

## Proceedings of the 3rd Expert Consultation and Planning Meeting on Infant and Young Child Nutrition-(Part 1)

Sofia Amarra\* & Pauline Chan

*ILSI SEA Region Infant and Young Child Nutrition Technical Committee, 2012  
Singapore International Life Sciences Institute Southeast Asia Region (ILSI SEAR)*

### ABSTRACT

During the 2<sup>nd</sup> ILSI SEA Region Expert Consultation and Planning Meeting in 2011, the following information gaps were identified: (i) Some Southeast Asian countries did not have data on infant and young child feeding (IYCF) indicators; (ii) There is a need to know the reasons for the disparities in duration of breastfeeding, age of giving complementary foods, and other breastfeeding and complementary feeding practices in Southeast Asian populations; (iii) Optimal complementary feeding practices that are most suitable in the context of Southeast Asia need to be identified. This report presents highlights from a literature review regarding the above topics. Findings from nationwide surveys and small scale studies were compiled to provide a snapshot of the state of infant and young child feeding practices in the region. Results for Cambodia, Indonesia, Philippines, and Vietnam are presented here.

**Keywords:** Infant young child feeding (IYCF), breastfeeding, complementary feeding, information gaps

### Use of infant and young child feeding indicators in Southeast Asian countries

In 2008, the World Health Organization (WHO) released the revised infant and young child feeding indicators based on practices shown to be capable of improving child nutritional status and supported by current scientific evidence. The documents *Indicators for Assessing Infant and Young Child Feeding Practices Part I (Definitions)* and *Part 2 (Measurement)* identified 8 core and 7 optional indicators for assessing infant and young child feeding practices, and provided guidelines for their operationalisation in household surveys (WHO, 2008; 2010). The recommended use of these indicators for

measuring feeding of children at 0-24 months is to enable assessment of the situation regarding breastfeeding and complementary feeding problems at the population level (UNICEF, 2011).

The proposed infant and young child feeding (IYCF) indicators were incorporated into the national Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS). The DHS is a nationally representative household survey that provides standardised data for a wide range of monitoring and impact evaluation indicators in the areas of population, health, and nutrition (<http://www.measureddhs.com>). The DHS is funded by USAID and carried

---

\* Correspondence author: Sofia Amarra; Email: [sofiaamarra@ilsisea.org.sg](mailto:sofiaamarra@ilsisea.org.sg)

out in less-developed countries or countries receiving US foreign aid. Survey topics include child health, education, infant and child mortality, maternal health, maternal mortality, nutrition (child feeding practices, vitamin supplementation, anthropometry, anemia, salt iodisation), HIV prevalence and HIV knowledge.

The Multiple Indicator Cluster Survey (MICS) is an international household survey programme developed by UNICEF following the 1990 World Summit for Children in order to track the situation of women and children (UNICEF: [http://www.unicef.org/statistics/index\\_24302.html](http://www.unicef.org/statistics/index_24302.html)). MICS collects data on the following topics: child survival and health, child nutrition, maternal health, newborn care, water and sanitation, education, child protection, HIV / AIDS.

Findings from the DHS and MICS are used as a basis for policy decisions and programme interventions, and in the case of MICS, for the purpose of influencing public opinion on the situation of children and women around the world. Both the DHS and MICS survey questionnaires are modular tools that can be adapted to the needs of the country. Countries in Southeast Asia that currently report IYCF indicators using the DHS are Philippines, Indonesia and Cambodia, while Vietnam uses the MICS. Malaysia, Singapore and Thailand have their own national surveys and do not implement either the DHS or MICS.

### **Infant and Young Child Feeding (IYCF) practices in selected Southeast Asian countries**

Prevalence of infant and young child feeding practices based on WHO indicators were obtained from country DHS and MICS reports. Results for Cambodia, Indonesia, Philippines, and Vietnam are shown in Table 1.

Among the four countries, Cambodia showed the highest rates for timely initiation of breastfeeding, exclusive breastfeeding below 6 months, and continued breast-

feeding at one year. It also had the lowest rate for bottle feeding of infants below 6 months.

In terms of complementary feeding, differences between breastfed and non-breastfed children were observed. Using the indicator *minimum acceptable diet*, breastfed children in Cambodia, Indonesia, and Philippines were more likely to receive good quality complementary foods compared with non-breastfed children. Similar results were obtained for the indicator *minimum meal frequency*. While the figures indicate that breastfed children in these countries may be recipients of better complementary feeding practices than non-breastfed children, it is unclear to what extent these indicators actually reflect adequate nutrient intakes.

### **Determinants of infant and child feeding practices in Southeast Asia**

#### *Cambodia*

Results of Cambodia's Demographic and Health Survey showed that factors associated with non-exclusive breastfeeding were poor maternal education, first-born infants, working mothers, and higher maternal age (Senarath, Dibley & Agho, 2010).

#### *Indonesia*

Senarath *et al.* (2010) showed that factors associated with increased rates of non-exclusive breastfeeding in Indonesia were first-born infants, working mothers, higher maternal age, and communities with a higher proportion of wealthier households.

#### *Philippines*

Factors associated with non-exclusive breastfeeding in the Philippines were first-born infants, working mothers, higher maternal age, and trained delivery assistance (Senarath *et al.*, 2010). Other studies showed that Filipino mothers' reasons for early termination of breastfeeding were perceived insufficient breast milk, slow weight gain of

**Table 1.** Infant and young child feeding practices in Cambodia, Indonesia, Philippines, Vietnam using WHO indicators

WHO indicators for assessing infant and young child feeding practices	Estimated prevalence (%)			
	Cambodia (2010) <sup>‡</sup>	Indonesia (2007) <sup>§</sup>	Philippines (2008) <sup>¶</sup>	Vietnam (2011) <sup>††</sup>
<b>A. Breastfeeding</b>				
Timely initiation of breastfeeding (within first hour of birth)	65.8	44	53.5	39.7
Exclusive breastfeeding of infants < 6 months	73.5	32	34	17
Continued breastfeeding rate (1 yr)	83.3	80	57.7	73.9
Continued breastfeeding rate (2 yrs)	43.4	50	34.2	19.4
Bottle feeding rate (< 6 months)	13.6	27.9	40.9	38.7
<b>B. Complementary feeding of children aged 6-23 months</b>				
Timely introduction of complementary foods (children receiving complementary food at 6-8 months)	87.7	75	89	50.4
Minimum meal frequency (fed solid/semi-solid foods the required minimum number of times)				
- breastfed children	78.8	67	80.7	40.6
- non-breastfed children	61.7	11.9	48.2	84.2
Total	74.5	52.9	65.3	58.5
Minimum dietary diversity (fed the required minimum number of food groups)				
- breastfed children	33.5	75.0	78.7	—
- non-breastfed children	47.5	80.3	78.8	—
Total	36.9	76.3	78.7	—
Minimum acceptable diet (fed according to all three IYCF practices)				
- breastfed children	28.2	52.5	68.2	—
- non-breastfed children	10.9	8.3	40.5	—
Total	24	41.2	55	—
Consumption of iron-rich/iron-fortified foods	75.8	69.7	78.3	—

<sup>‡</sup> Data taken from Cambodia Demographic and Health Survey available at <http://www.measuredhs.com/publications/publication-FR249-DHS-Final-Reports.cfm>

<sup>§</sup> Data taken from Indonesia Demographic and Health Survey 2007 available at <http://www.measuredhs.com/publications/publication-FR218-DHS-Final-Reports.cfm>

<sup>¶</sup> Data taken from Philippines Demographic and Health Survey 2007 available at <http://www.measuredhs.com/pubs/pdf/FR224/FR224.pdf>

<sup>††</sup> Data taken from Vietnam Multiple Indicator Cluster Survey 2011 available at [http://www.childinfo.org/files/MICS4\\_Vietnam\\_FinalReport\\_2011\\_Eng.pdf](http://www.childinfo.org/files/MICS4_Vietnam_FinalReport_2011_Eng.pdf)

—No data

infants, working outside the home/too busy, child refused to breastfeed, another pregnancy, and mother was ill/weak (Agrasada & Kylberg, 2009; Food and Nutrition Research Institute, 2012).

### *Vietnam*

Factors that influence infant and young child feeding practices in Vietnam as shown by nationwide and small studies are enumerated below.

- The analysis by Senarath *et al.* (2010) of MICS data showing that factors associated with non-exclusive breastfeeding in Vietnam were poor maternal education, first-born infants, working mothers, and higher maternal age.
- The finding by Duong, Binns & Lee (2004) that local socio-cultural factors that influenced the initiation rate of breastfeeding in rural Vietnam were feeding preference of the husband and maternal grandmother, feeding practices of friends, and health factors. Rural women's decision to exclusively breastfeed were influenced by mother's educational level, mother's preference, mother's comfort to breastfeed in public, father's occupation, feeding preference of husband, and having sufficient food for the family (Duong, Lee & Binns, 2005).
- In a survey of 120 rural mothers with infants < 6 months, Dearden *et al.* (2002) found that working women were less likely to practice exclusive breastfeeding. Working mothers who exclusively breastfed their babies differed from mothers who did otherwise in the following ways: they all felt they had enough milk, all knew the appropriate time to introduce foods and liquids, and all were supported in their breastfeeding decisions by health workers and family members.
- Using qualitative interviews among mothers, grandmothers, fathers, health workers, 'oldest women' in rural and urban areas, Almroth *et al.* (2008) found that low rates of exclusive breastfeeding were due to lack of knowledge and understanding by health professionals and lay persons, and their failure to realise that exclusive breastfeeding is the best way to feed infants during the first 6 months.
- In a study among 260 mother-infant pairs in Ho Chi Minh City, Li *et al.* (2002) found that higher maternal education was beneficial to continuation of breastfeeding.
- A review by Nguyen *et al.* (2011) showed that there is limited information regarding complementary feeding practices in Vietnam. Challenges identified were early introduction and low nutrient quality of complementary foods, and inadequate knowledge on proper infant and young child feeding among health care providers and mothers.

### **Optimal complementary feeding practices for Southeast Asian populations**

Few studies have examined the effects of various complementary feeding practices in the region. Complementary foods that are available for use in Southeast Asia consist of improved corn soy blends, ready-to-use foods (RUTFs) such as energy-dense mineral- and vitamin-enriched oil seed or peanut-based pastes, and micronutrient powders (World Food Programme, 2010). De-Regil *et al.* (2011) systematically assessed the effects and safety of multiple micronutrient powders (MMP) in children < 2 years from trials in low income countries in Asia, Africa, and the Caribbean. The review concluded that home fortification of foods with MMPs reduces anemia and iron deficiency in children age 6-23 months, that

provision of MMP is better than no intervention, and that use of MMP is comparable to daily iron supplements in terms of adherence, effects on anemia and haemoglobin concentration.

However, the benefit of MMPs on child survival or on developmental outcomes is unclear and data are lacking regarding effects on malaria and morbidity outcomes.

With respect to the use of fortified foods, Phu *et al.* (2010) showed that providing fortified complementary foods (fortified flour or a fortified food complement) in at least 2 meals daily for 6 months improved 5-month-old Vietnamese infants' iron status and decreased the prevalence of anemia, iron deficiency, and iron deficiency anemia. The fortified foodstuffs also significantly increased energy and nutrient intakes compared with regular home-made complementary foods (Van Hoan *et al.*, 2009). After 6 months of intervention, length-for-age z scores were greater in the fortified flour and fortified food complement groups compared with a control group that used traditional complementary foods at home. However, 18 months after the intervention, there was no significant difference in height-for-age z scores between the three groups. The authors (Pham *et al.*, 2012) suggested that providing only certain micronutrients rather than a complete array of nutrients might result in limited short-term length growth benefits.

In the Philippines, consumption of vitamin A-fortified oil was associated with a reduced prevalence of vitamin A deficiency (<10%) after 18 months, compared with no sustained reduction in deficiency (30%) resulting from 3-month dosing with 200,000 IU vitamin A capsules in children aged 1-5 years (Mason *et al.*, 2011).

In Indonesia, studies have demonstrated reductions in stunting and wasting using fortified RUTFs such as fortified biscuits, milk, and noodles (Purwestri *et al.*, 2012; Semba *et al.*, 2011).

Some studies suggest that the use of energy-dense fortified foods may have potentially greater benefits for Asian infants than micronutrients alone. Pollitt *et al.* (2000; 2002) compared the effects of a micronutrient intervention with and without a high energy supplement on the developmental trajectories of undernourished Indonesian children from 12- and 18-month-old cohorts. In the 12-month-old cohort, children given micronutrients with a high energy supplement walked at an earlier age, had higher scores in the Bayley Scale, and showed more mature social-cognitive and emotional regulatory behaviour, compared with those given micronutrients only. In the 18-month-old cohort, micronutrients alone (without a high energy supplement) given to severely undernourished children over a period of 1 year was associated with a longitudinal decline in mental test performance.

In order to improve knowledge on optimal infant and young child feeding practices in Southeast Asia, a regional meeting organised by UNICEF, WFP & WHO (2010) suggested that the following areas need to be further investigated:

- The nutrient quality of complementary foods in relation to caregiver characteristics
- Quantities/amounts of complementary foods consumed using 24-h recalls
- Typical energy density, food diversity in complementary foods, meal frequency, food consistency, time and fuel available for the preparation of these foods
- Market availability and cost of micronutrient-dense or fortified foods
- Validation studies to determine whether feeding frequency can be used as a proxy for quantity

### Quality rating for complementary feeding programmes in Southeast Asia

UNICEF has recommended two key components of complementary feeding interventions: (1) Counselling of mothers/caregivers in relation to home preparation of complementary foods, and (2) provision of complementary feeding supplements in the form of micronutrient and targeted food supplements (UNICEF, 2012). In 2010-11, UNICEF assessed complementary feeding programmes in 65 countries based on these components. A qualitative IYCF action score was given for each country. Action scores were scaled from 0 to 10 and the following ratings given for each range of scores:

- 0 to 3: **Poor** (very low number of the key IYCF actions or interventions implemented);
- 4 to 6: **Fair** (low number of the key IYCF actions or interventions implemented);
- 7 to 8: **Good** (average number of the key IYCF actions or interventions implemented);
- 9 to 10: **Very Good** (high number or all of the key IYCF actions or interventions implemented).

Complementary feeding programmes in Cambodia, Indonesia, Philippines, and Vietnam were all rated 'fair' (UNICEF, 2012). We hope that this meeting will help us determine how ILSI SEA can work towards improving the infant and young child feeding situation in Southeast Asia.

### CONCLUSION

The improvement of infant and young child feeding practices is a key strategy to achieve the Millennium Development Goal of reducing child mortality. The target is for countries to achieve a two-thirds (i.e., 67%) reduction in under-five mortality rate (U5MR) for the period 1990 to 2015. From 1990 to 2010, the Southeast Asian countries

of Cambodia, Indonesia, Philippines and Vietnam have achieved significant reductions in U5MR rates, ranging from 51% to 59%. So far, only Malaysia and Singapore have achieved the targeted 67% reduction in U5MR.

In Southeast Asia, more large-scale programmes are needed at the national and community level to improve complementary feeding practices that ensure child health and survival. This requires knowledge of existing practices but unfortunately only a few studies on complementary feeding practices in the region are available. Formative research on areas where information is limited, such as complementary feeding practices among different population groups and the diets of children aged 6 to 23 months in different countries, as well as knowledge, attitudes, practices and social norms related to infant and young child feeding, are needed to guide the design of these programmes and to provide context-specific, culturally acceptable interventions.

### REFERENCES

- Agrasada GV & Kylberg E (2009). When and why Filipino mothers of term low birth weight infants interrupted breastfeeding exclusively. *Breastfeed Rev* 17(3): 5-10.
- Almroth S, Arts M, Quang ND, Hoa PT & Williams C (2008). Exclusive breastfeeding in Vietnam: an attainable goal. *Acta Paediatr* 97(8): 1066-9.
- Dearden KA, Quan le N, Do M, Marsh DR, Pachón H, Schroeder DG & Lang TT (2002). Work outside the home is the primary barrier to exclusive breastfeeding in rural Viet Nam: insights from mothers who exclusively breastfed and worked. *Food Nutr Bull* 23(4 Suppl):101-8.
- De-Regil LM, Suchdev PS, Vist GE, Walleser S & Peña-Rosas JP (2011). Home fortification of foods with multiple micronutrient powders for health and nutrition in children under two years of age. *Cochrane Database* (9): CD008959.

- Duong DV, Binns CW & Lee AH (2004). Breast-feeding initiation and exclusive breast-feeding in rural Vietnam. *Public Health Nutr* 7(6):795-9.
- Duong DV, Lee AH & Binns CW (2005). Determinants of breast-feeding within the first 6 months post-partum in rural Vietnam. *J Paediatr Child Health* 41(7): 338-43.
- Food and Nutrition Research Institute, Philippines (2012). Nutritional status of Filipino children, 0-60 months of age, 2011 National Nutrition Survey [powerpoint presentation]. Department of Science and Technology, Taguig, Philippines.
- Li L, Thi Phuong Lan D, Hoa NT & Ushijima H (2002). Prevalence of breast-feeding and its correlates in Ho Chi Minh City, Vietnam. *Pediatr Int* 44(1): 47-54.
- Mason JB, Ramirez MA, Fernandez CM, Pedro R, Lloren T, Saldanha L, Deitchler M, Eisele T (2011). Effects on vitamin A deficiency in children of periodic high-dose supplements and of fortified oil promotion in a deficient area of the Philippines. *Int J Vitam Nutr Res* 81(5): 295-305.
- Nguyen PH, Menon P, Ruel M & Hajeerhoy N (2011). A situational review of infant and young child feeding practices and interventions in Viet Nam. *Asia Pac J Clin Nutr* 20(3): 359-74.
- Pham VP, Nguyen VH, Salvignol B, Treche S, Wieringa FT, Dijkhuizen MA, Nguyen CK, Pham DT, Schwartz H & Berger J. A six-month intervention with two different types of micronutrient-fortified complementary foods had short- and long-term effects on linear and ponderal growth of Vietnamese infants. *J Nutr* 142(9): 1735-40.
- Phu PV, Hoan NV, Salvignol B, Treche S, Wieringa FT, Khan NC, Tuong PD & Berger J (2010). Complementary foods fortified with micronutrients prevent iron deficiency and anemia in Vietnamese infants. *J Nutr* 140(12): 2241-7.
- Pollitt E, Saco-Pollitt C, Jahari A, Hussaini MA & Huang J (2000). Effects of an energy and micronutrient supplement on mental development and behaviour under natural conditions in undernourished children in Indonesia. *Eur J Clin Nutr* 54(Suppl 2): S80-90.
- Pollitt E, Jahari A, Husaini M, Kariger P & Saco-Pollitt M (2002). Developmental trajectories of poorly nourished toddlers that received a micronutrient supplement with and without energy. *J Nutr* 132: 2617-25.
- Purwestri RC, Scherbaum B, Inayati DA, Wirawan NN, Suryantan J, Bloem MA, Pangaribuan RV, Stuetz W, Hoffmann V, Qaim M, Biesalski HK & Bellows AC (2012). Supplement feeding with locally produced ready-to-use-food (RUF) for mildly wasted children on Nias Island, Indonesia: comparison of daily and weekly program outcomes. *Asia Pac J Clin Nutr* 21(3): 374-9.
- Semba RD, Moench-Pfanner R, Sun K, de Pee S, Akhter N, Rah JH, Campbell AA, Badham J, Bloem MW & Kraemer K (2011). Consumption of micronutrient-fortified milk and noodles is associated with lower risk of stunting in preschool-aged children in Indonesia. *Food Nutr Bull* 32(4):347-53.
- Senarath U, Dibley MJ & Agho KE (2010). Factors associated with non-exclusive breastfeeding in five East and Southeast Asian countries: a multilevel analysis. *J Hum Lac* 26(3): 248-57.
- UNICEF website. Multiple Indicator Cluster Survey (1995). From [http://www.unicef.org/statistics/index\\_24302.html](http://www.unicef.org/statistics/index_24302.html) [Retrieved Sept 25 2012].
- UNICEF (2011). Programming Guide. Infant and Young Child Feeding. From [http://www.unicef.org/nutrition/files/Final\\_IYCF\\_programming\\_guide\\_2011.pdf](http://www.unicef.org/nutrition/files/Final_IYCF_programming_guide_2011.pdf) [Retrieved Sept 25 2012].
- UNICEF (2012). Infant and Young Child Feeding Programming Status. From [http://www.unicef.org/nutrition/files/IYCF\\_65\\_country\\_assessment\\_report\\_UNICEF.pdf](http://www.unicef.org/nutrition/files/IYCF_65_country_assessment_report_UNICEF.pdf) [Retrieved Sept 25 2012].
- UNICEF, WFP, WHO (2010). Asia-Pacific regional workshop on the reduction of stunting through improvement of complementary feeding and maternal

- nutrition. From [http://www.unicef.org/eapro/WorkshopReport\\_ReductionOfStunting\\_2010-06-07\\_FINAL.pdf](http://www.unicef.org/eapro/WorkshopReport_ReductionOfStunting_2010-06-07_FINAL.pdf) [Retrieved 25 Sept 2012].
- USAID website. Measure DHS Demographic and Health Surveys. From <http://www.measuredhs.com/> [Retrieved 25 Sept 2012].
- Van Hoan N, Van Phu P, Salvignol B, Berger J & Tréche S (2009). Effect of the consumption of high energy dense fortified gruels on energy and nutrient intakes of 6-10-month-old Vietnamese infants. *Appetite* 53(2): 233-40.
- World Food Programme (2010). Complementary food supplements and fortified complementary foods in the context of IYCF programs (powerpoint presentation). UNICEF/WHO/WFP Asia-Pacific Regional Workshop March 2010. From: <http://ilins.org/lms-research-network/minutes/2010-03-25/WFP%20-%20LNS%20and%20FBF%20for%20IYCN%20BKK%2025Mar10.pdf> [Retrieved 26 Sept 2012].
- World Health Organization (2008). Indicators for Assessing Infant and Young Child Feeding Practices, Part 1 Definitions. WHO Press, Geneva.
- World Health Organization (2010). Indicators for Assessing Infant and Young Child Feeding Practices, Part 2 Measurement. WHO Press, Geneva.