Consortium for Improving Complementary Foods in Southeast Asia (COMMIT)

A comprehensive nutrient gap assessment in Viet Nam:

Estimating micronutrient gaps during the complementary feeding period

COMMIT ACTIVITY 1

COMMIT 1 Comprehensive nutrient gap assessment
COMMIT 2 Consumer survey
COMMIT 3 Legal and policy review
COMMIT 4 Nutrient profile model
COMMIT Synthesis report

COMMIT
Consortium for Improving Complementary Foods in Southeast Asia

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THE COMMIT INITIATIVE

Overview

A nutrition transition is underway across Southeast Asia, with convenience, time and aspiration increasingly influencing food choices. This changing food environment is resulting in a shift from traditional diets towards processed foods that are usually higher in salt, sugar and unhealthy fats, and lower in essential nutrients – and children's diets are no exception.

The availability, affordability and variety of commercially produced, packaged foods marketed as suitable for older infants and young children – also known as commercially produced complementary foods (CPCF) – is increasing. Many CPCF exceed recommended levels of sugar, salt or fat and/or are labelled in ways that may mislead consumers; these products should not be promoted or provided to older infants and young children. For other CPCF, however, targeted improvements to their nutrient composition – such as through fortification – can help improve their nutritional impact. Governments and partners must work together to ensure that the CPCF promoted as suitable for older infants and young children are nutritionally adequate, safe and labelled in a responsible way.

The **Consortium for Improving Complementary Foods in Southeast Asia (COMMIT)**[i] was established to help ensure that the CPCF sold and consumed in the region contribute to healthy diets instead of unhealthy ones. COMMIT recognizes that one of the most effective ways to transform the food system and food environment is by supporting governments to set up regulatory environments that enable access to healthy food, adequately regulate unhealthy products and protect consumers from inappropriate marketing practices. To do this, COMMIT identified micronutrient gaps in the diets of older infants and young children, analysed current consumer CPCF preferences, reviewed national legislation regulating CPCF nutrient composition and labelling practices, and used a nutrient profile model to assess current CPCF nutrient composition, labelling practices and micronutrient content:

COMMIT Activity 1: Comprehensive nutrient gap assessment
A comprehensive nutrient gap assessment to identify limiting micronutrients in diets during the complementary feeding period.

COMMIT Activity 2: Consumer survey
Consumer perspective survey on the provision of CPCF to older infants and young children, motivations for CPCF provision and factors influencing CPCF purchases.

COMMIT Activity 3: Legal and policy review
Assessment of current national binding legal measures related to CPCF nutrient composition and labelling practices and their adherence to global CPCF guidance.

COMMIT Activity 4: CPCF nutrient profile model
Benchmarking of CPCF nutrient composition and labelling practices against an adapted version of the 2019 WHO Europe nutrient profile model designed specifically for CPCF.

This report details the methods and results for COMMIT Activity 1 in Viet Nam.

[i] COMMIT partners include Access to Nutrition Initiative; Alive & Thrive; Helen Keller International's Assessment and Research on Child Feeding Project; JB Consultancy; School of Food Science and Nutrition, University of Leeds; UNICEF East Asia and the Pacific Regional Office; and World Food Programme Asia Pacific Regional Bureau.

1 Introduction

1.1 Micronutrient intake during the complementary feeding period

What, when, how and how much children are fed in early life lays the foundation for their health and survival.[1] Between 6 and 23 months of age – known as the complementary feeding period – children's diets must provide adequate quantities of energy, protein and micronutrients to fuel their rapid growth and development. In fact, between 6 months and 2 years of age, children have greater nutrient needs per kilogram of body weight than at any other time in life.[2] Sufficient quality, quantity, and diversity of foods during this period can reduce their risk of micronutrient deficiencies and other forms of malnutrition.

The most recent estimates of diet quality in Viet Nam indicate that while 100 per cent of children aged 6–23 months are consuming fruits and vegetables, only half (50 per cent) are consuming nutrient-rich eggs or other animal-source foods and only 26 per cent of children 12–23 months of age receive nutrient-rich breastmilk.[ii] Further, only half (52 per cent) of children aged 6–23 months are consuming the minimum recommendation for a diverse diet (i.e., at least five food groups per day).[4] Approximately 9 per cent of children aged 6–23 months in Viet Nam suffer from severe food poverty,[iii] meaning they consume foods from only one or two (or zero) food groups per day, and a further 36 per cent suffer from moderate food poverty, meaning they consume foods form only three or four food groups per day.[5] Limited dietary diversity and the absence of nutrient-rich foods during the complementary feeding period can increase the risk of micronutrient deficiencies, which take a devastating toll on children's physical and cognitive development.[6-8]

Improvements in diet quality in the first two years of life can help reduce the burden of micronutrient deficiencies and accelerate progress in ending other forms of malnutrition. However, robust evidence on specific nutrient gaps in the diets of older infants and young children is often unavailable, underused or misinterpreted.[9, 10] While standard global indicators on complementary feeding provide information on the number of food groups children are consuming and the frequency of meal consumption for children 6–23 months of age,[11-13] these indicators only provide limited insight into the magnitude and significance of specific nutrient gaps. As a result, governments may lack the evidence base needed to design effective policies to improve nutrient intake, such as legislation on mandatory fortification.[9, 10]

1.2 What is a comprehensive nutrient gap assessment?

The comprehensive nutrient gap assessment (CONGA) is a methodology designed to identify nutrient gaps in the diets of a defined population and estimate both the public health significance of these gaps and the certainty of evidence on which they are based. To do this, CONGA guides the compilation and synthesis of evidence relevant to nutrient gaps, including data and indicators beyond those typically used to assess the diets of children aged 6–23 months.

A CONGA analysis was conducted in Viet Nam to identify micronutrient gaps experienced during the complementary feeding period. This brief summarizes the results of the CONGA.

[ii] Between the ages of 12 and 23 months, it is estimated that children still receive 35–40 per cent of their energy needs from breastmilk, which is also a good source of essential fatty acids and micronutrients.[3]
[iii] UNICEF defines child food poverty as the percentage of children under 5 years of age consuming foods and beverages from four or fewer of the eight defined food groups. If children are fed 0–2 food groups per day, they live in severe food poverty. If children are fed 3–4 food groups per day, they live in moderate food poverty.

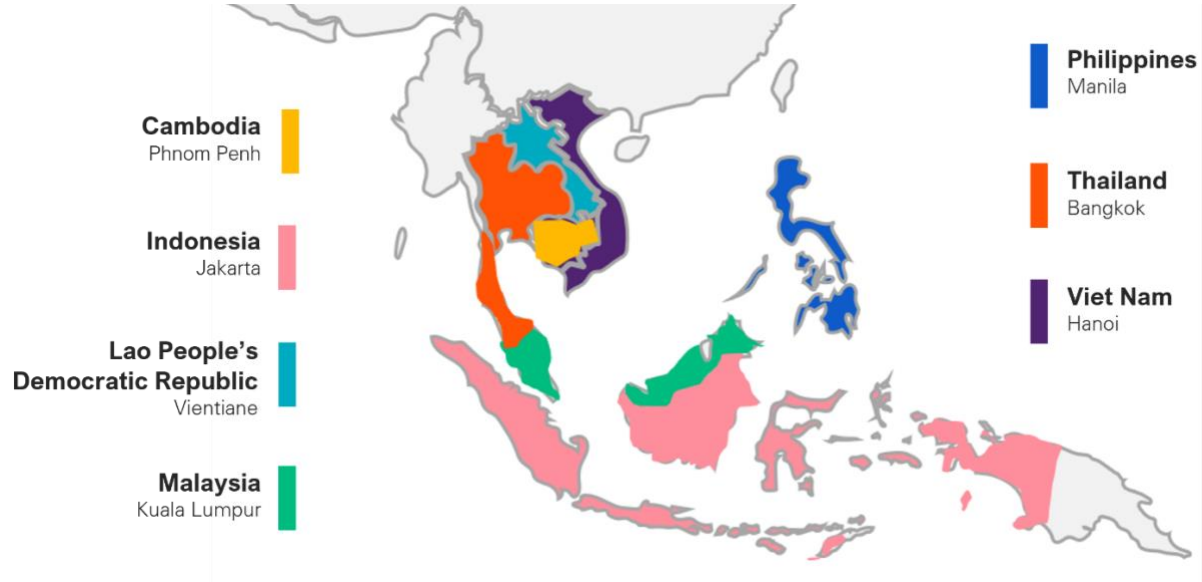
2 Objectives

To better understand micronutrient gaps during the complementary feeding period in Southeast Asia, the CONGA was implemented in seven countries in the region: Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Philippines, Thailand and Viet Nam (Figure 1).

The objective of this analysis was to (1) estimate micronutrient gaps in the diets of older infants and young children aged 6–23 months; and (2) establish the certainty of available evidence for each gap.

Micronutrients assessed in this analysis included those commonly lacking in the diets of older infants and young children aged 6–23 months: iron, vitamin A, zinc, calcium, iodine, vitamin B_1 [thiamine], niacin, vitamin B_{12}, vitamin B_6, folate, vitamin C and vitamin D.[3]

Figure 1: Map of the seven COMMIT Initiative countries



3 Summary of methods

The analysis in Viet Nam followed the CONGA methodology,[14] with key steps summarized here.

Step 1

CONGA considers existing evidence only, with no primary data collection or analysis required. A literature search was conducted to gather five types of evidence identified by CONGA as relevant for assessing nutrient gaps: (1) biological, clinical and functional markers; (2) nutrient adequacy of individual diets; (3) nutrient adequacy of household diets; (4) nutrient adequacy of national food supplies; and (5) nutrient-informative food group intake of individuals or households. Evidence that did not fall into one of these five evidence categories but was still relevant to the diets of children 6–23 months of age (e.g., linear programming to identify problem nutrients) was compiled and classified as 'other' evidence. Data points from identified evidence sources were extracted and captured in a spreadsheet.

Step 2

Each data point was reviewed and assigned an implied nutrient burden gap rating (i.e., public health significance) of either negligible, low, moderate or high. Per CONGA methodology, ratings were based upon suggested prevalence and mean ranges for commonly available population-level indicators from each of the five priority evidence types (e.g., a data point for vitamin A deficiency prevalence >20 per cent was assigned a rating of 'high'). Each rating had an associated weight score: negligible (0); low (1); moderate (2); and high (3). If no implied nutrient burden was available (e.g., for 'other' evidence types), the implied burden was marked 'not applicable' and no weight score was assigned.

Step 3

To document and account for variations in evidence type, recency, relevance, and representativeness of each data point, five types of metadata were extracted, recorded, and assigned a weight in the country-specific spreadsheets: (1) evidence type; (2) geographic representation; (3) year of data collection; (4) age and sex group; and (5) sample size. Metadata information was standardized and assigned a weight score per CONGA methodology. Metadata weight scores were used to generate overall weight scores for each data point, where the most robust data points (e.g., the most recent, representative and relevant) were assigned greater weight and the less robust (e.g., older, subnational and small sample size) were assigned lower weight. Weight scores were calculated for each data point by multiplying the evidence-type metadata weight score by the combined weight scores of its other four metadata categories. Data points were *not* assigned a weight score if they were (1) categorized as 'other' evidence; (2) representative of <10 per cent of the national population; (3) collected before 2010; (4) representative of an age and sex group that excluded and was not near to children aged 6–23 months (i.e.., women of reproductive age); or (5) based on a sample size <50.

Step 4

To determine nutrient gap burden and evidence certainty ratings, CONGA requires at least two content experts to jointly review all evidence. Two researchers with expertise in infant and young child nutrition and knowledge of the Southeast Asian context reviewed the data points for Viet Nam.

A quantitative nutrient gap burden score was calculated for each of the 12 micronutrients assessed using *only* data points from the five priority evidence types that received weight scores. The nutrient gap burden score was calculated by multiplying the implied nutrient burden weight score by the overall data point weight score (thus, data points without weight scores, such as for 'other' evidence, were omitted from this calculation). A rating of either negligible, low, moderate or high was assigned based on its value.

Step 5 The quantitatively derived nutrient gap burden ratings were then reviewed by the two researchers alongside the totality of evidence collated for each micronutrient, including the 'other' evidence data points and any additional information available (e.g., indicator trends). Researchers considered all evidence to determine whether the final nutrient gap burden rating should deviate from the quantitatively derived rating calculated in step 4. Final ratings of negligible, low, moderate, or high were assigned to each nutrient, and any deviation from the quantitatively derived ratings was documented and explained.

Step 6 A criteria-based rating of evidence certainty (low, moderate or high) was assigned to each final nutrient gap burden rating per the CONGA methodology. This criteria-based rating only considers the data points that received a weight score and is based both on the level of agreement between the implied nutrient burden ratings (e.g., variation in implied nutrient burden ratings for iron data points) and the evidence weight score for the data points. The two researchers again conducted a qualitative review, considering the totality of evidence available, to determine whether the final rating should deviate from the criteria-based rating. Any deviations were documented and explained.

Step 7 Finally, any disagreements with the final nutrient gap burden of evidence certainty ratings were discussed and critically re-evaluated by researchers. Ratings were only finalized once consensus was reached.

4 Results

4.1 Evidence sources and relevant data points

A total of 13 evidence sources were identified during the literature search for Viet Nam, including General Nutrition Surveys, a Multiple Indicator Cluster Survey, a 2011 Southeast Asian Nutrition Survey (SEANUTS) and several peer reviewed articles and global databases. A full list of evidence sources identified and used in this analysis is provided in the Annex.

A total of 40 data points relevant to micronutrient intake, availability and/or deficiency during the complementary feeding period were extracted from these evidence sources. All data points were nationally representative, and many (n=15) were representative of children aged 6–23 months. The majority of data points (n=35) were collected between 2010 and 2012 and five were collected between 2019 and 2022.

The availability of data points for the five priority evidence types varied (Table 1). A total of ten biological, clinical or functional marker data points (e.g., deficiency prevalence data) were identified, including for iron, vitamin A, zinc, calcium, iodine, folate and vitamin D, with nearly all data points representative of a subgroup of young children. An estimate of nutrient adequacy of national food supplies was available for all micronutrients except vitamin D. Data on nutrient-informative food group intake was available for iodine (e.g., household coverage of iodized salt). No data points were identified for nutrient adequacy of individual or household diets. A total of 18 'other' data points were identified, including several from an Optifood analysis. Half of the 40 identified data points qualified to receive a weight score.

Table 1: Number of datapoints identified that qualified* for a weight score, by evidence type

Qualification for quantitative calculations*	Evidence types						Total
	Biological, clinical and functional markers	Nutrient adequacy of individual diets	Nutrient adequacy of household diets	Nutrient adequacy of national food supplies	Nutrient-informative food group intake of individuals or households	Other	
Qualified	8	0	0	10	2	0	**20**
Did not qualify	2	0	0	0	0	18	**20**
Total	**10**	**0**	**0**	**10**	**2**	**18**	**40**

*Qualifying data points were: (1) one of the five priority evidence types; (2) collected in 2010 or later; (3) based on a sample size >50; (4) representative of >10 per cent of the population; and (5) representative of an age group at least similar to children aged 6–23 months.

4.2 Final ratings

Micronutrient gaps are identified when a micronutrient is assigned both a final nutrient gap burden and evidence certainty rating of at least moderate. Based on available evidence, micronutrient gaps during the complementary feeding period in Viet Nam were identified for zinc and vitamin D (Table 2).

Potential micronutrient gaps (micronutrients with a moderate to high nutrient gap burden but low evidence certainty) were identified for calcium, iodine and iron. Vitamin A received a nutrient gap

burden rating of low with high certainty, suggesting there may not be a significant dietary gap in vitamin A during the complementary feeding period.

More high-quality evidence is required in Viet Nam to estimate the burden of micronutrient gaps, particularly for those with low certainty evidence (i.e., vitamins B_{12}, C, B_6, folate, niacin and thiamine).

Table 2: Final micronutrient gap burden and certainty of evidence ratings

Micronutrient	Micronutrient gap burden rating	Certainty of evidence rating
Zinc	High	High
Vitamin D	High	Moderate
Calcium	High	Low
Iodine	High	Low
Iron	Moderate	Low
Vitamin A	Low	High
Vitamin B_{12}	Low	Low
Vitamin C	Low	Low
Folate	Negligible	Low
Niacin	Negligible	Low
Thiamine	Negligible	Low
Vitamin B_6	Negligible	Low

5 Conclusion

Preventing micronutrient deficiencies through relevant, context-specific national nutrition policies and programmes requires a comprehensive understanding of dietary gaps; however, relevant evidence and analyses to identify nutrient gaps are often lacking.[10, 14] The CONGA methodology applied to Viet Nam enabled the synthesis of multiple evidence types from disparate sources. It provided a comprehensive picture of the magnitude and significance of micronutrient gaps in the diets of children aged 6–23 months, and highlighted the depth, breadth and quality of the relevant evidence base in the country.[iv] In addition, using CONGA in Viet Nam allowed for the consideration of evidence types not typically synthesized to assess the quality of young children's diets.

Available evidence indicates that children aged 6–23 months face micronutrient gaps in zinc and vitamin D. Zinc deficiency in early life is associated with impaired immune function, diminished cognitive and motor development and increased risk of diarrhoea.[15, 16] Vitamin D deficiency may cause rickets and delayed motor development in young children, and osteomalacia (bone softening) in adulthood.[17] Calcium, iron and iodine were also identified as potential micronutrient gaps. Early iron deficiency can result in poorer cognitive, motor and social-emotional development;[18, 19] iodine deficiency in early life can impair cognitive and motor development and may adversely affect school performance; and calcium deficiency can increase the risk of rickets. However, wider, long-term health implications of calcium deficiency in young children are not well established.[10, 20]

Biological, clinical and functional markers (i.e., deficiency prevalence data) for young children were available for iron, vitamin A, zinc, calcium, iodine, folate and vitamin D from the 2011 SEANUTS, the 2019–2020 General Nutrition Survey and other sources. This is more data than are typically available on micronutrient deficiencies in other countries in Southeast Asia, as well as globally.[21] No data, however, on the nutrient adequacy of individual or household diets were identified in Viet Nam. Most data points identified were collected prior to 2012.

Identifying micronutrient and dietary gaps requires relevant, reliable and representative data. Evidence generation on micronutrient availability, intake and deficiency should be prioritized in Viet Nam, particularly for the micronutrients with moderate or high nutrient burden ratings but low evidence certainty (i.e., calcium, iodine and iron).

Evidence-based strategies are required to address the micronutrient gaps identified during the complementary feeding period. Relevant strategies include increasing the availability and consumption of nutrient-dense foods, micronutrient supplementation, large-scale fortification of staple foods and condiments, and point-of-use fortification with multiple micronutrient powders and fortified specialty foods (e.g., fortified infant cereals). Nutrition programmes and policies should consider a multitude of approaches to equitably improve nutrition for older infants and young children aged 6–23 months. The strategies noted here can be implemented concurrently, and in a complementary fashion. Efforts to protect, promote and support breastfeeding should also be considered essential. Social and behaviour change strategies and interventions are also critical to support efforts to reduce micronutrient gaps, including by encouraging the consumption of micronutrient-dense foods and improving caregiver awareness of the suitability of fortified speciality foods for their older infants and young children.

[iv] Other methods exist for collating and assessing data to guide policy and programming decisions on nutrient gaps and/or diets. For example, the Fill the Nutrient Gap exercise designed and implemented by the World Food Programme provides a comprehensive look at the environment within which observed diets are shaped. However, in contrast to the CONGA, the Fill the Nutrient Gap exercise does not provide estimates of nutrient gaps, their public health significance or the certainty of the relevant evidence base. The CONGA can be a complementary exercise to Fill the Nutrient Gap efforts and other similar exercises.

Annex

List of references utilized in the CONGA in Viet Nam

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