research project entitled: "Improving the dietary intakes and nutritional status of infants and young children through improved food security and complementary feeding counselling" (IMCF) (2010–2015) was implemented by Justus Liebig University (JLU) Giessen, Germany and Mahidol University, Thailand, with support from FAO and funding from the German Federal Ministry of Food and Agriculture (BMEL). IMCF aimed to assess the effectiveness of MALIS project activities on children's dietary intake, micronutrient status and growth, and to determine the nutrition outcomes of combining agricultural production and nutrition education.

A process review of the MALIS project was conducted during June–July 2014 with the aim of providing answers to a number of questions that related to project implementation. Questions focused on the following issues: targeting of families with young children through agriculture; implementing nutrition education activities using existing government extension services; training and capacity development of trainers; underlying socio-cultural issues related to childcare and feeding; and sustainability and scaling up of such interventions.

[3] The other FAO food security project entitled: "Improving food security and nutrition policies and programme outreach" (IFSN) (2011–2015) was implemented by the Government of Malawi and funded by the Government of Flanders.

[4] FAO. 2015. Key recommendations for improving nutrition through agriculture and food systems (available at www.fao.org/3/a-i4922e.pdf).

The process review objectives were to:

1. Collect data on the nutrition education component of the MALIS project, and the linkages between the food security and nutrition education interventions in order to establish what had and had not worked well
2. Identify best practices
3. Develop lessons learned to inform future programme and policy development

The process review is intended to complement the quantitative and qualitative research findings of the IMCF project, and enhance our understanding of nutrition-sensitive agriculture interventions.

This report focuses on the IYCF nutrition education sessions with mothers/caregivers of young children aged 6–23 months, which aimed to improve complementary feeding using locally available foods in the context of a food security project. Thus, the agriculture/food security activities are presented through a nutrition education lens. Lessons learned related to other components of the MALIS project were not included in the process review and considered beyond the scope of this report. However, lessons learned on the nutrition education and food security interventions were shared at provincial workshops in Samrong, OMC Province on 6 March 2015 and in Tbeng Meanchey, PVR Province on 11 March 2015, and in a national dissemination meeting in Phnom Penh on 26 March 2015.[5]

A similar process review was conducted on the FAO food security and nutrition project in Malaw. [6] General programming lessons for programme managers will be developed following the FAO/JLU Technical meeting "Linking agriculture and nutrition education for improved young child feeding," which was held at FAO headquarters, Rome, Italy on 6–8 July 2015.[7]

[5] The MALIS and IMCF project Cambodia dissemination meeting report was distributed in early September 2015.
[6] The IFSN project process review report was released in December 2015.
[7] The FAO/JLU Technical meeting report is forthcoming.


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2 Background

This section provides a summary of the IMCF research project, which is an evaluation of the MALIS project; an overview of the food security and nutrition context in Cambodia; and a description of the MALIS project.

2.1 Evaluation through independent research – the IMCF project

The impetus for the IMCF project in Malawi and Cambodia was the lack of evidence on the effectiveness of combining food security and nutrition education interventions on young children's nutrition; particularly how nutrition-sensitive agriculture interventions might improve access to nutrient-dense complementary foods and promote their consumption, and increase the adoption of appropriate IYCF practices among caregivers of young children. Hence, the IMCF project objectives were to document the effectiveness of promoting locally available and affordable complementary foods to improve infant and young children's nutritional status. The IMCF research component tested the following hypotheses:

1. Trials of Improved Practices (TIPs) generate Behaviour Change Communication (BCC) messages and nutritionally improved recipes that lead to lasting improvements in complementary feeding practices, dietary intakes and child nutritional status.
2. Locally available and affordable foods can provide a significant contribution to the nutritional requirements of children aged 6–23 months.
3. Nutrition education with a focus on IYCF and linked with a food security intervention can improve child feeding practices and nutritional status.
4. Using locally available foods for improving complementary feeding practices and children's nutritional status is a sustainable strategy, which can be replicated by households at low cost and taken to scale using available government services.

The IMCF project commenced in November 2010 and will close in January 2016. Research activities began with baseline surveys in households with children under 2 years of age, conducted in Malawi in August 2011 and in Cambodia in September 2012. Clusters were subsequently randomized to either intervention (six in Malawi, ten in Cambodia) or comparison groups (six in Malawi, five in Cambodia). In intervention clusters, caregivers in households with children under 2 years of age participated in nutrition education related to complementary feeding. Longitudinal studies of small cohorts of children were undertaken in both countries, a cross-sectional mid-term survey was carried out in Malawi 2 years after collection of baseline data, and impact surveys were conducted in 2014, first in Malawi in August and then Cambodia in September.

Research activities also comprised focus group discussions (FGDs), in-depth interviews, and pre- and post-training tests to assess participant knowledge as well as observations among spouses, grandmothers and health professionals. In both countries, observations took place of training of trainers activities, volunteer Community Nutrition Promoters (CNPs) and IYCF nutrition education sessions. Home visits were also undertaken to observe the preparation of porridges for young children. Preliminary quantitative and qualitative research findings were presented at the national dissemination meeting in Phnom Penh on 26 March 2015.

2.2 Food security and nutrition in Cambodia – situation and strategies

Improving food security and nutrition is an important development priority of the Royal Government of Cambodia. In June 2014, Cambodia became the 53rd country to join the Scaling Up Nutrition (SUN) Movement.[8] At that time, Cambodia's Council for Agriculture and Rural Development (CARD) and line ministries had just developed the National Strategy for Food Security and Nutrition (NSFSN) (2014–2018) [9] to complement existing strategies and plans, and to foster joint intersectoral actions for food security and nutrition. In-line with the new NSFSN strategy, the Ministry of Health (MoH) launched Cambodia's first National Fast Track Road Map for Improving Nutrition (2014–2020) to ensure that health services are delivering key nutrition interventions at scale.

Cambodia has achieved impressive economic growth since the mid-1990s and made significant progress in reducing national poverty. Cambodia has also achieved national food security and become an important rice exporter in the region. However, household access to sufficient and nutritious food remains a serious challenge. This is particularly the case for poor farm households that do not produce sufficient food to meet their nutrient requirements.

According to the IMCF project baseline survey[10] conducted in September/October 2012 (N=1 028 households), 28.3 percent of children aged 6–23 months achieved a Minimum Acceptable Diet, 43.9 percent Minimum Dietary Diversity and 69.9 percent Minimum Meal Frequency. Also, MALIS project's baseline survey [11] conducted in October/November 2012 (N=796 households), found that 18.2 percent of households in OMC Province and 26.3 percent in PVR Province were considered as moderately food insecure. In addition, 22.1 percent and 15.7 percent of households were regarded as severely food insecure in OMC and PVR Provinces, respectively. In 2010, the Cambodia Demographic and Health Survey (CDHS)[12] reported that 39.9 percent of children under the age of five were stunted; however, stunting prevalence had decreased to 32.4 percent in 2014.[13] Nevertheless, stunting prevalence remains high in rural areas of Cambodia. In 2014, stunting prevalence was 36.3 percent and 44.3 percent in OMC and PVR/Steung Treng Provinces, respectively.

[8] Cambodia – scaling up nutrition (available at www.scalingupnutrition.org/sun-countries/cambodia)

[9] The NSFSN (2014–2018) was developed by CARD in consultation with the Technical Working Group for Social Protection and Food Security and Nutrition (TWG-SP and FSN) in April 2014.

[10] Reinbott, A., Kuchenbecker, J., Jordan, I., Hirschmann, I., Herrmann, J., Kevanna, O. & Krawinkel, M.B. 2013. *IMCF Cambodia in Preah Vihear and Otdar Meanchey Provinces, cross-sectional nutrition baseline survey September/October 2012 final report*. Faculty 09, unpublished. Giessen, Germany, Agricultural and Nutritional Sciences and Environmental Management, Justus Liebig University Giessen.

[11] FAO. 2013. *Improving food security and market linkages for smallholders in Otdar Meanchey and Preah Vihear: baseline survey report*, April 2013. Prepared by: Christopher Tomlinson for FAO Cambodia. Phnom Penh, FAO Cambodia.

[12] National Institute of Statistics, Directorate General for Health & ICF Macro. 2011. *Cambodia demographic and health survey 2010.* Phnom Penh, Cambodia and Calverton, USA, National Institute of Statistics, Directorate General for Health & ICF Macro.

[13] National Institute of Statistics, Directorate General for Health & ICF International. 2015. *Cambodia demographic and health survey 2014*. Key indicators report. *Phnom Penh and Rockville, USA, National* Institute of Statistics, Directorate General for Health & ICF International.

Wasting and underweight figures were also much higher than the national levels.

In Cambodia, key contributory factors to undernutrition, particularly stunting, are poor IYCF practices including insufficient quantity and quality of complementary foods, poor hygiene and sanitation, and lack of awareness, knowledge and skills among service providers, mothers and other family members. Hence, the first 1 000 days of life provide a "window of opportunity" to address and prevent stunting, and ensure that children can develop their full potential through: exclusive breastfeeding for the first 6 months; continued breastfeeding up to 2 years of age; and adequate, safe and appropriate complementary feeding from 6–23 months.

In order to reduce undernutrition in Cambodia, there is a need for effective nutrition interventions; particularly with regard to nutrition education. Hence, a national campaign to improve complementary feeding: "Communication for Behavioural Impact (COMBI) campaign to promote complementary feeding in Cambodia: 2011–2013" was developed by the National Centre for Health Promotion and the National Maternal and Child Health Centre in close collaboration with development partners.[14] Its main aim was to contribute to improving the nutritional status of Cambodian children by increasing the adoption of appropriate complementary feeding practices of infants and young children aged 6–23 months. The MALIS project's nutrition education component was fully aligned with the COMBI campaign.

2.3 Description of the MALIS project

The MALIS project commenced in January 2012 and closed in June 2015, and was funded under the Food Security Thematic Programme of the EU. The General Directorate of Agriculture (GDA), Ministry of Agriculture, Forestry and Fisheries (MAFF), was the main government implementing partner, and approximately 7 500 vulnerable rural households were targeted.

The overall objective of the MALIS project was to improve the food security and nutrition of vulnerable rural families in OMC and PVR Provinces that primarily depended on agriculture for their livelihood. The specific objectives were enhanced agricultural productivity, income, nutritional status and resilience to external shocks for vulnerable smallholder farmers.

The project activities included: implementing farmer field schools and farmer business schools, nutrition education activities, agricultural fairs and input credit, strengthening market networks, information flows and community-based organizations as well as conducting capacity building. Farmer field schools and farmer business schools were set up in conjunction with the community-based organizations. Most project activities had at least 70 percent participation by women.

The nutrition education component was integrated with farming systems improvements and consisted of a community-based nutrition intervention to teach groups of mothers/ caregivers with children aged 5–18 months [15] improved IYCF practices through the promotion of nutritious recipes for complementary food using locally available foods in a course of IYCF nutrition education sessions and participatory cooking sessions, and nutrition modules in farmer field schools.

The main service providers for nutrition were NGOs - Malteser International and Farmer Livelihood Development in OMC and PVR Provinces, respectively.

The NGOs implemented the nutrition education activities with mothers/caregivers in collaboration with staff from the Provincial Health Department (PHD) and Provincial Department of Women's Affairs (PDoWA) as well as staff from district health centres in both provinces.

[14] MoH. 2011. *COMBI campaign to promote complementary feeding in Cambodia: 2011-2013.* Phnom Penh, Ministry of Health (available at www.camnut.weebly.com/uploads/2/0/3/8/20389289/2011compfeedingcommstrategy.pdf).

[15] Children aged 5 months were included to support the transition from exclusive breastfeeding to complementary feeding and children aged less than 18 months were included as the IYCF sessions took approximately 23 months to complete.


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3 Methods

This section provides a description of the process review data collection methods, data processing, analysis and limitations.

3.1 Key informant interviews, focus group discussions, review

The process review was conducted by FAO Cambodia and headquarters nutrition staff from 22 June–17 July 2014.[16] The process review involved primary data collection in Cambodia and a review of secondary data sources undertaken at FAO headquarters.

The MALIS project was implemented in two phases – Phase one (August 2013–March 2014) and Phase two (April 2014–March 2015) – and study participants were therefore selected from both phases (Annex 1). Purposive sampling was used to select districts, villages[17] and participants for the study.

Initially, a set of 61 questions were generated that related to: agriculture-nutrition linkages (i.e. project design, implementation, targeting of project participants); the nutrition education component (i.e. training cascade, capacity of trainers, inputs, activities); involvement of government staff (i.e. in training/monitoring); socio-cultural factors related to childcare and feeding (i.e. role of grandmothers, intra-household communication, behaviour change etc.); and sustainability and scaling up. Based on this set of 61 questions, bespoke questionnaires were developed for individual interviews and FGDs with different stakeholders.

In total, 20 individual interviews were carried out with staff of the MALIS project, NGOs, national and provincial government departments as well as with Phase one project beneficiaries. In addition, six FGDs were undertaken with Phase one and two mothers/caregivers, community nutrition promoters (CNPs), grandmothers and spouses. At the end of the primary data collection, a workshop was held with MALIS project staff to consolidate preliminary findings. An overview of the data collection schedule is provided (Annex 2)

The review of secondary data sources included: six-monthly implementing partner reports, six-monthly donor reports, meeting reports, monitoring data and other information.

[16] Data collection was ongoing when Dr Elizabeth Westaway left Cambodia on 17 July 2014.

[17] Cambodia is divided into 24 provinces and the special administrative unit Phnom Penh. Provinces are divided into districts, which are sub-divided into communes that usually consist of 3–30 villages.

3.2 Data processing, analysis and limitations

Individual interviews and FGDs were audiotaped (after the participants gave their verbal consent), with written notes taken concurrently as a backup, and the audiotapes were transcribed and translated from *Khmer* into English, when necessary.

After which, a thematic analysis was undertaken at FAO headquarters using OpenCode 4 software.

The main limitations of the process review were: (i) the capacity of staff to undertake qualitative data collection and analysis; and (ii) the language barrier of the investigators, who were not familiar with the official language of Cambodia, *Khmer*.

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4 Discussion of findings

Findings are presented on the following key themes: training environment; IYCF sessions; family environment; monitoring and evaluation; and coordination across sectors and partners.

4.1 Training environment

4.1.1 Materials for training and IYCF sessions

In mid-2012, when the MALIS project had just commenced, the MoH launched new Information, Education and Communication (IEC) materials under the national COMBI campaign to promote complementary feeding nationwide. Consequently, the MALIS project aligned its IEC materials with those of the government, although the original plan was to use the IEC materials developed in a previous FAO project ("FAO-EU food facility project," 2009–2011). Nevertheless, FAO was able to promote the nutritious complementary feeding recipes, which were developed in a participatory, formative research phase [18] under the EU food facility project, as there was no official recipe book available and the concept of the recipes was in-line with the COMBI campaign. A total of 15 improved complementary feeding recipes[19] (rice-based or sweet potato/taro-based, enriched with a variety of readily available local foods) were developed at the time, [20] which were subsequently refined and promoted through participatory cooking sessions with mothers/ caregivers.

The MALIS project IEC materials included a video and a large flipchart (used in the Baby-Friendly Community Initiative (BFCI) by government staff), which comprised a set of community counselling cards on improved IYCF practices as well as a facilitator's book that contains the complementary feeding recipes for *bobor khap krop kroeung*.[21] The large flipchart was used to demonstrate key messages in picture format to groups of mothers/caregivers and the facilitator's guide was developed by FAO headquarters and MALIS project staff to assist trainers in conducting IYCF sessions in a participatory manner.

[18] During the formative research phase, TIPs were undertaken with caregivers in different provinces of Cambodia over two seasons to test the feasibility and acceptability of *bobor khap krop kroeung* (improved porridge) recipes for complementary feeding using different locally available foods.

[19] FAO. 2011. *Complementary feeding for children aged 6–23 months. A recipe book for mothers and caregivers* (available at www.fao.org/docrep/014/am866e/am866e00.pdf).

[20] Based on WHO. 2003. *Guiding principles for complementary feeding of the breastfed child* (available at www.who.int/maternal_child_adolescent/documents/a85622/en/).

[21] *Bobor khap krop kroeung* is thick and multi-ingredient porridge, enriched with locally available nutritious foods.

During Phase two of the MALIS project, four posters[22] were developed on particular issues for use during the IYCF sessions: (i) food preparation; (ii) food safety and personal hygiene; (iii) *bobor khap krop kroeung* recipes; and (iv) *bobor khap krop kroeung* age-appropriate quantity and feeding frequency. The latter two posters were distributed to the mothers/caregivers for their use at home. In addition, a basic nutrition manual was developed to integrate nutrition education activities into farmer field schools, which comprised the following three modules: (i) importance of dietary diversification; (ii) benefits of home gardening; and (iii) selection of nutritious crops for home gardening.

4.1.2 The training cascade trainers and supervisors

In July 2013, two master trainers from the National Nutrition Programme in the National Maternal Child Health Centre of the MoH and two FAO staff conducted training of trainers and supervisors. A total of 34 staff members of PDoWA, PHD, district health centres and NGO partners from each province participated in a 5-day training on how to run the IYCF sessions with mothers/caregivers. The training focused on improving IYCF practices, facilitating IYCF sessions with mothers/caregivers and cooking the improved complementary feeding recipes for *bobor khap krop kroeung*. They were also instructed on their main supervisory role and the monitoring tasks expected to be fulfilled. In the training cascade approach, these trainers and supervisors then carried out the trainings of CNPs, who were the main trainers in Phase one (Annex 3).

In the MALIS nutrition education intervention, volunteer members of the village health support groups were termed CNPs once they had participated in the training of trainers for IYCF sessions with mothers/caregivers. The village health support groups are the community health workers of the national healthcare system and usually work in pairs. They carry out health-related tasks in the community, e.g. assist with awareness raising on immunization.

The CNPs were recruited with the assistance of the district health centre staff and NGO partners from the pool of existing village health support groups or Commune Focal Points for Women and Children or other suitable residents of the target villages. A total of 153 CNPs participated in the 5-day training. The CNPs worked in pairs and most of them were female. During the IYCF sessions they received regular support from the NGO staff and other supervisors.

Mothers/caregivers, who participated in the first round of IYCF sessions, assessed the CNP performance positively.

> *"The CNPs spoke clearly. They always recalled the IYCF messages as they were afraid that we didn't remember them or that we hadn't understood them during the previous training."*
> *(Mothers, Phase one, FGD)*

However, FAO and NGO staff, who assessed the CNPs' performance during monitoring visits, identified many issues with the way in which they conducted the IYCF sessions. For example, the CNPs were not well prepared, did not have good facilitation skills and struggled particularly to conduct the participatory cooking sessions. It was frequently observed that the CNPs did not distribute age-appropriate quantities of *bobor khap krop kroeung* to the mothers/caregivers to feed their children, which meant that the CNPs did not reinforce the theoretical messages by applying them in practice during the cooking sessions. It was also observed that the timing of *bobor khap krop kroeung* distribution to mothers/caregivers was not optimal as the trainer often continued with the lesson after *bobor khap krop kroeung* was served into bowls and it became cold. It is important to note that when cold, *bobor khap krop kroeung* is less palatable and the consistency/viscosity changes (becomes thicker and dries out) and young children, particularly, find it hard to eat.

[22] The four posters entitled: *Food preparation and cooking methods*; *Food safety and personal hygiene in complementary feeding*; *My child is healthy because of bobor khap krop kroeung*; and *How to give bobor khap krop kroeung to children* are available on the following website: www.fao.org/ag/humannutrition/nutritioneducation/70106/en/

The FGDs with Phase one CNPs also highlighted their lack of confidence and facilitation skills; however, they appreciated the support given by NGO staff.

> *"[In Phase one] it was hard to conduct the trainings, because I was just new in providing trainings. Before the MALIS project, I have never been a trainer. Therefore, providing trainings within the MALIS project was a new experience for me. Fortunately, I always got support from the supervisors such as NGO and health centre staff."*
> *(CNPs, FGD)*

NGO staff felt that if the project duration had been longer, the CNPs would have gradually learned how to be good trainers. However, because of the limited project duration, it was decided to change the training cascade approach in Phase two to achieve a greater impact on behaviour change of mothers/ caregivers (Annex 4). Therefore, the NGO staff became the main trainers as they had more ability to conduct IYCF sessions and the CNPs became assistants to the trainers, which they were relieved about.

> *"In Phase two, we actually feel released, because we are no longer supposed to provide the training. In Phase two, we have not faced any difficulties as we are no longer trainers. We only gather the mothers to attend the training."*
> *(CNPs, FGD)*

> *"I feel that when Malteser International staff takeover to be trainers, we would get better results. In contrast to receiving training provided by CNPs, it would increase the chance that mothers might change their practices."*
> *(Malteser International staff, Interview)*

Nevertheless, a number of issues were observed with regard to the facilitation skills of the NGO partners: particularly, not speaking loud enough, so that all participants could hear; not being able to motivate mothers to participate; and not always ensuring that the seating arrangement of mothers/caregivers was conducive for a participatory training.

4.2 IYCF sessions with mothers/ caregivers of young children

4.2.1 Community engagement meeting recruitment of mothers/caregivers

A community engagement meeting was held in each village to recruit caregivers into the IYCF sessions. It is important to note that MALIS project staff had already conducted community sensitization prior to implementing farmer field schools. Hence, MALIS project activities were ongoing in those communities when the IYCF sessions started.

Participants were recruited in the following order of priority: (i) mothers/caregivers of children aged 5–18 months from farmer field schools to strengthen agriculture and nutrition linkages, and enhance the potential of improving family and young children's diets; (ii) mothers/caregivers of children aged 5–18 months from community-based organizations and the wider community; and (iii) pregnant women and women of reproductive age (15–49 years), and their families (e.g. if there were insufficient women to form an IYCF group), as good nutrition during pregnancy is key for children's development (i.e. the first 1 000 days of life).

In practice, approximately 25 mothers were invited to attend the community engagement meeting, during which the trainers explained the objectives of the MALIS project, particularly the IYCF sessions with mothers/caregivers, the content of IYCF sessions, how they were to be facilitated and the frequency (weekly or bi-weekly). When resources permitted, a cooking session took place during the engagement meeting, so that the participants could taste the *bobor khap krop kroeung* and become interested in joining the IYCF group. By the end of the community engagement meeting, 10–15 eligible mother/caregiver-child pairs were registered as new participants.

4.2.2 IYCF sessions – approach and key messages

The IYCF sessions with mothers/caregivers comprised a course of seven facilitated community-based sessions with four participatory cooking sessions and two separate meetings where motivating and hindering factors to improved IYCF practices were discussed. Each village organized an IYCF group of approximately 15 mothers/caregivers through a community engagement meeting (as described in the Community engagement meeting recruitment of mothers/caregivers section on page 10). Most IYCF groups met every week or bi-weekly for approximately 23 hours over a period of about three months.

The IYCF sessions included lessons on: importance of IYCF; continued breastfeeding; food for lactating women; food diversity; hygienic preparation of foods and hand washing; thickness of *bobor khap krop kroeung*; nutritious snacks; age-appropriate complementary feeding (meal frequency and quantity); responsive feeding; feeding a sick child; and preparing complementary foods from family foods (from 9 months of age according to the COMBI campaign) (Annex 5).

Approach during phase one of the MALIS project

The IYCF sessions commenced during August 2013 and were implemented in a total of 35 villages (19 in OMC and 16 in PVR). In total, 449 mother/caregiver-child pairs were enrolled in the first round and trained by 91 CNPs (54 in OMC and 37 in PVR), with support from the staff of the PHD, PDoWA and local NGOs (as described in the training cascade – trainers and supervisors section on page 9). The first round was completed in December 2013. On average, 67 percent of sessions were attended by all mothers/caregivers.

Wider promotion – complementary feeding campaign and 7-day free *bobor khap krop kroeung* distribution

Phase one, a 1-day complementary feeding campaign was conducted to more widely promote the improved IYCF practices in the communities and a total of 1 080 villagers were reached across both provinces. Following the campaign, a 7-day free *bobor khap krop kroeung* distribution was carried out. *Bobor khap krop kroeung* was cooked every day for children in the complementary feeding age range, and ingredients were sourced in the communities and local markets. On average, 75 percent of participating children (380 out of 507 beneficiaries in PVR Province) received *bobor khap krop kroeung* on a daily basis over the 7-day period.

Approach during phase two of the MALIS project

A second round of IYCF sessions with mothers/ caregivers started in the same villages during May 2014. In Phase two, the training cascade approach was refined and NGO implementing partners became the main trainers, with CNPs assisting them (as described in the training cascade - trainers and supervisors section on page 9). A *bobor khap krop kroeung* evaluation process was also introduced whereby mothers/ caregivers were requested to prepare *bobor khap krop kroeung* at home and bring it to the next IYCF session for group evaluation and feedback, in order to motivate the mothers/caregivers to practice cooking the different recipes. This method worked well, according to the trainers. During this round, 495 mothers/caregivers were reached and, on average, 87 percent of IYCF sessions were attended. A third round of IYCF sessions commenced in 29 new villages (i.e. farmer field school locations) during October 2014 with 453 mothers/caregivers. In total, approximately 1 400 mothers/caregivers participated directly in the IYCF sessions (in both phases). Nevertheless, additional people were reached through nutrition education in agricultural activities (as described in the Nutrition education in agriculture - farmer field

schools, farmer field days and agriculture fairs section on page 14).

4.2.3 Participatory cooking sessions – practical learning

The participatory cooking sessions were usually conducted with mothers/caregivers at the same location as the IYCF sessions, such as in the village hall or the CNPs' or village leader's house.

Initially, the trainers purchased the ingredients (e.g. rice, vegetables, fish or meat) from the market, since there was a small budget provided by the MALIS project. However, the implementing partner staff criticized this approach and soon started to ask participants to bring what they had available in their home gardens to learn what could be used from their own produce and have more ownership of the programme.

Prior to the start of each participatory cooking session, the trainer asked the participants to wash their hands with soap. Then, the cooking equipment was cleaned, in addition to the vegetable and meat or fish products. While the rice was boiled, the vegetables were chopped by the mothers/caregivers and boiled separately from the rice. The cooking process usually took approximately 30–45 minutes, and when the *bobor khap krop kroeung* was ready to be served the trainers and caregivers evaluated its consistency and discussed the age-appropriate quantity that each child should receive. Before feeding the children *bobor khap krop kroeung*, the trainer again advised the mothers/caregivers to wash their hands with soap.

All mothers and other family members present during the sessions (e.g. grandmothers) were encouraged to participate in the cooking process; however, some mothers were distracted by their crying children and temporarily left the meeting place until they became quiet. At a later stage of the project, trainers were provided with a set of toys, which they brought to IYCF sessions, so that the children would not get bored or upset and the women would be less distracted from learning. This was a solution for some of the IYCF groups, but it was an additional task for the trainer, who was responsible for ensuring their return at the end of the IYCF session and keeping the toys clean.

The whole cooking session, which included *bobor khap krop kroeung* tasting, usually lasted approximately 1.52 hours, but in some cases it was even longer and this was problematic for the mothers/caregivers, as women in rural areas are faced with heavy workloads.

Generally, mothers and grandmothers liked the cooking sessions as they could actively participate, and both they and their children were able to taste the different *bobor khap krop kroeung* recipes.

> *"I liked the cooking session as it was a group work. Each participant did a different task. I also appreciated that the different types of bobor khap krop kroeung were cooked with various vegetables."*
> *(Grandmothers, Phase one, FGD)*

> *"Grandmothers and all the small children got the chance to not even taste the different types of bobor khap krop kroeung, but we actually ate them. We thought that it was really good as they contained various nutrients that could help our grandchildren grow well."*
> *(Grandmothers, Phase one, FGD)*

During the FGDs, mothers reported that the practical learning during the cooking sessions increased their confidence to prepare *bobor khap krop kroeung* at home.

> *"After the cooking demonstration, I am confident to prepare the bobor khap krop kroeung and I remember the ingredients."*
> *(Mothers, Phase one, FGD)*

Other NGOs working in the area also acknowledged that participatory cooking sessions were important to reinforce what mothers learned, and felt that more of these sessions were needed.

"We are also concerned that the mothers do not understand about what we taught them. It takes time for them to understand the lessons. We need to do many participatory cooking sessions, so that they understand what we teach them."
(World Vision staff, Interview)

Cooking Equipment for Improved Practices

A set of cooking equipment was distributed to each IYCF group, which included: bowls, spoons, soap, washing detergent and two fuel-efficient stoves. All mothers/caregivers participating in the IYCF sessions received a set of five items (i.e. a small bowl, a food cover net, a kettle, a spoon and a fuel-efficient stove) to facilitate their behaviour change. An interim review conducted in December 2013 showed that most mothers/ caregivers already possessed a stove, but needed an additional one to prepare a special meal for the child. Hence, IYCF session participants considered the additional cooking equipment as beneficial.

"It was helpful to get the inputs. My daughter received the kettle to boil water, the Lao stove to cook the bobor khap krop kroeung and the food cover net to cover food from flies in order to keep the food safe. She also got the small standard bowl, which she uses for the bobor khap krop kroeung when she feeds the child."
(Grandmothers, Phase one, FGD)

However, concerns were raised over distributions of inputs; particularly by staff from the NGO implementing partners. This practice raised expectations of future beneficiaries that might lead to reluctance to participate in project activities without receiving inputs. In addition, distribution of inputs went against sustainable approaches to behaviour change as the beneficiaries did not develop a desire to change, but passively waited for change to occur and relied on handouts.

"Providing inputs is good for the community, but it is not good for us as Malteser International trainers because in Phase two, mothers attended the training because they only anticipated getting the inputs."
(Malteser International staff, Interview)

4.2.4 Special Sessions – CNP and mothers/caregivers sharing meetings

During Phase one, CNP sharing meetings were carried out on five occasions in each commune. The purpose of these meetings was to give CNPs an opportunity to share their experiences in conducting the trainings, and to provide support and guidance to challenges, which they faced. It was shown that CNPs had issues with confidence and facilitation; however, it was not possible to resolve these issues in the meetings. Hence, the training cascade approach was changed in Phase two.

Since CNPs were no longer the main trainers, CNP sharing meetings became obsolete and mothers/ caregivers sharing meetings were introduced instead in Phase two. Mothers/caregivers sharing meetings were conducted twice (After session three and six) in each IYCF group and supported by CNPs, Commune Council for Women and Children, and PDoWA staff. The objectives of the mothers/caregivers sharing meetings were: (i) to determine mothers'/caregivers' perceptions of improved IYCF practices (e.g. preparation of *bobor khap krop kroeung*, responsive feeding); (ii) to identify mothers'/caregivers' constraints to good childcare and child feeding practices (e.g. cooking of *bobor khap krop kroeung*) and solutions; and (iii) to understand motivating factors for behaviour change to encourage optimal child feeding practices among mothers/caregivers.

Nutrition education in agriculture – farmer field schools, farmer field days and agriculture fairs

The MALIS project implemented four different types **of farmer field schools on** cassava,

chickens, rice and vegetables. The farmer field schools on vegetables naturally lent themselves to integration of the nutrition modules, which focused on dietary diversification and home gardens. However, the farmer field schools on chickens and rice were also used as entry points for nutrition education.

Farmer field school facilitators (i.e. staff from Buddhism for Development, Community Integrated Development Organization, Khmer Buddhist Association, Rural Community Environment Development Organization, District Office of Agriculture, PDA and PDoWA) were trained on the three nutrition modules using the farmer field school nutrition manual. However, the farmer field school nutrition education sessions were not implemented in Phase one due to the trainers' low capacity and lack of confidence in nutrition-related topics. Consequently, another attempt was made in Phase two when two PDoWA staff with a good knowledge of nutrition were trained on the nutrition modules; after which they conducted farmer field school nutrition education sessions in their respective provinces.

A total of 2 900 smallholder famers (of whom 77 percent were female), participated in these integrated nutrition education sessions and the most frequently discussed topics were the importance of dietary diversification and benefits of home gardening.

A wider promotion of basic hygiene and IYCF key messages was incorporated into the **farmer field days**, in which participatory cooking sessions and tasting of *bobor khap krop kroeung* often took place. Farmer field days were organized by the nutrition NGOs (Malteser International and Farmer Livelihood Development) in collaboration with the NGOs responsible for the agricultural activities.[23]

The MALIS project organized a total of nine **agricultural input trade fairs** in OMC and PVR Provinces. The aim of these fairs was to provide quality inputs to farmers, when they were most needed during the seasonal agricultural calendar, and to ensure that families had access to basic cooking equipment for food preparation and feeding. Participants were smallholder farmers, of whom approximately 70 percent were women, which were registered members of selected community-based organizations. Many of these community-based organizations were officially registered agricultural cooperatives and 20 out of 49 participated in the MALIS farmer business schools.

The fairs were run in conjunction with a voucher system and input credit. Under this system, participants registered with each of the selected community-based organizations were able to apply for credit up to a set limit per household (generally US$150), with the requirement that 60 percent of the amount borrowed plus interest, according to the rules of the community-based organization, was to be repaid after the harvest. Thus, participants issued with vouchers could select from a range of inputs, such as: fertilizer, seeds, cooking equipment, water pumps and tubing, poultry medication and post-harvest equipment. In total, 3 766 smallholder households participated in the fairs, using input credit provided by the project to purchase goods from the range on display. On average, the participants borrowed US$142per household, with a total cash value of US$543 000 traded during the nine fairs.

At seven out of the nine agricultural fairs, nutrition booths were organized by the nutrition NGOs to promote *bobor khap krop kroeung*. In total, 827 children aged 6–59 months, of whom 59.9 percent (496) were girls, were targeted with a free *bobor khap krop kroeung* distribution.[24] In addition, a video showed *bobor khap krop kroeung* preparation, age-appropriate complementary feeding, food safety, and basic hygiene and sanitation. As a result, messages on improved IYCF practices reached hundreds of mothers/caregivers and many more fair

[23] The NGOs that implemented agricultural activities were: Buddhism for Development, Community Integrated Development Organization, Khmer Buddhist Association, and Rural Community Environment Development Organization.

[24] Adults also tasted the *bobor khap krop kroeung*, but they were not counted by the NGOs. Hence, approximately 850 people were directly reached with the tasting of *bobor khap krop kroeung*.

participants. A total of over 7 200 visitors was recorded for the fairs and attendance of beneficiary households varied from 250–660 per fair.

4.3 Family environment

4.3.1 Mothers' knowledge of IYCF practices and openness to advice

Increased knowledge of improved practices

The implementing NGO staff of Malteser International commented that it appeared challenging for some of the mothers/caregivers to understand how to prepare *bobor khap krop kroeung* from the theoretical lessons. However, during the practical participatory cooking sessions it seemed that mothers/caregivers learned faster.

Openness to advice on IYCF practices

Mothers and fathers of young children usually turn to their mother/mother-in-law for advice on childcare and feeding.

> *"My mother always reminds me to care of the new born child and my wife. She also gives me advice on how the new born and its mother need to eat and she tells me about food taboos. During the first three months the mother should not eat sour food, red tail fish or scaled fish, and fresh vegetables."*
> *(Fathers, Phase one, FGD)*

However, during the IYCF sessions fathers also listened to the trainer because they acknowledged that their advice was useful and important.

4.3.2 Importance of grandmothers in childcare and feeding

Mothers reported that grandmothers play an important role in feeding infants and young children. In the absence of the mother, the grandmother feeds the child, and in some instances the mother prepares the food, so that the grandmother can feed the child, or the grandmother cooks it herself.

> *"My mother is involved in helping me to feed the child. I cook bobor khap krop kroeung for her to feed to my child when I am busy. My mother normally cooks plain porridge to feed her grandchildren."*
> *(Mothers, Phase one, FGD)*

Grandmothers reported that they are involved with caring for and feeding young children (e.g. bathing them before sleep, dressing them, singing them to sleep).

The MALIS project staff also highlighted the significance of grandmothers in the Cambodian society. They confirmed that grandmothers take over the childcare when their daughters/ daughters-in-law are at work and also attended the IYCF sessions on their behalf; this often occurred in OMC, where many women migrate to Thailand for work.

> *"My son and daughter really appreciated when I attended the training. They are happy that I also received knowledge of improved IYCF practices, so that I can take better care of my grandchildren."*
> *(Grandmothers, Phase one, FGD)*

> *"Normally, during the cooking demonstration we cooked bobor khap krop kroeung in groups. After the demonstration, I was about 80 percent sure that I can prepare the bobor khap krop kroeung on my own at home."*
> *(Grandmothers, Phase one, FGD)*

4.3.3 The role of fathers in childcare and feeding

The FGDs showed that fathers of young children supported their wives to participate in the IYCF sessions. However, mothers reported that their husbands only played a minor role in childcare as they occasionally helped with cooking preparation (e.g. washing vegetables), caring for and feeding the child (e.g. bathing and dressing the child). In contrast, the fathers stated that

they played a prominent role in childcare for the first three months after their wives had given birth.

> *"I am involved in child feeding by helping my wife to carry our child around while she cooks."*
> *(Fathers, Phase one, FGD)*

In addition, fathers acknowledged the importance of the grandmothers in caring for and feeding the child as well as the support they gave when the child was sick or when the parents were busy.

4.3.4 Sharing of information and knowledge

Mothers and grandmothers stated that they shared the newly acquired information with each other after one of them attended the IYCF sessions.

> *"Our daughters shared the information with us when they participated in the training, for example topics regarding personal hygiene like washing hands, washing dishes and other kitchen materials. They shared the information when both of us had free time. It usually took approximately half an hour to talk about the sessions. It was not that hard to discuss about it because both of us received training and we were familiar with the lessons"*
> *(Grandmothers, Phase one, FGD)*

They also shared the new information with their neighbours.

> *"I have shared the new information and skills with my neighbours and other mothers who have children. I told them about preparing bobor khap krop kroeung, hygiene, but I don't know if they follow this advice."*
> *(Mothers, Phase two, FGD)*

> *"It is necessary to spread the word about the participatory cooking sessions. We need to feed our children well and we should still do more participatory cooking sessions to show the porridge preparation. It could also be done in a TV show, so that people all over Cambodia can see it and follow."*
> *(Mothers, Phase one, FGD)*

However, some mothers and grandmothers admitted to either minimally or not discussing with each other the topics learned during IYCF sessions.

4.3.5 Acceptance of bobor khap krop kroeung

Most mothers, grandmothers and fathers confirmed that they liked the taste of *bobor khap krop kroeung*.

> *"I tasted the bobor khap krop kroeung during the cooking session. It is so delicious. My child likes the bobor khap krop kroeung so much that she finished the bowl. My child ate only one bowl, but I ate about three bowls."*
> *(Mothers, Phase one, FGD)*

> *"I like the bobor khap krop kroeung recipe with fish and ivy gourd leaves."*
> *(Fathers, Phase one, FGD)*

> *"I used to cook porridge and add salt to feed the child, when we prepare bobor khap krop kroeung we need to add some salt, soy sauce. They often spitted out when it was plain taste as they are used to eat a strong taste before."*
> *(Fathers, Phase one, FGD)*

Concerns were raised by the trainers over some mothers/caregivers adding salt or fish/soy sauce to the *bobor khap krop kroeung* as the child would very likely be consuming too much salt.

Local availability of foods for complementary feeding recipes

Mothers and fathers independently acknowledged that locally available vegetables were used and that the recipes were feasible.

> *"The recipes are easy to follow and fit to our situation as we can find vegetables*

around the house during this season, but the difficulty is having meat."
(Mothers, Phase two, FGD)

Motivating factors to cook *bobor khap krop kroeung*

Mothers/caregivers prepared *bobor khap krop kroeung* because of the following motivating factors, so that the child: (i) became smart; (ii) gained weight; (iii) was sick less often; and (iv) had a healthy looking skin.

"The bobor khap krop kroeung is good for the health of my child; it is now growing well and eats more diverse foods."
(Mothers, Phase two, FGD)

"After providing the bobor khap krop kroeung to my grandchild, it seems that it doesn't get sick as frequently as before. In previous times, we normally had to go to the health centre in order to get the child treated. However, now my grandchild is healthier."
(Grandmothers, Phase one, FGD)

4.3.6 Barriers to improved child feeding

The child is perceived to be "too old" or "too big" for complementary food

In FGDs, mothers, fathers and grandmothers explained that when children were perceived as "too old" or "too big" to eat complementary foods, they were no longer fed *bobor khap krop kroeung*, but instead given family food. MALIS project monitoring data indicated that children aged 12 months or even earlier were perceived as "too old" for *bobor khap krop kroeung*.

Feeding age-appropriate quantities of bobor khap krop kroeung

Mothers and fathers gave reasons why the child would not finish the *bobor khap krop kroeung*, such as when the child ate other snacks beforehand and when the child was not well. However, it remained to be clarified whether the portion size was appropriate for the age of the child or if the mother/caregiver simply offered too much food per serving.

Financial constraints

Some households faced financial constraints in buying the ingredients needed for *bobor khap krop kroeung*, particularly, the animal-source foods, such as meat and fish. "Not having money to buy food" was mentioned as an obstacle by mothers, fathers and grandmothers as well as CNPs, NGO and government staff.

"We actually face financial problems in our family. If we would have money, we would buy good and nutritious food. But sometimes, if we do not have money, we eat whatever is available. In the rural area, it is not hard to find the vegetables to prepare bobor khap krop kroeung. It is only hard to find the meat."
(Grandmothers, Phase one, FGD)

Household poverty also impacts on childcare as mothers often have to leave their young children with the grandmothers in order to generate income for the family, and many young women migrate to Thailand or to the capital city, Phnom Penh.

"For poor families, although the mothers participate in the nutrition education activities, they never get the chance to actually take care of their children. They normally leave the children with the grandmothers. Grandmothers normally follow the traditional ways of feeding children. They are not aware of bobor khap krop kroeung unless they get the chance to join the IYCF group as well."
(Malteser International staff, Interviews)

Time constraints and workload

A frequently mentioned barrier to preparing *bobor khap krop kroeung* was not having enough time. Mothers/caregivers admitted to giving their

young children complementary food from family food, family food only or pure rice. One mother stated that cooking complementary food from family food took approximately 15 minutes and cooking *bobor khap krop kroeung* took approximately 20 minutes or longer.

> *"The benefit of attending the training session is that I gain knowledge and new experiences. However, I can only practice 50 percent of what we are recommended to do because I am busy with farming and work."*
> *(Mother, Phase one, FGD)*

> *"My wife prepares bobor khap krop kroeung once every three days; because we have no time and we don't have food available and money, which we need to buy fish and meat. Sometimes we need to rush to work on the rice field. We only cook when we have free time."*
> *(Fathers, Phase one, FGD)*

Attitudes of mothers/caregivers – "too lazy to cook bobor khap krop kroeung"

CNPs felt that some mothers had not adopted the new practices due to laziness. This was corroborated by Malteser International staff, who reported that when mothers/caregivers were asked to explain why they did not cook *bobor khap krop kroeung*, they initially claimed having insufficient resources to do so. However, when the NGO staff pointed out the different vegetables growing around the houses, which could be used to prepare *bobor khap krop kroeung*, the mothers/caregivers admitted being too lazy to cook it.

Some caregivers stated that they only cooked family food for their young children; particularly as complementary food was easier to prepare from family food.

> *"My child is getting bored with the bobor khap krop kroeung; it also likes the family food. It is easier for me to prepare the food for the whole family."*
> *(Mothers, Phase one, FGD)*

> *"We only cook the normal family food, so we just mix clear soup with rice to feed the child. There are also no measurements when making family food for the child."*
> *(Fathers, Phase one, FGD)*

Mothers/caregivers use "sprinkles" (micronutrient powder)

The Cambodia National Nutrition Programme developed a policy on micronutrient powder (MNP) use, and PHDs are responsible for implementing and monitoring MNP home fortification. The Operational Districts request MNP supplements and coordinate with health centre staff responsible for conducting MNP activities in their respective catchment areas. Village health support groups provide assistance to district health centre staff for MNP programme activities at the community level, which includes tracking the number of children aged 0–59 months in their village (using a registration book developed by the National Nutrition Programme), recruiting and enrolling eligible children, providing counselling on IYCF practices (including the use of MNP), mobilizing communities to attend outreach activities, and distributing MNP to caregivers of children aged 6–23 months, who do not receive them through district health centre distribution channels.

Village health support groups received their supplies of MNP at bi-monthly district health centre meetings, which supported the monthly distribution to caregivers, and NGOs provided training to the village health support groups on MNP distribution, data collection and monitoring. Nearly all the MALIS project CNPs were members of village health support groups and they confirmed that MNP reached the project beneficiaries.[25]

[25] MALIS CNPs were not given MNP by the project, but there was a government MNP distribution in place. In September 2014, the IMCF project impact survey census data for the intervention group reported that only 9.5 percent (N=653) of MALIS beneficiaries used MNP during the previous day; however, 20.7 percent (N=653) stated to have MNP sachets stored in their household.

"Yes, I am using sprinkles. They have to be mixed with food. We get them from the village health support groups and the village health support groups get them from the health centres. I got 15 packs of sprinkles per month and I used one pack for two days or one pack per day. We can use them at any time like we want."
(Mothers, Phase two, FGD)

Mothers, fathers and grandmothers were aware of different issues related to MNP use, such as the health benefits, the frequency and avoidance of use on very hot food. However, there was confusion over MNP use with *bobor khap krop kroeung*, which was stipulated in government guidelines. Some mothers/ caregivers stated that they only put MNP on pure rice or complementary food made from family food, which they considered to be less nutritious than *bobor khap krop kroeung*.

"I mix the sprinkles with plain porridge and salt or with food from family; I let the food cool down before I mix it with the sprinkles. I don't mix with bobor khap krop kroeung. We were told for when we open the package we need to finish that package. Otherwise, it will be spoilt if we let the pack open for long time."
(Mothers, Phase two, FGD)

4.3.7 Change of behaviour - cooking and feeding *bobor khap krop kroeung*

Despite mothers/caregivers facing so many barriers to adopting improved child feeding practices, some behaviour change did occur, although the evidence is based on reported behaviour of mothers/caregivers. MALIS and NGO staff, who conducted regular monitoring, were not able to observe the new child feeding behaviour as their visits did not coincide with mothers/caregivers cooking food. However, they did see leftovers in the kitchen, and were able to check on improved hygiene behaviour and observe the home environment.

4.3.8 Responsive feeding – looking into the child's eyes

According to the World Health Organization (WHO),[26] complementary foods should be given in an appropriate way, such that foods of an age-appropriate texture are given to the child in a responsive manner following the principles of psycho-social care.

Responsive feeding or active feeding as it is called in Cambodia has not been commonly practiced in the MALIS target areas. However, during the course of IYCF sessions, the importance of responsive feeding was underscored and it was explained to mothers/caregivers that they needed to look into their children's eyes and encourage them to eat. This was corroborated in FGDs and interviews, when caregivers stated that they learned about responsive feeding from the trainers.

"[The CNP] advised us that while we are nursing our babies, we need to look into the children's eyes. We learned how we should play with our children to develop a good relationship and we learned about responsive feeding."
(Mothers, Phase one, FGD)

However, CNPs reported observing mothers/ caregivers not taking the time to feed the child in a responsive manner.

"It seems that some children do like bobor khap krop kroeung; however, the mothers do not take the time or they do not know how to feed their child properly."
(CNPs, FGD)

[26] Based on WHO. 2003. *Guiding principles for complementary feeding of the breastfed child* (available at www.who.int/maternal_child_adolescent/documents/a85622/en/).

4.3.9 Feeding snacks – fruits vs. biscuits

Feeding nutritious or healthy snacks to young children was promoted with mothers/ caregivers during the IYCF sessions. Mothers/caregivers reported that because of what they learned in the IYCF sessions, they bought the following fruit and vegetables – musk melon, pineapple, ripe banana, papaya, boiled sweet potato and pumpkin – and fed them to their young children as healthy snacks. However, they also admitted to occasionally buying homemade desserts (e.g. sticky rice with banana, cake and biscuits) for their young children.

Trainers did not always provide nutritious snacks during breaks. This may have occurred due to convenience as the Cambodian local snacks (e.g. fried banana, sweets with coconut milk) are available in the villages, whereas fruit may have only been available in larger markets. Concerns were expressed by another NGO working in the area that caregivers continued to provide unhealthy snacks for their children.

> *"There is also a concern that most of the mothers might not apply the knowledge they received in the IYCF sessions in real life. They might still provide unhealthy food and snacks to their children."*
> *(World Vision Cambodia staff, Interview)*

Nevertheless, mothers/caregivers would not give biscuits or cake to a sick child because they knew that they do not provide any nutrients. They also stated that diarrhoea in children can be caused by cake and desserts sold by vendors as well as by spicy and sour foods, chilli and young mango.

4.3.10 Hygiene practices at home

Lessons on improved hygiene practices were incorporated into the IYCF sessions. Some mothers stated that they frequently washed their hands with soap and kept their house and surroundings clean, and this was confirmed by grandmothers.

> *"After my daughter got the training, I could see some changes in her house with regard to hygiene. She cleaned the dishes, pots and other kitchen stuff regularly. It seemed that her child was strong to fight diseases. She also learned how often she should wash her hands. Previously, she rarely washed her hands; however, after the training, my daughter knew that she should wash her hands before cooking and before feeding the baby."*
> *(Grandmothers, Phase one, FGD)*

Nevertheless, some caregivers still practiced unhygienic behaviour**.**

> *"I wash my hands sometimes with soap and sometimes without soap."*
> *(Fathers, Phase one, FGD)*

> *"Sometimes I need to drink unclean water as I have no time to boil it, so I just drink directly from the jar."*
> *(Fathers, Phase one, FGD)*

4.4 Monitoring and evaluation

4.4.1 Phase one

During the TIPs process in the EU Food Facility project, it was established that being supported in the home environment motivated the mothers to change their behaviour. Hence, for monitoring purposes in Phase one, CNPs were instructed to regularly visit the mothers at their home. During these visits, the CNP interviewed the mother/ caregiver and the rest of the family about the improved hygiene and feeding practices, checked the kitchen and home environment for cleanliness, and observed whether *bobor khap krop kroeung* leftovers were in the house. These activities were well received by the mothers/ caregivers.

> *"The CNP visited our home about two times. She was checking my kitchen, cooking area and how we clean materials. She always talked with me about child feeding and asked me if the*

child ate porridge or not because she was afraid that I don't remember the ingredients. She also asked about our home garden."
(Mothers, Phase one, FGD)

However, some fathers complained that the CNP never visited their house or the grandmother's house. One reason could have been the distance between the CNP's house and the caregiver's house; particularly as some villages were spread out over a large area.

Home visits were sometimes conducted by CNPs as well as by Malteser International and Farmer Livelihood Development staff. However, feedback from mothers/caregivers indicated that they appreciated the opportunity of discussing challenges with improved IYCF practices, and the need to collect more in-depth monitoring data on behaviour change of mothers/caregivers led to home visits being intensified during Phase two.

4.4.2 Phase two

During Phase two, regular monitoring was undertaken by the NGO partners as well as by the MALIS nutrition team. Twice weekly, project staff visited the different training locations in OMC and PVR Provinces considered to be challenging, as some villages were quite remote from the Siem Reap project office (34 hours away).

The home visits were strengthened and a new monitoring form was introduced. Also, in September 2014, on-the-job training was carried out by MALIS staff for the six Malteser International and Farmer Livelihood Development trainers. Although a lot of monitoring data was collected by the NGO staff, negligible data was collected on actual observed behaviour change.

Since the CNP's role was reduced to assisting the main trainer (NGO staff), they were not involved with collecting monitoring data during home visits. Instead, they were responsible for keeping attendance records, organizing the participatory cooking sessions (i.e. cooking equipment and ingredients) and assisting with the preparation of IEC materials for the IYCF sessions.

4.5 Coordination across sectors and partners

4.5.1 Coordination in the nutrition/ health sector

National level

The MoH in Cambodia works within operational and administrative districts. One health centre serves one operational district, which can contain up to five administrative districts. This creates challenges for coordination of the MoH with NGOs as well as among NGOs, as there are many NGOs working in the same districts with similar objectives. Most NGOs seek coordination and collaboration with the MoH and PHD, but some by-pass the government system and this can lead to confusion at the ground level.

"NGOs should be in-line with the government. They should reduce the coverage, but have complete implementation. However, the government should have ownership of these programmes. But because the government has not enough funds, it is relying on NGOs' assistance to implement programmes to improve the nutritional status of the children."
(National Nutrition Programme staff, Interview)

Provincial level

NGOs working in health-related areas are coordinated by the PHD. Provincial Technical Working Groups on Health (Pro-TWGH) were in place in MALIS target provinces and monthly meetings were held to discuss coordination issues between government and NGO partners.

In OMC Province, there were four other NGOs concurrently implementing nutrition activities in addition to the MALIS project. Malteser International, the nutrition implementing partner of the MALIS project, and Rural Community Environment Development Organization also had maternal and child health programmes in non-MALIS districts, Khmer Buddhist Association

worked on general nutrition and Medical Team International focused on health-related issues in the same districts and communes as Malteser International; hence they had to divide up villages in the same communes in order to avoid an overlap of similar activities.

In PVR Province, World Vision Cambodia and Farmer Livelihood Development, the nutrition implementing partner of the MALIS project, collaborated on a livelihood development programme, which focused on livelihoods and basic primary health care. Although some of the districts overlapped between Farmer Livelihood Development (for the MALIS-related activities) and World Vision Cambodia, the activities were of a different nature.

4.5.2 Coordination in the agriculture sector at provincial level

Provincial coordination meetings were called by the PDA and served as a forum for coordinating activities of different stakeholders. The meetings aimed to develop work plans, solve problems, share progress and give useful feedback as well as provide a forum to discuss overlap of activities between NGOs running similar projects.

One PDA reported several coordination issues, which included: NGOs providing different Daily Subsistence Allowance (DSA) rates, budgets for accommodation and training fees. The PDA explained that government staff still received their monthly government salary and were also paid by NGOs for the days worked for them. The PDA also stated that NGOs normally consulted with him before they implemented a project, such as when they selected the village or commune to start their activities.


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5 Lessons learned

This section provides details of the key lessons learned, which focus on challenges and successes of the MALIS project. Challenges include: linking nutrition education and agriculture; capacity and motivation of trainers; implementation; and supervision and reporting. Successes include: the 7-day free *bobor khap krop kroeung* distribution; nutrition education in farmer field schools, farmer field days and agricultural fairs; government role in capacity building; and implementation.

5.1 Challenges

5.1.1 Linking nutrition education and agriculture in the MALIS project

To enhance synergies between the agriculture and nutrition education activities, recruitment of mothers/caregivers was prioritized from farmer field schools and agricultural community-based organizations. However, in practice, there were not as many female farmers as initially anticipated, who participated in the farmer field schools with a child in the target age group of 5–18 months (on recruitment). Therefore, other mothers/caregivers, who were not necessarily taking part in any MALIS agricultural activities were invited to participate in the IYCF sessions. Additionally, in Phase two, during the second round of IYCF sessions, which took place in the same villages as Phase one, pregnant women and women of reproductive age were invited to participate because there were insufficient women with young children, who had not previously participated in the IYCF sessions to form an IYCF group.

In September 2014, the IMCF project found that 35 percent of households interviewed had participated in both farmer field schools and IYCF sessions; while 38 percent of households that participated in IYCF sessions had also received agricultural inputs and training, indicating that integration between these activities was weaker than anticipated.

As far as the timing of the interventions was concerned, the MALIS farmer field school team suggested that the agriculture/food security activities should be implemented one year ahead of the nutrition education component, so that the food (vegetables) grown in the project was available to families once the IYCF sessions commenced.

5.1.2 Capacity and motivation of trainers

In Cambodia, there is a lack of capacity in nutrition and nutrition education, and this was corroborated in a knowledge, attitudes and practices (KAP) survey conducted by the MALIS project. Results confirmed that CNPs had low facilitation skills, and lacked the knowledge and confidence, which are necessary to effectively run IYCF sessions with mothers/caregivers. Government (PHD, PDoWA, district health

centres) and NGO staff had some previous knowledge in nutrition, and increased their knowledge on specific topics related to improved IYCF practices due to the training of trainers, but were found in general to have rather low capacity in nutrition and nutrition education approaches.

Motivating volunteers required incentives

As there is no nationwide system for non-health related social services, other line ministries and NGOs also rely on the support of the village health support groups (CNPs) to reach households. However, community volunteers in Cambodia do not receive any government remuneration and to compensate them for their services, it is expected that an implementing agency (UN or NGO) provides an incentive, mostly in cash.

During the design phase, the FAO backstopping nutrition team argued that paying volunteers was not a sustainable development approach, but without this incentive the CNPs would not have taken on any work. Hence, in Phase one of the MALIS project, CNPs received US$2.50 for half a day's work, which was considered appropriate, and they also received stationery and T-shirts with logos from the PHD. In Phase two, when CNPs became assistants instead of trainers, Malteser International changed their approach and gave in-kind donations to the CNPs instead of money; however, Farmer Livelihood Development continued to give them money.

In addition, the Commune Focal Points for Women and Children and district health centre staff received a per diem for their work in the project as they would not otherwise have participated in the IYCF sessions. Hence, there is a need to strengthen the government extension system and to find long-term solutions to support the community and the community workers, who are themselves often coming from poor families.

5.1.3 Implementation

Several challenges were identified during the process review with regard to implementation of the nutrition education activities and the agriculture/food security interventions; however, only the key challenges are highlighted below.

Recruitment of men, particularly fathers: The nutrition education intervention aimed to include the fathers of young children in IYCF sessions and farmer field school nutrition education sessions, so that they could also learn about the importance of good nutrition for the health of their children as well as for the whole family. However, the main caregivers in Cambodia are mothers and grandmothers, and men only take a minor role in preparing food, feeding and caring for children. In addition, many men migrate to other parts of the provinces for labour (e.g. forests in PVR Province) or work in the capital city, Phnom Penh, and are simply not physically around. Nevertheless, at a later stage of the MALIS project, when PDoWA staff reinforced gender mainstreaming lessons in the IYCF groups, more men showed up and participated for the full IYCF session.

Recipes: Trainers and mothers/caregivers had difficulty in understanding how to prepare age-appropriate quantities of *bobor khap krop kroeung* using different measurements of ingredients to make one-half, three-quarters and one full bowl.

Agriculture/nutrition education interventions: The MALIS team faced technical and logistical issues related to agricultural production and nutrition, and their effective integration. Requirements for training of trainers on nutrition and communication before and during implementation were extensive and could only be met through repeated refresher trainings. Also, the home environments for caregivers, given women's multiple responsibilities and time constraints, were sometimes not supportive for nutrition behaviour change. In addition, agricultural inputs and food security support to enable households to improve and diversify agricultural production were not effectively targeted at households with young children, thus compromising their capacities to diversify incomes and improve family diets.

Farmer field school team: Many of the facilitators were uncertain of how to conduct

farmer field school nutrition education sessions, and needed more training and support from PDoWA staff to integrate the nutrition modules. Hence, the effectiveness of farmer field schools as an entry point for nutrition education was limited by the capacity of facilitators and level of backstopping.

The challenges faced in linking agriculture and nutrition education clearly indicate the importance of nutrition-sensitive project design and planning, and highlight the need for prior needs assessment, strategic targeting and ongoing capacity development of ministry staff and CNPs to enhance nutrition benefits for households with young children.

5.1.4 Supervision and reporting

Coordination of supervisors: In Phase one, IYCF sessions were often attended by multiple levels of staff (PHD, PDoWA, district health centres, NGOs, FAO, CNPs). In Phase two, NGO staff conducted the IYCF sessions, the supervisory role of PHD, PDOWA and district health centre staff was reduced, and CNPs mobilized mothers/ caregivers with children in the appropriate age range and assisted the trainer during IYCF sessions.

Reporting: In Phase one, there was an over-emphasis on reporting of activities and inputs by NGO implementing partners. In Phase two, reporting on behaviour change improved through strengthened monitoring (e.g. home visits, case study).

5.2 Successes

5.2.5 7-day free *bobor khap krop kroeung* distribution

Mothers/caregivers could see improvements in their child's health after they consumed *bobor khap krop kroeung* three times each day for seven days.

> *"Some mothers adopt the IYCF practices - especially by preparing bobor khap krop kroeung for their children - because they understand the significance of bobor khap krop kroeung for their child's health. For example, during the 7-day campaign (free distribution of bobor khap krop kroeung), the mothers saw the significant change in their child's growth. Therefore, some mothers keep preparing bobor khap krop kroeung for their children."*
> *(CNPs, FGD)*

5.2.6 Nutrition education in farmer field schools, farmer field days and agricultural fairs

Nutrition modules integrated into farmer field schools: Three modules were incorporated into Phase two farmer field schools to promote awareness of the nutritional value of different food sources, and to encourage home gardening as a means of diversifying the diet and supplying essential vitamins and micronutrients.

Nutrition integrated into agricultural fairs and farmer field days: Nutrition NGO implementing partners organized different nutrition education activities to promote a wider awareness of *bobor khap krop kroeung* and key nutrition messages among the target communities.

5.2.7 Government role in capacity building

Good cooperation with the government in their capacity building role: Master trainers from the National Nutrition Programme conducted training of trainers with staff of PHD, PDoWA, district health centres and NGO partners, who then trained CNPs.

Capacity building in nutrition of government and NGO staff: During the project, a number of different types of nutrition training sessions were conducted: training of trainers; training of CNPs (village health support groups); refresher training; on-the-job training during monitoring visits; training on nutrition modules for farmer field school facilitators; and training on KAP.

5.2.8 Implementation

Practical learning environment: The four participatory cooking sessions increased mothers'/caregivers' skills and confidence to prepare *bobor khap krop kroeung* at home.

> *"After the cooking demonstration, I have confidence in preparing bobor khap krop kroeung and I remember the ingredients."*
> *(Mothers, Phase one, FGD)*

Participation of grandmothers: In the Cambodian society, grandmothers play an important role in caring for and feeding young children; particularly when the mother is at work. Hence, grandmothers were invited to participate in IYCF sessions and this increased their advocacy for improved childcare and feeding practices.

Provision of cooking equipment: Caregivers, who participated in the IYCF sessions, were provided with a water container, plastic dipper, plastic food cover and food cover net, kettle, pot, hand soap and fuel-efficient stove, which enabled them to put knowledge and skills into practice at home.


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6 Conclusions

This section draws conclusions at the national and provincial government levels as well as the community level.

6.1 National and provincial government levels

Cooperation with government: The degree that NGOs coordinate with the government and with other NGOs is variable, with some by-passing the government system altogether, indicating a need for greater coordination and cooperation. This has resulted in NGOs not always using government IEC materials.

Existing extension systems: Within the existing government infrastructure, there is no agriculture extension system with potential agents for dietary diversification. However, within the health sector, the community health volunteers (village health support groups) are being used by different ministries and NGOs, but are unpaid (apart from DSA and incentives).

Targeting mothers/caregivers with young children: Currently, agriculture/food security interventions do not specifically target mothers/ caregivers with children in the complementary feeding age group (6–23 months), although MALIS was an exception.

Nutrition capacity: The overall capacity of government staff in nutrition and nutrition education is low and needs to be strengthened to address and prevent nutrition problems, rather than focusing on treatment alone.

6.2 Community level

Complementary feeding knowledge levels: Mothers/caregivers lack knowledge of good complementary feeding and follow traditional childcare and feeding practices.

Heavy workloads: Particularly in rural areas, women face heavy workloads and consequently have time constraints to care for the child, especially if their family is very poor, and mothers leave the child with the grandmother in order to go to work.

Hygiene and sanitation: There are links between stunting and lack of hygiene. Hence, hygiene and sanitation issues need to be addressed.

Gender: In rural communities, traditional gender roles are often entrenched and can prevent social change. Hence, mothers are not able to share their new knowledge and skills with grandmothers, and fathers still perceive that it is not their role, but that of the mother to take care of their child.


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7 Way forward

This section highlights a number of issues, which need to be addressed for effective linking of agriculture and nutrition education to improve the nutrition outcomes of young children and their families.

Cooperation and coordination: There is a need for NGOs, government (provincial, district, commune and village level) and village health support groups (of the national healthcare system) to better cooperate to prevent overlap and encourage collaboration. In addition, it is important for cross-sectoral coordination as no sector is more important than another, but the sectors of agriculture, health, education and social protection are important for nutrition.

Capacity building in nutrition/nutrition education: Training on nutrition is needed at all government levels (national, sub-national, provincial, district, commune and village). In addition, there is a need to incorporate nutrition education into school curricula and deepen nutrition science education at tertiary levels.

Extension system: It is important to empower the communes (through decentralization) and strengthen the extension system; particularly by providing pre-service training in nutrition and facilitation skills for staff in the agriculture and health sectors at all levels (national, sub-national, provincial, district, commune and village levels).

Infrastructure and market expansion: There is a need to improve rural infrastructure, support mechanization, which is advancing rapidly (because of the scarcity of rural labour), and encourage innovation. In addition, it is important to strengthen agricultural cooperatives, which can serve as drivers of change and to expand market linkages.

Gender: Nutrition-sensitive agriculture programmes need to empower women, so that their roles are changed, and to provide nutrition education to all family members and generations, who are involved in childcare and feeding. Measures to reduce women's workload are paramount, possibly to be considered alongside the establishment of childcare facilities, to reduce women's work burden and ensure proper childcare and feeding.

Monitoring and evaluation: It is important for implementers to undertake monitoring to generate evidence on the activities that work; particularly with regard to showing that mothers/ caregivers apply knowledge on improved child feeding into their daily practice.

Scaling-up and sustainability: The MALIS project invested some support to other projects, so that a number of development partners can carry the activities forward. In terms of sustainability of the IYCF trainings, the Commune Council for Women and Children are agents of change in the commune and could be agents of change for nutrition. MALIS only reached a few villages in each commune and a comprehensive effort is needed to reach every village or the results will

not show. In addition, development partners will have free access to the IEC material, and lessons learned will be widely shared on integration of nutrition education in farmer field schools, farmer field days and agricultural fairs.

Investing in nutrition: There is a need for the government to allocate funding for nutrition interventions, and to ensure effective monitoring and evaluation.

Annex 1. Process review participants

Name	**Position**	**Organization**	**Province**
Theresa JEREMIAS	Associate Nutrition Officer	FAO	PP[27]
Iean RUSSELL	MALIS Project Manager	FAO	SRP
CHEA Chanthan	MALIS M&E Officer	FAO	SRP
KHORN Sdok	MALIS Training Advisor	FAO	SRP
KAING Chanlen	MALIS Agribusiness Specialist	FAO	SRP
DOUNG Chansereivisal	MALIS Post-Harvest/Agribusiness Specialist	FAO	SRP
PHORN Yoeum	MALIS Household Food Security and Nutrition Assistant	FAO	SRP
THOANG Sokha	MALIS Nutrition Assistant	FAO	SRP
OY Sreymom	MALIS Nutrition Research Assistant	FAO	SRP
Tyler WHITLEY	MALIS Intern	FAO	SRP
KIMSONG Tek	MALIS Provincial Advisor	FAO	OMC
VANN Kimsan	MALIS Agronomy Specialist	FAO	OMC
DUK Seyha	MALIS Livestock Specialist	FAO	OMC
KHIM Charya	MALIS Provincial Advisor	FAO	PVR
PEL Chivita	MALIS Agronomy Specialist	FAO	PVR
Anika REINBOTT	IMCF PhD Student	JLU	SRP
THAN Rathany	IMCF Nutrition Research Assistant	JLU	SRP
CHEA Mary	National Nutrition Programme Deputy Manager	MoH	PP
PEOUNG Tryda	Provincial Director of Agriculture	PDA	PVR
BO Rithy	Farmer Field School Trainer	PDA	OMC
Susan NOVAK	Director of Social Inclusion and Capacity Development	Cambodia HARVEST	PP
HOUN Ravy	Technical Nutrition Officer	World Vision Cambodia	PVR
LY Koung Ry	(former MALIS National Nutrition Officer) Nutritionist	Foundation for International Development/Relief	PP
ROEUN Sopheap	Project Manager	Medical Team International	OMC
Petra VERMEULEN	Project Manager	Malteser International	OMC
MAO Sarith	Project Manager of Maternal and Child Health Nutrition	Malteser International	OMC
LAO Thoeung	Food Security Project Manager	Malteser International	OMC
SO Vath	Trainer / Midwife Coach	Malteser International	OMC
KHOUN Chanthan	CNP	Malteser International	OMC
MAM Thang	CNP	Malteser International	OMC
THAI Ham	CNP	Malteser International	OMC
VIN Srei Gnagn	CNP	Malteser International	OMC
OUCH Chanthan	CNP	Farmer Livelihood Development	PVR
PHON Bo Ravy	Community Trainer	Rural Community and Environment Development Organization	OMC

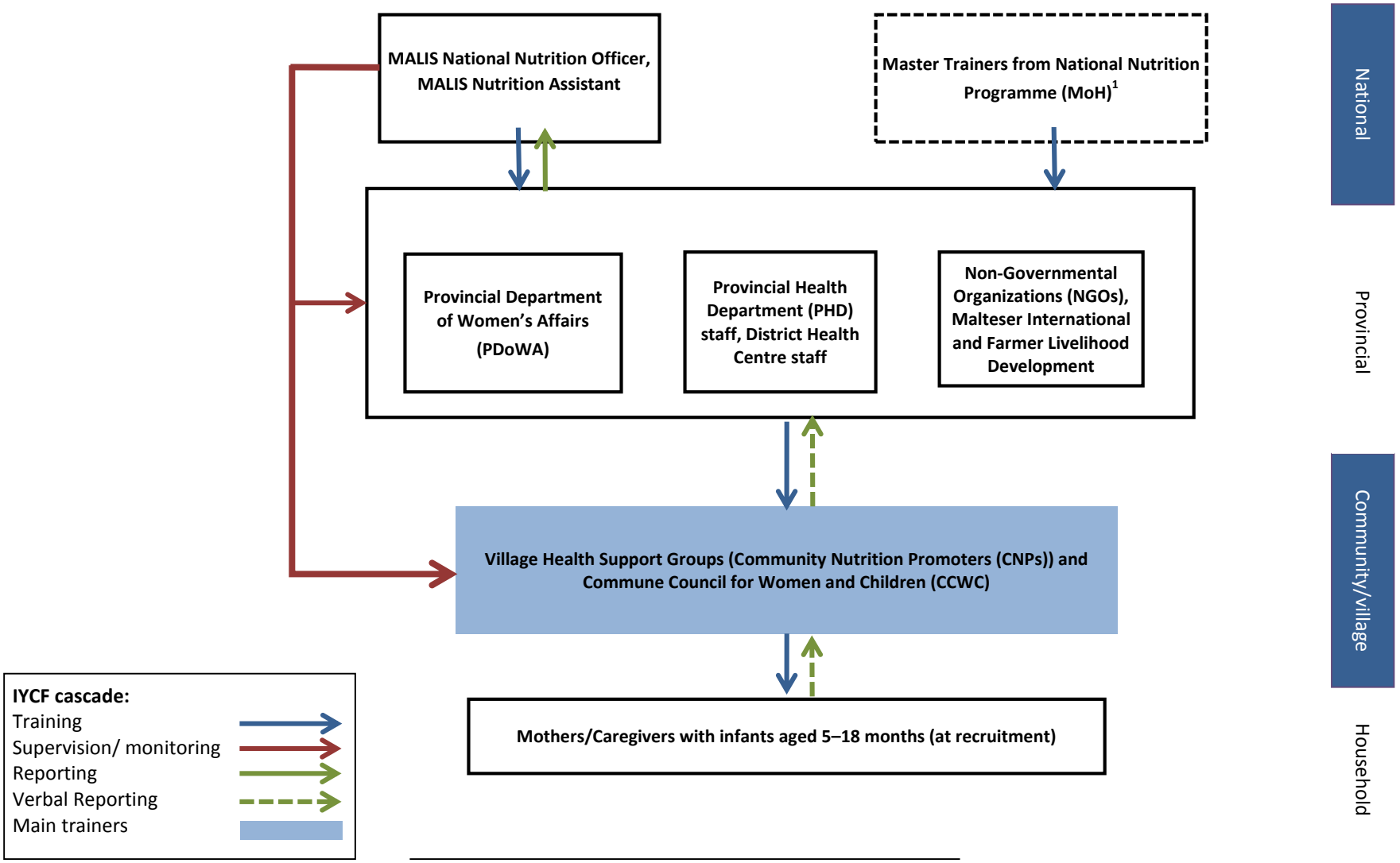
[27] PP: Phnom Penh

Annex 2. Overview of data collection schedule

Date	Activity	Participants	Province
1 July 2014	Interview	MALIS Agribusiness team: MALIS M&E Officer; MALIS Training Advisor	SRP
1 July 2014	Interview	MALIS FFS team: MALIS Agribusiness Specialist; MALIS Post-Harvest/Agribusiness Specialist	SRP
2 July 2014	Interview	Malteser International Project Manager; Malteser International Project Manager of Maternal and Child Health Nutrition	OMC
3 July 2014	Interview	MALIS Project Manager	SRP
5 July 2014	Interview	MALIS Nutrition Assistant	SRP
7 July 2014	FGD	Malteser International Trainers	OMC
7 July 2014	FGD	Mothers Phase one	OMC
8 July 2014	Interview	Provincial Director of Agriculture	PVR
9 July 2014	FGD	CNPs	PVR
9 July 2014	FGD	Mothers Phase one (unsuccessful village)*	PVR
15 July 2014	Interview	National Nutrition Programme Deputy Manager	PP
15 July 2014	FGD	Grandmothers Phase one	OMC
16 July 2014	FGD	Mothers Phase two	OMC
17 July 2014	MALIS workshop: Agriculture - nutrition linkages	MALIS technical staff; MALIS Intern; IMCF PhD Student; IMCF Nutrition Research Assistant	SRP
18 July 2014	Interview	MALIS Provincial Advisor PVR	SRP
18 July 2014	Interview	MALIS Household Food Security and Nutrition Assistant	SRP
21 July 2014	Interview	Medical Team International Project Manager	OMC
21 July 2014	Interview	MALIS Provincial Advisor OMC	OMC
21 July 2014	FGD	Fathers Phase one	OMC
21 July 2014	HH interview	Mothers Phase one	OMC
22 July 2014	HH interview	Mothers Phase one	OMC
23 July 2014	HH Interview	Mothers Phase one	PVR
28 July 2014	Interview	World Vision Technical Nutrition Officer	PVR
1 August 2014	Interview	former MALIS National Nutrition Officer	E-mail

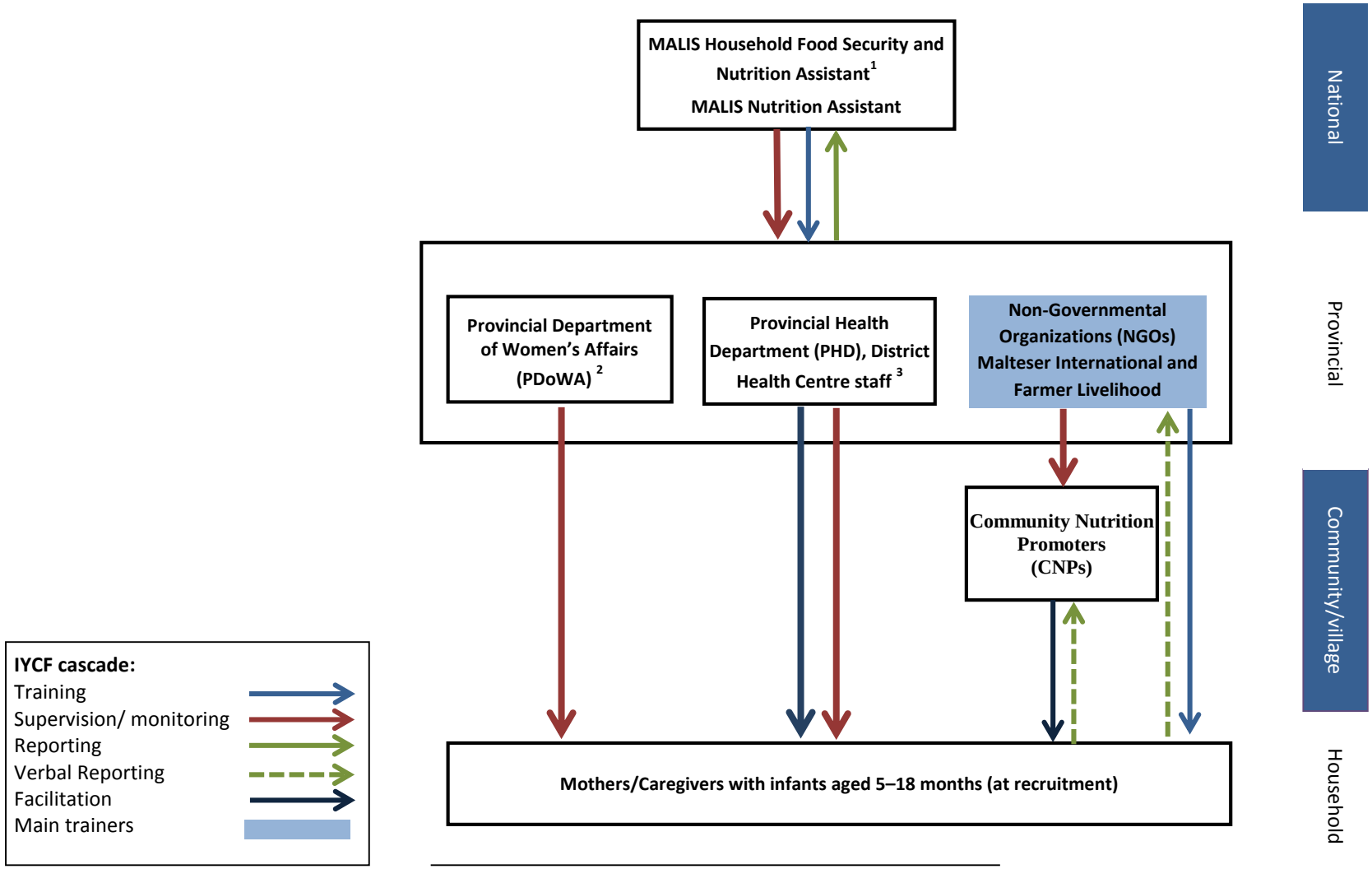
Note: A village was considered "unsuccessful" if the IYCF care group had not completed all seven IYCF sessions.

Annex 3. IYCF nutrition education intervention training cascade 2013



[1] 5-day training at the start of the project

Annex 4. IYCF nutrition education intervention training cascade 2014



[1] MALIS National Nutrition Officer in 2013

[2] Gender mainstreaming

[3] Health education

Annex 5. Overview of IYCF sessions

Session 1

1. **Lesson 1**: Introduction and importance of infant and young child feeding
2. **Lesson 2:** Continuing breastfeeding
3. **Lesson 3:** Food for a mother who breastfeeds
4. **Lesson 4:** Food diversity, three food groups

Session 2

1. **Lesson 5**: Hygienic preparation of foods
2. **Lesson 6:** Washing hands with clean water and soap
3. **Lesson 7**: Preparing complementary foods for infants – Part 1
4. **Lesson 8:** Preparing complementary foods for infants – Part 2

Session 3

1. **Lesson 9:** Snacks
2. **Lesson 10**: Age-appropriate complementary foods
3. **Lesson 11**: Active complementary feeding

Cooking demonstration 1:
Rice with fish and moringa leaves porridge

Session 4

Participatory cooking session 2:
Sweet potato with peanuts and amaranth porridge; Taro with eggs and spinach porridge

Session 5

Participatory cooking session 3:
Rice with pork liver and ivy gourd leaves porridge; Rice with chicken and morning glory porridge

Session 6

1. **Lesson 12:** Feeding a sick child
2. **Lesson 13:** Complementary foods from family foods

Participatory cooking session 4:
Steam rice with fish and mixed vegetables soup

Session 7

1. **Lesson 14:** Review of key messages
2. **Lesson 15:** Graduation