Mothers' perceptions of healthy feeding practices for children under the age of five years in Cambodia

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A thesis submitted to
Auckland University of Technology
in partial fulfilment of the requirements for the degree of
Master of Public Health (MPH)

2022

School of Public Health and Interdisciplinary Studies

Abstract

Undernutrition among children under the age of five years (under-5s) remains a significant public health issue in developing countries, including Cambodia. Poverty, food insecurity, low levels of maternal education, poor hygiene and sanitation, and poor feeding practices influence children's nutritional status. In many cultures, mothers are primary caregivers, hence maternal feeding is critical to the nutritional status of infants and young children.

This study aimed to explore mothers' feeding practices for their infants and young children, their understanding and perceptions of the recommended healthy feeding practices promoted by the Cambodian Ministry of Health, and the challenges they faced in adopting that recommendation and the support needed.

An exploratory qualitative approach was employed using semi-structured interviews with 13 purposely selected mothers to gain an in-depth understanding of the participants' feeding practices. Subsequent semi-structured interviews with two deputy village chiefs and one midwife (MCH supporters) were conducted to share the recommendations proposed by mother participants and obtain feedback on the challenges faced and actions needed to implement those recommendations. Thematic analysis was used to analyse the findings.

Key findings highlight that mothers' knowledge and practices on child feeding were influenced by their individual circumstances, family support, cultural gender norms, and available community-based support. The mothers and the community MCH supporters agreed on the importance of creating an enabling environment to support the healthy feeding practices recommended by the participants which were to (1) enhance existing community-based programmes, (2) build on mothers' capabilities and resourcefulness, and (3) creatively utilise existing social media channels. An enabling environment needs to focus on local wisdom and knowledge, socio-cultural norms, and women's social-cultural contexts. Future research could examine the best practices in healthy feeding programmes and the roles of the family meal and household food security in child-feeding practices.

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List of Abbreviations

ANC	Ante-natal care
CARD	Council for Agricultural and Rural Development
CF	Consent form
COMBI	Communication for Behavioural Impact
DHS	Demographic and Health Survey
EBF	Exclusive breastfeeding
FAO	Food and Agriculture Organization of the United Nations
FSN	Food security and nutrition
HR	Human resources
ICN2	Second International Conference on Nutrition
IYCF	Infant and young child feeding
MCH	Maternal and child health
MNP	Multiple micronutrient powders
MSG	Monosodium glutamate
NGO	Non-governmental organisation
NNP	National Nutrition Programme
NSFSN	National Strategy for Food Security and Nutrition
P/MWG	Provincial/Municipal Working Groups
PIS	Participant Information Sheet
PSI	Population Services International
RGC	Royal Government of Cambodia
SDGs	Sustainable Development Goals
TWGFSN	Technical Working Group for Food Security and Nutrition
TWGs	Technical Working Groups
UN	United Nations
under-2s	Children under the age of two years
under-5s	Children under the age of five years
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organization

Glossary

Appropriate complementary feeding: The Cambodian National Nutrition Programme (Cambodian NNP) (2008) defined this term as follows:

- **Timely** – meaning that complementary foods are introduced at six months of age when the child's need for energy and nutrients exceeds what can be provided through exclusive and frequent breastfeeding;
- **Adequate** – meaning that complementary foods provide sufficient energy, protein, and micronutrients to meet a growing child's nutritional needs;
- **Safe** – meaning that they are hygienically prepared and stored, and fed with clean hands using clean utensils and not bottles and teats or artificial nipples;
- **Properly fed** – meaning that foods are given consistent with a child's signals of appetite and satiety, and that the meal frequency and feeding method are suitable for the child's age (actively encouraging the child, even during illness, to consume sufficient food using fingers, spoon, or self-feeding) (p. 13).

Complementary feeding: "is defined as the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk" (World Health Organization [WHO], 2003, p. 8)

Enriched porridge: the porridge that cannot fall/drip off a spoon as a base, with added: (1) fish, egg, blood, chopped meat, tofu, and beans, (2) vegetables, (3) cooking oil, and (4) iodized salt (Cambodian NNP, 2008).

Malnutrition: "refers to deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients. The term malnutrition addresses 3 broad groups of conditions: (1) undernutrition, (2) micronutrient-related malnutrition, and (3) overweight and obesity, and diet-related non-communicable diseases" (WHO, 2021, para. 2).

Minimum Dietary Diversity (MDD): the consumption of at least five out of the eight food groups for children aged 6-24 months: (1) breast milk, (2) grains, roots and tubers, (3) legumes and nuts, (4) dairy products (milk, yogurt, cheese), (5) flesh foods (meat,

fish, poultry, liver or other organs), (6) eggs, (7) vitamin A-rich fruits and vegetables, and (8) other fruits and vegetables (WHO, n.d.).

Stunting – low height-for-age: "It is the result of chronic or recurrent undernutrition, usually associated with poor socioeconomic conditions, poor maternal health and nutrition, frequent illness, and/or inappropriate infant and young child feeding and care in early life. Stunting holds children back from reaching their physical and cognitive potential" (WHO, 2021, para. 5).

Undernutrition: "there are four broad sub-forms of undernutrition: wasting, stunting, underweight, and deficiencies in vitamins and minerals. Undernutrition makes children in particular much more vulnerable to disease and death" (WHO, 2021, para. 3).

Underweight – low weight-for-age: "A child who is underweight may be stunted, wasted, or both" (WHO, 2021, para. 6).

Wasting – low weight-for-height: "It usually indicates recent and severe weight loss, because a person has not had enough food to eat and/or they have had an infectious disease, such as diarrhoea, which has caused them to lose weight" (WHO, 2021, para. 4).

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Kimleang Nhoeuk

Signature:

Date: 31 August 2022

Acknowledgements

I would like to acknowledge and express my sincere thanks to the following people who have contributed to the successful completion of my thesis.

To start, I would like to express my special gratitude to my supervisors, **Dr Sari Andajani** and **Dr Carolyn Cairncross** for their guidance, motivation, patience, kindness, support, and valuable feedback throughout this research. They have taught me to think critically and look beyond the scope of the research topic.

I would also like to extend my appreciation to my research participants for giving their valuable time in participating in this research. Without their cooperation, this research thesis would never have been possible.

My deepest gratitude is given to the New Zealand **Ministry of Foreign Affairs and Trade** (MFAT) for providing me with this privileged opportunity to pursue my Master's Degree at Auckland University of Technology (AUT), New Zealand. Together with MFAT, a huge "THANK YOU" is extended to the university's Scholarship Team for the continuous care, attention, and dedication. They have enhanced the quality of my student life in New Zealand.

My heartfelt thanks are expressed to all my course lecturers for their contribution to the improvement of my knowledge and skills in public health, research methodology, and other academic skills.

I would also like to acknowledge Dr David Parker for proofreading this thesis.

Last but not least, I would like to express my profound thanks to my family, friends, and those who have contributed to the achievement I have gained. To these people, thank you for always being there when I needed help. Although their names are not mentioned, I believe they know who they are.

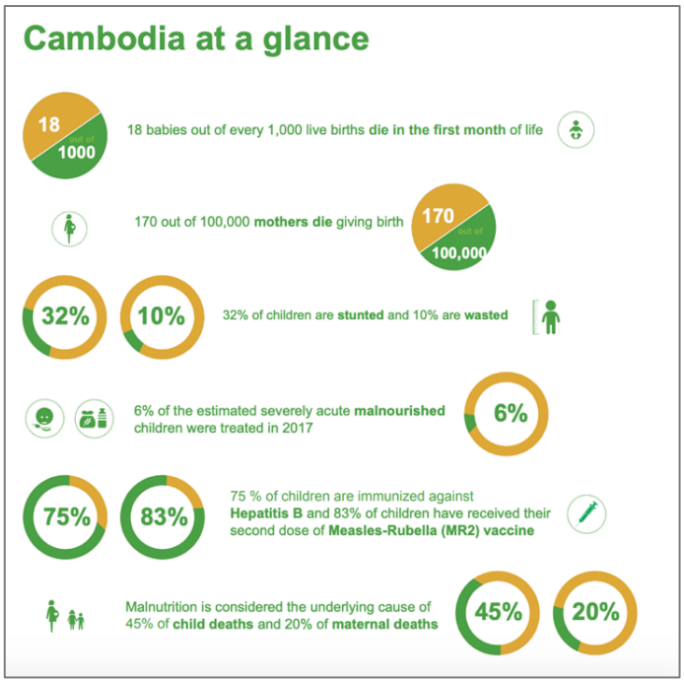
Chapter 1: Introduction

This chapter presents an overview of the research topic. The chapter is divided into five main sections. The first three sections introduce the problems with child undernutrition, followed by the rationale, the study's aim, and research questions. Section four discusses the potential contribution of this research to public health policies and programmes. The chapter concludes with an outline of the structure of the thesis.

1.1 Statement of the problem

There should not be any child suffering or dying from preventable causes, such as malnutrition, but this has been a persistent national public health issue in Cambodia (United Nations International Children's Emergency Fund [UNICEF] Cambodia, 2019) and globally. The following Figure 1.1 shows that, of 1,000 babies, 18 babies die in their first month, and 45% of child mortality is related to malnutrition. Further, the prevalence of undernutrition, such as stunting (32%), underweight (24%), and wasting (10%), is higher among under-5s than the developing country average (Cambodian National Institute of Statistics, 2015; Global Nutrition Report, 2019).

Figure 1.1 Health and nutrition in Cambodia at a glance



Note. From *Health and Nutrition: UNICEF Country Programme 2019-2023* (p. 6), by UNICEF Cambodia, 2019. Copyright 2019 by UNICEF Cambodia.

To respond to this situation, global health agencies and non-government organisations (NGOs) initiated Cambodian nutrition policies and programmes, yet the prevalence of child undernutrition remains a significant public health issue of national concern (Cambodian National Institute of Statistics, 2015; Food and Agriculture Organization of the United Nations [FAO], 2020; Global Nutrition Report, 2019; UNICEF Cambodia, 2019).

1.2 Rationale

A broad variety of factors, including poverty, food insecurity, low maternal education, poor hygiene and sanitation, and poor feeding practices (Blaney et al., 2019; Chhoun et al., 2016; Greffeuille et al., 2016; Hondru et al., 2020; Hong & Mishra, 2006; Laillou et al., 2020; McDonald et al., 2015; Muehlhoff et al., 2017) interplay in affecting the nutritional status of children and child-feeding practices. Child-feeding practices are important for child health and nutrition. Traditionally, mothers are primary caregivers; therefore, maternal feeding is influenced by mothers' lived dimensions, such as education and age (Chung et al., 2017). These aspects subsequently influence the nutritional status of young children.

I live in Cambodia, and I am passionate about the health of the people in this country. I believe that all children deserve to be healthy and free from all forms of diseases, particularly malnutrition. Since children are dependent on their parents, parents play a vital role in providing healthy environments for their children, especially food environments. Therefore, I focused on one aspect of this issue related to mothers' perceptions of healthy feeding practices, which contributes to the nutritional status of children.

Although mothers' feeding practices have an influence on their children's nutritional status, the mothers' situations have not been studied in detail. A review of literature has revealed the predominance of quantitative research in studies of the diverse determinants of child undernutrition, with limited information about each determinant and minimal qualitative research on this issue. In this case, qualitative exploratory research was employed in investigating the health-seeking practices in relation to child healthcare of the mothers, and unpacking their perceptions.

1.3 Aim and research questions

This study aimed at investigating mothers' perceptions of healthy feeding practices for under-5s in Cambodia. The following research questions were formulated to best achieve the research aim:

1. What are the experiences of mothers in feeding practices for children under the age of five years?
2. How do mothers perceive their challenges in order to provide healthy feeding practices for their children under the age of five years?
3. What is the perception of community health workers in regard to local mothers' feeding practices?
4. What do mothers and community health workers suggest can be done to support healthy feeding practices at the community level?

1.4 The study's contribution

The findings of this study will provide insights into how Cambodian mothers perceive their knowledge for the future implementation of healthy feeding practices, the possible challenges and barriers they identify, and solutions for their successful implementation. The findings will have implications for public health planning and the delivery of community programmes around nutrition and feeding children, which will impact child nutrition. This study has the potential to inform policies and initiatives through relevant stakeholders, such as the Cambodian ministries, the Cambodian National Nutrition Programme (Cambodian NNP), international and local NGOs, and community-based organisations. In addition to contributing to policies and programmes, the research findings may be a platform for future qualitative research on child-feeding practices in Cambodia.

Healthy feeding practices will contribute to improving nutrition, and better nutrition is critical to make progress on the success of each of the Sustainable Development Goals (SDGs). Nutrition is mandated in the recent 2016-2030 SDG Agenda (United Nations [UN], 2015). Improving nutrition is strongly linked to SDG 2, "end hunger, achieve food security and improved nutrition and promote sustainable agriculture," and SDG 3, "ensure healthy lives and promote wellbeing for all at all ages" (UN, 2015). Successful nutrition is linked to all SDGs (Grosso et al., 2020), which reflects the importance of improving nutrition, particularly in countries such as Cambodia.

1.5 Structure of the thesis

This thesis is structured into five main chapters:

Chapter one states the problem, the rationale, the aim and research questions, the study's contribution, and the structure of the thesis.

Chapter two presents the literature review related to the study area. First, an overview of child undernutrition in the global and Cambodian context, including relevant policies and programmes, is provided. Following this is a review of the existing studies on feeding practices among Cambodian mothers.

Chapter three outlines the methodology employed in this study. The rationale for using exploratory qualitative research methodology is outlined, followed by the research paradigm. Then, the research design, consisting of pilot interviews, recruitment of participants, data collection, and data analysis, is presented. This chapter concludes with research rigour and ethics.

Chapter four outlines the findings of the study, from the interviews with participants.

Chapter five discusses the findings in relation to the research questions and their connection to the existing studies and to Cambodia's nutrition-related policies and programmes. The chapter concludes with the study's limitations and recommendations for future research.

Chapter 2: Literature Review

In this chapter, the existing literature relevant to the topic of this study is reviewed, outlined, and synthesised. The chapter begins with the global context and the Cambodian context of child undernutrition. Literature pertaining to child-feeding practices, an important factor in child undernutrition, is presented. The chapter concludes with a summary.

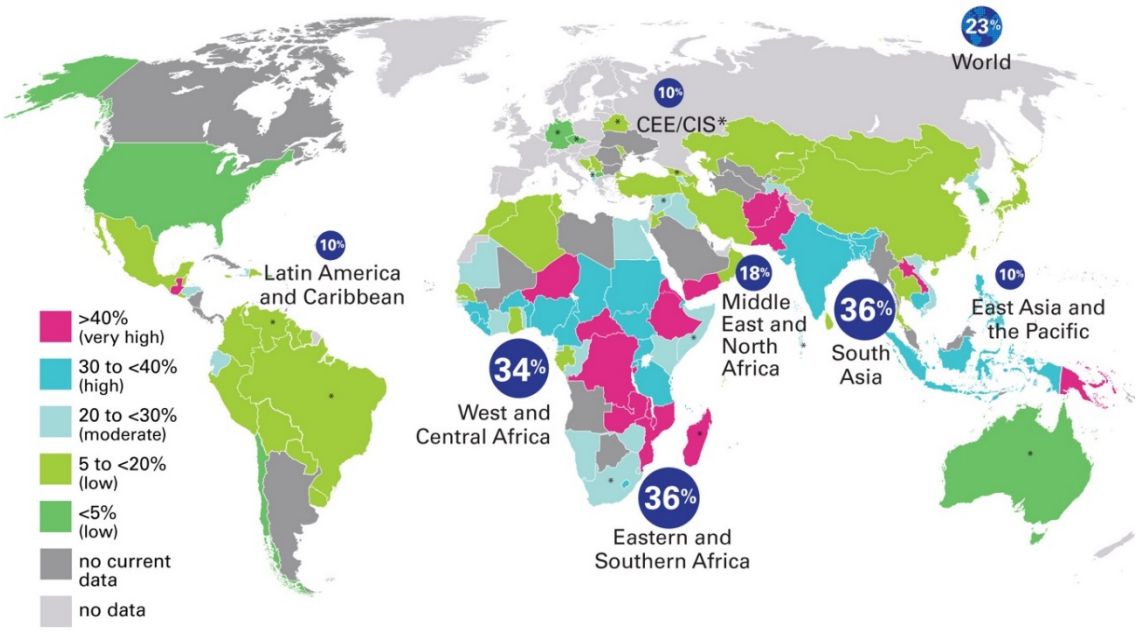
2.1 Child undernutrition at a global level

2.1.1 Overview

Globally, one in three under-5s does not receive proper nutrition (World Economic Forum, 2019). This burden of child malnutrition is highest in South Asia, and in Eastern and Southern Africa (Figure 2.1). Undernutrition is a type of malnutrition, one of the three broad forms of malnutrition, which are: (1) undernutrition, (2) micronutrient-related malnutrition, and (3) overweight and obesity and diet-related non-communicable diseases (World Health Organization [WHO], 2021). Undernutrition consists of various forms: wasting, stunting, underweight, and deficiencies in vitamins and minerals (WHO, 2021). The global statistics in 2020 demonstrated that 149 million under-5s were estimated to be stunted and 45 million were wasted (WHO, 2021). In developing countries, undernutrition is a major public health issue that increases the risk of morbidity and mortality in children (Akhtar, 2016; FAO, 2018; WHO, 2021).

According to the WHO (2021), approximately 45% of mortality among under-5s is associated with undernutrition. Even though the undernutrition burden has brought suffering to children in developing countries (Akhtar, 2016; FAO, 2018; WHO, 2021), its impact on children in each country is not equally shared. According to Akhtar (2016), undernutrition remained a significant public health issue in South Asia, where vulnerable populations were disproportionately affected by stunting, wasting, and being underweight due to socio-economic factors.

Figure 2.1 Global burden of child malnutrition



Note. From *One in three children does not get the nutrition they need*, by World Economic Forum, 2019. (https://www.weforum.org/agenda/2019/10/one-in-three-children-dont-get-the-nutrition-they-need/). Copyright 2019 by World Economic Forum.

2.1.2 Global policies and programmes

In 2016, the UN Decade of Action on Nutrition 2016–2025 (referred to as the Nutrition Decade) was proclaimed by the UN General Assembly to provide relevant national leaders with opportunities to work together to address all forms of malnutrition worldwide (WHO, 2016). The Nutrition Decade reflects a commitment by the UN member states to implement policies and programmes recommended in the Second International Conference on Nutrition (ICN2) Framework for Action. This ICN2 aimed to meet nutrition and diet-related non-communicable disease targets by 2025, and the SDG 2030 Agenda, particularly SDG 2, "end hunger, achieve food security and improved nutrition and promote sustainable agriculture," and SDG 3, "ensure healthy lives and promote wellbeing for all at all ages" (FAO and WHO, 2014; UN, 2015; WHO, 2021). This commitment was framed by the Comprehensive Implementation Plan on Maternal, Infant, and Young Child Nutrition (MIYCN), which required the member states and relevant partners to work collaboratively to achieve global nutrition targets by 2025 (WHO, 2014, 2021). The targets aim to reduce the global number of stunted children among under-5s by 40%, and reduce and maintain wasting to less than 5% (WHO, 2014).

Focussing on the first 1,000 days during pregnancy and a child's first 24 months is critical to halting childhood malnutrition (UNICEF, 2018). In particular, in the context of Target 2.2 of SDG 2, the UN (2015) recommends:

> By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons. (p. 15)

Nutrition is mandated in the recent 2016–2030 SDG 2 (UN, 2015). The success of nutrition goes beyond SDG 2, linking to all SDGs (see Table 2.1) (Grosso et al., 2020). For example, poor households have limited access to nutritious food, limiting their ability to implement nutritional recommendations (SDG 1: No poverty); this, therefore, affects the households' ability to maintain good health and wellbeing (SDG 3). Quality of education for mothers (SDG 4), equality in education, employment, and other social and political opportunities (SDG 5), and the availability of clean water and sanitation (SDG 6) all relate to the nutritional status of the household and children (Table 2.1).

Table 2.1 Nutrition in the context of the Sustainable Development Goals

Sustainable Development Goals	Link to nutrition
1. No poverty	Poverty limits access to adequate food intake and makes it difficult to reach nutritional recommendations
2. Zero hunger	Unsustainable food production causes undernourishment
3. Good health and wellbeing	Healthy and sustainable nutrition may reduce premature death including from non-communicable diseases
4. Quality education	Malnutrition affects learning abilities, while higher awareness may affect healthy and sustainable food choices
5. Gender equality	Empowering women to claim their rights leads to improved quality of life and nutrition; proper nutrition improves learning performance, which can be translated into better job opportunities

6. Clean water and sanitation	Access to safe drinking water and sanitation may reduce undernutrition
7. Affordable and clean energy	Creating independence from fossil fuels will reduce greenhouse gas emissions and environmental pollution, and ensure food security
8. Decent work and economic growth	Economic transformation may provide increased nutrition security and sustainable agriculture
9. Industry, innovation and infrastructure	Affordable access to technologies and infrastructure is essential for agriculture development and food security
10. Reduced inequalities	Inequalities cause disparities in income, food, health and education access
11. Sustainable cities and communities	Expansion into rural areas increases food needs, creates competition for food and water resources, and finally dependence on food purchases
12. Responsible consumption and production	Meeting the nutritional needs of a growing global population requires sustainable solutions for food production and access to water, as uncontrolled and inefficient food production causes greenhouse gas emissions and soil degradation
13. Climate action	Climate change affects global food production and food security as well as access to fresh water resources
14. Life below water	Aquaculture reduces hunger and improves nutrition; however, overfishing limits biodiversity
15. Life on land	Change of land use causes soil degradation while reducing biodiversity and food production, and decrease access to fresh water
16. Peace and justice	War causes malnutrition and death due to inadequate/insecure food supplies and reduced access to food
17. Partnerships for goals	In order to achieve the goals partnership between both diverse sectors and governments is needed

Note. Reprinted from "Nutrition in the context of the Sustainable Development Goals," by G. Grosso et al., 2020, *European Journal of Public Health*, *30*(Supplement_1), p. i20. Copyright 2020 by the European Public Health Association.

One crucial aspect of preventing child malnutrition is appropriate complementary feeding practices (WHO, 2019). The 6-24-month age is critical for the growth of infants and young children. WHO recommends children aged 6-24 months are provided with safe and adequate complementary foods to ensure they meet the nutritional requirements

(WHO, 2019). Appropriate guidelines for complementary feeding for children are crucial to help parents and caregivers with information on preparing and storing complementary foods, and measuring the food portions and feeding frequencies (WHO, 2003). Although the WHO (2003) recommended guidance to be applied to guide nutrition actions across all levels, the practices within and between countries vary due to local and socio-cultural-political factors and the access to and availability of healthy options.

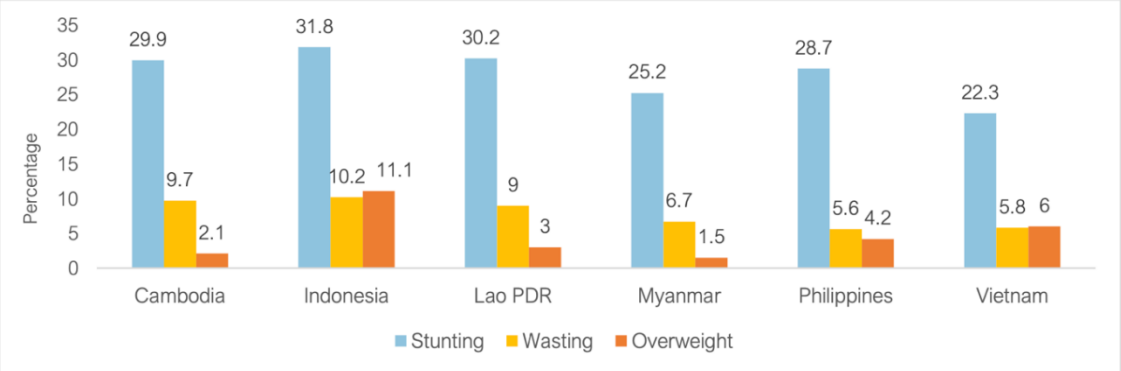
The following section discusses child undernutrition and the policies and programmes to address this issue in the Cambodian context.

2.2 Child undernutrition in Cambodia

2.2.1 Overview

In Cambodia, the prevalence of stunting (32%), underweight (24%), and wasting (10%) among under-5s is high (Cambodian National Institute of Statistics, 2015). Cambodia, compared to the developing country average, has a higher prevalence of child undernutrition among this age group (Global Nutrition Report, 2019). Among the six countries in South-East Asia, Cambodia has the third highest rate after Indonesia and Lao PDR (Figure 2.2). About 6,000 Cambodian children (0-5 years old) die annually due to maternal and child undernutrition, poor infant feeding practices, and vitamin and mineral deficiencies (FAO, 2020). The COVID-19 pandemic has exacerbated the social inequalities in child undernutrition (Headey et al., 2020; UNICEF, 2020).

Figure 2.2 Prevalence of child stunting, wasting, and overweight in the six countries of South-East Asia (0-5 years old)



Note. From *Southeast Asia Regional Report on Maternal Nutrition and Complementary Feeding* (p. 15), by UNICEF East Asia and Pacific Region, 2021. Copyright 2021 by UNICEF East Asia and the Pacific Regional Office.

Despite economic growth of 7.7% between 1998 and 2019 (World Bank, 2022), Cambodia is still affected by poverty and related adverse health outcomes (Windus et al., 2022). A study conducted by Moench-Pfanner et al. (2016) found that the economic burden of undernutrition in Cambodia is high. It is estimated that the cost of undernutrition in Cambodia is about US$ 266 million per year (1.7% of gross domestic product) (Moench-Pfanner et al., 2016), and that stunting among under-5s negatively impacts the national economic output at a cost of more than US$ 120 million per year, which is hampering Cambodia's efforts to make progress on economic and human development (Moench-Pfanner et al., 2016). As noted earlier, undernutrition among under-5s is associated with multidimensional SDGs, such as poverty, health, early childhood development, safe water, sanitation, and housing environments (Karpati et al., 2020). Thus, it requires cross-sectoral programmes to promote and sustain children's nutritional status (Karpati et al., 2020).

The following section presents relevant policies and programmes relating to improving child nutrition in Cambodia.

2.2.2 Cambodian policies and programmes

In response to child undernutrition, the Royal Government of Cambodia (RGC) established a range of policies, guidelines, regulations, and strategies:

1. *National Policy on Infant and Young Child Feeding (IYCF)* 2008 (Cambodian NNP, 2008)
2. *National Nutrition Strategy 2009-2015* (Cambodian NNP, 2009)
3. *National Strategy for Food Security and Nutrition 2014-2018* (Council for Agricultural and Rural Development [CARD], 2014);
4. *Fast Track Road Map for Improving Nutrition 2014-2020* (Cambodian NNP, 2014)
5. *Cambodia's Roadmap for Food Systems for Sustainable Development 2030* (CARD and Technical Working Group for Food Security and Nutrition [TWGFSN], 2021)

The *National Policy on IYCF* adopted by the Cambodian NNP (2008) is the most relevant policy relating to my study. This policy document focuses on the promotion of the health and wellbeing of children by improving their nutritional status through optimal feeding

practices. Targeting the under-5s group, this policy endorses exclusive breastfeeding for the first six months and complementary feeding for children aged 6-24 months or beyond (see Table 2.2). The policy provides healthcare providers and other relevant stakeholders with guidance for improving IYCF, including ensuring appropriate exclusive breastfeeding, appropriate complementary feeding with continued breastfeeding, and appropriate feeding in critical circumstances (e.g., during times of illness). For example, the recommendations on complementary feeding of this policy were used in other programmes, such as the *Nutrition Handbook for the Family* by the Cambodian NNP (2011).

Table 2.2 Recommended complementary feeding guidelines for Cambodia

RECOMMENDATIONS ON COMPLEMENTARY FEEDING			
Age	**Texture**	**Frequency**	**Amount at each meal**
6 months	Start with thick enriched Borbor, well mashed foods, e.g., mashed cooked banana, sweet potato, pumpkin, etc.	Start foods 2 times per day plus frequent breastfeeds at least 8 times per day	Start with 2-3 tablespoonfuls per feed
7-8 months	Thick enriched Borbor, well mashed foods	Increasing to 3 times per day plus frequent breastfeeds at least 8 times per day	Increasing gradually to 1/2 of Chan Chang Koeh at each meal
9-11 months	Thick enriched Borbor, finely chopped or mashed foods, and foods that baby can pick up	3 meals plus 1 snack between meals plus breastfeeds at least 6 times per day	Increasing gradually to 1 Chan Chang Koeh
12-24 months	Family foods, chopped or mashed, if necessary, thick enriched Borbor	3 meals plus 2 snacks between meals plus breastfeeds as the child wants, at least 3 times per day	1 Chan Chang Koeh
If the baby is not breastfed, give 1-2 extra meals daily.			

Note. Reprinted from *National policy on infant and young child feeding* (p. 29) by Cambodian NNP, 2008. Copyright 2008 by Cambodian NNP.

Promoting and sustaining healthy feeding for young children will have wide-reaching consequences for improving nutrition, and better nutrition is essential for making progress on the success of each of the SDGs. One of the major strategies used by the

Cambodian Government and agencies, such as Cambodian NNP and FAO, to combat child undernutrition is to promote "enriched porridge" as a complementary food for children from six months of age (Cambodian NNP, 2008; Cambodian National Centre for Health Promotion and National Maternal and Child Health Centre [Cambodian NCHP and NMCHC], 2011; Chung et al., 2017).

The dietary guidelines relevant to under-5s are presented in the *Nutrition Handbook for the Family* (Cambodian NNP, 2011). These guidelines have been used in community nutrition programmes throughout the country (Cambodian NNP, 2011). This handbook includes diagrams to illustrate dietary guidelines for families with young children (Figure 2.3), and pictures and instructions on how to prepare enriched porridge (Figure 2.4).

Figure 2.3 Eat a variety of foods every day

Note. From *Nutrition Handbook for the Family* by Cambodian NNP (2011, p. 3), NMCHC, Ministry of Health. Copyright 2011 by Cambodian NNP.

Figure 2.4 How to prepare enriched porridge

Note. From *Nutrition Handbook for the Family* by Cambodian NNP (2011, p. 13), NMCHC, Ministry of Health. Copyright 2011 by Cambodian NNP.

Other than the *Nutrition Handbook for the Family*, documents which provide guidelines on dietary recommendations for under-5s in Cambodia are limited, and mainly appear in

reports, briefing notes, and newsletters from international organisations and NGOs promoting healthy eating at the community level. For example, the FAO Cambodia published a facilitators' guide for community nutrition promoters to facilitate educational sessions on IYCF for mothers and caregivers in two provinces (Otdar Meanchey and Preah Vihear) (FAO, 2014).

Despite a vast number of policies, programmes, and interventions, the prevalence of child undernutrition among under-5s remains a critical public health issue in Cambodia (WHO, 2021). A wide range of determinants of child undernutrition, such as poverty, food insecurity, low maternal education, poor hygiene and sanitation, and poor feeding practices (Blaney et al., 2019; Chhoun et al., 2016; Greffeuille et al., 2016; Hondru et al., 2020; Hong & Mishra, 2006; Laillou et al., 2020; McDonald et al., 2015; Muehlhoff et al., 2017) interplay in influencing child nutrition status and child-feeding practices.

Child-feeding practices are critical to children's nutritional status. Parents and families are important agents of children's eating environments, especially for under-5s (Birch et al., 2007; Duncanson et al., 2012). Parents are central in the decision making on what, when, and how children are fed at home (Birch et al., 2007; Duncanson et al., 2012). Mothers have a large role in the household, so child-feeding practices are influenced by such as mothers' education and age (Chung et al., 2017). These factors subsequently affect young children's nutritional status.

Next, I discuss factors affecting child-feeding practices among Cambodian mothers.

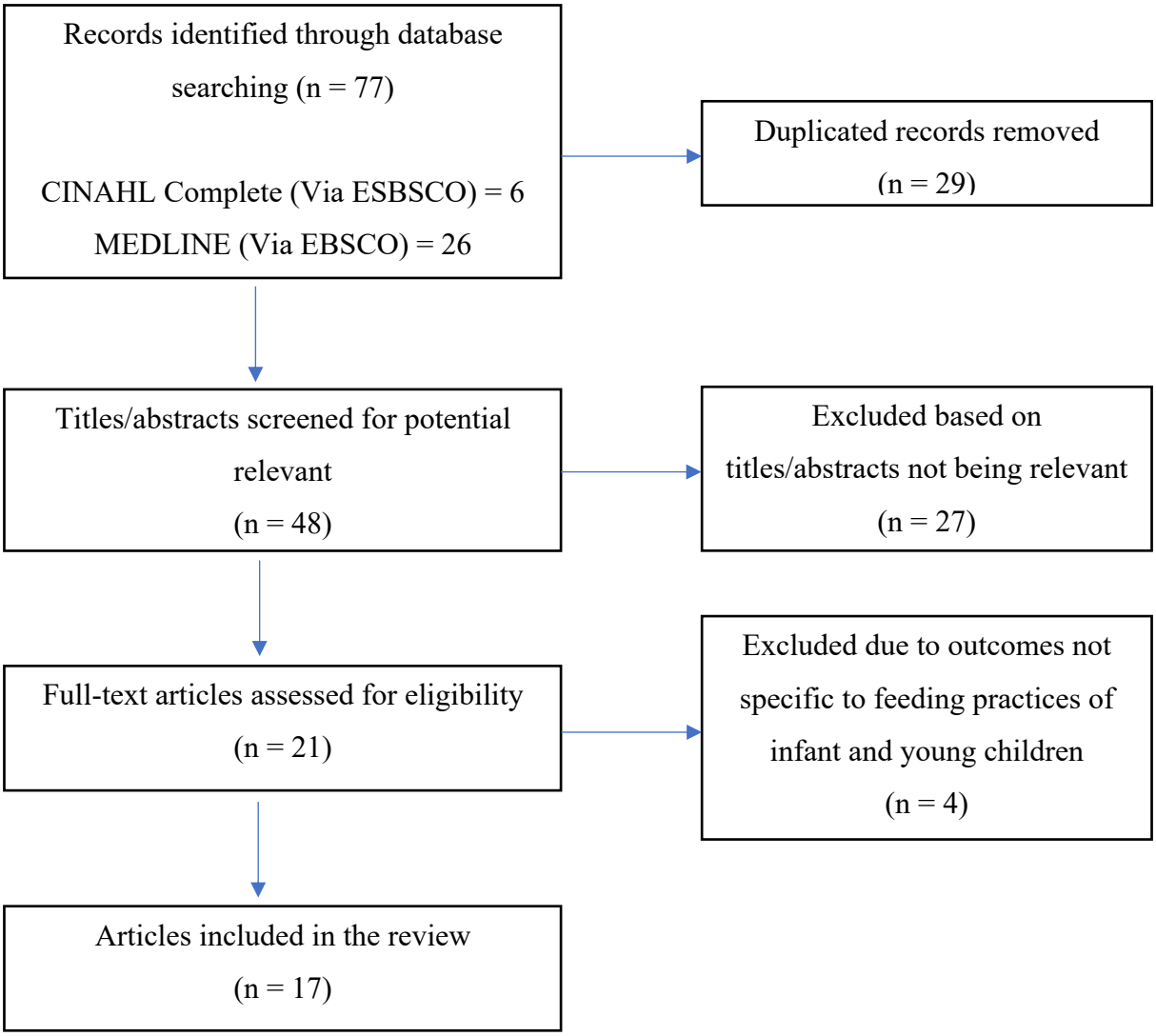
2.3 Factors affecting child-feeding practices

2.3.1 Introduction

I used the four databases to search relevant articles: CINAHL Complete (Via ESBSCO), MEDLINE (Via EBSCO), Scopus, and Web of Science. The following keywords were used the search strategy: "feeding practices," "feeding children," mothers, and Cambodia. The literature search was carried out on literature available prior to July 2021. Figure 2.5 shows the PRISMA diagram depicting the article search process. First, the titles and abstracts of the 48 articles were reviewed to determine their relevance by applying the inclusion and exclusion criteria. The inclusion criteria of selected articles were: (1) the study was labelled with the keywords used for the search "feeding practices," "feeding

children," mothers, and Cambodia; (2) the study focused on some aspects of mothers' feeding practices among children aged 6-59 months, such as barriers in providing appropriate feeding practices and determinants of child undernutrition; and (3) the study mentioned Cambodia. Of the 48 articles, 27 were excluded because they did not meet the inclusion criteria; for example, they targeted children under six months, or only focused on breastfeeding, or newborn health topics.

Figure 2.5 PRISMA diagram showing article search process



Seventeen articles were selected for this section. Table 2.3 shows the points extracted from the research articles using headings: reference, size, location of study, objective, and methodology. The study findings, recommendations, and limitations are presented in more detail in Appendix A. Of the 17 articles, 15 were quantitative studies and only two were qualitative studies (Jameel et al., 2019; Muehlhoff et al., 2017). All studies focused

on maternal and child health (MCH), predominantly mothers or caregivers or households of children under two years of age (n = 11) compared to children under five years of age (n = 3). Nearly half of the studies (n = 8) examined the relationship between child-feeding practices and the children's nutritional status. For example, Cambodian studies by Reinbott et al. (2015) and Hondru et al. (2020) investigated the effect of appropriate feeding practices to the growth of under-2s. Recommendations from these 17 articles cover not only child-feeding practices, but also illustrate the complex interplay of feeding practices and children's nutritional status, ranging from individual to socio-cultural and economic factors.

Table 2.3 Studies by author, year, sample size, location of study, objective, and methodology

Reference	Size (N)	Location of Study	Objective	Methodology
Harvey et al. (2018)	In Cambodia, 2,127 children aged 6–23 months	Cambodia, Myanmar, and Indonesia	To examine the socio-economic differentials in minimum dietary diversity (MDD) among children aged 6–23 months in Cambodia, Myanmar, and Indonesia	Cross-sectional study
Hondru et al. (2020)	2,129 children aged 0–24 months	Phnom Penh and two north-eastern provinces (Kratie and Ratanakiri), Cambodia	To estimate the effect of appropriate feeding practices on linear and ponderal growth of Cambodian children aged 0–24 months	Longitudinal cohort study
Hong and Mishra (2006)	3,235 children aged 0-59 months included in the 2000 Cambodia DHS	Cambodia	To examine how inequality in household wealth status was linked to children's nutritional status	Cross-sectional study
Jacobs and Roberts (2004)	252 households Having at least one child aged 60 months or less	Takeo province, Cambodia	To formulate appropriate responses by the public health sector to reduce acute malnutrition among children aged 0-60 months	Cross-sectional study

Jameel et al. (2019)	109 participants (pregnant women and infants' mothers who have worked in factories, young women currently working in factories, caregivers of children, village leaders, healthcare workers, and factory managers)	Kampong Chhnang province, Cambodia	To investigate the health-seeking behaviours for maternal and infant care of female garment factory workers in Kampong Tralach district, Cambodia	Qualitative study
Laillou et al. (2020)	1,938 households with children aged 6-23.9 months	Phnom Penh and two north-eastern provinces (Kratie and Ratanakiri), Cambodia	To analyse key drivers of child stunting and wasting and explore the contribution of several integrated early child development (IECD) factors on socio-economic inequities of stunting and wasting in Cambodia	Longitudinal study
Marriott et al. (2010)	3027 and 3112 mother–infant pairs from the 2000 and 2005 Cambodia DHS, respectively for children aged 0–24 months	Cambodia	To assess the new WHO core healthy feeding indicators (WHO, 2008) with other covariates in terms of their association with the documented improvement in stunting and underweight in Cambodia	Quantitative study
Marriott et al. (2012)	Comparing DHS infant feeding data collected in 2000 to date from 2005 and assessing the WHO core feeding indicators recommended for healthy growth	Infant feeding in 20 developing countries with focus on infant undernutrition in Cambodia	To provide an in-depth focus on whether the feeding practices in Cambodia met the current WHO guidance and if compliance with these feeding guidelines was associated with improved growth outcomes	Cross-sectional study

McDonald et al. (2015)	900 households with children under the age of five years	Four rural districts of Prey Veng province, Cambodia	To assess household food insecurity and dietary diversity as correlates of maternal and child anthropometric status and anaemia in rural Cambodia	Quantitative study
Muehlhoff et al. (2017)	53 stakeholders: • 13 interviews: 16 participants (MALIS project staff, Government staff, and NGO staff) • Seven focus group discussions: 30 participants (mothers, grandmothers, fathers, and community nutrition promoters) • Seven household visits: seven participants (mothers)	Cambodia and Malawi Cambodia: Oddar Meanchey and Preah Vihear provinces	To provide an overview of the main facilitating factors and barriers that influence the adoption of desirable IYCF, and to highlight opportunities and critical implementation challenges, that need to be addressed for greater programme effectiveness and impact	Qualitative study
Nurhasan et al. (2021)	520 caretakers with children aged 7–24 months	Phnom Penh (urban) and Prey Veng province (rural), Cambodia	To evaluate the caretakers' preferences and willingness-to-pay (WTP) for processed complementary food in packages (PCFP) in Cambodia	Quantitative study
Pries et al. (2016a)	294 mothers of children less than 24 months	Phnom Penh, Cambodia	To assess consumption of commercial food and beverage products among children less than 24 months in Phnom Penh, and to assess their mothers' exposure to commercial promotions for these products	Cross-sectional study

Pries et al. (2016b)	294 mothers of children aged less than 24 months	Phnom Penh, Cambodia	To assess mothers' exposure to commercial promotions for breastmilk substitutes and their use of these products in Phnom Penh, Cambodia	Cross-sectional study
Pries et al. (2017)	In Cambodia, 222 mothers of children aged 6–23 months in Phnom Penh	Four study sites: Phnom Penh, Cambodia; Kathmandu Valley, Nepal; Dakar, Senegal; and Dar es Salaam, Tanzania.	To assess consumption patterns among children aged 6–23 months, particularly focus on use of commercially produced foods and beverages by mothers during the complementary feeding period	Cross-sectional study
Reinbott et al. (2015)	803 households with children aged 6–23 months	Two provinces in north-west (Preah Vihear and Oddar Meanchey), Cambodia	To investigate the association between feeding practices and length-for-age Z-scores (LAZ) in a population of two provinces in north-west Cambodia	Cross-sectional study
Reinbott et al. (2016)	928 randomly selected households with children aged 3–23 months	Preah Vihear and Otdar Meanchey provinces, Cambodia	To investigate relationships between biomarkers of iron status in children aged 3–23 months and their linkage to haemoglobin levels by considering age and sex of the child, maternal haemoglobin status, age-appropriate feeding practices, and the food intake of either breastmilk or animal source foods (ASF); and to analyse the associations of the biomarkers with anthropometric data	Cross-sectional study

Som et al. (2018)	4,161 children aged 0–24 months and 4,072 women (pregnant and non-pregnant)	Phnom Penh and two rural provinces (Kratie and Ratanakiri), Cambodia	To assess the current feeding practices among of women of reproductive age, pregnant women, lactating women, and children less than 24 months living in six districts from Phnom Penh and two rural provinces in the north-east of Cambodia	Cross-sectional study

2.3.2 Recommendations from the studies

Each of the 17 articles provided recommendations around feeding practices. Two main themes were identified which have the potential to contribute to improving child nutritional status in Cambodia:

1. Complementary feeding
2. Integrated and equity-focused approach

Complementary feeding

Several studies recommended focusing on appropriate complementary feeding to improve the nutritional status of children (Hondru et al., 2020; Jacobs & Roberts, 2004; Pries et al., 2016a; Pries et al., 2017; Reinbott et al., 2016). Studies by Hondru et al. (2020) and Reinbott et al. (2016) suggested mothers and caregivers prepare complementary foods for their children from six months of age, particularly ensuring the quantity of food and frequency of feeding. An example of appropriate complementary feeding is shown in Table 2.2, above. Another study by Jacobs and Roberts (2004) found that the late introduction of complementary foods also contributed to poor child-feeding practices. The authors proposed a community-based education campaign and peer counselling of mothers about complementary feeding, including dietary diversity, to ensure young children get the nutrition they need.

Three studies by Pries et al. (2016a), Pries et al. (2016b), and Pries et al. (2017) suggested discouraging the consumption of unhealthy commercially produced products for under-2s. As recommended by Pries et al. (2016a) and Pries et al. (2017), there is a need to improve feeding practices among under-2s, including promoting healthy options and discouraging the use of unhealthy commercially produced snack food products. In addition, mothers are encouraged to exclusively breastfeed and provide complementary feeding, and breastmilk substitutes for their under-2s are not recommended (Pries et al., 2016b).

Integrated and equity-focused approach

An integrated and equity-focused approach is needed to improve healthy feeding practices and, subsequently, children's nutritional status (Laillou et al., 2020). Child stunting and wasting were affected by socio-economic inequities, including households'

access to clean water, sanitation, maternal education, household poverty, and maternal nutrition; therefore, the situation demands attention is given to addressing these issues (Laillou et al., 2020; Som et al., 2018). Similar studies recommended reducing poverty, reducing household food insecurity, and making services more accessible to poor households (Hong & Mishra, 2006; McDonald et al., 2015). In addition to these key drivers, a qualitative study conducted by Muehlhoff et al. (2017) suggested addressing mothers' and caregivers' barriers, such as women's workload and limited access to nutritious options. Therefore, integrated, holistic, and equity-focused approaches are critical to addressing the relevant challenges of healthy feeding practices.

2.3.3 Barriers to healthy feeding practices

From the 17 articles, three main themes relating to the barriers to healthy feeding practices which have been found to contribute to child undernutrition in Cambodia were identified:

1. Poverty and income inequity
2. Maternal education
3. Social and cultural factors

Poverty and income inequity

Poverty is the most critical factor in child-feeding practices and undernutrition (Cambodian Ministry of Health, 2006; Harvey et al., 2018; Hong & Mishra, 2006; Laillou et al., 2020; Marriott et al., 2010, 2012). Studies published by Laillou et al. (2020) and Marriott et al. (2010) found a relationship between increased household wealth and reduced risk of child undernutrition. Poverty influences children's diets and, subsequently, their nutritional status. According to the poverty data in 2020 of the World Bank, the poverty rate in Cambodia remained one of the highest among developing countries (World Bank, 2022). Approximately 18% of Cambodians live under the national poverty line, with the highest poverty rate found in rural areas at 22.8% (World Bank, 2022). The national poverty line refers to people living on less than US$ 2.70 per person per day (Cambodian Riel 10,951) (World Bank, 2022). If household wealth increases, children can have more healthy and nutritious foods, which will ultimately contribute to the reduction of child malnutrition (Chhoun et al., 2016; Hong & Mishra, 2006). The risk of undernutrition in children living in poor households is higher than for

those living in wealthier households (Chhoun et al., 2016). Persistent inequalities in undernutrition relate to poor families having limited availability of and access to nutrition and healthy food choices (Greffeuille et al., 2016).

Regarding the impact of poverty on child nutrition, a study in urban Phnom Penh (the capital city of Cambodia) conducted by Pries et al. (2017) found a strong relationship between poor households and the consumption of commercial food and beverage products. Children of poorer households were more likely to consume commercial snack food products, compared to those of wealthier households (Pries et al., 2017). Many commercial snack food products fall into the ultra-processed food category, and are of low nutritional value (Pries et al., 2017). Recent research indicates that nutrition and disease development indicators in children are negatively impacted by a high rate of ultra-processed food consumption (de Oliveira et al., 2022). This high consumption of ultra-processed foods can contribute to a lack of dietary diversity.

Dietary diversity increases the intake of nutrition in young children (Hoddinott & Yohannes 2002; Onyango et al., 1998), which contributes to lower risk of undernutrition. Children living in poor households have been shown to have a lower level of dietary diversity (Cambodian Ministry of Health, 2006; Harvey et al., 2018; Muehlhoff et al., 2017). WHO (n.d.) defines minimum dietary diversity (MDD) as the consumption of at least five out of the eight food groups for children aged 6-24 months: (1) breast milk, (2) grains, roots and tubers, (3) legumes and nuts, (4) dairy products (milk, yogurt, cheese), (5) flesh foods (meat, fish, poultry, liver or other organs), (6) eggs, (7) vitamin A-rich fruits and vegetables, and (8) other fruits and vegetables. A study in three South-East Asian countries (Cambodia, Myanmar, and Indonesia) found that children who live in poor households in rural areas did not meet the requirements of the MDD (Harvey et al., 2018). Poverty contributed to these findings where poor households had financial constraints in buying a variety of the nutrient-rich ingredients recommended for enriching infant porridge, especially meat and other protein-rich food (Cambodian Ministry of Health, 2006; Muehlhoff et al., 2017).

Maternal education

Maternal education is a significant determinant of child-feeding practices and children's nutritional status (Hondru et al., 2020; Laillou et al., 2020). Studies conducted by Hondru

et al. (2020) and Laillou et al. (2020) found that children of mothers with a lower educational level were at a higher risk of undernutrition. Hondru et al. (2020) found that mothers with higher education have knowledge and skills related to health and nutrition, which positively influenced the nutritional status of themselves and their children. A study in Myanmar and Indonesia by Harvey et al. (2018) found that mothers with higher education are more likely to introduce a variety of foods (e.g., meat, vegetables, and fruit) into their children's diets.

Research shows maternal education is associated with access to health information (Hondru et al., 2020; Miller & Rodgers, 2009; Yanagisawa et al., 2004). A study in two Cambodian north-eastern provinces (Kratie and Ratanakiri) and Phnom Penh by Hondru et al. (2020) found that well-educated mothers are more likely to access health information and education about healthy feeding practices, which contributes to a higher nutritional status for their children. These Cambodian findings relating to maternal education and children's nutritional status confirm findings from other developing countries like Kenya (Chege et al., 2015) and Indonesia and Bangladesh (Semba et al., 2008).

Social and cultural factors

Social and cultural factors which influence feeding practices and children's nutritional status may include patriarchal ideology, and food taboos and intergenerational practices in food preparation (Desclaux & Alfieri, 2009; Jameel et al., 2019; Nurhasan et al., 2021; Som et al., 2018; Windus et al., 2022).

Regarding Cambodian patriarchal culture, men are seen as the head of the household and primary income earner, while women are the primary caregivers and housewives. Studies by Men et al. (2011) and Som et al. (2018) indicated that the best food was usually prepared for the men, often the fathers, leaving the women and children eating last. This cultural practice is likely to affect the children's diets and, subsequently, their nutritional status.

Intergenerational practices in food preparation for young children are influenced by beliefs and taboos. For example, Jameel et al. (2019) found that older Cambodians believed mixing plain porridge with meat and vegetables would cause a stomach upset.

Common practices related to this include feeding young children plain rice porridge with salt or soy sauce rather than mixed varieties which includes foods such as legumes, meats, or vegetables (Jameel et al., 2019; Windus et al., 2022). Intergenerational child-feeding practices are often not aligned with the recommended complementary feeding guidelines by the Cambodian NNP (2008). Poor child-feeding practices for under-5s of 'skip-generation' households can increase the risk of child undernutrition (World Vision, 2022). Skip-generation families are families where grandparents take care of children while parents are absent from the family (World Vision, 2022). Traditionally, in Cambodia, grandmothers tend to prepare food for their grandchildren based on their traditional practices and beliefs, instead of following the feeding guidelines, which leads to the nutrient inadequacy of children's diets (Jameel et al., 2019). Thus, cultural aspects are essential elements to consider in the promotion of sustainable healthy feeding practices.

As noted, the majority of studies of child nutrition in Cambodia have been dominated by quantitative studies which provide little information on the socio-cultural factors determining child undernutrition (Muehlhoff et al., 2017), such as women's workload, access to nutritious foods, and the importance of community nutrition programmes. Thus, I decided on qualitative research to explore the wider and important factors which are not captured in quantitative studies. This study sought to explore mothers' perceptions and practices of healthy feeding for under-5s.

2.4 Chapter summary

This chapter has reviewed the relevant literature as the background for this study, and has provided an overview of child undernutrition in the global and Cambodian context. Child undernutrition is a global issue which requires the adoption of policies, guidelines, frameworks, and programmes to improve child-feeding practices and child nutrition, such as achieving SGD 2. In Cambodia, child undernutrition remains a public health issue, which may reflect social, economic, and cultural contexts. In response to this issue, child nutrition policies and programmes have been developed by both governments and NGOs. The last section discussed themes identified through a systematic review of the literature on child-feeding practices. From these studies, recommendations for healthy eating practices, and barriers to healthy feeding practices, such as poverty and income inequity, maternal education, and social and cultural factors, demonstrated that factors impacting

child-feeding practices are multi-dimensional. The review of the key determinants and policies and programmes of child undernutrition has provided an empirical background to healthy feeding practices in the Cambodian context.

Chapter 3: Methodology

This chapter discusses the research methodology employed to explore the perceptions of Cambodian mothers regarding healthy feeding practices for under-5s. The chapter has six main sections. Section one explains the rationale for using exploratory qualitative research methodology, followed by a discussion of the research paradigm in section two. Section three describes the research design, which includes pilot interviews, recruitment of participants, data collection, and data analysis. The next two sections are on the research rigour and ethics, and the chapter concludes with a summary.

3.1 Exploratory qualitative research

Exploratory qualitative research guides researchers in gaining insights into their participants' relevant local, social, and cultural contexts to understand the phenomena being investigated (Stebbins, 2001). Further to this, Hays and Singh (2011) state that:

> Qualitative research is the study of a phenomenon or research topic in context. Phenomena tend to be exploratory in nature, as researchers examine topics that have not been investigated or need to be investigated from a new angle. Because topics are exploratory, qualitative design tends to include research questions that address the how or what (i.e., a process) versus why (i.e., aetiology of outcome) aspects of a phenomenon. (p. 4)

I believe that participants' perspectives on healthy feeding and the practices of child feeding are influenced by their personal, local, social, and cultural contexts where they live. I also explored participants' perceptions of the recommended healthy feeding practices promoted by the Cambodian Ministry of Health and the challenges they faced in adopting that recommendation, and what support was needed at the community level to promote healthy feeding practices for young children.

In Chapter 2, I noted gaps in the literature on mothers' feeding practices in Cambodia. Studies on child nutrition in Cambodia have been predominantly quantitative and focused on the determinants of undernutrition in children (Harvey et al., 2018; Hondru et al., 2020; Hong & Mishra, 2006; Jacobs & Roberts, 2004; Laillou et al., 2020; Marriott et al., 2010, 2012; McDonald et al., 2015; Reinbott et al., 2015; Reinbott et al., 2016; Som et al.,

2018). Mothers' perceptions and voices, which are important in understanding child feeding, have been understudied. This study required a method that generates rich information from participants based on their experiences and points of view. The exploratory qualitative approach enabled me to gain insights into the mothers' life contexts, and the meanings and stories of their understanding, values, beliefs, and motives to their feeding practices, through in-depth communications, as noted by Stebbins (2001).

Next, I turn the discussion of the research paradigm.

3.2 Research paradigm

This research employed the interpretive paradigm to understand the social, cultural and political context of child-feeding practices in Cambodia. I believe in the existence of multiple realities in understanding the Cambodian mothers' beliefs, values, knowledge, and practices in regard to under-5 feeding. In understanding multiple realities in this research, I followed Hudson and Ozanne (1988) and Grant and Giddings (2002) on the interpretive approach. As a researcher, I have a critical role in observing and capturing participants' lived experiences and give participants the authority to choose the lived experiences they believe to be relevant to inform the research, as noted by Grant and Giddings (2002).

I wondered to what extent mothers' cultural, social, and economic backgrounds influence their perceptions, understanding, and practice of healthy feeding. I used in-depth communication/interviews to explore mothers' views on under-5 feeding, and their practices. I acknowledge that each of these mothers has had unique experiences and subjective perceptions, and collectively produced multiple and complex socio-cultural realities that are rich with individuals' unique lived circumstances.

The following section describes the research design.

3.3 Research design

A semi-structured interview format was used in this study. A semi-structured interview, when used in a qualitative study, can generate rich information; at the same time, it provides extra flexibility to the interviewer to adapt to the interviewees, gain great understanding of and investigate the considerable depth in people's perspectives,

meanings, situations, and constructions of reality (Fylan, 2005; Holloway & Wheeler, 1996; Punch & Oancea, 2014). During the interview, I also invited the mother participants to offer suggestions to improve community support to promote and sustain healthy feeding practices for children. To gain a broader perspective, I subsequently shared these mothers' suggestions with community healthcare workers in a semi-structured interview to gain their responses. Thus, I developed two interview guides in consultation with my supervisors, who are experts in the public health and nutrition fields (Appendices B and C).

In order to explore the mothers' views and understanding of the guidelines for healthy eating, some pictures from the *Nutrition Handbook for the Family* (Cambodian NNP, 2011) were used (see Figures 2.3 and 2.4). This handbook currently provides dietary guidelines in Cambodia, and in community programmes in the province.

I began my field research by piloting my research instruments (Appendices B and C).

3.3.1 Pilot interviews

I conducted two pilot studies of the research instruments in New Zealand and Cambodia. In the following section, I also share my reflections and lessons learned from the pilot activities.

Pilot interviews with the two mothers

The interview guide for mothers was piloted with two Cambodian mothers living in Cambodia via online Zoom meetings which were audio-recorded. Makara and Kompheak (pseudonyms) were interviewed on June 7 and 11, 2021. Table 3.1 gives demographic details of Makara and Kompheak. They each had at least one child under the age of five years. Prior to the interviews, I emailed them the Participant Information Sheet (PIS) (Appendix D) and consent form (CF) (Appendix E). Makara and Kompheak decided on the day and time for the interviews. They signed the CF before the interviews and returned it to me by email.

Table 3.1 Demographic data of the two pilot participants

Pseudonyms	Makara	Kompheak
Age	31	32
Marital status	Married	Married
Educational background	Bachelor's degree	Master's degree
Occupational status	Administrative Assistant at United Nations Assistance to the Khmer Rouge Trials	Programme Assistant at World Health Organization
Household number	5	3
Number of children	2	1
Age of children	2.5 y; 1.1 y	4 y

Note. y = years.

I started each interview by explaining the purpose of the study. I reminded each of them that they could stop the interview at any time or choose not to answer any question without needing to give me any explanation. I asked for their permission to record the interview. I then asked some demographic questions, followed by the interview using the interview guide (Appendix B). I concluded each interview by showing them the pictures of the recommended healthy eating for under-5s from the *Nutrition Handbook for the Family* by Cambodian NNP (2011) (Figures 2.3 and 2.4). I invited their views and asked about their understanding of cooking the enriched porridge depicted in the guidelines and what support they needed to comply with those guidelines. I thanked them for their participation and feedback regarding my research tool.

Pilot interview for healthcare workers

I conducted a pilot interview with one of my fellow Cambodian postgraduate students. I conducted this interview after completing all the interviews with the 13 mothers. Vutha (pseudonym), aged 29 at the time of the study, is a medical doctor in Cambodia. I emailed him the PIS (Appendix F) and CF (Appendix G) before the interview. The interview lasted for 25 minutes. I asked him to introduce himself and his roles in Cambodia. Then,

I conducted the interview using the interview guide (Appendix C). Following the interview, I also sought Vutha's thoughts and comments on, and insights into, existing and relevant policies or programmes in Cambodia and how the mothers' recommendations can be implemented. Vutha gave constructive feedback on the interview questions and guide, to be discussed below.

Lessons learnt from pilot interviews

Based on the feedback from the pilot participants, I amended my research tools as explained in this section. From the pilot with the mothers, I made the following amendments:

Simplifying the interview guide. Makara and Kompheak suggested simplifying the interview questions to best suit the literacy level of my potential participants. They also suggested the use of colloquial language used in rural Cambodian communities. For instance, they suggested changing the term "support" (Khmer: ជំនួយ), which is often understood as "financial support", to the Khmer word ជួយ which is literally translated as "help". I used this term in the following questions: "Who can help?" and "What services can help you?" Such questions explored participants' ideas about how to promote healthy child-feeding practices in their community.

The Khmer language is used nationwide in Cambodia. However, different dialects or utterances may be used in urban or rural areas. In urban areas, the terms "mother" is "ម៉ាក់" in Khmer. People in rural areas use slightly different terms, such as "ម្ដាយ" or "ម៉ែ". By using local dialects and colloquial language, I was hoping to facilitate a smooth and friendly atmosphere, and dialogue with the participants.

Only include one theme in one question. The pilot participants suggested simplifying and shortening the questions. They thought some of my questions were too long, wordy, and hard to understand. I then modified my questions to make them simpler, and easier to understand.

Using a picture on thick enriched porridge. Figure 2.4 shows a picture of how to prepare enriched porridge, called "bobor khap krop kroeung" in Khmer, taken from the *Nutrition Handbook for the Family* (Cambodian NNP, 2011) on the complementary feeding of

infants and young children. Initially, I showed the mothers two pictures: (1) "eat a variety of foods every day" (Figure 2.3); and (2) "how to prepare enriched porridge" (Figure 2.4). I was advised to use only one picture, "how to prepare enriched porridge" (Figure 2.4). I took this recommendation. The pilot participants found it confusing when the two pictures were used.

Active listening and using key words to probe. I learned during the pilot interviews that active listening and repeating the key words uttered by the participants were effective ways to probe participants' ideas and encourage them to go in-depth with their explanations without interrupting the flow of the dialogue. Since the interviews were conducted via Zoom audio calls, I had no eye contact and ability to read participants body language or facial expressions compared to having the interview in person. Therefore, I practiced my active listening and the repetition of key words as a means to encourage my participants to expand their answers. I also learned that using a simple expression like "I see" would invite participants to express and explain their answers in more depth.

Be prepared for surprises. From the pilot, I was aware that I needed to be prepared for any surprises. I also needed to be aware of my own perceptions and expectations. For example, I might have expected mothers to be eloquent in explaining their feeding practices and types of foods they prepared for their children. Makara's first response, for example, was about her uncertainties regarding whether she was the right participant for the research:

> *Regarding this topic, I think you might ask the wrong person. Why did I say so? Because my children do not eat at all. I do not know why. I asked the doctor, and I tried all the methods, but they still do not eat. I was told, in general, daughters do not really eat, right? So, I thought my second child (son) would eat. However, he is around one year, but he does not eat. Nowadays, they totally depend on milk.*

I responded by explaining that this research was to seek mothers' understanding, perceptions and practices of healthy feeding and its barriers. Makara, then, continued telling me about her experiences, concerns, and points of views. Throughout my interviews with the participants, I always reminded myself to feel comfortable and flexible in my approach to the interview guide and responses.

From the pilot interview with the healthcare professional, I made the following amendments to the interview guide.

Showing respect at all time. Showing respect is one of the most fundamental principles in any interpersonal relationships with participants. Initially, I started the pilot interview by presenting the key themes given by the 13 mothers in this research and asking Vutha for some feedback. Vutha commented that it sounded critical, as if the healthcare workers were not doing their work well. When interviewing government civil servants or community leaders, Vutha suggested it was important to first acknowledge their achievements. It is important to have positive and respectful dialogues and not to appear to be critical. For example, I should start my interview by praising and acknowledging their accomplishments and their dedication to the community. Then, I could start asking about their opinions and experiences. Thus, I used this approach in my interviews with the healthcare workers.

Using pictures or visual information for better engagement. When interviewing Vutha, I described the key themes retrieved from the interviews with the 13 mothers. I did not use any visual tools or texts. Vutha advised the use of a poster or picture or some other visual information summarising those themes. The use of a visual tool would facilitate interactive discussion and better engagement. I took this recommendation. I summarised these themes as a poster, and presented it to the healthcare workers as part of the interview (Appendix C).

3.3.2 Recruitment of participants

Initially, I had planned to travel to Cambodia to conduct my field research, but I was unable to go there due to the COVID-19 restrictions. Thus, the recruitment and interview processes were conducted remotely, via Zoom and Facebook Messenger, from New Zealand. I recruited the potential participants were from Commune I and Commune II in Kang Meas District, Kampong Cham Province. I chose this location because of two main reasons. The first reason related to the accessibility of the study site. It is close to Phnom Penh – Cambodia's capital city. It can be reached within two hours by car. Having the study site close to the capital city, would make it easier for Vutha (my field support person) to obtain necessary research approval and permission from the relevant

authorities, including the Chief of the Provincial Health Department and the Village Chief. Secondly, Kampong Cham Province is one of six provinces which have involved in the Promoting Healthy Behaviors (PHB) project since 2018, a project that aims to improve MCH, child nutrition, and family planning (Population Services International [PSI] Cambodia, n.d.). Figure 3.1 shows a map of Cambodia with Kampong Cham Province highlighted in blue, and a map of the province with the code areas of Commune I and Commune II, 030702 and 030708, highlighted in green and yellow, respectively. Pseudonyms are used to refer to all participants, the contact person, village, and the communes in this study.

The recruitment process in Cambodia was assisted by Sophea. I first met Sophea in 2019 through my Cambodian scholarship students' network. It just happened that Sophea, at the time of this study, lived and worked in Phnom Penh. Sophea is familiar with research, as he has completed his master's degree in New Zealand. Sophea was born and grew up in the selected district in Kampong Cham Province. He has good knowledge of the community networks and mothers of young children. He helped by distributing the advertisement to potential mother participants and an invitation to potential stakeholders working in the MCH programme via both hard copies and Facebook Messenger. He also submitted a letter to the village chief on my behalf. Having Sophea deliver the letter showed respect to the village chief. As the interested participants contacted the researcher directly, Sophea and the village chief had no knowledge of who any of the participants in this research were.

Figure 3.1 Map of Cambodia and administrative areas in Kampong Cham Province by District and Commune

Note. Reprinted from Cambodian National Institute of Statistics (2013). Copyright 2013 by the Cambodian National Institute of Statistics.

The following section describes the recruitment process of two groups of participants:

1. thirteen mothers, and
2. three community MCH supporters.

Recruitment of mothers

The mother participants in this study lived in Thmei village, Commune I, Kang Meas District, Kampong Cham Province. Thmei village is one of the nine villages in Commune I. According to the village chief, this village had a population of 837 people. This village is about 50 kilometres from Kampong Cham's provincial capital and 45 kilometres from Phnom Penh – Cambodia's capital city. According to the village chief, this village is regarded as a rural area where the economic status is relatively low compared to that of the central district, despite it being next to the provincial roads. Most of villagers were farmers, and some have migrated to Phnom Penh and other main cities/towns to work.

The participants were purposively selected to include women, who were 18 years old or older and had at least a child who was under the age of five years. Following David and Sutton (2004), purposive sampling selects research participants based on researchers' knowledge and views about who they believe to be most suitable to the research topic. The purposive sampling strategy aligns with exploratory qualitative research, as it offers an in-depth insight into the participants' relevant social and cultural contexts (Liamputtong, 2012). During the recruitment, Sophea distributed an advertisement to potential mothers via Facebook Messenger (Appendix H). He used to work as a teacher in the selected district, so he had contact details of other teachers who were the mothers of under-5s. From the advertisement distributed by Sophea, I recruited four mothers who were all teachers.

I also used a snowballing technique to recruit more participants. Once I completed the interviews with the first cohort of participants, I asked them individually to share my research and my contact details with their network of mothers. This snowball method was convenient during the COVID-19 pandemic, due to restrictions on any community activities or gatherings. In total, 13 mothers were recruited and agreed to participate in my study.

Once a potential participant expressed her interest in participating in this study, I sent her electronic copies of the PIS (Appendix D) and CF (Appendix E). Then, she gave me dates and times she was available for the interview. Before obtaining written or verbal consent from the participant, I informed her about her rights to confidentiality and privacy, including using pseudonyms instead of their actual names and arrangements for data storage and disposal.

Prior to the interview, some participants chose to sign the CF and then returned the signed form to me by email and Facebook Messenger as images. The other participants gave verbal consent at the start of the interviews.

Recruitment of community MCH supporters

As noted earlier, I also recruited community leaders and health professionals who worked at the community level on maternal and child health (MCH) programmes and services. These community-based supporters of MCH are referred to as community MCH supporters throughout the remaining of the thesis. I asked Sophea to help me recruit the community MCH supporters. Sophea distributed hard copies of the PIS (Appendix F) and CF (Appendix G) to relevant stakeholders who had been working in MCH services and programmes in the village. The PIS and CF were sent to five relevant key stakeholders, including two deputy village chiefs responsible for the MCH programme and three midwives. Three agreed to participate in the study. One of the participants, a midwife, lived in Commune I, but she worked as a midwife at Health Centre II located in Commune II. I decided to include her in the study because the two communes are next to each other and mothers from Commune I often go to the Health Centre located in Commune II for services (see Figure 3.1 for the proximity of the locations of Communes I and II). The other two participants were deputy village chiefs.

The processes of arranging the interview dates and times and explaining the CF and other aspects of the research were the same as those used with the mother participants as described above.

3.3.3 Data collection

I conducted the semi-structured interviews using Zoom and Facebook Messenger in July and August 2021. This section describes the data collection processes with the 13 mothers and the three community MCH supporters.

Interviewing mothers

The 13 mothers were individually interviewed in the Khmer language. Indicative interview questions covered topics which included: mothers' perceptions of healthy feeding practices; the barriers the mothers face in promoting healthy feeding practices (e.g., implementing the recommended commentary feeding); and the support the mothers felt they needed to achieve healthy feeding practices (see Appendix B). As noted in section 3.3.1, I applied interview techniques, such as repeating keywords and listening actively, to encourage the participants to expand their answers.

Individual interviews took between 35 and 60 minutes, excluding the introduction of myself and my study, the explanation of the interview protocol and the process of obtaining consent. I observed that mothers with a higher education level tended to give more in-depth and rich narratives or information. I felt humbled and excited by the richness and diversity of the responses given to my research questions.

Upon completing the interviews with the 13 mothers, I analysed the data and summarised their views into three main themes. I transferred them into a poster to be presented to the community MCH supporters for responses and feedback (Appendix C).

Interviewing community MCH supporters

I interviewed three community MCH supporters individually. They were a midwife and two deputy village chiefs. I began each interview by presenting the poster and themes and summarising the recommendations from the 13 mother participants. I invited them to reflect on those recommendations (see Appendix C for interview guidelines). I also asked how those recommendations would fit with their mandates and programmes. I asked them to identify relevant key stakeholders, potential challenges, and the actions needed to implement the recommendations proposed by the mothers. Each interview lasted between 35 and 45 minutes, excluding my introduction to the study and the consent process.

3.3.4 Data analysis

The interview data were analysed using thematic analysis. In qualitative research, thematic analysis is used to identify themes by analysing the data collected from the research and the identified themes are used to explain the research findings (Braun & Clarke, 2006; Maguire & Delahunt, 2017). I followed Braun and Clarke's (2006) six steps of thematic analysis: (1) familiarisation with the data collected, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. I followed each step carefully, as detailed below.

To ensure the accuracy of the data analysis, the recorded verbatim data collected in Khmer were transcribed by me, followed by translation and back-translation. I was born, grew up and spent most of my life in Cambodia, and speak fluent Khmer. To ensure the accuracy of the translation, I worked on back-translation with assistance and verification from a bilingual Cambodian lecturer in Cambodia, who has completed a Master of Public Health in New Zealand. At the time of the research, he was working a lecturer at University of Puthisastra in Phnom Penh and completed a confidentiality form (Appendix I). Back-translation, according to Brislin (1970), is used to ensure the accuracy and quality of translation by translating the translated version of a document back into the original language. The credibility of qualitative research within cross-cultural contexts can be increased by independently re-translating the data collected; in this way, the loss of original meanings can be minimised (Wong et al., 2019).

Following the completion of back-translation, I read through the interviews again to familiarise myself with the data. The identification of themes was carried out by a clustering process that consisted of two phases. In the first phase, I generated initial codes in NVivo 20 software. NVivo "is designed to be used from the beginning of a qualitative research project" (Hoover & Koerber, 2009, p. 76). Through the NVivo process, I identified "codes". I produced a research codebook for the group of mothers and one for the group of community MCH supporters (Appendices N and O). In the second phase, I worked with my supervisors to aggregate the initial codes into themes. The initial codes were grouped into possible sub-themes, which then were grouped into main themes and developed in a mind-map. After that, the sub-themes and main themes were named.

3.4 Ensuring academic rigour

In qualitative research, rigour is used to evaluate the quality of the whole research process, ranging from the first to the final step (Liamputtong, 2012). Johnson et al. (2020) suggested a step-wise approach presented the use of rigour in all stages of research, including research design, process, and dissemination of research results. It is necessary to have a rationale for a chosen approach used in each stage and practice consistency in all stages. Rigorous research should be credible, transferable, and confirmable (Lincoln & Guba, 1986). The concepts and application of credibility, transferability, and confirmability are discussed below.

Table 3.2 Rigour checklist in the data analysis

Criteria	Rigour checks for language awareness
Credibility (Internal validity)	Data collection processes considered the preferred language of participants: Khmer. Standard translation procedure through back-translation. Supervisors reviewed and critiqued data analysis to obtain diverse views.
Transferability (External validity)	Details of the language profile of participants: Khmer.
Dependability (Reliability)	Tested and revised the interview guide during the pre-fieldwork preparation. Used the same semi-structured interview questions and asked them in the same order.
Confirmability (Objectivity)	Audit trail of data sets by supervisors.

Note. Adapted from Irvine et al. (2008).

3.4.1 Credibility

One main aspect of achieving research rigour is credibility (Lincoln & Guba, 1986). Irvine et al. (2008) define credibility as "confidence in the truth of the data" (p. 45). The credibility of research is achieved by various strategies, one of which is peer review (Chilisa, 2012; Lincoln & Guba, 1986; Shenton, 2004). In this study, credibility was achieved by peer review meetings between my supervisors and myself to develop sub-themes and main themes. Given the cross-language research in this study, the credibility was supported by back-translation, which a neutral bilingual Cambodian lecturer

validated to ensure concept equivalence (see Table 3.2). The process of back-translation is described in 3.3.4.

3.4.2 Transferability

Transferability, in research, asks about "the extent to which the findings from the data can be transferred to other settings or groups" (Irvine et al., 2008, p. 45). To ensure transferability of the research findings, a rich description of the research setting is required to provide a strong foundation for the research results to be transferred to other contexts (Shenton, 2004). For example, I provided details of the participants' demographic profiles, localities, places of residents, local cultures, and community systems, as much as possible to inform future researchers who would conduct a similar study in a commune or rural areas in Cambodia.

3.4.3 Dependability

Another significant aspect of trustworthiness in qualitative research is dependability, which means "the stability of the data over time and over conditions" (Irvine et al., 2008, p. 45). The dependability of research can be fostered by demonstrating consistency throughout the data collection procedures (Colorafi et al., 2016; Miles et al., 2014). In this study, I ensured the consistency in data collection by testing and revising the interview guide during the pilot interviews. During the interview process, I asked the same semi-structured interview questions in the same order for all participants. See Table 3.2.

3.4.4 Confirmability

Confirmability is achieved when the research findings are driven by informants and not subject to researchers' predispositions to a high degree (Lincoln & Guba, 1985). According to Shenton (2004), the researchers need to ensure their research findings are guided by the analysis of the data gathered from the participants and not the researchers' own bias. Given this research project, my own biases could be avoided by having my supervisors check and evaluate data analysis to obtain diverse points of view. See Table 3.2.

3.5 Research ethics

This research project was approved by the Auckland University of Technology Ethics Committee (AUTEC) on May 27, 2021, Reference No. 21/89 (Appendix J), and the National Ethics Committee for Health Research of Cambodia (NECHR) on July 5, 2021, Reference No. 135NECHR (Appendix K). The Chief of Kampong Cham Provincial Health Department provided written approval supplied to the NECHR (Appendix L).

Although the fieldwork was undertaken remotely, I was required to inform relevant authorities, including the village chief. Given the COVID-19 situation, I prepared a letter for the village chief of the selected village informing him of the proposed research fieldwork. I had to provide approval from AUTEC (Appendix J), NECHR (Appendix K), and a support letter from the Chief of Kampong Cham Provincial Health Department (Appendix L). I sent e-copies of these documents to Sophea, who was my contact person in Cambodia, and then he printed hard copies and submitted these to the village chief. In response to this, the village chief supported this research study (Appendix M).

3.6 Chapter summary

The chapter described the methodology used, specifically an exploratory qualitative approach embedded within the interpretive paradigm. It outlined the various steps involved in research design, namely pilot interviews, recruitment procedures, the data collection process and the analytic methods used. The chapter also described how the research was carried out to ensure compliance with ethics requirements.

Chapter 4: Research Findings

This chapter discusses the analysis of interview data from two groups: (1) 13 mothers; and (2) community MCH supporters. This chapter includes two main sections. The first section discusses mothers' perceptions of healthy feeding practices for their children under five years of age in one commune of Kang Meas District, Kampong Cham Province, Cambodia. The second section discusses the findings from the interviews with community MCH supporters on their feedback on the key ideas provided by the mothers.

4.1 The findings from the mothers

Thirteen mothers participated in semi-structured interviews. They were recruited from Commune I, Kang Meas District, Kampong Cham Province, Cambodia. The interview explored participants' knowledge, perceptions, and practices of healthy feeding for their under-5s, the challenges and the support needed to promote healthy feeding practices in their families and community. The findings from the interviews with mothers are presented in six main sections. This chapter begins with two short stories of two mothers. These stories were chosen to illustrate the socio-cultural context of Cambodian mothers in understanding feeding practice and its determinants. These mothers were Sreypich (age 18) and Sokny (age 30). The second section includes demographic profile data on the mothers. The third section illustrates the relationships between the main themes and sub-themes derived from the study findings. The last three sections present and discuss the study findings on mothers' current knowledge and practices, mothers' perceived barriers in child-feeding practices, and mothers' perceptions of the support needed to promote and maintain healthy feeding practices at home and in the community.

4.1.1 Short stories of two mothers

Sreypich (age 18), a teen mother, was the youngest of all the participants. She completed a primary school education (grade 6). At the time of the interview, she was a full-time housewife and had two children – a daughter aged one-and-a-half years and a son aged five months. She lived in an extended family which included her grandfather, mother, husband, and two young children. She was the main caregiver of the two children because her husband and mother work outside the house. Sreypich's husband worked as a construction worker and her mother was a waste picker. In Cambodia, waste pickers collect plastics, cardboard, scrap metal, and aluminum waste (e.g., cans), and sell them to

dealers. They may collect recyclable items from households' waste bins or buy them from the households, and then sell them to dealers. Waste pickers are vulnerable populations living in very poor conditions. Sometimes, Sreypich's baby girl went with her mother to collect and sell recyclables. Sreypich recalled her little daughter was underweight at nine months old. The health centre staff advised Sreypich to feed her daughter some thick enriched porridge which consists of a variety of vegetables and meat. But Sreypich said she did not have enough money to always buy some meat for her daughter and only cooked the enriched porridge with whatever vegetables she had around her house, such as ivy gourd.

Sreypich's account may reflect the experience of a poor teen mother[1] in a rural Cambodia and the challenge she faced being a first-time mother and how these determinants hindered her ability to provide healthy and nutritious foods for her children. Sreypich came from a poor family. She got pregnant with her first child when she was around 15 years old. In Cambodia, a child would finish a primary school around the age of 12. This means Sreypich got pregnant with her first child a few years after she left primary school.

Sokny (age 30) was a full-time teacher and had only a four-year-old son. She had obtained the highest qualification of all the participants (a master's degree). She lived with her husband and son. Sokny lived within the school compound where she worked as a teacher. Sokny often took her son to the class as she did not have anyone to look after the child. Both Sokny and her husband worked full-time. Sokny learned about healthy feeding and nutritious foods for her child from various sources, including social media. Yet she found it difficult to juggle between being a mother and a career woman. Not having the support from her parents or parents-in-law in childcare made it hard to balance her work and motherhood. She expressed her concerns about her son's living environment in regard to the way he should have stayed in a home environment, which was the most suitable place for child growth and development.

[1] According to the Article 948 of the Civil Code of Cambodia (2007), the legal age of marriage for both men and women is the age of 18. As reported by the Cambodian National Institute of Statistics (2015), teenage pregnancies amongst Cambodian adolescent girls and women aged 15–19 years have increased from 8% in 2010 to 12% in 2014. The report shows that teenage pregnancy is a public health issue in Cambodia because teenage mothers and their children are at high risk of disease and death.

4.1.2 Demographic profile of the mothers

The mothers were aged from 18 to 48 years. Most of them (8/13) were in their 30s. All mothers were married. One participant (Sreypich), who was 18 years old, had not held a wedding ceremony. In Cambodia, a Khmer traditional wedding usually lasts for three days to include ceremonies like the dowry-giving ceremony and monk blessing. At the time of this study, the ceremony has been shortened to one or two days. A wedding ceremony costs a lot of money. Families who cannot afford to hold a wedding ceremony, would organise a small ceremony at home, attended only by the parents of both the bride and groom, and close relatives. Table 4.1, below, provides a summary of the mothers' demographic profiles.

The mothers' levels of education ranged from a primary school level to a higher education level. According to the Cambodian Ministry of Education, Youth and Sport (2019), the current public education system is classified into four major categories: (1) pre-school (three years); (2) primary school (grades 1–6); (3) lower secondary school (grades 7–9) and upper secondary school (grades 10–12); and (4) higher education which includes undergraduate education/bachelor's degree (four years), master's degree (two years), and PhD (three to six years). In this study, four mothers had a higher education background (two with master's degrees and two with bachelor's degrees), two had completed upper secondary school (grade 12), and the remaining seven had completed schooling between primary school (grade 5) and lower secondary school (grade 9). All participants were literate.

All 13 mothers were Khmer and spoke fluent Khmer. They were recruited from Thmei Village (pseudonym) which is a village located in Commune I (pseudonym), Kang Meas District, Kampong Cham Province. The occupational status of the mothers was diverse. Of the 13 mothers, four were teachers, three were farmers, three were full-time housewives, two had small home-based businesses, and one – named Malis – worked as a senior seller in a company in Phnom Penh, the capital city of Cambodia. Malis worked in Phnom Penh five days a week. She travelled using her own motorbike, the journey from her village taking around one hour. She left her child with her mother, and she came home for the weekends.

The number of people in the household ranged from three to eight people. The number of children ranged from one to five. Nearly half of the mothers (6/13) lived in extended families. The extended family may include living with grandparents, especially grandmothers, who would usually help with looking after their grandchildren at home.

Table 4.1 Demographic profile of the mothers (n=13)

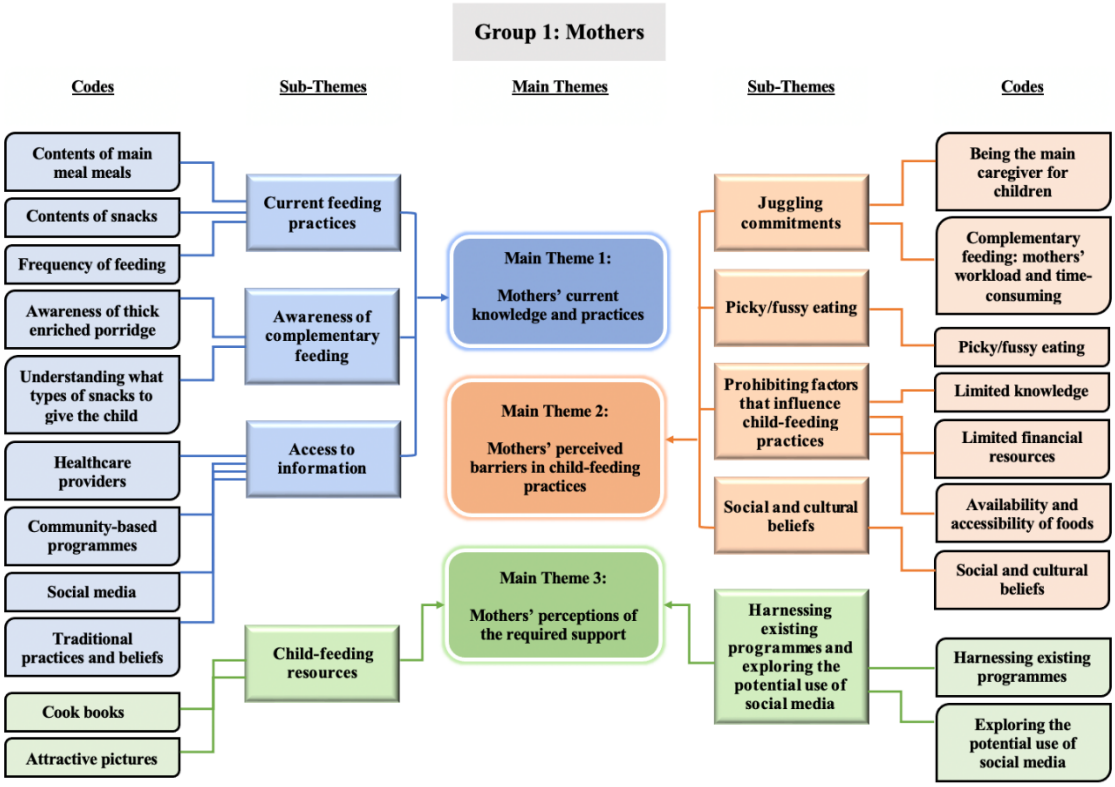
Pseudonyms	Age	Educational background	Occupational status	Household No.	Extended family	No. of children	Age of children
Dany	25	Bachelor's Degree	Teacher	3	No	1	2y
Nou	30	Master's Degree	Teacher	5	Yes	1	1.5y
Malis	24	Grade 12	Senior seller in a company in Phnom Penh	5	Yes	1	11m
Sreypov	30	Grade 7	Farmer	8	Yes	2	4y; 8m
Sopheap	31	Grade 5	Farmer	5	Yes	2	8y; 2y
Sokunthea	36	Grade 6	Farmer	5	No	3	16y; 14y; 10m
Dane	24	Grade 12	Home-based business	4	No	2	5.5y; 7m
Sreypich	18	Grade 6	Housewife	6	Yes	2	1.5y; 5m
Sokha	48	Grade 9	Home-based business	8	No	5	28y; 24y; 18y; 13y; 4y
Theara	35	Grade 7	Housewife	5	No	3	13y; 10y; 4y
Sokny	30	Master's Degree	Teacher	3	No	1	4y
Chanthou	38	Grade 6	Housewife	5	No	3	4y; 3y; 6m
Nareth	30	Bachelor's Degree	Teacher	6	Yes	1	3.5y

Note. Primary school = grades 1–6; lower secondary education = grades 7–9; upper secondary education = grades 10–12; higher education = Bachelor's degree and Master's degree. y = year(s); m = month(s). Participants are ordered based on the order of the interviews.

4.1.3 Identification of the main themes and sub-themes

The three main themes and nine sub-themes which emerged from the interview data were produced as shown in the researcher's codebook (Appendix N). Figure 4.1, below, illustrates the structure of the main themes and related sub-themes.

Figure 4.1 Mind-map of developing main themes and sub-themes



The decisions on the main themes and sub-themes were discussed by the researcher in fortnightly consultation with her supervisors (Table 4.2).

Table 4.2 A summary of main themes and sub-themes with descriptions

Main theme 1: Mothers' current knowledge and practices ***Description: Mothers' current feeding practices for their children***	
Sub-themes	Descriptions
A. Current feeding practices	Mothers' decisions on what and when to feed their children.
B. Awareness of complementary feeding	Mothers' awareness of recommended complementary foods, such as thick enriched porridge and snacks (e.g., fruit).
C. Access to information	Sources of information on child feeding.

Main theme 2: Mothers' perceived barriers in child-feeding practices ***Description: Mothers' challenges in feeding their children***	
Sub-themes	Descriptions
A. Juggling commitments	How the mothers negotiate and juggle their commitments as a mother and a worker (e.g., farmers, teachers, etc.).
B. Picky/fussy eating	The children are fussy about their food. Children do not like eating food prepared, such as thick enriched porridge.
C. Prohibiting factors that influence child-feeding practices	Factors that determined feeding practices, such as having little knowledge around child-feeding, families facing financial issues, and availability and accessibility of nutritious foods.
D. Social and cultural beliefs	How the socio-cultural beliefs about child-feeding affect mothers' beliefs and practices. The mothers may learn about those beliefs from the elders in the family or the village.
Main theme 3: Mothers' perceptions of the required support ***Description: Mothers' suggestions on how healthy feeding practices can be promoted and maintained***	
Sub-themes	Descriptions
A. Harnessing existing programmes and exploring the potential use of social media	Explore ways to build the capacity of mothers to promote and maintain healthy child-feeding practices in their families and community.
B. Child-feeding resources	Attractive and up-to-date child-feeding information, including pictures; attractive and mother-friendly cookbooks about complementary foods.

The following sections discuss each theme in detail.

4.1.4 Main theme 1: Mothers' current knowledge and practices

This theme is presented in three parts: Mothers' current feeding practices, their knowledge and awareness of complementary feeding, and sources of information.

Current feeding practices

Contents of main meals

All mother participants prepared three main meals a day and snacks in between. How the mothers decided what to feed their children varied based on individual and family circumstances. The majority of mothers gave their children plain porridge (Khmer: bobor sor). They added a little bit of salt, soy sauce, eggs, or dried meat to the porridge for breakfast. For lunch and dinner, they would give their children some rice with some simple home-cooked food, often found in the daily diets of a Cambodian family, such as Khmer soups (Khmer: samlar). They mixed some rice with the soups for their children to eat. For example, Nou (age 30), a teacher, gave her one-and-a-half-year-old son the following:

> *When he [my son] was one year old, I tried to feed him rice with our daily foods. He likes soup. So, I always try to ensure that we always have some vegetables to make soup for him. […] In the morning, he eats porridge [plain porridge]. […] His lunchtime is around 11:00 AM. […]. In the evening, he has dinner with our daily foods.*

For lunch and dinner, a Cambodian family has some rice, at least a type of soup, and one or two other dishes for lunch and dinner including fried meat or fermented foods. Khmer soups include "samlar machu" (sour soups) and "samlar kako" that are eaten with rice. There are different types of sour soups, such as "samlar machu kroeung", which has some meat and vegetables (water morning glory), seasoned with a few coriander leaves, and a little bit of holy basil, turmeric, and fermented fish paste. Samkar kako is a type of soup consisting of fermented fish paste, roasted ground rice, meat, and vegetables. See Figure 4.2, below. Thus, most Khmer soups are made of meat (e.g., fish, pork, or chicken) and vegetables seasoned with local herbs and spices.

Figure 4.2 Khmer soups: "samlar machu kroeung" and "samkar kako"

Note. From *An uncommon guide to Cambodian cuisine – and the must try dishes,* by LHuillier, 2019, HelloAngkor. (https://helloangkor.com/traditional-dishes-of-cambodian-cuisine/#dumplings). Copyright 2022 by HelloAngkor.

Sreypov (age 30) had feeding practices similar to Nou's. Sreypov worked as a farmer and had two children aged four years and eight months, and stated:

> *For the four-year-old son, he eats like an adult. Early in the morning, I prepare breakfast. Sometimes, I cook some rice or plain porridge. He eats rice or plain porridge with meat, such as dried fish or pork. At around 7:00 AM or 8:00 AM, I go to the market to buy food and snacks. After that, I prepare lunch. As you know, local foods for people living in rural areas include sour soups and "samlar kako". These are our daily foods. In the evening, we also eat those foods which cooked during lunchtime, but add other dishes, such as fried fish or steamed fermented fish paste.*

Some mothers gave their children steamed rice (Khmer: bay chamhoy) cooked with salt, sugar, monosodium glutamate (MSG), eggs, and garlic. Usually, there is no meat or vegetables in the steam rice. Sokunthea (age 36), a farmer who had three children aged 16 and 14 years and 10 months, gave her youngest son steamed rice for breakfast, lunch, and dinner:

> *Every day, I prepare steamed rice to feed my son. At first, I cook rice as usual. When it is nearly cooked, I take it out with a spoon to put into a small bowl. And then, I add egg, sugar, salt, MSG, and garlic. After that, I put the bowl back into the rice cooker to steam it. My son eats the steamed rice for all the three meals (breakfast, lunch, and dinner).*

Sopheap (age 31) was a farmer, like Sokhuntea. She had two children aged eight and two years. She sometimes gave steamed rice to her two-year-old son:

> *This is about feeding my two-year-old son. For breakfast, I cook plain porridge or rice. He eats with dried fish or pork. Lunch, he eats rice (soft rice) with our daily foods, such as sour soups or other types of soups. I mix the rice with the broth and then feed him. In the evening, I sometimes feed him steamed rice which contains ingredients, such as salt, sugar, MSG, egg, and garlic. Regarding how to cook the steamed rice, I put the cooked plain rice into a small bowl and then add ingredients. After that, I put it into the rice cooker and steam it. Once it is done, I mix it and then feed my son.*

Contents of snacks

Apart from the three main meals, mothers also gave their children some snacks, including local and seasonal fruit, local homemade Khmer snacks, and ultra-processed snacks. Some mothers gave fruit to their children as snacks between their main meals. Theara (age 35), a full-time housewife and a mother of two sons aged 13 and 10 years and a daughter aged four years, gave *"pumpkin and avocado smoothies"* to her daughter. Sokunthea (age 36), a farmer and a mother of two daughters aged 16 and 14 years and a son aged 10 months, gave her baby son some fruit for snacks, like *"dragon fruit and banana, and cooked pumpkin"*. Chanthou (age 38), a full-time housewife stated:

> *Besides the three meals, there are fruits for them, but not every day. My sister-in-law, who sells fruit, always brings my children fruit every week. She always brings their favourite fruit, such as rambutans. I sometimes buy from the market. However, due to the COVID-19 lockdown, the market is closed now. I only have bananas around my house.*

Local homemade Khmer snacks can be bought from the local/village market or individual food vendors who sell these snacks at their home. Khmer pastries ("num" in Khmer, e.g., "num kroch" and "num kong") and desserts, e.g., green bean dessert (Khmer: "bang aem bobor sandaek khiev"), are sold by some villagers from home (see Figure 4.3, below). The term "dessert" locally refers to sweet porridge (Khmer: "bang aem") which may include green bean dessert, banana dessert, or corn dessert.

Figure 4.3 Local homemade Khmer snacks: "num kroch", "num kong", and green bean dessert (Khmer: "bang aem bobor sandaek khiev")

Note. From *An uncommon guide to Cambodian cuisine – and the must try dishes,* by LHuillier (2019), HelloAngkor. (https://helloangkor.com/traditional-dishes-of-cambodian-cuisine/#dumplings). Copyright 2022 by HelloAngkor.

Apart from fruit and local homemade Khmer snacks, some mothers gave their children packaged snacks (Khmer: nom kanhchob) which mostly were ultra-processed snacks.[2] These snacks might be locally produced and packaged, or imported from other countries, such as China, Thailand, and Vietnam.

Sokha (age 48) had the largest number of children of all the participants. She had five children aged 28, 24, 18, 13, and four years. Sokha did not want her four-year-old son to eat packaged snacks, but the son would grab the snack by himself from her home-based stall. She had opened a small home-based grocery store, and Figure 4.4 shows an example of a home-based grocery store known as "taub chabhuoy" in Khmer. This kind of store usually sells a variety of products, including cooking ingredients, soft drinks, packaged snacks, etc. She stated:

> *In between the three meals, my son drinks some milk or coconut water. He does not like eating fruits. He likes eating snacks (e.g., packaged snacks). We do not need to buy these snacks because I sell them here at home. I do not want him to eat a lot because it will affect his health, but he takes them by himself.*

[2] As explained by Monteiro et al. (2018), the term "ultra-processed" refers to "industrial formulations manufactured from substances derived from foods or synthesized from other organic sources" (p. 6). The ultra-processed foods include sweet, fatty or salty packaged snacks, sugar-sweetened beverages, reconstituted meats, and pre-prepared frozen dishes (Monteiro et al., 2018).

Figure 4.4 A home-based grocery store

Note. From "Safety of food a mystery – even to gov't", by Barron and Khouth, 2014, *The Phnom Penh Post*. (https://www.phnompenhpost.com/national/safety-food-mystery-even-govt). Copyright 2020 by The Phnom Penh Post.

Peer pressure from other children eating these snacks is another factor contributing to unhealthy eating. Chanthou (age 38) was a housewife and had three under-5s. They were four and three years old and six months old. She was worried about unhealthy snacks, and said that: *"Their [my children's] snacks include fruit and packaged snacks. I rarely buy packaged snacks for my children because eating these snacks would affect their health. However, when they see other children eating, they always ask for these snacks."*

Frequency of feeding

All 13 mothers provided their children three meals a day and snacks in between. Some mothers set regular mealtimes. Nareth (age 30), who worked as a teacher, emphasised the importance of setting regular mealtimes for her child. She had only one child, aged three-and-a-half years. She lived in an extended family and had her parents and older sister looking after her child.

> *I set three meals a day, which are breakfast, lunch, and dinner. Apart from the three meals, she drinks PediaSure bottle milk twice a day. I also prepare fruit for her. […] I set regular mealtimes for my daughter. If I do not set regular mealtimes for her to eat, she will be bored with eating foods. Eating regularly is good for*

her stomach. If she does not eat regularly, she may have a stomach ache. […] the three meals and PediaSure bottle milk are regular.

Nou (age 30), who was also a teacher, had regular mealtimes for her only child, a one-and-a-half-year-old son. While she was teaching, her mother helped look after her son and cook foods:

There are three meals and snacks in between. […] I want him [my son] to eat at regular times. Breakfast is around 7:30 AM at the latest. Lunch is between 11:30 AM and 12:00 PM. Dinner, I started to feed him around 6:30 PM. Having regular mealtimes makes him healthy. When the food is cooked, I feed him first. After finishing feeding him, the adults eat.

Although some mothers did not set regular mealtimes, they tried to feed their children as soon as the food was cooked. Usually, wives would wait for husbands to come back from the farm to eat together, but they would feed their young children earlier. All participants, except one (Sreypich), had their children to eat first when the food was just cooked without waiting for their husband. Chanthou (age 38) was a full-time housewife and had three young children. Her husband worked on the farm and returned home in the late evening. She explained:

Their mealtimes are not regular because I am busy. I take care of children alone. My husband works on the farm. In the early morning, he leaves home for his farming work. He comes home to have lunch and then back to work. He returns home in the evening.

When the food is cooked, I feed my children first. Since they are young, we need to feed them; otherwise, they will not be full. If they eat by themselves, they will not eat much because they like playing. We [parents] eat meals after finishing feeding them. Since we have young children, I cannot wait for my husband.

Whilst a majority got the children eat as soon as the food was cooked, only one participant, Sreypich (aged 18), waited until her husband was home for the family to eat together. She was a full-time housewife and had two young children aged one-and-a-half

years and five months. Her family lived with her grandfather and mother. Details about Sreypich were included earlier, in section 4.1.1. She explained:

> *In the morning, before my husband goes to work, he buys breakfast for us. Breakfast is around 6:00 AM. Lunch is around 11:00 AM. Dinner is between 6:00 PM and 7:00 PM. For both lunch and dinner, we wait until my husband back from work. I do not feed my children first. We wait to eat together.*

Awareness of complementary feeding

As recommended by the Cambodian NNP (2008), from six months of age children should have complementary foods: thick enriched porridge or well-mashed foods (e.g., mashed cooked pumpkin). Dany (age 25), who was a teacher with a bachelor's degree and a mother of two-year-old daughter, started to introduce thick enriched porridge when her child was six months old:

> *When she [my daughter] was six months old, I started to make thick enriched porridge. […] About preparing the enriched porridge, I added a variety of vegetables. At first, I added at least three types of vegetables, such as pumpkins, carrots, and ivy gourd. Later, I added only one type of vegetable to avoid the same flavour. For meat, I sometimes added chicken by chopping it. After the porridge was cooked, I blended and then warmed it up.*

Some mothers cooked the enriched porridge only once or twice and then stopped. Malis (age 24) had an 11-month-old daughter. She completed upper secondary education (grade 12) and worked full-time as a senior seller. Malis's mother lived with her and helped looking after her daughter. Malis once introduced enriched porridge to her daughter following the advice from the community health centre staff. She did not continue because her daughter did not like to eat it:

> *When she was from six months of age, I started to feed her porridge. We used to cook thick enriched porridge to feed her, but she did not eat. Since she does not eat the enriched porridge, we cook soup which consists of meat and green vegetables. We feed her the broth in which the meat and vegetables have been*

cooked. She does not like eating vegetables, but the broth contains nutrients. We feed her the broth with plain porridge.

I also learnt from health centre staff (e.g., nurses and midwives), who instructed me to implement the recommended complementary guidelines for children from six months of age by providing thick enriched porridge and snacks (e.g., fruit).

I used carrots, pumpkin, potatoes, ivy gourd, egg, and olive oil when preparing the enriched porridge. About how to cook this enriched porridge, I poured the water into a pot with the right amount of water and then cooked until the meat and vegetables were soft.

Sreypich's daughter also did not like eating thick enriched porridge at first, but she encouraged her daughter to eat it: "At first, she [my daughter] did not want to eat the cooked enriched porridge, but I still tried to feed her by encouraging her to eat. After that, she liked eating this enriched porridge." She understood that eating thick enriched porridge would improve her child's health:

I only fed this enriched porridge which contained a variety of vegetables [no plain porridge]. I was told [by health centre staff] that feeding thick enriched porridge would improve children's health. When she was nine months old, I took her to get vaccinations at the health centre. At the time, I was told that my child was underweight. Therefore, I was advised to give her thick enriched porridge.

In complementary feeding, the provision of snacks is significant. Sokny (age 30), a teacher and a mother of a four-year-old son, shared the following:

For packaged snacks, I rarely allow him [my child] to eat. […] Besides feeding my son the enriched porridge, it is important to prepare snacks for him. I have been doing this until now. For children from six months of age, it is not only recommended to feed thick enriched porridge, but also snacks. Mothers living in rural areas might have limited awareness about this, which leads to undernutrition among their children.

Dany (age 25), a teacher and a mother of a two-year-old daughter, added: “My child used to eat packaged snacks, but she felt unwell after eating. So, I do not allow her to eat anymore because these snacks are unhealthy. So, I give her fruit (e.g., bananas), milk, sugar cane, etc.” Theara (age 35) was a full-time housewife. She had three children aged 13, 10, and four years. She completed a lower secondary education (grade 7). Similar to Dany’s feeding practices, she also limited the type of snacks for her children. She added:

> *Other snacks include handmade Khmer snacks. I prefer to make those snacks for my children compared to buying packaged snacks because eating packaged snacks would affect their health. […] I do not allow her to eat something unhealthy or affect their health.*

Access to information

The mothers learnt how to prepare foods for their children from various sources, including healthcare providers (e.g., midwives or nurses at health centres), community-based programmes (e.g., meetings of mothers), social media (e.g., YouTube, Facebook, etc.), and traditional practices and beliefs (shared by, e.g., own parents and the village elders). Nou (age 30) was one of two participants with the highest education qualification (a master’s degree). She had only one son, aged one-and-a-half years. She was teacher and lived in an extended family. Her mother helped with taking care of her child while she was teaching. Nou learnt how to take care of her child from different sources, including midwives. She stated: *“I consulted with a midwife who works at a health centre in my commune. For example, my child sometimes did not want to eat, so she provided recommendations to address the issue accordingly.”*

Besides the education from the health centre staff, the mothers also learnt from community-based programmes. Sokunthea (age 36), a farmer and a mother of three children, stated:

> *There have been community-based activities (e.g., meetings of mothers) organised by NGOs. For example, they educate us about taking care of our health, child health, child education, and feeding children. They instruct us on how to take care of our children appropriately. […] I saw it [the picture of thick enriched porridge] at the health centre and through community-based activities whereby the*

midwives instructed the mothers on how to take care of young children. For example, they told us to prepare complementary foods (e.g., thick enriched porridge) to feed children from six months of age in order for them to be healthy.

The internet, such as YouTube and Facebook, had been an important source of information. Some mothers mentioned that the "Smart Moms" (Khmer: nak mteay chhlatvei) group[3] on Facebook often posted information about how to take care of infants and young children, including cooking thick enriched porridge for their children. This group was created for mothers to share knowledge and experiences, and ask questions related to maternal and child health. As of March 24, 2022, this group had more than 198,000 members. The mother participants found this group very useful. They learnt how to nurture their children and shared with other mothers in the group. Other similar Facebook groups and pages include the "Enriched Porridge for Beloved Children" (Khmer: bobor krop kroeung samreab kaun chea ti sralanh) group[4] and the "MommyDoctor by Kaknika" page.[5] Some examples of preparing thick enriched porridge consisting of a variety of meats and vegetables are in Appendix B.

Facebook is the most commonly used social media platform in Cambodia.[6] In this study, most of the mothers had Facebook accounts. Nou (age 30), a teacher and a mother of a one-and-a-half-year-old boy, stated: *"it [Facebook] is the most used social media in Cambodia. Among 100 people, almost 100 people have Facebook accounts. Other social media, such as Telegram, is not widely used in Cambodia."* She learnt how prepare foods for her son from Facebook: *"I am also a member of the "Smart Moms" Facebook group.*

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[3] According to Ket (2020), the "Smart Moms" Facebook group was created on January 3, 2020. There is no information about the creator. Although the purpose of the group is to share information about maternal and child health, it is also used by the members to advertise their small businesses, such as selling baby products.

[4] According to Leng (2016), the "Enriched Porridge for Beloved Children" Facebook group was created on June 5, 2016. There is no information about the creator. As of March 24, 2022, this group had more than 52,000 members.

[5] According to Kosal (2018), the "MommyDoctor by Kaknika" Facebook page was created on July 31, 2018. As shown on the page, Dr Kosal Kaknika is a pediatrician. The purpose of the page is to share medical knowledge and parenting tips. Furthermore, it is used to advertise her clinic, named "MommyDoctor Pediatric Health Care Clinic". Her contact details are shown on the page, so interested mothers/caregivers can also book appointments. As of March 24, 2022, more than 61,000 people followed her page.

[6] As of April 2022, 76.3% of the Cambodian population were active Facebook users (NapoleonCat, 2022). There was a significant increase of the Facebook users in Cambodia from 7.9 million in September 2018 to 12.4 million in June 2021 (Leang, 2021).

[…] when they [the group members] post useful information, I always view or screenshot in order to learn how to cook healthy foods for children." She shared how to prepare thick enriched porridge, as follows:

> *When I cooked the enriched porridge, I added chopped meat (e.g., fish), vegetables, oil, and other ingredients. After it was cooked, I blended it and then cooked it again until it became thick again. I prepared the porridge to feed him for a whole day. I put it in the fridge. I did not store the enriched porridge in the fridge for a long time because I think it is less healthy.*

Malis (age 24), a young and first-time mother of an 11-month-old daughter, stated:

> *When I want to cook food for my daughter, I always check YouTube. Apart from YouTube, I am also a member of the "Smart Moms" Facebook group. In general, the mothers in the group share information or experiences related to child health. For example, some mothers asked advice from other mothers in the group about what brand of milk or nutritious foods or any complementary foods that improve their children's health.*

Similarly, Sokny (age 30), a teacher and a mother of a four-year-old son, accessed information regarding child feeding from social media:

> *I have explored how to prepare these foods for my son through Facebook, which is the most commonly used platform. With smartphones, we can gain knowledge from information shared through Facebook or health pages that talk about foods. We can learn from these sources to strengthen our knowledge in preparing foods for young children as well as whole families.*

Some mothers learnt about child-feeding practices from their parents and village elders. Dany (age 25), who was a teacher and a mother of a two-year-old girl, noted: *"Most of the other mothers in the village take care of their children based on cultural norms by following advice from the elders."* Sokunthea (age 36), who was a farmer and a mother of three children aged 16 and 14 years and 10 months, stated that *"I learnt from older people"* about how to prepare foods for her children, like steamed rice cooked with salt,

sugar, MSG, eggs, and garlic for her 10-month-old son. She also gave them some snacks, such as fruit and desserts, between meals.

In summary, the mothers' knowledge and practices were shaped by a variety of aspects, such as educational background. The results show they learnt how to prepare foods for their children from different sources, including health centres, community-based programmes, social media, their own parents, and the village elders. However, the decisions on their children's diets and frequency of feeding were not the same. For instance, they were aware of complementary foods, such as thick enriched porridge, but not every mother cooked it at home. The following section discusses factors that influence the mothers' feeding practices.

4.1.5 Main theme 2: Mothers' perceived barriers in child-feeding practices

This section outlines the mothers' challenges in feeding practices for their children. The mothers explained a number of factors influencing their feeding practices: juggling commitments, picky/fussy eating, prohibiting factors that influence feeding practices, and social and cultural beliefs.

Juggling commitments

Being the main caregiver for children

Mothers who lived in nuclear families found taking care of children challenging. They were often left alone with sole responsibility for taking care of children. The demands of housework and looking after children were hard to juggle. In rural Cambodia, while husbands work outside the home to support their families, wives do housework and take care of children at home. Chanthou (age 38), a full-time housewife and a mother of three children, explained:

> *It [taking care of children] is difficult due to a small age gap between my children (four years old, three years old, and six months old), and they are all young children. If the oldest daughter were older (e.g., 7-10 years old), she would help look after younger sisters. However, I have to take care of the three daughters. […] My neighbour living next to my house also has a lot of children like me, but she has support from her parents. Very relieving.*

Sokunthea (age 36) was also a farmer and a mother of three children. She did not work in the field every day because she took care of her 10-month-old son at home. She would primarily go to the field during the busy times of planting and harvesting: She stated:

> *[…] it [taking care of children] is difficult because I do not have support from my parents. I take care of my children alone, so it is difficult. Wherever I go, I have to take my 10-month-old son with me. For example, when I go to the market to buy food, I have to take him with me. I cannot leave him at home. In short, no one helps me at all, so it is difficult. Sometimes, when I go to the farming field, I have to take him with me.*

Some participants expressed the burden of carrying multiple roles. Sokny (age 30) was a teacher and a mother of a four-year-old son:

> *If I had only one role as a housewife without working outside, I would not find it difficult to take care of my son. However, I play a variety of roles, including a wife, a mother, and a teacher. In other words, it is challenging because I have to take care of my son, work outside[of the home], and do housework. Therefore, I do not have enough time to spend with my son. […] If we stayed with parents or parents-in-law, we would have support from them or the family members. In my case, I have to take my son to my workplace, which does affect not only my work, but also my son's feelings. He should have stayed in a home environment which is the most suitable environment for his growth and development.*

> <u>*Thick enriched porridge: Mothers' workload and time constraints*</u>

Most of the mothers agreed that the major barrier to preparing thick enriched porridge was the time commitment required. Dany (age 25) worked as a teacher and had just one child aged two years. She lived with her husband and child only. She stated:

> *It is easy to cook this enriched porridge, but it is time-consuming. […] I prepared the porridge to feed her for a whole. I put it in the fridge because I was busy with teaching. When it was time to feed, I warmed it up.*

Malis (age 24), a mother of an 11-month-old daughter, acknowledged that: *"It [cooking thick enriched porridge] is not easy because it requires a lot of ingredients."* She worked as a senior seller in a company in Phnom Penh, 45 kilometres away from her village. Malis worked in Phnom Penh and only saw her daughter at weekends.

Some mothers had never prepared the enriched porridge to feed their children because they thought that it would take a long time to cook it. For example, Sreypov (age 30), a farmer and a mother of two children aged four years and eight months, stated: *"I have never cooked this enriched porridge for children because I think it is time-consuming. I am also busy doing housework and taking care of my children."*

The issue in relation to time constraints was also raised by another participant. Sokunthea (age 36), who was also a farmer, expressed the following view:

> *I have never cooked this enriched porridge because I am very busy. At his age (10 months old), I have to be with him all the time. Even cooking the steamed rice is also challenging. I have to carry him while cooking. It is extremely tiring to prepare each meal.*

Chanthou (age 38), a full-time housewife and a mother of three daughters, had never cooked the enriched porridge for her daughters:

> *I have never cooked this enriched porridge. […] as shown in the picture [the picture of thick enriched porridge], it requires many ingredients and a lot of time to prepare this type of porridge. Therefore, I was lazy to cook this enriched porridge. Also, I was busy.*

Picky/fussy eating

The mothers found it challenging to introduce thick enriched porridge. Sopheap (age 31), a farmer and a mother of two children aged eight and two years, shared her experiences as follows:

> *I used to cook this enriched porridge, but my son did not eat it. He did not like eating this enriched porridge which contained vegetables, such as edible*

amaranth and ivy gourd. However, he only likes eating plain porridge with salt or soy sauce or dried fish instead.

Dane (age 24), had a home-based business, and lived with her husband and two children (five-and-a-half years old and seven months old) only. She had completed an upper secondary education (grade 12). She watched how to prepare enriched porridge on TV, and wanted to introduce the enriched porridge into her child's diet:

I used to cook [thick enriched porridge] only once, but she refused to eat it. […] For vegetables, I put only carrots and potatoes. And then, I added salt and garlic. However, she did not eat it. I fed her, but she wanted to vomit.

Nou (age 30), a teacher and a mother of a son aged one-and-a-half years, said that her son was a fussy eater:

I think the difficulty in feeding young children is related to picky eating. I think this issue happens to every mother. […] In spite of being time-consuming, if children eat, it does not matter. If they do not eat, no motivation to make it again.

As noted earlier, some children liked eating snacks which were unhealthy. Children usually like to eat sweet or savoury packaged snacks, ice cream, and sugar-sweetened beverages. Sreypov (age 30), a farmer and a mother of two children aged four years and eight months, explained:

Although it is easy to find fruit (e.g., bananas) around the house, they [my children] do not like eating them. They like eating packaged snacks. Since they do not like eating fruit, I do not prepare fruit for my children.

Sokha (age 48), ran a home-based grocery store, and her son grabbed the snacks from her stall, often without, her knowing. Nou (age 30), was a teacher and had a master's degree, and believed that *"Every child likes something sweet, such as ice cream and sugar-sweetened beverages, which are unhealthy."* Nou's son also liked sugary drinks, and Nou introduced a healthy option: *"I sometimes poured sugar cane juice into an empty can and gave it to him."*

Prohibiting factors that influence child-feeding practices

Limited knowledge

Relatively well-educated mothers explored various legitimate sources on how to feed their children well. For a Cambodian woman, Nareth (age 30), would be regarded as a mature, highly educated first-time mother. She had only one daughter, aged three-and-a-half years. She was a teacher. She followed the Cambodian Ministry of Health guidelines, as explained below:

> *Talking about taking care of my daughter, I follow the guidelines of the Ministry of Health. She was exclusively breastfed for the first six months. From six months of age, I added various nutrient-dense foods; for example, thick enriched porridge, which contains vegetables, meat, etc. This would help her grow well. When she was over two years old, I added a kind of milk that would help her grow taller and raise her intelligence. Until now, I continue to feed her this milk along with the three meals a day and fruits. She drinks this milk twice a day.*

Nareth also observed that some mothers in the village might have adopted "unhealthy" feeding practices due to having little education:

> *Another reason is the mothers' limited knowledge so that they cannot raise their children appropriately. […] mothers who have limited knowledge or do not explore further on social media tend to feed their children based on cultural norms. […] Sometimes, the mothers feed their fermented foods, which would affect their health, growth, and intelligence. They feed their children these foods without considering the negative effects of these foods on their children's health. Since they used to feed these foods without any effects, they continue this habit. This can be related to their limited education as well.*

Sokny (age 30), a teacher like Nareth, also believed that other mothers in the village had limited knowledge about complementary feeding for infants and young children, including the provision of thick enriched porridge and snacks. She articulated her thoughts as follows:

Besides feeding my son the enriched porridge, it is important to prepare snacks for him. I have been doing this until now. For children from six months of age, it is not only recommended to feed thick enriched porridge, but also snacks. Mothers living in rural areas might have limited awareness about this, which leads to undernutrition among their children.

Half of the mothers (7/13) had completed lower levels of education (three farmers, three housewives, and one mother who had a home-based business). Most of these seven mothers did not introduce a variety of meats and vegetables into their children's diets. For example, Chanthou (age 38) completed primary education (grade 6). She was a full-time housewife taking care of three under-5 daughters. Chanthou's current feeding practices seemed to provide inadequate variety in the diets of the children:

For the six-month-old daughter, she has not eaten yet. I am exclusively breastfeeding. Until she is eight or nine months, I will start to feed plain porridge. For the first and second daughters, when they were younger, I fed them plain porridge with dried fish or salt. When they were over one year old, I started to feed them rice. They like eating meat, such as roasted meat, fried meat, and fried fish. They do not like eating vegetables.

Sokha (age 48) completed lower secondary education (grade 9), but she was not sure about how to prepare complementary foods (e.g., thick enriched porridge) for her four-year-old son:

About cooking this enriched porridge, I put chopped meats (e.g., fish), egg, vegetables (pumpkin, potatoes, and water spinach), sugar, MSG, and salt. I learnt from my sister-in-law in Phnom Penh (capital city), but I am not sure whether I put enough ingredients or not.

Limited financial resources

When it comes to raising children, one of the challenges is having limited family income. Dany (age 25), a teacher with a higher education qualification (Bachelor's Degree), expressed her concerns over mothers in the village who might not have enough money to give healthy foods to their children:

For other mothers in the village, they mostly feed their children plain porridge. This might be because of their family financial problems. While mothers living in high-income families tend to be able to prepare the enriched porridge for their children, those living in low-income families mostly feed plain porridge to their children. […] I used to see a child in the village. His family is poor. He did not have enough food to eat. At that time, he was around two years old, but he had just learnt to walk. Also, he could not speak yet. I meant he grew up slowly due to undernutrition.

Sreypich (age 18), prepared thick enriched porridge for her first child, but she rarely had any meat in the porridge. Her family was poor. Sreypich also had an old grandfather at home. She stated:

I cooked the enriched porridge by adding a variety of vegetables, such as carrots, potatoes, pumpkin, and ivy gourd. I mixed and blended it. I rarely added meat due to my family's limited income. […] The difficulty is meat (e.g., pork) because I need to buy them at the market. It takes time and costs money. My family's incomes are limited. […] When she was nine months old, I took her to get vaccinations at the health centre. At the time, I was told that my child was underweight. Therefore, I was advised to feed thick enriched porridge.

Availability and accessibility of foods

The mothers accessed fresh foods at the market, which took around 30 minutes to reach by motorbike. Most of the mothers went to the market every day because they did not have a refrigerator at home. While it was easy to find some vegetables, it was difficult to find meat. Sopheap (age 31), a farmer and a mother of two children aged eight and two years, stated:

The market is quite far. It takes me around 30 minutes by motorbike from my house to the market. […] It is easy to find these ingredients. Vegetables (e.g., edible amaranth and ivy gourd) are around the house. We do not need to buy them. Some ingredients (e.g., salt and cooking oil) are already available at home.

What we need to buy from the markets is meat (e.g., fish and pork), but it is not difficult because I go to the market every day.

Only a few of them had a refrigerator at home, so they went to the market once or twice a week. For example, Theara (age 35), a full-time housewife and a mother of three children, said:

I go to the market once a week and keep it in the fridge. As living in rural areas and near the river, it is easy to find fish, so I only buy those vegetables that are not available around my house.

Some mothers would buy fresh foods locally from home-based stores. Some families, like Sokha (age 48) have opened small home-based grocery stores to sell some daily supplies, knick-knacks, snacks, and fresh foods. She stated:

I do not need to buy foods because I also sell vegetables and meats (e.g., chicken, pork, and fish). Those are organic products. So, when I prepare meals for my family, I use the vegetables and meats that I sell.

Chanthou (age 38), a full-time housewife and a mother of three girls, expressed her views on access to foods as follows:

Some vegetables, we can grow at home, such as pumpkin and green vegetables. It is also easy to find meat. I can buy from the market. If I do not go to the market, I can also buy from stores near my house.

Social and cultural beliefs

Some mothers' feeding practices were influenced by their parents and the village elders. Nareth (age 30), a teacher and a mother of a daughter aged three-and-a-half years, explained:

Sometimes, the mothers feed their children based on cultural norms by following what their parents or older people have done. For example, older people believe that young children should not eat meat, otherwise, they may have parasite

diseases. They also think young children should not eat vegetables because eating vegetables may cause flatulence in them. This belief is different from the current child-feeding practices in the way meat and vegetables should be introduced into young children's diets in order to improve their health. Feeding insufficient nutrition will affect young children's growth. Moreover, they will not be as healthy as those who eat a variety of foods. However, mothers who have limited knowledge or do not explore further on social media tend to feed their children based on cultural norms.

Dany (age 25), a teacher like Nareth, also believed that how the mothers in the village took care of their children was influenced by their parents and the elders: *"Most of the other mothers in the village take care of their children based on cultural norms by following advice from older people."*

This might be one of the reasons that some mother participants fed their children steamed rice without adding any meat or vegetables. Taking Sokunthea (age 36) as an example, she was one of the participants with a lower education qualification (grade 6). At the time of the interview, she had two daughters aged 16 and 14 years and a son aged 10 months. This means she got pregnant with her first child at the age of 19 years. For her youngest child, Sokunthea prepared steamed rice without vegetables, only containing egg, sugar, salt, MSG and garlic. She learnt how to prepare these foods for her children from the elders in the village.

All in all, the mothers' perceived barriers to child-feeding practices include mothers' juggling commitments, their children being picky eaters, and social and cultural beliefs. Other prohibiting factors that influenced their feeding practices include having little knowledge about child feeding, limited financial resources, and availability and accessibility of nutritious foods. To address these challenges, the mothers provided the suggestions presented in the following section.

4.1.6 Main theme 3: Mothers' perceptions of the required support

This section reports the perceptions of the 13 mother participants on the support required to enable them and the other mothers in their village to strengthen their child-feeding

practices. The themes centred around existing programmes, social media, and child-feeding resources.

Harnessing existing programmes and exploring the potential use of social media

The mothers in this study emphasised the need to harness existing programmes and explore the potential use of social media in relation to feeding infants and young children.

Harnessing existing programmes

The mothers suggested continuing community-based programmes in the village, which would particularly benefit those who have limited knowledge about taking care of children. For example, Malis (age 24) was a young mother of an 11-month-old child. She completed upper secondary education (grade 12) and worked as a full-time senior seller in a company in Phnom Penh. She visited her child only at weekends. Malis suggested: *"Continue community-based activities (e.g., meetings of mothers) in the village so that they [the mothers in the village] will be able to strengthen their child-feeding practices."*

Theara (age 35), a full-time housewife and a mother of three children, added that support from relevant stakeholders to strengthen the mothers' feeding practices was needed. She articulated her points of view as follows:

> *There have been NGOs instructing the villagers about feeding children in the village, but I rarely attended because my husband works outside, and I take care of children and have a small business at home. From the community-based activities organised by NGOs or relevant groups, it would benefit those who have limited knowledge in taking care of children, including hygiene.*

In regard to complementary feeding, Nareth (age 30), a teacher and a mother of a child aged three-and-a-half years, believed that it should be broadly advocated for and taught, stating:

> *The knowledge of feeding thick enriched porridge should be widely promoted. Some mothers in the village only know that it is called thick enriched porridge, but do not know how to make it. There should be a more comprehensive approach to disseminate the knowledge of enriched porridge.*

Sokny (age 30), who had obtained the highest educational background (master's degree), thought that it is crucial to follow up after each activity. She suggested: *"There should be regular community-based activities (e.g., instructing how to feed children) and follow-up. This would encourage the mothers to follow the recommendations."* Sokny gave an example as follows:

> *I think it is a good idea to have a team (e.g., a team of youths) to strengthen mothers' feeding practices. This would provide them the opportunities to help the mothers in rural areas. Despite the fact that those youths are not the mothers/caregivers, they may have more comprehensive knowledge of healthy feeding practices than the mothers in rural areas. Since rural people's awareness of nutrition or healthy eating is limited, we can see the differences between children living in rural and urban areas. The instruction from outsiders (e.g., a team of youths) may be more effective.*

<u>*Exploring the potential use of social media*</u>

Most mothers suggested using social media as an avenue to further explore feeding practices, nutrition, and simple recipes for cooking healthy foods for young children. Nou (age 30), a teacher and a mother of a child aged one-and-a-half years, explained why Facebook was the most appropriate platform for sharing information regarding infant and young child feeding: *"Among 100 people, almost 100 people have Facebook accounts. Other social media, such as Telegram, is not widely used in Cambodia."* She meant almost everyone in Cambodia has a Facebook account.

Dany (age 25) is one of the young mothers. At the time of the interview, she worked as a teacher and had a child aged two years. She shared her thoughts as follows:

> *It is necessary to educate and instruct the mothers/caregivers widely. For example, community health facilities (e.g., health centres) introduce the benefits of thick enriched porridge through TV and social media (e.g., Facebook). Since Facebook is the most used social media in Cambodia, the enriched porridge can be promoted through a Facebook community page. This would help the mothers/caregivers learn more or explore further.*

Nareth (age 30), a teacher and a mother of a child aged three-and-a-half years, expressed her views:

> *It is also important to disseminate through social media. Since most people use social media (e.g., Facebook), they can learn more from this platform. For me, I always explore the knowledge of feeding children and teaching children from Facebook, YouTube, Google, etc.*

Sopheap (age 31), a farmer and a mother of two children aged eight and two years, saw the benefits of using social media, particularly during the COVID-19 pandemic: *"gatherings are not allowed due to the COVID-19 pandemic. I think it is beneficial to explore information or experiences related to raising children, including feeding children, through Facebook."*

Child-feeding resources

Although only two mothers suggested updating the pictures in existing guidelines, or establishing new cookbooks with recipes for thick enriched porridge for infants and young children, it is worth taking their perspectives into account.

Sokny (age 30), a teacher and a mother of a four-year-old child, highlighted the importance of the picture of thick enriched porridge to guide mothers in preparing this food. She articulated her view as follows: *"The picture [Figure 2.4] of preparing thick enriched porridge for young children is very important, but I think the picture needs to be more attractive. It means that the picture should be up to date."*

Another mother, Nou (age 30), a teacher and a mother of a child aged one-and-a-half years, suggested a similar idea in relation to establishing cookbooks about thick enriched porridge. This would help mothers by providing different recipes for cooking the porridge and only referring to the guideline picture for preparing thick enriched porridge. Nou stated: *"I think there should be cookbooks about thick enriched porridge introducing a variety of recipes and how to cook the enriched porridge for infants and young children in an appropriate way."*

To sum up, the mothers suggested that promoting and sustaining healthy feeding practices requires harnessing existing programmes and exploring the potential use of social media around child nutrition and healthy eating. Further to this, child-feeding resources need to be updated, including cookbooks about and attractive pictures of complementary foods.

The following section discuss the findings obtained from one midwife and two deputy village chiefs working in the MCH programme within the community.

4.2 The findings from the community MCH supporters

This section discusses the findings from the semi-structured interviews with one midwife and two deputy village chiefs responsible for the MCH programme within the community. The three participants are referred to as community MCH supporters. These interviews were conducted following the completion of all interviews with the mothers. A poster was designed with the key ideas from the summary of the interviews with the mothers (see Appendix C), and the community MCH supporters were asked their views and invited to provide feedback on each of the key ideas.

This section starts with the demographic profile of the community MCH supporters, followed by the findings from this group: (i) main theme 1: challenges in implementing the suggestions by the mothers; and (ii) main theme 2: the recommendations of the community MCH supporters.

4.2.1 Demographic profile of the community MCH supporters

All three MCH supporters had worked in Kang Meas District, Kampong Cham Province, Cambodia for 10 years. They provided advice and support to the mothers/caregivers. Commune I and Commune II are neighbouring communes in Kang Meas District. Some mothers from Commune I often visit the health centre in Commune II. Figure 3.1 (in Chapter 3) includes the map of the administrative areas in Kampong Cham province by district and commune.

Midwife Sokhom (age 33) has worked at the health centre in Commune II for 10 years. She was responsible for the MCH programme, including family planning, child vaccination, and child nutrition. She was also involved in teaching mothers about breastfeeding and complementary feeding for children from six months of age. Some

mothers in Commune I might contact her directly with concerns regarding their children's health. She ran a home-based clinic, and the community visited her home-based clinic outside working hours.

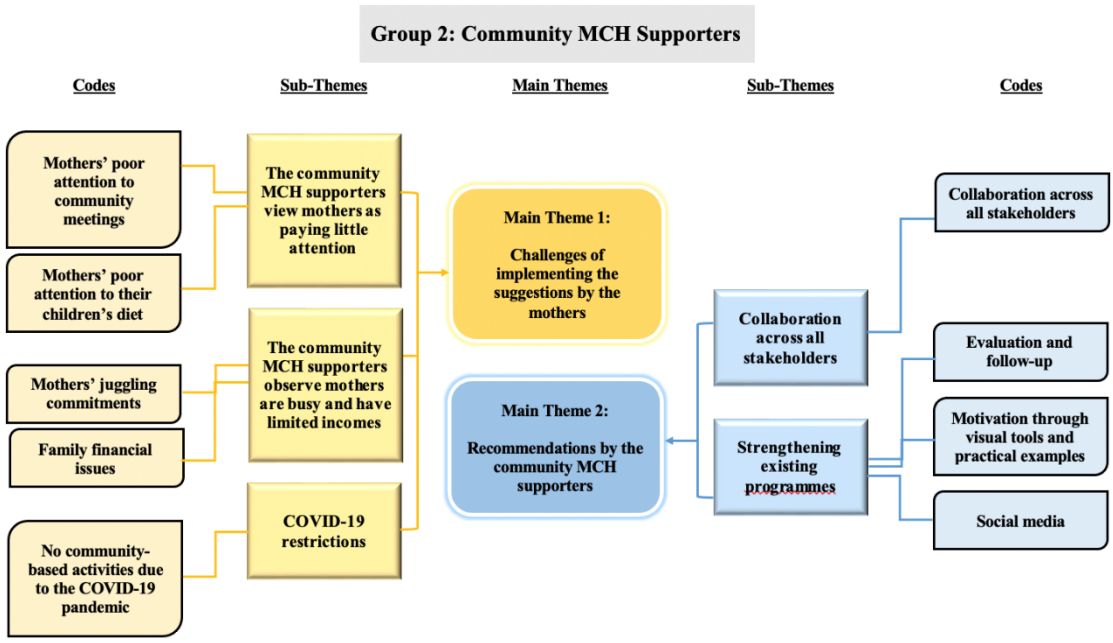
The other two participants (Mrs Heang and Mr Eng) were deputy village chiefs. These are local authorities/civil servants who support and assist the village chief in dealing with village issues and activities.[7] Mrs Heang (age 61) and Mr Eng (age 70) lived in Commune I. They were mainly responsible for organising and inviting community members to community-based activities on the MCH programme, such as monthly community meetings with mothers promoting child health and nutrition (e.g., preparing complementary foods for children from six months of age) and early childhood education (e.g., visiting households and distributing books for young children). At times, community activities took place at their own homes.

4.2.2 Identification of main themes and sub-themes

The following figure summarises the main themes and sub-themes generated from the interviews with the three community MCH supporters. Two main themes and five sub-themes were produced (Appendix O). Figure 4.5 illustrates the mind-map of the main themes and sub-themes.

[7] The village chief is an administrative authority responsible for dealing with all matters within the village (Luco, 2002). The role of the village chief is more political as the village chief is the representative of the main political party within the village (FAO, n.d.).

Figure 4.5 Mind-map of developing main themes and sub-themes



The researcher organised the main themes and sub-themes in fortnightly consultation with her supervisors (see Table 4.3).

Table 4.3 The community MCH supporters' views around the mother's suggestions: A summary of themes

Main theme 1: Challenges of implementing the suggestions by the mothers ***Description: The community MCH supporters' perceived barriers in implementing the mothers' suggestions***	
Sub-themes	Descriptions
A. The community MCH supporters view mothers as paying little attention	The MCH supporters view that some mothers, particularly less-educated mothers, do not care about the importance of community meetings and what their children eat.
B. The community MCH supporters observe mothers are busy and have limited incomes	The MCH supporters feel some mothers are not feeding their children well due to juggling commitments and family financial issues.
C. COVID-19 restrictions	Community gatherings are restricted during the COVID-9 pandemic, so community meetings of mothers are not

	held, and support for healthy eating is not available.
Main theme 2: Recommendations by the community MCH supporters ***Description: The community MCH supporters' recommendations for promoting and maintaining healthy feeding practices in families and the community***	
Sub-themes	Descriptions
A. Collaboration across all stakeholders	All relevant stakeholders to take part in promoting and maintaining healthy feeding practices in families and the community.
B. Strengthening existing programmes	Conduct evaluation and follow-up as part of existing programmes and strengthen child-feeding practices in families and the community through expanding the programmes, using visual tools, practical examples, and social media channels

Overall, the community MCH supporters agreed with the information on the poster and the suggestions made by the mothers. Mrs Heang (age 61), one of the deputy village chiefs, commented: *"These suggestions [made by the mothers] are acceptable."* The following section discusses each theme in detail.

4.2.3 Main theme 1: Challenges in implementing the suggestions by the mothers

The three community MCH supporters were positive about the mothers' suggestions on how to improve child-feeding practices. However, they felt barriers to those recommendations included: (i) mothers pay little attention; (ii) mothers are busy and have limited incomes; and (iii) COVID-19 restrictions.

The community MCH supporters view mothers as paying little attention

The MCH supporters felt that some mothers might not care about the importance of community meetings and what their children eat. Mrs Heang thought that less-educated mothers tended to engage less in community-based activities or meetings about child health. She commented: *"When they [mothers] have limited education, they do not pay*

attention in these meetings [the community meetings of mothers]." Midwife Sokhom (age 33) was similarly concerned:

> *the caregivers do not pay attention to feeding their children […] Nowadays, young children like eating packaged snacks, including sugar-sweetened beverages. If the parents do not pay attention to what their children should or should not eat, the children are likely to eat those unhealthy snacks.*

This is in contrast to the findings from the mothers' group, where the mothers acknowledged they understood many snacks, such as ultra-processed snacks, were unhealthy and would negatively affect their children's health. Despite mothers being concerned, the community MCH supporters see that some mothers are still providing packaged snacks for their children to eat.

The community MCH supporters observe mothers are busy and have limited incomes

The MCH participants generally thought that the mothers were aware of the recommended complementary feeding guidelines (see Table 2.2 in Chapter 2) through the education programmes, but they did not follow them. They explained two things might have had contributed to this: (1) the family's financial situation, which limits the food they can purchase and necessitates the mothers having to work to support their family; and (2) mothers are busy and have no time to prepare complementary foods, such as thick enriched porridge, for their children. Mrs Heang explained:

> *In terms of thick enriched porridge, they saw the picture [showing the preparation of thick enriched porridge], but they do not follow it. They have been introduced to preparing the enriched porridge, but they do not implement it because of limited incomes in their families and having no time. […] We can buy meat and vegetables in the village. The issue is that they do not have time to cook. […] the mothers do not follow the guidelines [the recommended complementary feeding guidelines] because working as a farmer is busy. It does not mean they do not want to cook the enriched porridge, but they do not have time. Due to family financial situations, they need to work hard, so they are busy.*

Midwife Sokhom added that although the healthcare providers taught the mothers about how to prepare complementary foods, only around one in 10 would follow the guidelines:

> *After introducing them to complementary feeding, they cooked the enriched porridge for a while and then stopped cooking. Some mothers claimed that their children did not like to eat it. Children would only try one or two spoons and then stop. I also advised them to introduce different flavours. However, I understood that they do not have time to cook due to family financial issues.*

The perspectives of Midwife Sokum concur with the findings from the mothers in regard to not having the time to prepare thick enriched porridge due to lack of time and juggling commitments between work for income and family. Additionally, in section 4.1.5, some mothers explained that they found it hard to get motivated to try cooking the enriched porridge again as their children continued to refuse to eat it, with the mothers explaining that some children are picky eaters. So, both the mothers and the community MCH supporters agreed that the mothers did not introduce complementary foods to their children because they did not have time.

COVID-19 restrictions

Community-based activities have been restricted due to the COVID-19 pandemic. All three MCH supporters explained that there had not been any community meetings since early 2020. Prior to the pandemic, there were monthly community meetings of mothers discussing maternal and child health-related issues. Mrs Heang stated: *"Before the COVID-19 pandemic, the Ministry of Health* (ក្រសួងសុខាភិបាល) *staff sometimes visited the households and distributed books (e.g., picture books for children) to young children."* Mr Eng added: "*Gatherings are not allowed due to the COVID-19 pandemic. What is more, my area is used for quarantine – high risk. Before the COVID-19 pandemic, there were monthly meetings of mothers."*

Since community meetings were restricted during the pandemic, some mothers might have turned to using a digital space, such as social media, around feeding their children. Some mothers might have accessed information on feeding practices, recipes, and healthy eating for children from Facebook and YouTube even before the COVID-19 pandemic

(see section 4.1.4). For example, Nou (age 30), a teacher and a mother of a one-and-a-half-year-old boy, shared the following:

> *I explored on the internet and social media (e.g., Facebook) about knowledge related to child health. Moreover, I am also a member of the "Smart Moms" Facebook group. The group was created to share experiences in nurturing infants and young children. So, when they post useful information, I always view or screenshot in order to learn how to cook healthy foods for children. I always learn from this platform.*

To continuously support the mothers during the COVID-19 pandemic, social media can be used as a tool for mothers to learn more about healthy feeding practices.

In summary, the community MCH supporters' perceived barriers to implementing the mothers' suggestions include mothers having poor attention, mothers being busy and having limited incomes, and restrictions on community-based activities during the COVID-19 pandemic. To address these challenges and support the mothers, the MCH supporters provided the following suggestions.

4.2.4 Main theme 2: Recommendations of the community MCH supporters

The recommendations made by the community MCH supporters included: (i) collaboration across all stakeholders; and (ii) strengthening existing programmes.

Collaboration across all stakeholders

To implement the recommended feeding practices, Midwife Sokhom believed that "healthcare professionals, local authorities, and families are responsible for strengthening mothers' healthy feeding practices among under-5s." She explained: "From the health centre, I can contribute partly by providing health education related to taking care of their children and encourage the mothers to implement." However, she did not specify the roles played by local authorities and families. She implied that for programmes to be effective, they need all relevant stakeholders to commit to working together. Healthcare providers have taught mothers about recommended healthy feeding practices, but some mothers might not turn these ideas into action. To motivate mothers to put what they have learned from the health providers into practice at home, the healthcare providers or local

authorities need to follow up with them. This would help them understand what worked and what did not work for the mothers, so that the programmes can be strengthened accordingly. This is linked to evaluation and follow-up, which are explained in the following section.

Strengthening existing programmes

The community MCH supporters suggested that existing programmes could be strengthened in some areas, including: (i) evaluation and follow-up; (ii) motivation through visual tools and practical examples; and (iii) use of social media.

Evaluation and follow-up

All three MCH participants were positive about the mothers' suggestions, and Mrs Heang suggested that *"we can try to implement these suggestions and see how they will work."* Midwife Sokhom stated: *"There are good action plans [on infant and young child feeding] of the Ministry of Health (ក្រសួងសុខាភិបាល), but they are limited by not evaluating and following up whether the recommendations have been implemented or not."* This is consistent with Sokny's perspectives regarding the required support to promote and sustain healthy feeding practices. In section 4.1.6, it was reported that Sokny (age 30), who had obtained a master's degree and was a mother of a four-year-old son, suggested: *"There should be regular community-based activities (e.g., instructing how to feed children) and follow-up. This would encourage the mothers to follow the recommendations."* After mothers attend community meetings about nutrition or healthy eating, it is essential to assess the extent to which they are using this information in their feeding practices at home. In this way, programme evaluation may offer a space for mothers' voices to be heard for continuous improvement of the community education programmes.

Motivation through visual tools and practical examples

Midwife Sokhom had some suggestions around motivating mothers to follow the complementary feeding guidelines. In the meetings, she recommended showing: *"video clips of child undernutrition"* and *"diseases related to undernutrition"*. She further added: "*We can compare the mothers with appropriate feeding practices to those with poor feeding practices."* She implied the community meetings could be expanded by highlighting the adverse effects or consequences of poor feeding practices. She believed:

"This would motivate the mothers to pay more attention to feeding their children appropriately." She suggested that using visual tools and practical examples could be the right motivation to engage mothers, and scare/shock them into paying more attention to how they are feeding their children. Also, Midwife Sokhom believed practical aspects of child-feeding practices need to be included in existing programmes: *"It is not only introducing the theories, but also motivates them to practice in real life."* The inclusion of practical aspects may provide motivation, and may also assist in addressing the challenges that the MCH supporters found in engaging the mothers in the community meetings.

Social media

All three MCH supporters were in favour of social media as a platform for mothers to learn about healthy feeding practices. Mrs Heang expressed her view: *"I think some mothers are very intelligent. They can learn from social media, such as YouTube and Facebook, to feed their children appropriately."* Mrs Heang felt that social media could be an important place for mothers to learn about health eating for their children. Mrs Heang's comment concurs with the views of the mothers in this study. In section 4.1.4, the researcher included details of a couple of Facebook groups, such as the "Smart Moms" and "Enriched Porridge for Beloved Children", which provided an online platform for mothers to discuss, learn and share their knowledge and experiences on healthy eating for children. Malis (age 24), a mother of an 11-month-old daughter, stated:

> *When I want to cook food for my daughter, I always check YouTube. Apart from YouTube, I am also a member of the "Smart Moms" Facebook group. In general, the mothers in the group share information or experiences related to child health. For example, some mothers asked advice from other mothers in the group about what brand of milk or nutritious foods, or any complementary foods improve their children's health.*

Midwife Sokhom supported the role of social media: "*There has not been a Facebook community page yet. It is one of the significant factors in strengthening the mothers' feeding practices among infants and young children*." Compared to a Facebook group, a Facebook page is more relevant and specific. The use of a Facebook group is too broad; for example, the group members also use it for marketing their businesses, which are

sometimes not relevant to child health. There has not been a Facebook community page about this research site yet, so this can be included in the existing programmes. The deputy village chief, Mr Eng, was favourable in his comment on using social media to share information about healthy feeding practices. Nonetheless, one of his concerns was whether every mother in the village would have access to a smartphone. He elaborated on this: "*There might be a smartphone in a family, but it might be used by the husband who works outside the home or the child for online classes*." He implies that for households of low economic status, this could create barriers to accessing information and education online about children and healthy feeding practices.

In summary, the MCH supporters' views were that to successfully promote and get mothers adopting healthy feeding practices, it requires collaboration from all parties involved, such as healthcare providers, local authorities, families, and mothers. Furthermore, they suggested conducting evaluation and follow-up as part of existing programmes and expanding them. The programmes need to be delivered in ways that make them motivational and engaging, with visual aids (videos), and they need to be practical. In order to reach all the mothers in the village, making information available through face-to-face meetings and social media could strengthen child-feeding practices.

4.3 Chapter summary

This chapter has reported the results of the semi-structured interviews with two groups of participants: (1) 13 mothers, and (2) three community MCH supporters. Although the community MCH supporters found the mothers' suggestions acceptable, they perceived a number of the challenges mothers faced in healthy feeding practices. The results showed both agreement and conflict between the mothers and the community MCH supporters in some of their perceptions. Common views amongst both mothers and community MCH supporters were strengthening existing programmes and using social media to promote healthy behaviours in the families and community. Together these results provide important insights into how to move the support closer to the mothers in relation to healthy feeding practices in their families and community. The next chapter, therefore, moves on to discuss the key findings and provides recommendations.

Chapter 5: Discussion and Recommendations

This chapter is divided into six sections. It begins with a summary of the study's key findings, followed by discussions on the intersectionality of the mother's personal, social, cultural, and economic context in promoting healthy feeding for their under-5s and the focus on culture and family foods. Next, I present the participants' recommendations, followed by a discussion of how their recommendations fit within Cambodia's policies and programmes. I conclude this chapter with the study limitations and future research.

5.1 Summary of the key findings

There are five key findings in this research:

1) Mother participants' knowledge and practices on healthy feeding for under-5s were influenced by various factors, such as age, educational background, employment, and family support. The knowledge and practices were acquired intergenerationally, being passed on from family elders, and from healthcare providers, community-based programmes, and social media.
2) Mothers' perceived barriers to child-feeding practices are social, cultural, financial, and also involve the availability of support from families or social networks. All these barriers intertwined and intersected, reinforcing women's gender status, roles, and domestic responsibilities (e.g., women as the main carers for their children). For example, a well-educated mother with a supportive family would have more resources and access to healthy feeding knowledge than a young mother of a poor family with a lower level of education (see Chapter 4, section 4.1 – compare Mother Nareth, who had a higher education background, and Mother Sreypich, who had a lower level of education).
3) Therefore, the promotion of the nutritional status of under-5s and the sustainability of healthy feeding practices cannot be separated from women's gender roles and status, available support from families, relevant local or community-based programmes, and the social media.
4) The mother participants accessed online social media as they had been easily accessible and free, especially during the COVID-19 interventions. Mother participants recommended the use of social media to help them learn about healthy feeding practices for young children (see Chapter 4, sections 4.1.6 and 4.2.4).

5) There were both agreement and tensions in the understanding and perceptions of the barriers to healthy feeding practice between the mother participants and the community MCH supporters. These results may reflect existing gaps in current policies and programmes on infant and young child feeding.

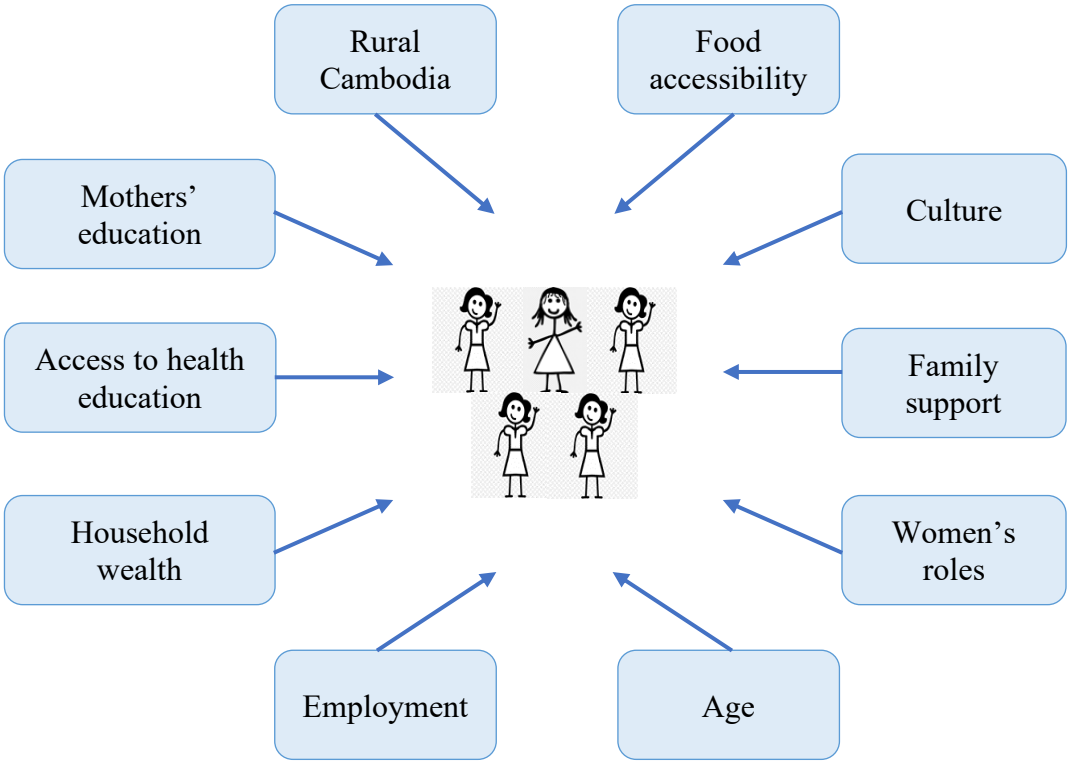
5.2 Discussion of the key findings

5.2.1 Children's nutritional status cannot be separated from the mothers' gender roles and status

In my attempt to explain the complexities of the inter-relationships of different personal, socio-cultural and economic factors influencing feeding practices for under-5s, I came across the concept of intersectionality. Intersectionality is a theoretical framework arguing that multiple social categories at the micro level (e.g., race, gender, age, and socio-economic status) intersect with macro-level structural factors (e.g., racism, sexism, poverty, social support, and political context) to produce a diverse pattern of health outcomes (Bowleg, 2012). Studies in low-income and middle-income countries, such as those by Paciorek et al. (2013) and Victora et al. (2021), confirmed child undernutrition is not simply caused by a lack of nutritious foods, but the intersection of feeding practices, households' and communities' socio-economic status, and the health sector and other sectors. Findings in this study concur with other Cambodian studies on the determinants of children's nutritional status, including mothers' educational level, mothers' workload, and household wealth (Hondru et al., 2020; Laillou et al., 2020; Muehlhoff et al., 2017).

I propose the following Figure 5.1 to depict in the intersections of various determinants influencing the mother participants in my study.

Figure 5.1 Mothers' perceived barriers to healthy feeding practices: An intersectional approach



Intersecting women's gender roles and family support

Mother participants reported carrying more responsibilities in childcare and domestic chores than their husbands or other family members. Culturally, in rural Cambodia, there are gender role differences between a man and his wife. A man is expected to be the breadwinner and his wife to look after the family, children, and household chores. When both the husband and the wife are working outside the home, the wife is still expected to be the main caregiver and responsible for household chores, creating a double burden for working-women (Chapter 4, section 4.1.1 included the experience of Mother Sokny who had to juggle between being a wife and a mother and a teacher). The working mothers in my study reported this double burden, and tension in the effort to balance the demand of looking after the family, children and household with working outside the home, while stay-at-home mothers were solely responsible for taking care of their children, family, and household. The mothers who stayed in extended families generally received support from their family members, especially the grandmothers, such as getting groceries, and preparing family meals and meals for their young children. Only one participant (Mother Dany) had her husband help buy food and cook meals. My research finding concurs with

other studies (Aubel, 2012; Avula et al., 2013; Muehlhoff et al., 2017; Mukuria et al., 2016) on the significance of the support of family members, particularly fathers and grandmothers, in the feeding of young children. Those studies acknowledged the pivotal roles of all family member in promoting healthy feeding practice for young children.

Intersecting maternal education, poverty, and access to health services

My study found that mothers' education is one of the critical determinants of the child-feeding practices and children's nutritional status, which concurs with other Cambodian studies (Hondru et al., 2020; Laillou et al., 2020). Those studies found that children of mothers with low educational status were more likely to be undernourished, stunted, or wasted (Hondru et al., 2020; Laillou et al., 2020). My study, however, also found that mothers' education alone is not sufficient to explain mothers' feeding practices. Mothers' education should be considered within its intersection with other factors, such as access to the right knowledge on child nutrition and feeding practices, access to healthy foods, food security, and poverty (Cambodian National Institute of Statistics, 2015). Studies by Hong and Mishra (2006) in Cambodia and Ruel et al. (1999) in Ghana found that mothers' education had only a minor effect on children's nutritional status. Wealth was also a critical determinant of under-5 undernutrition (Hong & Mishra, 2006; Laillou et al., 2020). Controlling for maternal education did not significantly change the effect of wealth on child undernutrition (Hong & Mishra, 2006). According to the Cambodian National Institute of Statistics (2020), nearly 40% of women aged 15+ years had never completed primary school. Only about 30% or one in every three women had completed primary school.

Mothers' education is likely to be positively associated with access to health education. Studies by Yanagisawa et al. (2004) and Hondru et al. (2020) in Cambodia found that child growth is not influenced to the same degree by mothers' feeding practices if comparing mothers with higher education to those with lower levels of education. A similar finding was obtained in other countries, such as a study by Chege et al. (2015) in Kenya, in which it was found that lower-educated mothers did not adopt healthy dietary practices for their under-5s. In my study, well-educated mothers tended to report greater access to information and education on healthy feeding and nutritious foods from various sources outside the traditional practices. In Chapter 4, section 4.1.4, I discussed Mother Nou, who had a higher education background, and who had greater access to different

knowledge sources, such as healthcare professionals and social media, while Mother Sokunthea, who had a lower education level, had limited access to knowledge on feeding practice, beyond her home and family. Mother Sokunthea learnt how to prepare foods for her children from her family and village elders.

Intersecting poverty and food accessibility

Both the mothers and community MCH supporters agreed that poverty affected the mothers' feeding practices, as reported elsewhere (Cambodian Ministry of Health, 2006; Harvey et al., 2018; Hong & Mishra, 2006; Laillou et al., 2020; Marriott et al., 2010, 2012). Findings from a study on IYCF practices in five provinces of Cambodia (Kratie, Stung Treng, Prey Veng, Kampot, and Battambang) identified limited family ability to buy certain foods, particularly meat, poultry, and fish/seafood (Cambodian Ministry of Health, 2006). In my research, Mother Sreypich, who lived in a poor family, reported not having the money to buy some meat for her daughter. She only cooked enriched porridge with the vegetables she had grown around her house. She reported her daughter was underweight. Children living in the poorer families were at a much higher risk of being chronically undernourished than those living in the better-off families (Hong & Mishra, 2006). Wealthy households are more likely to have a better access to more varieties of fresh products, which are important for ensuring children's health and nutrition (Hong & Mishra, 2006).

Food accessibility is a problem for many rural villagers in Cambodia. Villagers reported having difficulties buying meat locally (Cambodian Ministry of Health, 2006; Chung et al., 2017; Muehlhoff et al., 2017). For example, some rural Cambodian communities may have limited food availability, especially during the dry season when there is not enough water for the farms and fish are rare (Cambodian Ministry of Health, 2006). In this study, some mothers bought fresh foods at the market. It took them around 30 minutes by motorbike. This extra travel added a further burden to their already very busy life. A few local home-based grocery stores may sell some meat, but it is expensive. Study participants who lived in better-off families bought food from the market once or twice a week and stored it in the refrigerator. Not all participants owned refrigerators, so they relied on buying fresh food every day. Limited availability of variety of fresh produces in the village market affected their ability to prepare nutritious and affordable meals for their young children.

5.2.2 Focus on culture and family foods

Cultural practices affect the food families prepared and ate. My findings noted that cultural practices affect feeding practices for under-5s, as found in Cambodia (Windus et al., 2022) and elsewhere (Aubel & Rychtarik, 2015; Chege et al., 2015; Peter et al., 2018). The Maasai culture in Kenya forbids the consumption of certain foods, such as wild animals, fish, and chicken, which leads to a lack of diversified diet among under-5s (Chege et al., 2015). A Cambodian family usually eats and shares meals together. Cambodian family meals generally include some rice, soup, and stir-fried vegetables or meat. Typical Khmer foods lack adequate animal-sourced foods and vegetables, which reflects poverty[8] rather than the lack of availability of these foods in Cambodia (Cambodian National Institute of Statistics, 2011). Generally, Cambodians would add a large amount of salt, including soy sauce and MSG, to add flavour to their dishes. Similarly, mothers may prepare some plain rice porridge flavoured with salt, soy sauce and MSGs for their children, rather than mixed varieties of legumes, meat, or vegetables (Jameel et al., 2019; Windus et al., 2022). Traditionally, grandmothers believed that mixing the plain rice porridge with meat and vegetables would cause stomach upset in 6–12-month-old children (Jameel et al., 2019). This worry was also reported by some of my mother participants. For those mothers who fed their young children plain porridge along with added soy sauce or salt, this could lead to inadequate dietary diversity[9]. I wonder if a consideration of cultural values, traditions, and families is a pre-condition for ensuring appropriate feeding practices.

Some mothers in my study felt there was a time and emotional burden in preparing a special enriched porridge dish for their young children, on top of a separate family meals. Preparing two separate sets of dishes incurs extra costs and takes time. Having children who refused to eat the meal prepared for them caused an extra emotional burden for the

[8] According to the World Bank (2022), approximately 18% of the total population was identified as poor; however, poverty rates differ considerably by area. The highest poverty rate is in rural areas of Cambodia (22.8%). Throughout the period 2009–2019/2022, poverty rates decreased by 1.6 percentage points per year, but poverty and social inequality increased because of the COVID-19 pandemic.

[9] According to WHO (n.d.), Minimum Dietary Diversity (MDD) is the consumption of at least five out of the eight food groups for children aged 6–24 months, which are: (1) breast milk; (2) grains, roots and tubers; (3) legumes and nuts; (4) dairy products (milk, yogurt, cheese); (5) flesh foods (meat, fish, poultry, liver or other organs); (6) eggs; (7) vitamin A-rich fruits and vegetables; and (8) other fruits and vegetables.

mothers. This finding concurs another Cambodian study by Chung and colleagues (2017), who found that, although technically it was not difficult to prepare enriched porridge, caregivers perceived it as "complicated" as it required an extra time (outside their time for preparing the family meals) and too many ingredients that could be hard to find or buy (Chung et al., 2017). If the children refused to eat the prepared porridge, the family would take the risk of throwing away and wasting the porridge (Chung et al., 2017). This wastage would be a financial and time burden for the family, especially those who are poor. I wonder how the preparation of the meals for the young children can be embedded within the family-meal culture in Cambodia?

In my search to answer the question above, I carefully examined different posters, flyers, and videos used to teach Cambodian mothers how to prepare enriched porridge for their young children. Most of the mother participants were aware of or had seen some posters or pictures about the preparation of enriched porridge, and commented that those pictures asked for "too many ingredients" and were "time-consuming" (Chapter 4, section 4.1.4). I also found a 13-minute video[10] published by UNICEF Cambodia (2012). I selected the last minute of the video (see Figure 5.2, below) on how to make the enriched porridge from family meals. This UNICEF video demonstrated the preparation of enriched porridge from the prepared family meal by taking some meat and vegetables from the Khmer soups prepared for the family and mixing them with some soft rice (UNICEF Cambodia, 2012).

For comparison, I have included Figures 5.3 and 5.4. Figure 5.3 is a facilitator's guide to promoting IYCF by FAO (2014). Figure 5.4 is a picture of how to prepare enriched porridge from the *Nutrition Handbook for the Family* (Cambodian NNP, 2011). I used Figure 5.4 in my interviews. I recalled, some of the participants felt overwhelmed and commented "too many ingredients" when I showed them that picture. From those three figures, I can see marked differences in the teaching of mothers and caregivers on how to prepare enriched porridge. The video (Figure 5.2) gave a step-by-step "real life" situation in showing how to prepare the enriched porridge from the family meal. Figure 5.3 implies

[10] UNICEF Cambodia (2012) produced the complementary feeding video to motivate mothers/caregivers to give their children aged 6-24 months sufficient nutrition from complementary feeding and breastfeeding. In the last two minutes, Dr Sophonneary Prak shows how to prepare enriched porridge from family foods that were already being cooked.

the preparation of enriched porridge from the family meal, which is similar to Figure 5.2. The video, however, sent a strong message that family meals are the centre of healthy meals for children. Hence, nutritious meals for young children start from thoughtful planning and preparation of the family meal. Unfortunately, it appears that this video was not widely viewed nor promoted. It was uploaded online on July 4, 2012. Ten years later, as at May 24, 2022, there had only been 4,503 views (UNICEF Cambodia, 2012). Participants in my study suggested Facebook as their preferred social media, and consequently I wonder if videos like this would be more widely viewed on Facebook, or if other social media channels can attract more views.

Figure 5.2 Complementary feeding training video

Note. Making enriched porridge from the family food: (1) taking some freshly cooked rice from the pot and putting it on a plate; (2) taking pieces of meat and vegetables from the soups or dishes; (3) mashing the rice and pieces of meat and vegetables until it becomes soft and thick; and (4) ensuring the porridge is thick and should not drip off spoon. From *How to cook "Bobor Kahp Krop Kroeung" (Thick and multi-ingredient porridge)* by UNICEF Cambodia (2012). Copyright 2012 by UNICEF Cambodia.

Figure 5.3 How to prepare complementary food for children from the daily family food

Note. From *Promoting Improved Infant and Young Child Feeding in Cambodia: Facilitator's Guide* (FAO, 2014, p. 41). Copyright 2014 by FAO.

Figure 5.4 How to prepare enriched porridge

Note. From *Nutrition Handbook for the Family* by Cambodian NNP (2011, p. 13), NMCHC, Ministry of Health. Copyright 2011 by Cambodian NNP.

To promote a family-centred healthy feeding practices for young children in Cambodia, it is important to raise community awareness of healthy eating which fits a family's cultural aspects, family food preparation practices and the caregivers' perceived barriers. Next, I present the recommendations made by the study participants on how to promote

and sustain healthy feeding practice for under-5s and how their recommendations fit with Cambodia's recent policies on improving child nutrition.

5.3 Recommendations

5.3.1 Recommendations from the study's participants

This section summarises key recommendations to strengthen and maintain healthy feeding practices for under-5s provided by the 13 mothers and three community MCH supporters. The mothers gave suggestions on how the healthy feeding practices can be best supported at the community level. Later, I presented those suggestions to the MCH supporters and invited them to share their insights and comments. The three main recommendations are as follows:

1) The participants suggested **continuing support for community-based programmes** through a comprehensive approach, motivation tools, and a monitoring and evaluation programme. Visual tools and practical examples were proposed to be included in the future programme to build the mothers' knowledge and confidence. The participants recommended evaluation of the programmes and assessment of the extent to which the mothers use the information from the community meetings in their feeding practices at home.

2) The participants suggested **using social media as a platform for mothers to learn about feeding practices, nutrition, and nutritious recipes.** They believed the most influential media channel would be Facebook as it was their most-used platform. Most of the participants have already accessed information about child-feeding practices from Facebook.

3) There is a need for **collaboration between stakeholders** to make the implementation of healthy feeding practices (e.g., advice on complementary feeding) more effective. The stakeholders involved include the community leaders of the MCH programmes, healthcare professionals, local authorities, mothers/caregivers, and family members.

Next, I explore the current policies concerning child nutrition in Cambodia. I then question the extent to which the participants' recommendations fit within these policy platforms.

5.3.2 Recent policies relating to child nutrition in Cambodia

Since 2008, there have been five relevant policies and strategies introduced in Cambodia to improve IYCF and child nutrition:

1) National Policy on IYCF 2008 (Cambodian NNP, 2008);
2) National Nutrition Strategy 2009-2015 (Cambodian NNP, 2009);
3) National Strategy for Food Security and Nutrition 2014-2018 (CARD, 2014);
4) Fast Track Roadmap for Improving Nutrition 2014-2020 (Cambodian NNP, 2014); and
5) Cambodia's Roadmap for Food Systems for Sustainable Development 2030 (CARD and TWGFSN, 2021)

The last two roadmaps (numbers 4 and 5) are the most recent ones. Both roadmaps provide a platform for promoting feeding practices and child nutrition. These roadmaps also look at a broader view of nutrition for mothers and children and are discussed below.

Fast Track Roadmap for Improving Nutrition 2014-2020 (Roadmap 2020)

The Cambodian NNP (2014) introduced a five-year nutrition roadmap to improve maternal and child nutrition (hereafter, the Roadmap 2020). This roadmap provides key interventions to improve nutrition, including complementary feeding practices for children aged 6-24 months. The roadmap consists of eight components (Table 5.1). Component 5 on "Behaviour change communication focused on 1,000-day window of opportunity" is particularly relevant to the participants' recommendations. Component 5 focuses on exclusive breastfeeding and complementary feeding interventions. The interventions of Component 5 link to the Communication for Behavioural Impact (COMBI) strategy on promoting complementary feeding by Cambodian NCHP and NMCHC (2011). The summary table of this roadmap is included in Appendix P.

Table 5.1 Eight components of the Fast Track Roadmap for Improving Nutrition 2014-2020 (Roadmap 2020)

Components		Outcomes
Component 1	Nutrition Counselling: Promote nutrition during ANC and related counselling	Scale up optimal use of nutrition-specific interventions, ultimately leading to improved maternal
Component 2	Micronutrient Supplementation: Sustain and improve micronutrient supplementation and deworming	

Component 3	Treatment of Severely Wasted Children: Expand the management and treatment of acute malnutrition nationwide	and child nutritional status and outcomes
Component 4	Micronutrient Supplementation for Prevention and Treatment Strategies: Scale up current distribution of MNP, vitamin A, deworming, and zinc supplementation to children	
**Component 5*	Behaviour Change Communication Focused on a 1,000-day Window of Opportunity: Improve and accelerate the national campaign on EBF and complementary feeding campaign • *Enhance and adapt the ongoing complementary feeding campaign* • *Develop new mass media communication of the 1,000-day window and monitor its impact* • *Develop communication tools (television and radio)*	
Component 6	Remove Financial and HR Barriers to Scale Up Efficient Interventions	Remove barriers to implement nutrition "specific" services efficiently and improve maternal and child nutritional status
**Component 7*	Leverage Support Through Other Ministries and Initiatives • *Forming or strengthening a multi-stakeholder platform*	
Component 8	Improve Nutrition Data in Existing Information Systems	

Note. *Components 5 and 7 in italic are the most relevant components that correspond to the participants' recommendations. Table adapted from Cambodian NNP (2014).

Cambodia's Roadmap for Food Systems for Sustainable Development 2030 (Roadmap 2030)

The Roadmap for Food Systems for Sustainable Development 2030 (hereafter, the Roadmap 2030) was established by CARD and TWGFSN (2021). This roadmap emphasises coordinated actions across multiple sectors and stakeholders to end malnutrition and hunger, protect the environment, and reduce poverty. This roadmap aligns with other policies and strategies, such as Cambodia's Sustainable Development Goals Framework 2016-2030 (RGC, 2018). The roadmap 2030 includes four priorities: (1) Healthy diets for all; (2) Empowerment of youth, women, and the vulnerable; (3) Resilient livelihoods and resilient food systems; and (4) Governance for a more inclusive food system (Table 5.2). This roadmap highlights a food system approach across cross-cutting issues related to child nutrition, including the expansion of a 1,000-day window for mothers and children aged 6-24 months. The summary table of this roadmap is included in Appendix Q.

Table 5.2 Four priorities of Cambodia's Roadmap for Food Systems for Sustainable Development 2030 (Roadmap 2030)

Priorities for Cambodia to 2030		Milestones 2030
*1. *Healthy diets for all*	To work across key sectors to ensure that healthy diets and safe foods are accessible to all, especially for women and children and vulnerable groups, to address all forms of malnutrition	*Healthy diets will be accessible and affordable for all Cambodians*
*2. *Empowerment of youth, women, and the vulnerable*	To work towards the promotion of gender equality, decent employment, enterprise development, and the creation of job opportunities for youth, women, and the vulnerable in the food system	• *Youth, women, and the vulnerable will be routinely engaged in policy dialogue and decision-making* • Vocational training, education, decent employment, and enterprise opportunities in the food system will be expanded
3. Resilient livelihoods and resilient food systems	To continue to build on our experience and success to address vulnerabilities and poverty and to strengthen the resilience of food system actors, networks, and infrastructure to human and climate-related shocks and stresses	• The resilience of households and food systems to future climate and human-induced shocks and stresses will be strengthened • Health and social protection systems and investments in climate-resilient infrastructure will be expanded • Nationally Determined Contributions related to food systems from production to consumption will be expanded and implemented
*4. *Governance for a more inclusive food system*	To continue to open the door for multi-stakeholder and multi-sectoral dialogue, coordination, and collaboration to make planning and implementation processes more just, inclusive and participatory	*An enabling environment will be created*

Note. *Priorities 1, 2, and 4 in italic are the most relevant components that correspond to the participants' recommendations. Table adapted from CARD and TWGFSN (2021).

Next, I discuss how the participants' recommendations correspond with Roadmap 2020 and Roadmap 2030, outlined above.

5.3.3 How the participants' recommendations correspond with Cambodian policies

The study participants' recommendations fit well with the Components 5 and 7 of the Roadmap 2020 (Table 5.1) and Priorities 1, 2, and 4 of the Roadmap 2030 (Table 5.2).

Table 5.3 How the participants' recommendations fit the two policies

Participants' recommendations	Recent policies relating to child nutrition in Cambodia		Notes
	Fast Track Roadmap for Improving Nutrition 2014-2020 (Roadmap 2020)	**Cambodia's Roadmap for Food Systems for Sustainable Development 2030 (Roadmap 2030)**	
1. Continuous support for community-based programmes	**<u>Component 5</u>: Behaviour change communication focused on a 1,000-day window of opportunity** • Enhance and adapt the ongoing complementary feeding campaign	**<u>Priority 1</u>: Healthy diets for all** • The expansion of 1,000 days of health counselling and services for mothers and children under two years of age **<u>Priority 4</u>: Governance for a more inclusive food system** • Support community-led nutrition programming	This recommendation also fits Priority 2 of Roadmap 2030. This is discussed below.
2. The use of various social media channels to promote healthy feeding and child nutrition	**<u>Component 5</u>: Behaviour change communication focused on a 1,000-day window of opportunity** • Develop new mass media communication of the 1,000-day window and monitor its impact • Develop communication tools (television and radio)		This recommendation also fits the two Roadmaps; however, none of these mentions the use of social media. This is discussed below.

3. Collaboration between relevant stakeholders	**<u>Component 7</u>: Leverage support through other ministries and initiatives** • Forming or strengthening a multi-stakeholder platform	**<u>Priority 4</u>: Governance for a more inclusive food system** • Incorporate food systems discussions across Technical Working Groups s • Establish and strengthen Provincial/ Municipal Working Groups to coordinate food security and nutrition • Ensure close coordination and collaboration between government, civil society, development partners, the private sector, and farmers' organizations	

The following discusses how each recommendation is relevant to the two roadmap strategies.

Recommendation 1: Continuous support for community-based programmes

Community-based programmes

Both roadmap strategies highlighted the importance of the first 1,000-day window in child nutrition. This observed that the first three years of the life of a child is a critical window in the nutritional status of children. The participants were supportive of the continuation of the community-based programmes on healthy feeding practices through visual tools and practical examples. The evaluation and monitoring of programmes were seen as pivotal. This recommendation is relevant to Roadmap 2020 (Component 5) and Roadmap 2030 (Priorities 1 and 4) (see Table 5.3).

A key finding of my study was that the family's meal tradition and culture contribute to mothers' feeding practices. These, however, are not included in the two Roadmap policies. For example, most mothers reported it was challenging to prepare the enriched porridge separately from their family meals. Those challenges included the fact that it was time-consuming, so another burden in their day, and children's refusal to eat the cooked enriched porridge, which would go to waste. Therefore, education programmes need to be relevant to the context of the family meals and practices, which influence the choice of healthy meals for not only the child but also the other members of the family.

I gathered from my interviews with the mothers that they were resourceful and aspired to learn and find creative ways to prepare healthy meals for their young children, and would explore different resources and learning platforms.

Mothers are resourceful and empowered

The mothers in my study were empowered in finding resources, information, and knowledge from within their close networks and social media. From the study findings, I came to the conclusion that child-feeding practices cannot be separated from women's status and roles. The community-based programmes and direction, therefore, need to harness and continue to build women's capacities, voice, and ideas. My study clearly showed that the mothers were very enthusiastic about and capable of participating in the designing, monitoring and evaluation of the community programmes. My research

findings supported the pivotal role of women's empowerment in halting child malnutrition, wasting, and stunting in Cambodia (Trauner & Williams, 2021). Other Cambodian studies also suggested promoting, supporting, and encouraging the completion of at least secondary education by Cambodian girls through scholarship programmes, government incentives, and peer support promotion (Laillou et al., 2020; Trauner & Williams, 2021).

Interestingly, the MCH participants disregarded women's resourcefulness and described women as lacking the commitment to prepare the complementary enriched porridge for their young children. This tension between the mother participants' resourcefulness and the perceptions of the MCH supporters that women lacked commitment warrants further studies. This potential misunderstanding is a significant barrier to the implementation of the Priority 2 of the Roadmap 2030, which advocates for women's empowerment, capacity building for young girls through vocational training programmes and education, and the strengthening of women's associations and networking.

Recommendation 2: Explore various social media channels to promote healthy feeding and child nutrition

The participants believed social media is the most powerful platform to promote healthy eating and nutritious foods for children and families. This recommendation links to Component 5 of the Roadmap 2020. The mothers in this study recommended the Facebook platform, which is the most widely used social media in Cambodia. As of April 2022, social media users of Facebook, Instagram, Messenger, and LinkedIn accounted for 76.3%, 12%, 69.1%, and 2.8%, respectively, of the entire population in Cambodia (NapoleonCat, 2022). The Roadmap 2020 is limited by focusing on only television and radio as communication tools, which are no longer popular platforms, especially after the COVID-19 intervention. For example, UNICEF Cambodia has been using its Facebook page to share information about children's rights, including health and nutrition (UNICEF Cambodia, n.d.).[11] Thus, there is a need for the potential use of social media channels, especially Facebook, as a communication platform.

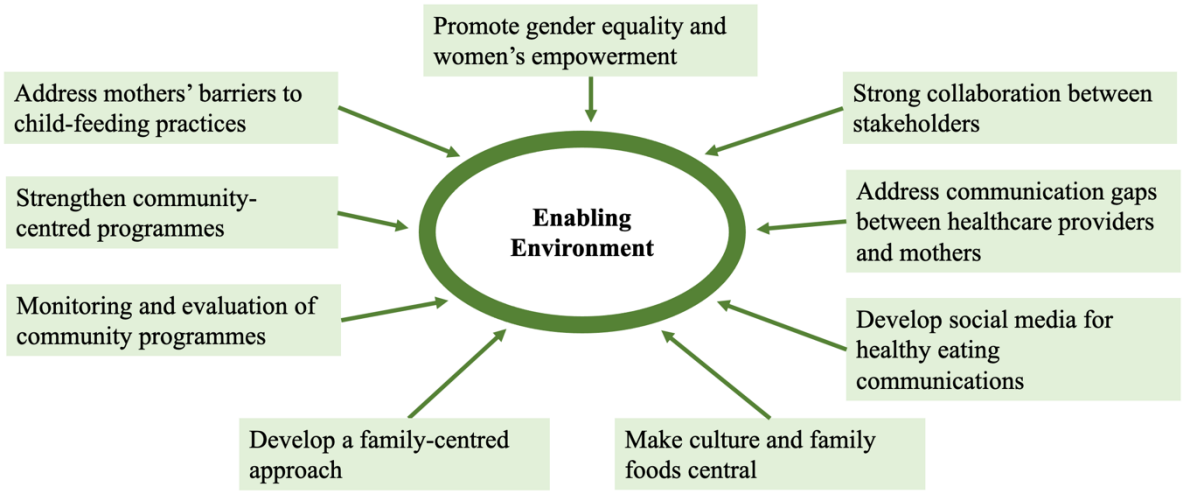
[11] According to UNICEF Cambodia (n.d.), the UNICEF Cambodia Facebook page was created on May 2, 2012. The page's purpose is to promote and protect children's rights. As of June 7, 2022, more than 293,000 people followed the page.

Recommendation 3: Collaboration between stakeholders

The mothers and MCH workers believed that multi-stakeholder collaboration in the community MCH programme is pivotal to ensuring mothers' healthy feeding practices, which will ultimately impact child nutrition. The stakeholders may include community health workers, volunteers, village chiefs, mothers, the community members, and their families. This recommendation links with the Roadmap 2020 (Component 7) and the Roadmap 2030 (Priority 4). These roadmaps provide a platform for collaboration across all sectors and stakeholders, beyond the community level, including the regional and national government, private sector, and NGOs.

Following the participants' recommendations, I ask the following question: What will an enabling environment for healthy child nutrition and feeding practices look like? I propose Figure 5.5, below, which depicts the various factors contributing to creating an enabling environment.

Figure 5.5 Factors contributing to creating an enabling environment



The figure identifies a wide range of factors contributing to creating an enabling environment for healthy feeding practices. From my findings, the crucial elements of an enabling environment need to focus on the local wisdom, knowledge, socio-cultural factors, and life context; for example, addressing the barriers faced by mothers (and families), strengthening community-centred programmes, and monitoring and evaluating the programmes, to create momentum for change in healthy feeding practices. A family-centred approach is critical to encourage and enable families to eat and live more healthily

and sustainably. Culture and family foods are centred on healthy eating for young children because their healthy foods start from the thoughtful planning and preparation of the family meal. Apart from the community-centred programmes, my participants proposed using social media platforms like Facebook to share information about feeding practices, nutrition, and simple recipes to cook healthy foods. The digital space could be a potential platform to advocate for healthy eating and nutrition for young children and families, especially during the COVID-19 pandemic. At the same time, changes need to occur in the regional and national level policies and progammes. Policymakers need to promote gender equality and women's empowerment by encouraging their participation in decision-making and promoting a platform for enhancing women's associations and networks. Partnerships, relationships, and close communication with the communities are essential to bridge the communication gaps between stakeholders.

The following sections discusses the strengths and limitations of the study and recommendations for future research.

5.4 Study strengths and limitations

As there is limited qualitative research on healthy feeding practices in Cambodia, my research presents a novel contribution to understanding Cambodian mothers' perceptions and practices. The findings from this research may provide valuable insights for future public health policies, programmes, and research in child-feeding practices and reducing child undernutrition.

Although there were a number of insightful findings in this study, it has limitations relating to the sample size, the sample selection, and the interruption of the COVID-19 pandemic which affected the data collection plan.

- Thirteen mothers and three community MCH supporters participated in this study. While the sample size was relevant to the scope of this master research and my experience as a novice researcher, the participants' perspectives do not represent other Cambodian mothers.
- In my research, I only recruited mothers and did not include other potential family members, such as grandmothers and fathers, whose were also the caregivers of the children. One mother (Malis) left her 11-month-old daughter with her mother

because she worked in the capital city. She came home on weekends. In this case, I could have included Malis' mother in my interview.

- The interruption caused by COVID-19 impacted my planned data collection. I shifted from face-to-face to online interviews. Since the interviews were conducted via Zoom audio calls, I had limited eye contact and ability to read my participants' body language or facial expressions. In addition, it was difficult to recruit healthcare providers due to the demand of health services during the pandemic; therefore, only one midwife participated in this research.

The following section provides recommendations for future research.

5.5 Recommendations for future research

In sections 5.3.2 and 5.3.3, I discussed key policies and programmes relating to child nutrition in Cambodia. Here, I focus on some recommendations for future research. This study provides a platform for an extensive study of improving and sustaining healthy feeding practices, maternal and child nutrition, and family nutrition in Cambodia and in other countries with a similar context to Cambodia. My findings discovered differences in the perceptions between the mothers, village leaders, and the community midwife in their perceptions of the roles and commitments of women to healthy nutrition for their young children. My findings identified the potential communication gaps and the opportunities which were missed when the knowledge and views of the mothers (and families) were overlooked and set aside from the programme development and organisation.

My research questions were directed to mothers' perceptions of healthy feeding practices. Findings from my research, however, suggested that family tradition and family meals are a significant feature of the Cambodian family. Future study can incorporate the centrality of the family in child-feeding practices and family food security. For example, I did not ask mothers about family meals or whether the families had enough food.

The findings suggested interactive and creative platforms for information and education on healthy feeding practices, food preparation, and child nutrition. Future research may explore creative and critical methodologies, ethnographic research, or participatory research to expand the findings from this study. A face-to-face interview, focus group discussion, and participant observation tools might help the researchers engage in more

depth with the participants' social and cultural realities than was possible in the online interviews I employed in my research.

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Appendices

Appendix A: A summary of the 17 articles of the literature review

Reference	Size (N)	Location of study	Objective	Methodology	Findings/Recommendations	Limitations
Harvey et al. (2018)	In Cambodia, 2,127 children aged 6–23 months	Cambodia, Myanmar, and Indonesia	To examine the socio-economic differentials in minimum dietary diversity (MDD) among children aged 6–23 months in Cambodia, Myanmar, and Indonesia	Cross-sectional study	- MDD deprivation among young children was significantly high in socio-economically disadvantaged households. - MDD requirements are not being met for about half of young children.	- Limited sample sizes. - Consequent lack of disaggregated statistics. - High response rates in each country show the value of Demographic and Health Survey (DHS) data for population-level analysis.
Hondru et al. (2020)	2,129 children aged 0–24 months	Phnom Penh and two north-eastern provinces (Kratie and Ratanakiri), Cambodia	To estimate the effect of appropriate feeding practices on linear and ponderal growth of children aged 0–24 months	Longitudinal cohort study	- To increase the food quantity and the meal frequency. - Maternal education, sanitation, and drinking water were among strongest predictors of the growth of children.	- The unknown changes occurring between data collections, adding to the limitations of 24-h recall period of the child-feeding practices. - The risk of misclassification.
Hong and Mishra (2006)	3,235 children aged 0-59 months included in the 2000 DHS	Cambodia	To examine how inequality in household wealth status was linked to children's nutritional status	Cross-sectional study	- Household wealth inequality is strongly linked to chronic undernutrition. - Reducing poverty and making services more accessible to the poor	- Not controlled for diet and healthcare indicators. - Use an indirect measure of household wealth.

					will be key to improving children's nutritional status.	- Unable to account for the impact of exclusive breastfeeding on stunting because few children aged less than six months are exclusively breastfed.
Jacobs and Roberts (2004)	252 households Having at least one child aged 60 months or less	Takeo province, Cambodia	To formulate appropriate responses by the public-health sector to reduce acute malnutrition among children aged 0-60 months	Cross-sectional study	- Poor child-feeding practices: not giving of colostrum, too early introduction of weaning, low feeding frequency, and late introduction of nutritious foods. - Inadequate healthcare-seeking behaviour. - No handwashing with soap.	N/A
Jameel et al. (2019)	109 participants (pregnant women and mothers of infants who have worked in factories, young women currently working in factories, caregivers of children, village leaders, healthcare workers, and factory managers)	Kampong Chhnang province, Cambodia	To investigate the health-seeking behaviours for maternal and infant care of female garment factory workers in Kampong Tralach district, Cambodia	Qualitative study	- Mothers often returned to work two months post-delivery. - Feeding was compromised for children aged 6–12 months as the introduction of complementary feeding was delayed. - Grandmothers were the preferred caregivers.	- May not be generalisable to other garment factory workers. - Only two factories. - Factories had a strong union presence, which may not be representative of other factories' working conditions. - No formal interrater reliability assessment conducted.

Laillou et al. (2020)	1,938 households with children aged 6-23.9 months	Phnom Penh and two north-eastern provinces (Kratie and Ratanakiri), Cambodia	To analyse key drivers of child stunting and wasting and explore the contribution of several integrated early child development (IECD) factors on socio-economic inequities of stunting and wasting in Cambodia	Longitudinal study	- A complex interplay of factors contributes to child stunting and wasting. - An integrated, intersectoral, equity-focused approach that addresses children's dietary quality, household water, sanitation and hygiene conditions, maternal education, and poverty is likely to yield the highest impact in achieving further gains in the nutritional status of children.	- The findings are representative of the six selected districts from the two provinces and Phnom Penh only. - Additional indicators, such as maternal nutrition, might further improve insights in the contribution of various factors on child stunting and wasting.
Marriott et al. (2010)	3,027 and 3,112 mother–infant pairs from the 2000 and 2005 Cambodia DHS, respectively for children aged 0–24 months	Cambodia	To assess the new WHO core healthy feeding indicators (WHO, 2008) with other covariates in terms of their association with the documented improvement in stunting and underweight in Cambodia	Quantitative study	Prevalence of meeting the WHO healthy feeding indicators improved, yet modelling showed that, generally, relative wealth, not child feeding, was linked to improved growth outcomes.	- Reporting and recall bias. - The sampling scheme of population-based clusters are not randomly spread across geographical areas. - Food diversity measures combined meat and eggs in 2000, and information on the quantity of foods consumed was not collected.

Marriott et al. (2012)	Comparing DHS infant feeding data collected in 2000 to date from 2005 and assessing the WHO core feeding indicators recommended for healthy growth	20 developing countries	To provide an in-depth focus on whether the feeding practices in Cambodia met the current WHO guidance and if compliance with these feeding guidelines was linked improved growth outcomes	Cross-sectional study	Models of the WHO feeding indicators in Cambodia demonstrated a consistent positive association of reduction in risk of stunting and underweight with increases in relative wealth.	The cross-sectional design of the DHS survey data makes it impossible to analyse the relationship between early exclusive breastfeeding and outcomes later in life for the infant.
McDonald et al. (2015)	900 households with children under the age of five years	Four rural districts of Prey Veng province, Cambodia	To assess household food insecurity and dietary diversity as correlates of maternal and child anthropometric status and anaemia in rural Cambodia	Quantitative study	- The risk of maternal thinness, but not child stunting or wasting, increased as the severity of household food insecurity increased. - Household food insecurity was also positively linked to maternal, but not child, anaemia. - Household dietary diversity status was not significantly related to any of the outcomes assessed.	Several methodological issues pertaining to the measurement of dietary diversity status make the results difficult to compare.
Muehlhoff et al. (2017)	53 stakeholders: • 13 interviews: 16 participants (MALIS project	Cambodia and Malawi	To provide an overview of the main facilitating factors and barriers that	Qualitative study	- Adoption of improved IYCF practices was facilitated by participation in nutrition education	- The process reviews were small qualitative enquiries, carried out as

	staff, government staff, and NGO staff). • Seven focus group discussions: 30 participants (mothers, grandmothers, father, and community nutrition promoters) • Seven household visits: seven participants (mothers)	Cambodia: Oddar Meanchey and Preah Vihear provinces	influence adoption of desirable infant and young child feeding (IYCF), and to highlight opportunities and critical implementation challenges, that need to be addressed for greater programme effectiveness and impact		and cooking sessions, and supportive family and community structures. - Barriers faced by families and caregivers were identified, including women's workload and limited access to high quality foods.	part of project monitoring and evaluation. - Limited experience in conducting qualitative research. - Language barriers. - Transcription and translation inaccuracies may have biased the findings.
Nurhasan et al. (2021)	520 caretakers with children aged 7–24 months	Phnom Penh (urban) and Prey Veng province (rural), Cambodia	To evaluate the caretakers' preferences and willingness-to-pay (WTP) for processed complementary food in packages (PCFP) in Cambodia.	Quantitative study	- The rural participants preferred locally developed fortified rice-and-fish-based PCFP (WF-L) over a worldwide distributed fortified complementary food aid product (CSB++) and they were willing to pay for it. - Despite being nutritionally inadequate, most participants preferred homemade porridge.	- The WF-L tested was not yet optimally refined while the other products were fully developed. - The total number of stores visited in the market survey was not recorded. - The number of participants who did not understand the bidding game was substantially higher in the urban area. - The study was conducted in 2012. Although CSB++ was included as the PCFP distributed through food aid channels, its distribution in

						Cambodia was discontinued in 2014. This makes the specific information embedded in CSB++ in this research less relevant to the context of Cambodia.
Pries et al. (2016a)	294 mothers of children less than 24 months	Phnom Penh, Cambodia	To assess consumption of commercial food and beverage products among children less than 24 months in Phnom Penh, and to assess their mothers' exposure to commercial promotions for these products	Cross-sectional study	- Need to improve IYCF. - Should promote nutritious options. - Should discourage consumption of unhealthy commercially produced snack food products.	- Utilising commercial food products for IYCF could differ between mothers depending on work status. - The interview could be biased because working mothers may not know what the child had eaten the day prior to the interview.
Pries et al. (2016b)	294 mothers of children aged less than 24 months	Phnom Penh, Cambodia	To assess mothers' exposure to commercial promotions for breastmilk substitutes and their use of these products in Phnom Penh, Cambodia	Cross-sectional study	- 86% of mothers observed commercial promotions for breastmilk substitutes, 19.0% observed child food product brands/logos on health facility equipment, and 18.4% received a recommendation from a healthcare provider to use a breastmilk substitute.	- May be biased assessment of early breastfeeding and the use of breastmilk substitutes among the general population of Phnom Penh mothers, as there may be differences between mothers who use health care and those who do not. - Only included public health facilities; mothers who use private

					- Although commercial promotions for breastmilk substitutes are restricted, occurrence of promotions is high and use is common.	health care may have different socio-economic characteristics than mothers who use public health care, which could influence their feeding practices. - The cross-sectional design limits the ability to establish causality between exposure to promotion and the current use of breastmilk substitutes.
Pries et al. (2017)	In Cambodia, 222 mothers of children aged 6–23 months	Four study sites: Phnom Penh, Cambodia; Kathmandu Valley, Nepal; Dakar, Senegal; and Dar es Salaam, Tanzania	To assess consumption patterns among children aged 6–23 months, particularly focus on use of commercially produced foods and beverages by mothers during the complementary feeding period	Cross-sectional study	Children of Phnom Penh mothers in the lowest wealth tercile were 1.5 times more likely to consume commercial snack food products, compared to wealthier mothers.	- Selection bias. - The sample size – the calculations were based on an estimated prevalence of 10%, whereas the actual rate found was much higher in all study sites, which may weaken the power of this study. - Only mothers were included.
Reinbott et al. (2015)	803 households with children aged 6–23 months	Two provinces in the north-west (Preah Vihear	To investigate the association between feeding practices and	Cross-sectional study	- Found the associations between a composite child feeding index (CFI)	- Limitations owing to its

		and Oddar Meanchey), Cambodia	length-for-age Z-scores (LAZ) in a population of two provinces in north-west Cambodia		and LAZ in infants and young children. - Need to include a wide range of information in the analysis in order to understand the relationship between appropriate feeding and child growth.	cross-sectional design and the difficulty of making assumptions regarding long-term impact. - Child development, including growth and motor skills, might influence mothers' feeding responses and behaviour. - The general variable "breastfeeding" should be differentiated by including the time when breastfeeding is initiated and the utilisation of pre-lacteal/early supplementary feeds.
Reinbott et al. (2016)	928 randomly selected households with children aged 3–23 months	Preah Vihear and Otdar Meanchey provinces, Cambodia	To investigate relationships between biomarkers of iron status in children aged 3–23 months and their linkage to haemoglobin levels by considering age and sex of the child, maternal hemoglobin status, age-appropriate feeding practices, and the food	Cross-sectional study	- Anaemia prevalence was highest among children aged 6–12 months (71%). - Nutrition programmes targeting children under two years of age need to focus on the preparation of complementary foods with high nutrient density to sustainably prevent micronutrient deficiency and generally improve their nutritional status.	- Cross-sectional design which does not permit any causal inference by time. - The calculations were done using the continuous variables as the literature still lacks appropriate cut-offs, particularly for infants. The cut-offs used were the most common ones, but they might not be suitable for this age group.

			intake of either breastmilk or animal source foods (ASF); and to analyse the associations of the biomarkers with anthropometric data			
Som et al. (2018)	4,161 children aged 0–24 months and 4,072 women (pregnant and non-pregnant)	Phnom Penh and two rural provinces (Kratie and Ratanakiri), Cambodia	To assess the current feeding practices among of women of reproductive age, pregnant women, lactating women, and children less than 24 months old living in six districts in Phnom Penh and two rural provinces in the north east of Cambodia	Cross-sectional study	- More than 70% of the children were not meeting the minimum acceptable diet - Most of the women did not improve their diet during pregnancy.	N/A

Appendix B: Interview protocol and semi-structured interview questions for mothers

INTERVIEW PROTOCOL

Project title: ***Mothers' perceptions of healthy feeding practices for children under the age of five years in Cambodia***

Conducting the telephone interview:

- The telephone interview will be booked, and held, to suit the availability of participants and will take approximately 45-60 minutes.
- The interviewer will start the interview by informing the participant of the purpose of the research.
    - Mothers: To collect mothers' views of feeding for children under the age of five years in a commune in Kang Meas District, Kampong Cham Province, Cambodia
- Participants will be informed that the discussion will be recorded for research purposes and that the content it is confidential.
- The researcher will ask the participant if they have any questions, and answer these, then briefly outline the online consent process.
- The researcher will inform the participant they need to obtain their verbal consent through their answers to the following questions:

○ I have read and understood the information provided about this research project in the Information Sheet dated ……....

○ I have had an opportunity to ask questions and to have them answered.

○ I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.

○ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.

○ I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or

allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.

○ I agree to take part in this research.

○ I wish to receive a summary of the research findings (please tick one): Yes○ No○

○ I understand that the researcher will develop key ideas from my interview and these will be shared with healthcare providers within the community for feedback.

- The questions below will be used as a guideline to facilitate discussion.
- When the discussion has concluded, the interviewer will close the interview, turn off the recording, and thank the participants for their input.
- The interviewer will save the recordings onto the secure password protected file. The consent section will be separated from the rest of the interview. This will be stored separately to the interview recording.

SEMI-STRUCTURED INTERVIEW QUESTIONS

A. Demographic profile

- Age
- Marital status
- Educational background
- Occupational status
- Household number
- Number of children
- Age of children

B. Asking participants' current feeding practices for their children

- Please tell me a little bit about how you feed your child at home.
- How do you decide when to feed your child?
    - Prompt: How many times a day you feed your child?
    - Prompt: Do you have set times that you feed your child? Who does the shopping? Who prepares the meals?
- Where did you learn how to prepare these foods for your child?
- What do you need to make it easier to feed your child? How about other mothers in your village?
- Do you find it difficult in feeding your child at this age? Why? How about other mothers in your village?

C. Showing participants a picture on complementary foods for children and asking (Appendix):

- Have you seen this picture before?

    - Prompt: If yes, where did you see?
    - Prompt: Which foods do you recognise?
- What does this picture tell you about?
    - Prompt: Do you give these types of foods to your child?
    - Prompt: Please share your experience in preparing these foods.
- Do you find it easy to feed these foods to your child?
    - Prompt: What are likely to be the difficulties?
- If you want to follow this guideline, what support do you need?
    - Prompt: Who can help you?
    - Prompt: What services or knowledge can help you?

Appendix

How to prepare enriched porridge

Appendix C: Interview protocol and semi-structured interview questions for community maternal and child health supporters

INTERVIEW PROTOCOL

Project title: ***Mothers' perceptions of healthy feeding practices for children under the age of five years in Cambodia***

Conducting the telephone interview:

- The telephone interview will be booked, and held, to suit the availability of participants and will take approximately 45-60 minutes.
- The interviewer will start the interview by informing the participant of the purpose of the research.
    - Stakeholders working in the maternal and child health programme: To collect the views of stakeholders working in the maternal and child health programme regarding solutions provided by the mothers
- Participants will be informed that the discussion will be recorded for research purposes and that the content it is confidential.
- The researcher will ask the participant if they have any questions, and answer these, then briefly outline the online consent process.
- The researcher will inform the participant they need to obtain their verbal consent through their answers to the following questions:

○ I have read and understood the information provided about this research project in the Information Sheet dated ……....

○ I have had an opportunity to ask questions and to have them answered.

○ I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.

○ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.

○ I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or

allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.

○ I agree to take part in this research.

○ I wish to receive a summary of the research findings (please tick one): Yes○ No○

- The questions below will be used as a guideline to facilitate discussion.
- When the discussion has concluded, the interviewer will close the interview, turn off the recording, and thank the participants for their input.
- The interviewer will save the recordings onto the secure password protected file. The consent section will be separated from the rest of the interview. This will be stored separately to the interview recording.

SEMI-STRUCTURED INTERVIEW QUESTIONS

A. Introduction

Hello (Jum Reap Sour). I am Kimleang, a master student in the Department of Public Health, Auckland University of Technology (AUT), New Zealand. I am conducting a study about mothers' perceptions of healthy feeding practices for children under the age of five years in Kampong Cham Province, Cambodia. The results of this study will be written in my master's public health thesis.

I interviewed 13 mothers in the community on healthy feeding practices for children under the age of five years. I also asked the mothers to share with me on practices or groups or community activities that support the recommended healthy feeding practices by the Ministry of Health.

Before sharing the key ideas from the interviews of mother participants, please tell me briefly about your role in your workplace.

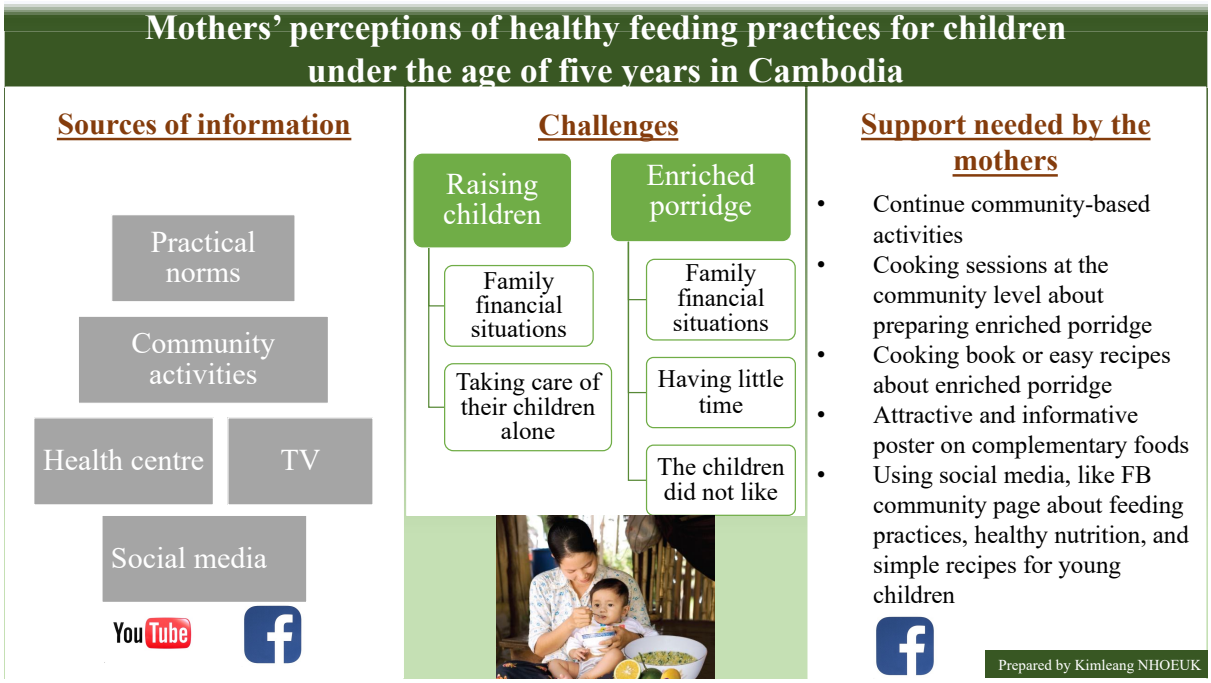
B. Presenting the key ideas provided by the mothers and asking: (Appendix)

I know the Ministry of Health, non-governmental organisations, and other related agencies have done a great job in promoting child health in Cambodia. When I interviewed the 13 mothers, I have got more information. So, I would like to share with you the three main things I found from them: (1) sources of information on child-feeding practices, (2) challenges, and (3) support needed by the mothers, such as recommendation of activities they want to see in the community/health services.

- Can you please share with me what your thoughts are on where the mothers in this commune get their nutrition and food advice?
- Can you please share your thoughts around the challenges the mothers said they face around feeding their young children?
- Can you please share your thoughts or views around the suggestions by the mothers to increase the support for mothers of young children? And how this might relate to the current programmes?
- Who do you think the relevant key stakeholders could be to implement the support ideas from the mothers?
- What do you think could be the challenges of implementing the suggestions by the mothers to improve support for mothers of young children?
- Do you have any further comments or questions?

Appendix

A poster of key ideas provided by the mothers



Appendix D: Participant Information Sheet for Mothers

Participant Information Sheet

Date Information Sheet Produced:

08 March 2021

Project Title

Mothers' perceptions of healthy feeding practices for children under the age of five years in Cambodia

An Invitation

Hello (Jum Reap Sour). I am Kimleang, a master student in school of Public Health and Interdisciplinary Studies, Auckland University of Technology, New Zealand. I am conducting a study about mothers' perceptions of healthy feeding practices for children under the age of five years in Kampong Cham Province, Cambodia. I would like to invite you to participate in my study if you are a mother who is 18 years old or older and has at least a child who is under the age of five years. Are you interested in taking part in this study? However, your participation in this study is voluntary.

You will be invited to participate in the individual interview. Each interview will take from 45 to 60 minutes. You have the right to refuse to take part in the research or discontinue at any stage of the research process without negative consequences. All your contact details and answers will be kept confidential.

You are now given this Participant Information Sheet, which mentioned more details about the study. Your participation is important and highly appreciated. Thank you for your kind attention considering this invitation.

What is the purpose of this research?

The aims of this research are two-fold. First, it aims to investigate the perceptions of mothers in healthy feeding practices for children under the age of five years in a commune in Cambodia. Second, it aims to investigate mothers' identified practices within the current recommendations of the Cambodian Ministry of Health on healthy feeding practices for under-five children and how healthy feeding practices can be supported at the community level. The research findings may be used an input of future programme and policy development in Cambodia.

How was I identified and why am I being invited to participate in this research?

I would like to invite you to participate in this study. You are invited because you are a mother who is 18 years old or older and has at least a child who is under the age of five years. As a mother, you are believed to be part of the solutions to achieve healthy child-feeding practices in your family as well as your community. You are welcomed to suggest solutions regarding how healthy feeding practices can be supported.

How do I agree to participate in this research?

If you agree to participate in this study, you can contact me through email or Telegram (contact details below), and we can discuss when should be comfortable for you. Before the interview starts, you will be asked to give your consent verbally by recording. Your participation in this research is voluntary (it is your choice). You are able to withdraw from the study at any time without being disadvantage in any way. If you choose to withdraw from the study, then you will be offered the choice between having

any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

What will happen in this research?

Once you accept the invitation, you will be individually interviewed on your perceptions and practices on child-feeding. Indicative questions include: your perceptions of healthy meals, barriers you face in promoting healthy meals, and support you need to achieve healthy feeding practices. The interview will take from 45 to 60 minutes. After completing the interviews, the researcher will develop key ideas from all the interviews with mothers and these will be shared with healthcare providers within the community for feedback.

What are the discomforts and risks?

The level of discomfort and risk are likely to be low as the questions are generally about the foods that your family eat and your eating habits, and the mothers' knowledge of the healthy eating guidelines.

How will these discomforts and risks be alleviated?

Khmer language is used in this study to make you feel comfortable in our discussion. If you feel uncomfortable with any question during the interview, you can choose not to answer the question. It is not expected that you will feel any discomfort or experience any risk in this study. However, while sharing your lived experiences, if you feel uncomfortable or unsure at any stage, you can stop the interview at any **time** or choose not to answer the question.

What are the benefits?

This research might not benefit directly to you. However, through your participation, you will be able to freely express your perceptions on how child-feeding can be improved in your community. Further to this, this study will enable the wider community to understand the needs to achieve healthy child-feeding practices in your community. The information provided by you may be used an input of future programme and policy development that would benefit the wider community.

How will my privacy be protected?

All information provided by you will be kept confidential. Your identities will not be identified in any report. The recordings will be saved onto the secure password protected file and be securely stored for a minimum of six years.

What are the costs of participating in this research?

There is not cost of participating in this study.

What opportunity do I have to consider this invitation?

You have two weeks to consider this invitation. Then, I will contact you to see if you would like to participate in this study or you can contact me through my contact details below.

Will I receive feedback on the results of this research?

The results of this study will be summarised and be translated into Khmer. You will get a copy of it.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr. Sari Andajani, sari.andajani@aut.ac.nz, work phone number +64 9 921 9999 ext 7738.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, *ethics@aut.ac.nz*, (+649) 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet for your reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Kimleang NHOEUK, nhoeuk.kimelang@gmail.com, Telegram: Kimleang Nhoeuk (+64 22 5883398)

Project Supervisor Contact Details:

Dr. Sari Andajani, sari.andajani@aut.ac.nz, work phone number +64 9 921 9999 ext 7738.

Approved by the Auckland University of Technology Ethics Committee on *27 May 2021*, AUTEC Reference number *21/89*.

Appendix E: Consent form for mothers

Consent Form

For use when interviews are involved.

Project title: ***Mothers' perceptions of healthy feeding practices for children under the age of five years in Cambodia***

Project Supervisor: ***Dr Sari Andajani***

Researcher: ***Kimleang NHOEUK***

- ○ I have read and understood the information provided about this research project in the Information Sheet dated ……...
- ○ I have had an opportunity to ask questions and to have them answered.
- ○ I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.
- ○ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.
- ○ I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.
- ○ I agree to take part in this research.
- ○ I wish to receive a summary of the research findings (please tick one): Yes○ No○
- ○ I understand that the researcher will develop key ideas from my interview and these will be shared with healthcare providers within the community for feedback.

Participant's signature:

……

Participant's name:

……

Participant's Contact Details (if appropriate):

……..

……..

……..

……..

Date:

Approved by the Auckland University of Technology Ethics Committee on 27 May 2021 AUTEC Reference number 21/89

Note: The Participant should retain a copy of this form.

Appendix F: Participant information sheet for community maternal and child health supporters

Participant Information Sheet

Date Information Sheet Produced:

08 March 2021

Project Title

Mothers' perceptions of healthy feeding practices for children under the age of five years in Cambodia

An Invitation

Hello (Jum Reap Sour). I am Kimleang, a master student in school of Public Health and Interdisciplinary Studies, Auckland University of Technology, New Zealand. I am conducting a study about mothers' perceptions of healthy feeding practices for children under the age of five years in Kampong Cham Province, Cambodia. I would like to invite you to participate in my study. Are you interested in taking part in this study? However, your participation in this study is voluntary.

You will be invited to participate in the individual interview. Each interview will take from 45 to 60 minutes. You have the right to refuse to take part in the research or discontinue at any stage of the research process without negative consequences. All your contact details and answers will be kept confidential.

You are now given this Participant Information Sheet, which mentioned more details about the study. Your participation is important and highly appreciated. Thank you for your kind attention considering this invitation.

What is the purpose of this research?

The aims of this research are two-fold. First, it aims to investigate the perceptions of mothers in healthy feeding practices for children under the age of five years in a commune in Cambodia. Second, it aims to investigate mothers' identified practices within the current recommendations of the Cambodian Ministry of Health on healthy feeding practices for under-five children and how healthy feeding practices can be supported at the community level. The research findings may be used an input of future programme and policy development in Cambodia.

How was I identified and why am I being invited to participate in this research?

I would like to invite you to participate in this study. You are invited because you are one of the key stakeholders working in the maternal and child health programme. With your role in promoting maternal and child health, you are believed to be part of the solutions to achieve healthy child-feeding practices for mothers in your community. You are welcomed to provide feedback to the solutions generated by mothers regarding how healthy feeding practices can be supported.

How do I agree to participate in this research?

If you agree to participate in this study, you can contact me through email or Telegram (contact details below), and we can discuss when should be comfortable for you. Before the interview starts, you will be asked to give your consent verbally by recording. Your participation in this research is voluntary (it is your choice). You are able to withdraw from the study at any time without being disadvantage in any way. If you choose to withdraw from the study, then you will be offered the choice between having

any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

What will happen in this research?

Once you accept the invitation, you will be individually interviewed to discuss the solutions provided by mothers and how those solutions fit within the current programme and how those solutions can be implemented. The interview will take from 45 to 60 minutes.

What are the discomforts and risks?

The level of discomfort or embarrassment are likely to be low as you are discussing your community programme.

How will these discomforts and risks be alleviated?

Khmer language will be used in this study. If you feel uncomfortable with any question during the interview, you have the right not to answer that question.

What are the benefits?

This study will enable the wider community to understand the needs to achieve healthy child-feeding practices in your community. The information provided by you may be used an input of future programme and policy development that would benefit the wider community.

How will my privacy be protected?

All information provided by you will be kept confidential. Your identities will not be identified in any report. The recordings will be saved onto the secure password protected file and be securely stored for a minimum of six years.

What are the costs of participating in this research?

There is not cost of participating in this study.

What opportunity do I have to consider this invitation?

You have two weeks to consider this invitation. Then, I will contact you to see if you would like to participate in this study or you can contact me through my contact details below.

Will I receive feedback on the results of this research?

The results of this study will be summarised and be translated into Khmer. You will get a hard copy of it.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr. Sari Andajani, sari.andajani@aut.ac.nz, work phone number +64 9 921 9999 ext 7738.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, *ethics@aut.ac.nz*, (+649) 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet for your reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Kimleang NHOEUK, nhoeuk.kimelang@gmail.com, Telegram: Kimleang Nhoeuk (+64 22 5883398)

Project Supervisor Contact Details:

Dr. Sari Andajani, sari.andajani@aut.ac.nz, work phone number +64 9 921 9999 ext 7738.

Approved by the Auckland University of Technology Ethics Committee on *27 May 2021*, AUTEC Reference number *21/89*.

Appendix G: Consent form for community maternal and child health supporters

Consent Form

For use when interviews are involved.

Project title: ***Mothers' perceptions of healthy feeding practices for children under the age of five years in Cambodia***

Project Supervisor: ***Dr Sari Andajani***

Researcher: ***Kimleang NHOEUK***

- ○ I have read and understood the information provided about this research project in the Information Sheet dated ……...
- ○ I have had an opportunity to ask questions and to have them answered.
- ○ I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.
- ○ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.
- ○ I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.
- ○ I agree to take part in this research.
- ○ I wish to receive a summary of the research findings (please tick one): Yes○ No○

Participant's signature:

.....……

Participant's name:

.....……

Participant's Contact Details (if appropriate):

……..

……..

……..

……..

Date:

Approved by the Auckland University of Technology Ethics Committee on 27 May 2021 AUTEC Reference number 21/89

Note: The Participant should retain a copy of this form.

Appendix H: Advertisement

AUCKLAND UNIVERSITY OF TECHNOLOGY
AUCKLAND, NEW ZEALAND

AUT

How do you feed your children at home?

If you are **a mother who has a child under the age of five years**,

I would like to invite you

to take part in an interview by telephone

for around 45 minutes.

I would like to hear your stories about how your family eats at home.

If you are interested in taking part, please contact me through:

Email: nhoeuk.kimleang@gmail.com

Telegram: Kimleang Nhoeuk (+64 22 5883398)

តើអ្នកចិញ្ចឹមកូននៅផ្ទះដោយរបៀបណា?

បើសិនជាអ្នកជា**ម្តាយដែលមានកូនតូចអាយុក្រោម ៥ ឆ្នាំ**

នាងខ្ញុំសូមគោរពអញ្ជើញអ្នក

ចូលរួមផ្តល់កិច្ចសម្ភាសន៍ជាមួយនាងខ្ញុំតាមទូរសព្ទរយៈពេលប្រហែល ៤៥ នាទី។

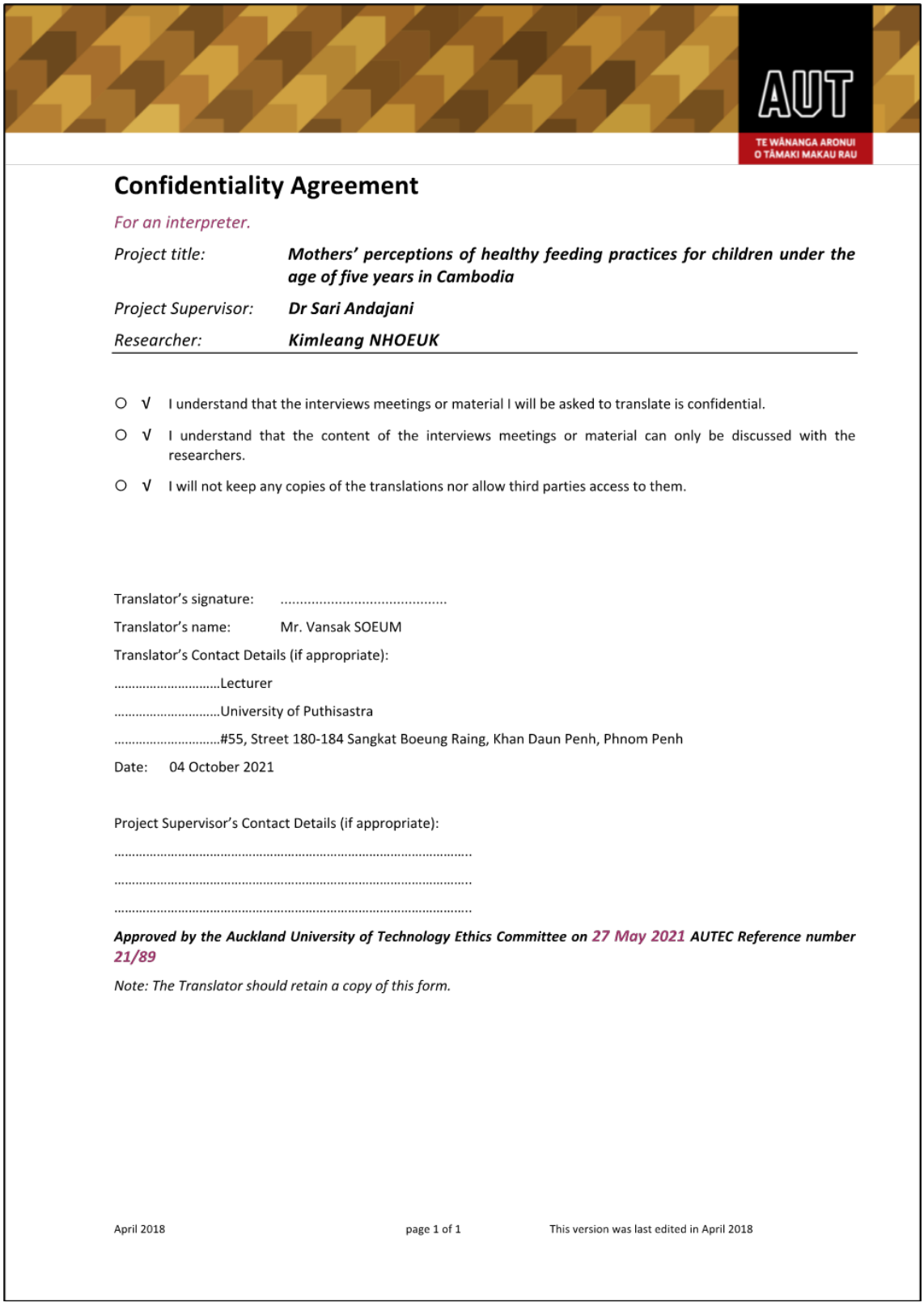
តើអ្នកមីង ឬបងស្រី ឬប្អូនស្រី អាចប្រាប់នាងខ្ញុំអំពីការទទួលទានអាហារឬ
ការហូបចុកក្នុងគ្រួសាររបស់អ្នកមីង ឬបងស្រី ឬប្អូនស្រី បានទេ?

បើអ្នកមានចំណាប់អារម្មណ៍ក្នុងការចូលរួម សូមទាក់ទងមកនាងខ្ញុំតាមរយៈ ៖

អ៊ីម៉ែល៖ nhoeuk.kimleang@gmail.com

តេឡេក្រាម៖ Kimleang Nhoeuk (+64 22 5883398)

Appendix I: Confidentiality agreement



AUT
TE WĀNANGA ARONUI O TĀMAKI MAKAU RAU

Confidentiality Agreement

For an interpreter.

Project title: ***Mothers' perceptions of healthy feeding practices for children under the age of five years in Cambodia***

Project Supervisor: ***Dr Sari Andajani***

Researcher: ***Kimleang NHOEUK***

- ○ √ I understand that the interviews meetings or material I will be asked to translate is confidential.
- ○ √ I understand that the content of the interviews meetings or material can only be discussed with the researchers.
- ○ √ I will not keep any copies of the translations nor allow third parties access to them.

Translator's signature: .....

Translator's name: Mr. Vansak SOEUM

Translator's Contact Details (if appropriate):

.....Lecturer

.....University of Puthisastra

.....#55, Street 180-184 Sangkat Boeung Raing, Khan Daun Penh, Phnom Penh

Date: 04 October 2021

Project Supervisor's Contact Details (if appropriate):

.....

.....

.....

Approved by the Auckland University of Technology Ethics Committee on 27 May 2021 AUTEC Reference number 21/89

Note: The Translator should retain a copy of this form.

April 2018 page 1 of 1 This version was last edited in April 2018

Appendix J: Ethics approval from AUTEC

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

27 May 2021

Sari Andajani
Faculty of Health and Environmental Sciences

Dear Sari

Re Ethics Application: **21/89 Mothers' perceptions of healthy feeding practices for children under the age of five years in Cambodia**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 27 May 2024.

Non-Standard Conditions of Approval

1. Please send through the updated signature page for the file.

Non-standard conditions must be completed before commencing your study. Non-standard conditions do not need to be reviewed by AUTEC before commencing your study but need to be sent through for our file.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the Auckland University of Technology Code of Conduct for Research and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard and that all the dates on the documents are updated.

AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

Please quote the application number and title on all future correspondence related to this project.

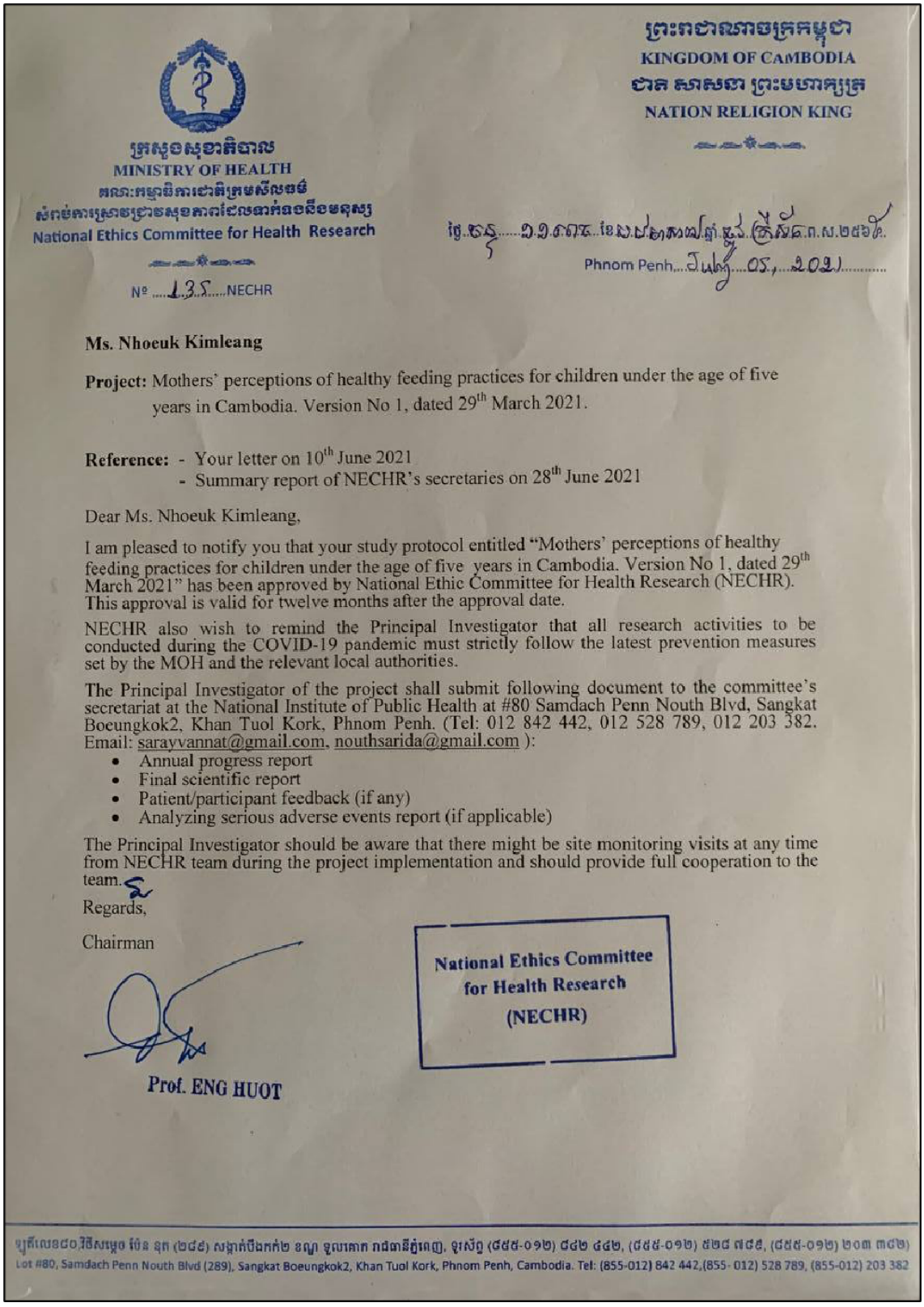
For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through http://www.aut.ac.nz/research/researchethics

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat
Auckland University of Technology Ethics Committee

Cc: vdv0117@autuni.ac.nz; Carolyn Cairncross

Appendix K: Ethics approval from NECHR



ព្រះរាជាណាចក្រកម្ពុជា
KINGDOM OF CAMBODIA
ជាតិ សាសនា ព្រះមហាក្សត្រ
NATION RELIGION KING

ក្រសួងសុខាភិបាល
MINISTRY OF HEALTH
គណៈកម្មាធិការជាតិក្រមសីលធម៌
សំរាប់ការស្រាវជ្រាវសុខភាពដែលពាក់ព័ន្ធនឹងមនុស្ស
National Ethics Committee for Health Research

ថ្ងៃទី ...22... ខែ ...កក្កដា... ឆ្នាំ ...ជូត... ព.ស.២៥៦៥
Phnom Penh, ...July... 05, ...2021...

№ ...135... NECHR

Ms. Nhoeuk Kimleang

Project: Mothers' perceptions of healthy feeding practices for children under the age of five years in Cambodia. Version No 1, dated 29th March 2021.

Reference: - Your letter on 10th June 2021
- Summary report of NECHR's secretaries on 28th June 2021

Dear Ms. Nhoeuk Kimleang,

I am pleased to notify you that your study protocol entitled "Mothers' perceptions of healthy feeding practices for children under the age of five years in Cambodia. Version No 1, dated 29th March 2021" has been approved by National Ethic Committee for Health Research (NECHR). This approval is valid for twelve months after the approval date.

NECHR also wish to remind the Principal Investigator that all research activities to be conducted during the COVID-19 pandemic must strictly follow the latest prevention measures set by the MOH and the relevant local authorities.

The Principal Investigator of the project shall submit following document to the committee's secretariat at the National Institute of Public Health at #80 Samdach Penn Nouth Blvd, Sangkat Boeungkok2, Khan Tuol Kork, Phnom Penh. (Tel: 012 842 442, 012 528 789, 012 203 382. Email: sarayvannat@gmail.com, nouthsarida@gmail.com):

- Annual progress report
- Final scientific report
- Patient/participant feedback (if any)
- Analyzing serious adverse events report (if applicable)

The Principal Investigator should be aware that there might be site monitoring visits at any time from NECHR team during the project implementation and should provide full cooperation to the team.

Regards,

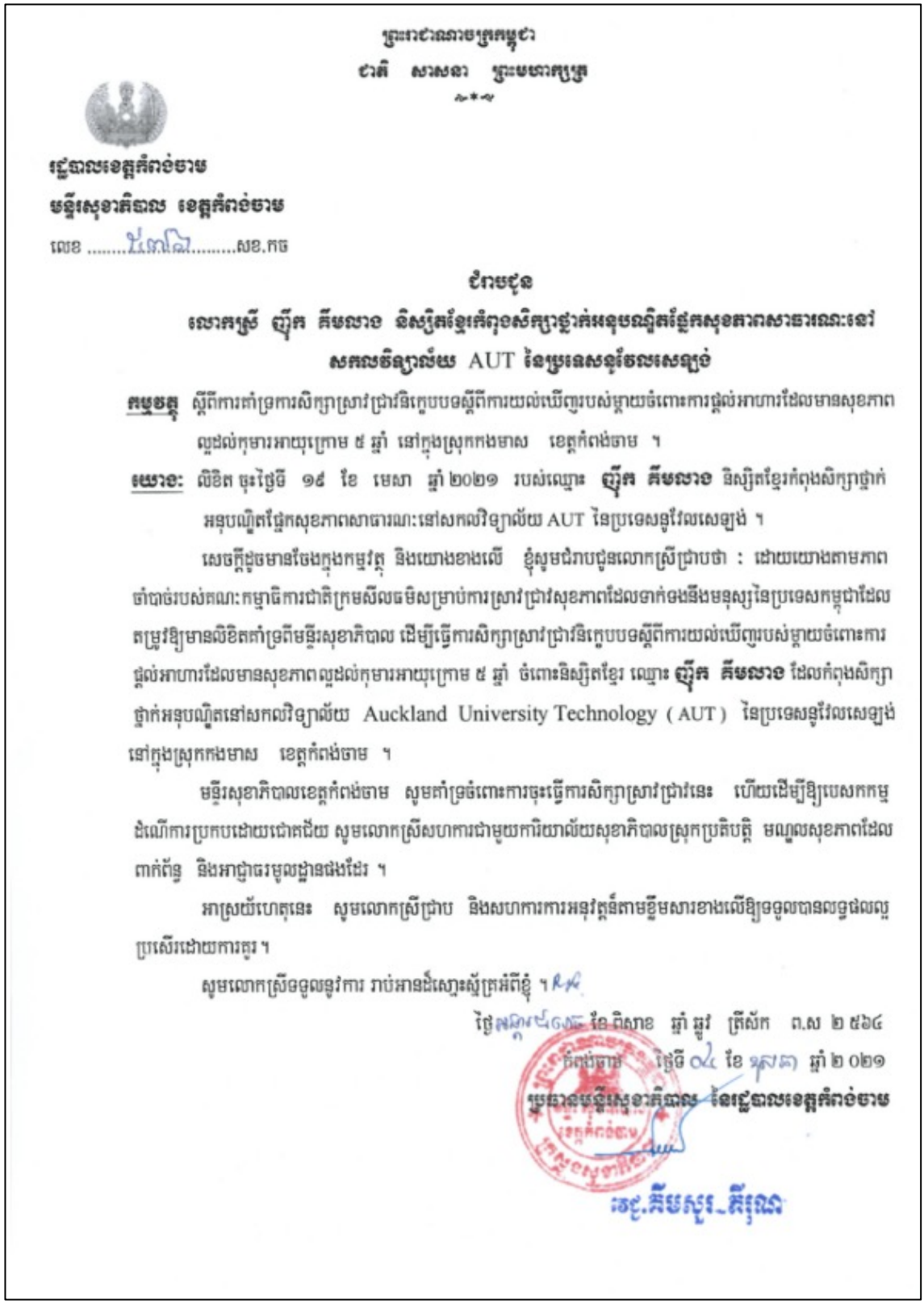
Chairman

Prof. ENG HUOT

National Ethics Committee for Health Research (NECHR)

ឡូតិ៍លេខ៨០ វិថីសម្តេច ហ៊ុន នុត (២៨៩) សង្កាត់បឹងកក់២ ខណ្ឌ ទួលគោក រាជធានីភ្នំពេញ, ទូរស័ព្ទ (៨៥៥-០១២) ៨៤២ ៤៤២, (៨៥៥-០១២) ៥២៨ ៧៨៩, (៨៥៥-០១២) ២០៣ ៣៨២
Lot #80, Samdach Penn Nouth Blvd (289), Sangkat Boeungkok2, Khan Tuol Kork, Phnom Penh, Cambodia. Tel: (855-012) 842 442,(855- 012) 528 789, (855-012) 203 382

Appendix L: Support letter from Kampong Cham Provincial Health Department



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

រដ្ឋបាលខេត្តកំពង់ចាម
មន្ទីរសុខាភិបាល ខេត្តកំពង់ចាម
លេខ .....សខ.កច

ជំរាបជូន

លោកស្រី ញ៉ឹក គីមលាង និស្សិតខ្មែរកំពុងសិក្សាថ្នាក់អនុបណ្ឌិតផ្នែកសុខភាពសាធារណៈនៅសាកលវិទ្យាល័យ AUT នៃប្រទេសនូវែលសេឡង់

កម្មវត្ថុ ស្តីពីការគាំទ្រការសិក្សាស្រាវជ្រាវនិក្ខេបបទស្តីពីការយល់ឃើញរបស់ម្តាយចំពោះការផ្តល់អាហារដែលមានសុខភាពល្អដល់កុមារអាយុក្រោម ៥ ឆ្នាំ នៅក្នុងស្រុកកងមាស ខេត្តកំពង់ចាម ។

យោង: លិខិត ចុះថ្ងៃទី ១៩ ខែ មេសា ឆ្នាំ ២០២១ របស់ឈ្មោះ **ញ៉ឹក គីមលាង** និស្សិតខ្មែរកំពុងសិក្សាថ្នាក់អនុបណ្ឌិតផ្នែកសុខភាពសាធារណៈនៅសាកលវិទ្យាល័យ AUT នៃប្រទេសនូវែលសេឡង់ ។

សេចក្តីដូចមានចែងក្នុងកម្មវត្ថុ និងយោងខាងលើ ខ្ញុំសូមជំរាបជូនលោកស្រីជ្រាបថា : ដោយយោងតាមភាពចាំបាច់របស់គណៈកម្មាធិការជាតិក្រមសីលធម៌សម្រាប់ការស្រាវជ្រាវសុខភាពដែលទាក់ទងនឹងមនុស្សនៃប្រទេសកម្ពុជាដែលតម្រូវឱ្យមានលិខិតគាំទ្រពីមន្ទីរសុខាភិបាល ដើម្បីធ្វើការសិក្សាស្រាវជ្រាវនិក្ខេបបទស្តីពីការយល់ឃើញរបស់ម្តាយចំពោះការផ្តល់អាហារដែលមានសុខភាពល្អដល់កុមារអាយុក្រោម ៥ ឆ្នាំ ចំពោះនិស្សិតខ្មែរ ឈ្មោះ **ញ៉ឹក គីមលាង** ដែលកំពុងសិក្សាថ្នាក់អនុបណ្ឌិតនៅសាកលវិទ្យាល័យ Auckland University Technology (AUT) នៃប្រទេសនូវែលសេឡង់ នៅក្នុងស្រុកកងមាស ខេត្តកំពង់ចាម ។

មន្ទីរសុខាភិបាលខេត្តកំពង់ចាម សូមគាំទ្រចំពោះការចុះធ្វើការសិក្សាស្រាវជ្រាវនេះ ហើយដើម្បីឱ្យបេសកកម្មដំណើរការប្រកបដោយជោគជ័យ សូមលោកស្រីសហការជាមួយការិយាល័យសុខាភិបាលស្រុកប្រតិបត្តិ មណ្ឌលសុខភាពដែលពាក់ព័ន្ធ និងអាជ្ញាធរមូលដ្ឋានផងដែរ ។

អាស្រ័យហេតុនេះ សូមលោកស្រីជ្រាប និងសហការការអនុវត្តន៍តាមខ្លឹមសារខាងលើឱ្យទទួលបានលទ្ធផលល្អប្រសើរដោយការគួរ ។

សូមលោកស្រីទទួលនូវការ រាប់អានដ៏ស្មោះស្ម័ត្រអំពីខ្ញុំ ។

ថ្ងៃសុក្រ ៤ កើត ខែ ពិសាខ ឆ្នាំ ឆ្លូវ ត្រីស័ក ព.ស ២៥៦៤
កំពង់ចាម ថ្ងៃទី ០៤ ខែ ឧសភា ឆ្នាំ ២ ០២១
ប្រធានមន្ទីរសុខាភិបាល នៃរដ្ឋបាលខេត្តកំពង់ចាម

ទេ.គីមសូរៈគីរុណ

Appendix M: Support letter from village chief

ជម្រាបជូន

ឈ្មោះ ញ៉ឹក គីមលាង

និស្សិតខ្មែរកំពុងសិក្សាថ្នាក់អនុបណ្ឌិតផ្នែកសុខភាពសាធារណៈនៅសកលវិទ្យាល័យ Auckland University of Technology (AUT) នៃប្រទេសនូវែលសេឡង់

កម្មវត្ថុ៖ ស្តីពីការគាំទ្រការសិក្សាស្រាវជ្រាវនិក្ខេបបទស្តីពីការយល់ឃើញរបស់ម្តាយចំពោះការផ្តល់អាហារដែលមានសុខភាពល្អដល់កុមារអាយុក្រោម ៥ ឆ្នាំនៅឃុំកងតាណឹង ស្រុកកងមាស ខេត្តកំពង់ចាម ប្រទេសកម្ពុជា។

យោង៖ លិខិត ចុះថ្ងៃទី ៥ ខែ កក្កដា ឆ្នាំ ២០២១ របស់ឈ្មោះ ញ៉ឹក គីមលាង និស្សិតខ្មែរកំពុងសិក្សាថ្នាក់អនុបណ្ឌិតផ្នែកសុខភាពសាធារណៈនៅសកលវិទ្យាល័យ Auckland University of Technology (AUT) នៃប្រទេសនូវែលសេឡង់។

សេចក្តីដូចមានចែងនៅក្នុងកម្មវត្ថុនិងយោងខាងលើ ខ្ញុំបាទប្រធានភូមិនៅឃុំកងតាណឹង ស្រុកកងមាស ខេត្តកំពង់ចាម សូមគាំទ្រចំពោះការចុះធ្វើការសិក្សាស្រាវជ្រាវនិក្ខេបបទស្តីពីការយល់ឃើញរបស់ម្តាយចំពោះការផ្តល់អាហារដែលមានសុខភាពល្អដល់កុមារអាយុក្រោម ៥ ឆ្នាំនៅប្រទេសកម្ពុជា ដើម្បីប្រមូលទិន្នន័យពីម្តាយរបស់កុមារអាយុក្រោម ៥ ឆ្នាំនិងភាគីដែលពាក់ព័ន្ធនឹងកម្មវិធីសុខភាពមាតា និង កុមារនៅស្រុកកងមាស ខេត្តកំពង់ចាម ប្រទេសកម្ពុជា។

- ក្រុមទី១ - ម្តាយ៖ ដើម្បីប្រមូលយោបល់ម្តាយក្នុងការផ្តល់អាហារដល់កុមារអាយុក្រោម ៥ ឆ្នាំនៅឃុំកងតាណឹង ស្រុកកងមាស ខេត្តកំពង់ចាម ប្រទេសកម្ពុជា។
- ក្រុមទី២ - ភាគីពាក់ព័ន្ធ៖ ដើម្បីប្រមូលយោបល់ភាគីពាក់ព័ន្ធដែលធ្វើការទាក់ទងនឹងកម្មវិធីសុខភាពមាតានិងកុមារស្តីពីយោបល់ដែលបានលើកឡើងដោយម្តាយពីក្រុមទី១។

ធ្វើនៅខេត្តកំពង់ចាម, ថ្ងៃទី ៧ ខែ កក្កដា ឆ្នាំ ២០២១

ប្រធានភូមិនៅឃុំកងតាណឹង ស្រុកកងមាស ខេត្តកំពង់ចាម

ហត្ថលេខា

ឈ្មោះ ផន ហ៊ិន

Appendix N: Researcher's codebook for mothers

Researcher's Codebook for Mothers

Codes

1 = Main Themes, Bold

1.A/B/C/D = Sub-Themes, Bold and Italic

1.A/B/C/D.1 = Codes

Name	Description	Files	References
1. Mothers' current knowledge and practices	Mothers' current feeding practices for their children	0	0
1.A Access to information	Sources of information on child feeding	0	0
1.A.1 Community-based programmes	From community-based programmes, such as meetings of mothers or campaign introducing complementary feeding in the village	5	8
1.A.2 Healthcare providers	From healthcare providers, such as nurses and midwives at health centres	10	14
1.A.3 Social media	From social media, such as YouTube and Facebook. In terms of Facebook, a number of mothers learnt from the "Smart Moms" Facebook group, which shared information about how to take care of infants and young children.	9	17
1.A.4 Traditional practices and beliefs	From their parents and the elders in the village	7	9
1.B Awareness of complementary feeding	Mothers' awareness of recommended complementary foods, such as thick enriched porridge and snacks (e.g., fruits)	0	0
1.B.1 Awareness of thick enriched	Mothers' awareness of recommended thick enriched porridge for children from six months of	13	25

Name	Description	Files	References
porridge	age		
1.B.2 Understanding what types of snacks to give the child	In complementary feeding, the provision of snacks is of significance.	6	8
1.C Current feeding practices	Mothers' decision on what and when to feed their children	0	0
1.C.1 Contents of main meals	All mother participants prepared three main meals a day and snacks in between.	13	21
1.C.2 Contents of snacks	Apart from the three main meals, mothers also gave their children some snacks, including local and seasonal fruit, local homemade Khmer snacks, and ultra-processed snacks.	13	21
1.C.3 Frequency of feeding	All mother participants provided their children three meals a day and snacks in between.	13	28
2. Mothers' perceived barriers in child-feeding practices	Mothers' challenges in feeding their children	0	0
2.A Juggling commitments	How the mothers negotiate and juggle their commitments as a mother vs. a worker (e.g., farmers, teachers, etc.)	0	0
2.A.1 Being the main caregiver for children		9	16
2.A.2 Thick enriched porridge - mothers' workload and time constraints		6	12
2.B Picky or fussy eating	The children are fussy about their food. Children do not like eating food prepared, such as thick enriched porridge	8	21
2.C Prohibiting factors that influence child-feeding practices	Factors that determined feeding practices, such as having little knowledge around child-feeding, family's facing financial issues, and availability and accessibility of nutritious foods	0	0
2.C.1 Availability and accessibility of foods		12	20
2.C.2 Limited financial resources		4	8

Name	Description	Files	References
2.C.3 Limited knowledge		5	7
2.D Social and cultural beliefs	How the socio-cultural beliefs about child-feeding being affect mothers' beliefs and practice. The mothers may learn about those beliefs from the elders in the family or the village.	3	4
3. Mothers' perceptions of the required support	Mothers' suggestions on how healthy feeding practices can be promoted and maintained	0	0
3.A Child-feeding resources	Attractive and up-to-date child-feeding information, including pictures, attractive and mother-friendly cookbooks of complementary foods	2	3
3.B Harnessing existing programmes and exploring the potential use of social media	Explore ways to build the capacity of mothers to promote and maintain healthy child-feeding practices in their families and community	0	0
3.B.1 Exploring the potential use of social media		12	17
3.B.2 Harnessing existing programmes		11	18

Appendix O: Researcher's codebook for community maternal and child health supporters

Researcher's Codebook for Community Maternal and Child Health Supporters

Codes

1 = Main Themes, Bold

1.A/B/C = Sub-Themes, Bold and Italic

1.A/B/C.1 = Codes

Name	Description	Files	References
1. Challenges of implementing the suggestions by the mothers	The community MCH supporters' perceived barriers in implementing the mothers' suggestions	0	0
1.A COVID-19 restrictions	Community gatherings are restricted during the COVID-9 pandemic, so community meetings of mothers are not held, and support for healthy eating is not available.	3	3
1.B The community MCH supporters observe mothers are busy and have limited incomes	The MCH supporters feel some mothers are not feeding their children well due to juggling commitments and family financial issues.	0	0
1.B.1 Family financial issues		3	8
1.B.2 Juggling commitments		3	10
1.C The community MCH supporters view mothers as paying little attention	The MCH supporters view that some mothers, particularly lower-educated mothers, do not care about the importance of community meetings and what their children eat.	2	5
2. Recommendations by the community MCH supporters	The community MCH supporters' recommendations to promote and maintain healthy feeding practices in the families and community	0	0
2.A Collaboration across all	All relevant stakeholders to take part in promoting and maintaining healthy feeding practices	1	2

Name	Description	Files	References
stakeholders	in the families and communities		
2.B Strengthening existing programmes	Conduct evaluation and follow-up as part of existing programmes and strengthen child-feeding practices in their families and community through expanding the programmes, using visual tools, practical examples, and social media channels	0	0
2.B.1 Evaluation and follow-up		1	1
2.B.2 Motivation through visual tools and practical examples		1	3
2.B.3 Social media		3	4

Appendix P: A summary of the Fast Track Road Map for Improving Nutrition 2014 – 2020

Components		Key interventions	Coordination and monitoring	Outcomes
Component 1	Nutrition Counselling: Promote nutrition during ANC and related counselling	• Support rural and poor community to access to at least 4 antenatal care visits • Improve nutrition counselling on how to increase energy intakes • Include weight monitoring of pregnant women • Include delayed cord clamping awareness at the health facilities level	MCHNC, PHDs, ODs, NGOs, and DPs	Scale- Scale-up optimal use of nutrition-specific interventions, ultimately leading to improved maternal and child nutritional status and outcomes
Component 2	Micronutrient Supplementation: Sustain and improve micronutrient supplementation and deworming	• Increase coverage and improve compliance of daily IFA supplementation • Promote early start of daily IFA supplementation during pregnancy • Increase coverage of deworming during pregnancy • Increase coverage of WIF	NNP, DPs, NGOs, PHDs, and ODs	
Component 3	Treatment of severely wasted children: Expand the management and treatment of acute malnutrition nationwide	• Improve nutrition counselling, ANC visits in rural area and urban poor area (see Component 1) • During post-natal care services, improve and continue mass monitoring • Procurement of therapeutic food for use in hospital and at community level • Implement systematic follow-up visits of children under treatment	NNP, DPs, NGOs, PHDs, and ODs	

		• Increase the number of ODs where severe acute malnourished children are treated • Increase the number of acute malnourished children receiving community-based treatment • Increase direct financial support to caretakers of children hospitalized		
Component 4	Micronutrient supplementation for prevention and treatment strategies: Scaling-up current distribution of MNP, vitamin A deworming and zinc supplementation to children	• Maintaining government effort on vitamin A supplementation • Maintaining deworming tablet of children from 12-59 months of age • Continued support for the supply of MNP • Revision of the national guidelines on supplementation • Increase the coverage of zinc supplementation with ORS for diarrhea treatment	NNP, PHDs, ODs, NGOs, and DPs	
Component 5	Behaviour change communication focused on 1,000-day window of opportunity: Improve and accelerate the national campaign on EBF and complementary feeding campaign	EBF: To enforce the sub-decree 133 on marketing of products for IYCF • Implement sub-decree 133 Joint Prakas on marketing of product on IYCF Enforce sub-decree • Improve IYCF practices at health facilities and community levels • Advocate for better baby care center at the workplace to ensure EBF until 6 months	MoH, PHDs, ODs, NNP, NGOs, and DPs	

		Complementary feeding: To support an integrated social and behaviour change communication campaign on complimentary food and food supplements • Enhance and adapt the ongoing complementary feeding campaign • Provide examples of accessible solutions: i) a home- made enriched porridge of the right consistency to children 6-24 months of age, ii) food supplements and iii) fortified complementary foods. Secondary objectives include ensuring appropriate frequency, quantity, and hygienic active feeding. • Develop new mass media communication of the 1,000 days window and monitor its impact • Develop communication tools (TV and radio)		
Component 6	Removing financial and HR barriers to scale up efficient interventions	Removing financial barriers: • Increasing the national nutrition budget and limit constraints on commodities • Assigning key focal point for health to work on nutrition activities, including budget allocation and planning • Increasing developing partners budget allocation	MoH, MEF, and MoEYS	Remove barriers to efficiently implement nutrition "specific" services and improve maternal and child nutritional status

		• Creating long-term agreement with national media and TV to allow free air time for health and nutrition education <u>Removing HR barriers</u>: • Strengthening capacities at national and subnational levels • Using nutrition experts from developing partners and NGOs to train graduate and post-graduate students		
Component 7	Leverage support through other ministries and initiatives	<u>To expand the access and the use of fortified foods in Cambodia</u>: • Providing technical expertise on the on-going efforts of salt, sauces and edible oil fortification to ensure maximum reach of quality fortified foods • Supporting the enforcement of existing legislation on salt that makes iodization mandatory and future Prakas • Increasing awareness of fortified products as part of a broader behaviour change campaign towards the 1,000 days window • Developing new evidence for new fortified staples or condiment to prevent micronutrient deficiencies <u>To support the SUN Movement and different steps</u>: • Developing or revising national policies, strategies and plans of action	MoH, DPs, NGOs, and other Ministries (e.g., CARD)	

		• Forming or strengthening a multi-stakeholder platform • Undertaking regular stocktaking of in-country and partner capabilities in nutrition		
Component 8	Improve Nutrition Data in Existing Information Systems	• Streamline existing web-based monitoring tools • Implement the newly designed web-tools in a pilot phase • Integrate the nutrition data management system into the health monitoring information system	MoH, DPs, and NGOs,	

*Note***.** ANC: Ante Natal Care; CARD: Council for Agricultural and Rural Development; DP: Development Partners; EBF: Exclusive Breastfeeding; HR: Human Resources; IFA : Iron/Folic Acid; IYCF: Infant and Young Child Feeding; MCHNC: Maternal Child Health Nutrition Center; MEF: Ministry of Economy and Finance; MNP: Multiple Micronutrient Powders; MoEYS: Ministry of Education, Youth and Sports; MoH: Ministry of Health; NGO: Non-Governmental Organization; NNP: National Nutrition Programme; OD: Operational District; ORS: Oral Rehydration Solution; PHD: Provincial Health Department; SUN: Scaling Up Nutrition; WIF: Weekly Iron/Folic Acid.

Appendix Q: A summary of Cambodia's Roadmap for Food Systems for Sustainable Development 2030

Priorities for Cambodia to 2030		Game changers	Milestones 2025	Milestones 2030
1. Healthy diets for all	To work across key sectors to ensure that healthy diets and safe foods are accessible to all, especially for women and children and vulnerable groups, to address all forms of malnutrition	• Healthy diets are to be made more available and accessible • Food will be made more accessible • The expansion of 1,000 days health counselling and services for mothers and children under 2 years of age • Operationalize the National Roadmap for Prevention and Treatment of Child Wasting • Ensure access to clean drinking water, sanitation and good hygiene practices • Create food environments where consumers can make healthy food choices	The coming 3rd NSFSN 2024-2029 and concerned sectoral policies and strategies will reflect a broader food systems framework and key game changers will be implemented to achieve the 2030 vision for sustainable food systems and the Cambodian SDGs.	Healthy diets will be accessible and affordable for all Cambodians.
2. Empowerment of youth, women and the vulnerable	To work towards the promotion of gender equality, decent employment, enterprise development and the	• Engage youth, particularly young women, in leadership roles and provide opportunities for youth, women and the vulnerable to be routinely engaged in policy dialogue and decision-making • Promote digitalization, research and development, innovation,	Capacity building and support provided to youth, women and the vulnerable to engage in food systems and healthy diets at national, sub-national and community levels.	• Youth, women and the vulnerable will be routinely engaged in policy dialogue and decision-making. • Vocational training, education, decent employment and

	creation of job opportunities for youth, women and the vulnerable in the food system	and support for the vulnerable, youth and women's SMEs • Strengthen vocational training programs, formal and non-formal education, and youth and women associations		enterprise opportunities in the food system will be expanded.
3. Resilient livelihoods and resilient food systems	To continue to build on our experience and success to address vulnerabilities and poverty and to strengthen the resilience of food system actors, networks and infrastructure to human and climate-related shocks and stresses	• Expand shock responsive social protection • Apply One-Health principles • Steer food systems development in the direction of green growth	The competitiveness of food value chains and smallholder livelihoods will be enhanced.	• The resilience of households and food systems to future climate and human induced shocks and stresses will be strengthened. • Health and social protection systems and investments in climate resilient infrastructure will be expanded. • Nationally Determined Contributions related to food systems from production to consumption will be expanded and implemented.

4. Governance for a more inclusive food system	To continue to open the door for multi-stakeholder and multi-sectoral dialogue, coordination, and collaboration to make planning and implementation processes more just, inclusive and participatory	• Incorporate food systems discussions across TWGs • Establish and strengthen P/MWG to coordinate FSN • Support community-led nutrition programming • Establish and strengthen youth for nutrition champions and women's associations • Ensure close coordination and collaboration between government, civil society, development partners, the private sector and farmers' organizations • Finalize the Food Safety Law and Plant Protection and Phyto-Sanitary Law, strengthen international accredited laboratories and enforce existing food safety, quality and labelling regulations and standards • Establish and engage private sector networks for improving nutrition • Support academic research programs for advanced	• Relevant TWGs will be strengthened. • Progress of the implementation of this roadmap for 2030 will be tracked. • Data systems and M&E tools will be improved. • Relevant laws and regulations will be enforced. • Capacities of actors at all levels will be improved and strengthened. • National and sub-national coordination will be supported to be more food systems oriented. • International, regional, national networks will be connected.	An enabling environment will be created.

		technologies in food systems, as well as for evidence-based decision making • Encourage sustainable financing for food systems improvements through allocation of domestic funding and mobilizing external resources		

Note. FSN: Food Security and Nutrition; M&E: Monitoring and Evaluation; NSFSN: National Strategy for Food Security and Nutrition; P/MWG: Provincial/Municipal Working Groups; SDGs: Sustainable Development Goals; SMEs: Small and Medium-sized Enterprises; TWGFSN: Technical Working Group for Food Security and Nutrition; TWGs: Technical Working Groups.