Special Report

Seminar on Young Child Nutrition: Improving Nutrition and Health Status of Young Children in Indonesia

Mia Isabelle BSc and Pauline Chan MSc, RD

International Life Sciences Institute - Southeast Asia Region, Singapore

The Seminar on Young Child Nutrition: Improving Nutrition and Health Status of Young Children in Indonesia held in Jakarta on November 2009 reviewed the current nutritional and health status of young children in Indonesia and identified key nutrient deficiencies affecting their optimal growth. The continuation of child growth from fetal stage is of paramount importance; and maternal and child health should be a central consideration in policy and strategy development. Clinical management of nutrient deficiency and malnutrition, as well as strategies and education to improve feeding practices of young Indonesian children were discussed in the seminar. Relevant experiences, approaches and strategies from France, New Zealand and Malaysia were also shared and followed with discussion on how regulatory systems can support the development of health policy for young children. This report highlights important information presented at the seminar.

Key Words: infant, child, nutrition, health, Indonesia

INTRODUCTION

The quality of infant feeding during the first 3 to 5 years of life is of paramount importance for growth, development, and long term health well into adulthood. The first 3 years of life are recognized as a critical window for the promotion of optimal growth, health and behavioral development. Recognizing the importance, ILSI SEA Region, together with Indonesian Pediatric Society (IDAI) and SEAMEO TROPMED, organized a one-day seminar on Young Child Nutrition: Improving Nutrition and Health Status of Young Children in Indonesia. Held at Borobudur Hotel, Jakarta, Indonesia on November 12, 2009, 5 local and 3 international experts in child nutrition presented at the seminar. These speakers shared the latest updates on the nutritional and health status of young children in Indonesia, identified key nutrient deficiencies affecting their optimal growth, and discussed clinical management and strategies to improve feeding practices and growth of young Indonesian children. Relevant experiences, approaches and strategies from France, New Zealand and Malaysia were also shared and followed with discussion on how regulatory systems can support the development of health policy for young children. The seminar was attended by over 220 medical and nutritional professionals, as well as representatives from governmental and regulatory agencies, academia, research institutions and industry. This report carries some of the highlights and important information presented at this meeting.

NUTRITION AND HEALTH LANDSCAPE OF YOUNG CHILDREN IN INDONESIA

Chaired by Dr Badriul Hegar of IDAI, the session shared current health status and strategies to improve feeding practices of young Indonesian children, particularly those between 1 to 6 years of age. Dr Endang Achadi of SEAMEO TROPMED, Indonesia presented the first topic on the current nutritional and health status of children in Indonesia. The Millennium Development Goal (MDG) 4 to reduce child mortality has been achieved remarkably in some countries but less in others. For Southeast Asia, efforts to improve child survival has reduced the under-five mortality rate to 34 deaths per 1,000 live births in 2007.[1] Indonesia has reduced the under-five mortality by 36 % over a 10-year period, from 69 deaths per 1,000 live births in the period 1993-1997 to 44 per 1,000 in the period 2003-2007.[2] Infant deaths comprise the majority of under-five deaths (34 per 1,000 in the period 2003-2007) with the majority of infant deaths taking place during the first month of life (19 per 1,000). When child mortality reaches a certain level, its further reduction will not be achieved unless there is a significant reduction in neonatal mortality, as more than one-third of under-five child mortality happens during the first month of life; three quarters of neonatal mortality happens in the first week of life, and 25-45% happens in the first 24 hours. During the perinatal and neonatal periods, respiratory disorders and sepsis neonatorum are the main causes of mortality respectively, while infant death is mainly caused by diarrhea

Corresponding Author: Pauline Chan, 9 Mohamed Sultan Road #02-01, Singapore 238959.
Tel: (65)63525220; Fax: (65)63525536
Email: ilsisea@singnet.com.sg
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and pneumonia. Adolescent pregnancy and delivery complications are some of the important contributing factors in child survival.[3,4]

The nutritional status of young children, especially during the very early period of life, is paramount in determining the quality of human resources. The prevalence of underweight among under-five children has decreased to 18.4% in 2007.[5] However, the appalling prevalence of stunting at 36.8% indicates chronic and persistent malnutrition throughout the period of intrauterine to post-partum and perhaps a sign of zinc deficiency. Stuntedness in children often starts very early, where most of the physical and cognitive growth and development failure is irreversible. The prevalence of low birth weight in Indonesia, as one indicator of fetal malnutrition, is 11.5% with wide variation between provinces.[5] About one-half of intrauterine growth retardation (IUGR) and low birth weight in developing countries is associated with maternal nutrition.[6] During post-partum period, considerable growth faltering starts very early in the first two months of life, which is usually not compensated later in life, and it coincides with low practice of exclusive breastfeeding until six months.

Considering the importance of the continuation of child growth from fetal stage and the irreversibility of the effects, the government of Indonesia has focused its effort on this window of opportunity period, particularly among the poor, to tackle priority nutritional problems such as wasting and stunting as well as micronutrient deficiencies. The Ministry of Health Priority Program Intervention for 2010-2014 also focuses on the integrated basic health services, nutrition education and the strengthening of inter-program and inter-sectoral coordination. Key strategies to reduce neonatal mortality is imperative to the reduction of child mortality. On the other hand, the reduction of neonatal mortality is very much affected by maternal health. Therefore, a continuum of care covering mother and child is a necessity. The vicious cycle between maternal and child malnutrition and its effect on maternal and child health should be a central consideration in the development of health policy and strategy. The policies focusing on the window of opportunity period and the poor are in the right direction in achieving the MDG, but the implementation remains challenging.

Dr Damayanti Rusli Sjarif of University of Indonesia highlighted that improving pediatric feeding practices is crucial if MDG target to reduce child mortality by two-thirds in 2015 is to be achieved. Around 10.9 million children under-five die in developing countries each year and malnutrition causes 60% of the deaths directly or indirectly.[7] More than two-thirds of these deaths are often associated with inappropriate feeding practices during the first year of life. Only one-third of infants are exclusively breastfed during the first 4 months of life. Untimely introduction of complementary feeding also occurs and these foods are often nutritionally inadequate and unsafe. Moreover, malnourished children who survive are more prone to illness and suffer the life-long consequences of impaired development.[8] On the other hand, rising incidences of overweight and obesity in children are also a matter of serious concern. Reducing under-nutrition in children can be done in community-based and hospital-based settings. For community-based settings, the promotion of exclusive breast feeding for 6 months and close growth monitoring as well as education of good pediatric nutrition care and infant feeding practices are the keys to success. In the hospital settings, hospital malnutrition can be tackled by Pediatric Nutritional Support Team and the implementation of the World Health Organization (WHO) Guidelines for management of severe malnutrition.

Inadequate knowledge about appropriate foods and feeding practices is often a greater determinant of malnutrition than the lack of food. The WHO has developed a strategy to ensure children's right to adequate nutrition and access to safe and nutritious food.[9] The strategy calls for governments to develop and implement a comprehensive policy on infant and young child feeding, in the context of national policies for nutrition, child and reproductive health, and poverty reduction. Governments should also review the national implementation of the International Code of Marketing of Breast Milk Substitutes, and consider new legislation or additional measures as needed to protect families from adverse commercial influences.

Legislation and enforcement are also necessary to protect the breastfeeding rights of working women in accordance with international labour standards. Mothers should have access to skilled support to initiate and sustain exclusive breastfeeding for 6 months and ensure the timely introduction of adequate and safe complementary foods with continued breastfeeding up to two years or beyond. Health workers need to be empowered to provide effective feeding counseling to mothers and caregivers so they have access to objective, consistent and complete information on appropriate feeding practices.

Dr Sjarif also discussed the dietary guidelines and nutrition education that currently exist in Indonesia. The current infant feeding guidelines based on the pediatrics nutrition chapter in the Indonesian's Textbook of Pediatrics have not been revised according to WHO Global Strategy on Feeding Infant and Young Child Nutrition.[10] The guidelines do not carry sufficient explanation on exclusive breast feeding and early initiation of breast feeding, breast milk substitute, or how to perform pediatric nutrition care. The guidelines also suggested earlier complementary feeding, i.e. fruits and biscuits at 2-3 months of age, which is not in line with global recommendation. Recognizing the need for the update as well as the inclusion of comprehensive national policies on infant and young child feeding, the Working Group on Nutrition and Metabolic Diseases of Indonesian Pediatric Society proposes insertion of a pediatric nutrition care plan and the WHO Global Strategy on Feeding Infant and Young Child Nutrition into the syllabus for medical students and pediatricians, as well as continuing education for pediatricians, general practitioners, midwives, nutritionists and caregivers. The pediatric nutrition care education will cover ways to assess nutritional status using growth charts, estimation of nutrient requirements, determination of delivery routes and feeding types and the monitoring of nutrition care results. The infant feeding education will provide practical tips for breast feeding, use of infant formula, and complementary feeding as well as management of associated feeding problems. Such approaches are expected to

reduce child mortality rates and increase the quality of life of children in Indonesia.

YOUNG CHILDREN: ARE THEY LITTLE ADULTS OR DO THEY REQUIRE SPECIAL FOCUS ON NUTRITIONAL NEEDS?

Chaired by Dr Endang Achadi of SEAMEO TROPMED, the afternoon session shared the French, New Zealand and Malaysian experiences, approaches and strategies in promoting young child nutrition. Dr Jean Pierre Chouraqui of University Hospital of Grenoble, France, again emphasized that the quality of infant feeding during the first 3 to 5 years of life is of paramount importance for growth, development, and long term health well into adulthood. Longitudinal studies have shown that the first 3 years of life is the most prevalent age for growth faltering, micronutrient deficiencies and common illnesses; after 2 years of age, stunting that has occurred earlier is difficult to reverse.[11] The consequences of poor nutrition during these formative years include significant morbidity and mortality and delayed mental and motor development, as well as impairment in intellectual performance, work capacity, reproductive outcomes and overall health in the long-term.

Dr Chouraqui shared that France has a low breast feeding rate compared to other Western countries such as USA, Canada, Norway, etc, but the rate has been increasing over the years. The ability of breast milk to meet requirements for macronutrients and micronutrients (energy, protein, iron, zinc, and some fat soluble vitamins) becomes limited with increasing age of the infant, especially after 6 months. Therefore to meet their evolving nutritional requirements, infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues. In comparison with Indonesia, France has a much lower rate of both exclusive breastfeeding at 6 months and the introduction of complementary foods between 6-9 months. France however experiences less stunting and mortality below 5 years of age. This is because non-breastfed infants are fed with a suitable breast-milk substitute- "infant formula", a milk formula intended for satisfying by itself all nutritional requirements of such infants; then followed by a "follow-on formula" intended for particular nutritional use by infants up to 9 to 12 months of age when appropriate complementary feeding is introduced; and lastly the use of a "Growing Up Milk" (GUM) to fulfill the principal liquid element in a progressively diversified diet of young children. Until at least the age of 3 years, European recommendations propose to feed infants and toddlers with a minimum of 500 ml/day of suitable milk.

During the first 3 years of life, infants and toddlers consume an increasingly complex diet, moving from a largely milk-based diet to one that includes a variety of table foods consumed by other family members. The timely introduction of complementary foods during infancy is necessary for both nutritional and developmental reasons, and to enable the transition from milk feeding to family foods. Complementary feeding is associated with major changes in both macronutrient and micronutrient intake. The importance of the period of complementary feeding is emphasized, first by recognition that 50% of worldwide childhood mortality is directly or indirectly related to malnutrition, and secondly by the representation of a critical window of vulnerability during the first years of life.[11] In many regions, the onset of stunting is within the first few months of life, and wasting and under-nutrition progressively continue through the first 3 years of life. Poor dietary intakes during complementary feeding are associated with deficits in the quality as well as in the quantity of complementary foods.

European infants are unlikely to experience deficiencies of macronutrients during the complementary feeding period. Rather, they may be at risk for excessive intakes – a matter of potential concern, given the increasing rates of childhood obesity. For some infants and toddlers, especially the energetic ones (after beginning of walking), the use of low-fat milk may limit energy intake and thereby growth; when the energy density is low, food volumes are high, making it difficult to meet total energy needs.[12] In other respects, regarding the current obesity epidemic, which can affect preschool children, the potential beneficial effects of low-fat milk on energy intake and later preferences should also be taken into account.[13] Analysis of total energy, source of energy, and fat on growth indexes of children below 6 years of age in Latin America showed that poor growth was observed only when diets provided less than 22% of energy from fat.[14] ESPGHAN Committee recommended that fat intake should not be actively reduced before the age of 2-3 years.

The recognition of the risk of micronutrient deficiencies after introduction of complementary foods has led to consideration of several intervention strategies, including food fortification, or micronutrient supplements. In most developing countries, complementary foods do not provide indeed sufficient iron, zinc and vitamin B6. A survey assessing the nutrient intakes of non-breast fed French infants and toddlers in 2005 showed that mean daily energy intake was above the estimated average requirement up to seven months of age, but was lower after one year.[15] Protein, fat, and carbohydrate intakes were adequate, while calcium, magnesium, phosphorus and B group vitamins were above the recommended dietary allowances at any age. However, for toddlers over 12 months of age, some may have had an inadequate intake of alpha-linolenic acid, vitamin E, vitamin C, iron and zinc. Dairy products are a good source of some nutrients, such as calcium, but do not provide sufficient iron unless they are fortified. The French guidelines for children feeding recommends iron fortified "follow on formula" from 4-6 months up to 1 year of age followed by "Growing up Milk" to at least 3 years of age with a minimum intake of 500 ml/day of such milk.

In Indonesia, complementary feeding diets often provide less than 20% of a child's estimated recommended dietary allowances of iron and zinc, and biochemical iron. Zinc and calcium deficiency in early childhood are common in home-based complementary diets.[16] Even in the best-case scenario, when iron-dense foods were preferentially selected, the optimized diet provided only 63% of iron requirements; in the worst-case scenario analysis, the iron content of a diet could be as low as 26% of requirements.[17] Therefore, alternative strategies such as fortification or supplementation are required to ensure iron re-

quirements are met. Food fortification, as done in formula and GUM, has been the primary method used to meet the micronutrient requirements of infants in France.

Associate Professor Cameron Grant of the University of Auckland, New Zealand, provided an overview of the health and nutritional status of young children in New Zealand and shared his country experiences with interventional trials conducted to address nutritional and health problems among young children. Relative to other developed countries, the child communicable disease burden in New Zealand is large. Compared to USA, Hong Kong, Australia and UK, the pneumonia hospital admission rates in New Zealand is almost triple.[18] Pediatric communicable disease hospital admission rates are increasing.[19] Compared to other developed countries, New Zealand is ranked low for its children's health and safety.[20] Educational under-achievement is also common.

Within New Zealand, macronutrient over-nutrition is prevalent across the pediatric and adult age range and micronutrient deficiency is prevalent in children less than two years old. Around 20% of New Zealand women of child -bearing age are obese; looking at the ethnic groups, over one quarter of Maori women and nearly half of Pacific women are obese.[21] And just as maternal undernutrition increases the risk of low birth weight, maternal overnutrition increases the risk of high birth weight. Around 5% of newborns in New Zealand are small for gestational age, but almost three times as many are too large.[19] Obesity is associated with increased risk of micronutrient deficiency in both children and adults.

The New Zealand weaning diet is nutritionally poor relative to its energy content. Iron, zinc and vitamin D contents are low compared with the United States diet for the same age group. The prevalence of iron deficiency is the highest in infant age 6 to 23 months and in women of child bearing age.[22] Vitamin D status is sub-optimal across the age range including in early childhood and in women of child bearing age.[23] Mild iodine deficiency is prevalent in New Zealand infants and school children. This may impair cognitive function. Breast milk iodine concentrations are also suboptimal.[24]

Using iron deficiency as an example, the management and treatment of micronutrient deficiency have several loopholes including failure to diagnose iron deficiency and prescription non-compliance. The efficacy of food-based strategies for improving iron status in one to two year old children has been evaluated in studies performed in both hospital and community-based settings in New Zealand. A hospital-based study on 234 infants with iron deficiency anemia showed that milk fortified with iron and other micronutrients was as effective as medicinal iron supplementation for the treatment of iron deficiency.[25] Treatment using iron-fortified milk also had fewer side effects such as constipation or dark bowel motions than iron supplement. A community-based study also showed that iron-fortified milk increased iron stores (serum ferritin) in 225 healthy non-anemic children; the intervention however had no significant effects on suboptimal iron status.[26] Adherence to intervention was close to 90% for iron-fortified milk. In comparison, compliance with a red meat based intervention was low, with only 3% achieving the target intake.

These studies indicate that milk fortified with micronutrients has the potential to improve child health in New Zealand. Food based strategies have several advantages over supplementation. They are more sustainable, do not require screening, avoid risk of accidental overdose, have lower risk of poor utilization of other minerals, and they are safe for those with sufficient micronutrient levels. Projects currently in development will seek to determine if such milk based interventions can reduce communicable disease burden in the preschool age group, and result in improved educational performance that is sustained into the school age years. Demonstration of such a beneficial effect would inform the development of child health policy designed to secure better child health, and hence more national wealth for the coming generation.

Dr E Siong Tee of TES NutriHealth Strategic Consultancy, Malaysia, shared his country experience in promoting young child nutrition. Recognizing that children under 5 years are a particularly vulnerable group, their nutrition status has been continuously monitored through the nutrition surveillance program of the Ministry of Health Malaysia. The data on the nutritional status of children under 5 from 1990-2006 showed that the nutritional status of Malaysian children has improved markedly over the years with increased proportion of children with normal body weight, and decreased proportion of both underweight and overweight children.

The largest data set on nutritional status of children (1-18 years) in Malaysia is the 2006 Third National Health and Morbidity Survey (NHMS III) of the Ministry of Health Malaysia.[27] According to this nationwide survey, majority of children (over 80%) was of satisfactory nutritional status. However, there is still a significant prevalence of malnourished children across the country; 13.2% of children were underweight, 15.8% were stunted, 10.4% were wasted. The percentage of overweight children was of a lower magnitude at 5.4%. Younger children, particularly those in the 1-6 years group, were the most affected with under-nutrition and over-nutrition problems. Micronutrient deficiencies such as iron, iodine and vitamin A also affected selected groups.

In cognizance of the situation, health and nutrition intervention programs in the country have always given high priority to children. One of the five enabling strategies of the National Plan of Action for Nutrition (NPAN) for Nutrition of Malaysia (2006-2015) focuses on promoting optimal infant and young children feeding practices. Another enabling strategy emphasizes the importance of the promotion of healthy eating and healthy lifestyle through intensification of education programs from a young age, educating healthcare providers, teachers and caregivers, as well as publishing education materials for target groups.[28]

In response to the call of the NPAN, a 3-year Healthy Children, Healthier Nation program was launched in 2009 under the Nutrition Month Malaysia (NMM) initiative – a nation-wide nutrition promotion initiative since 2002 spearheaded by the Nutrition Society of Malaysia. In 2009, the program focused on young children 1-6 years old; several educational materials were published emphasizing on the importance of nourishing and nurturing the children especially in the crucial formative years as the

nutrient needs of young children are higher than for adolescents and adults in terms of energy or nutrients per kg body weight.[29]

Messages to parents to help them raise healthy young children have been based on the Malaysian dietary guidelines which focus on eating a variety of foods, eating a balanced diet and eating in moderation. Milk and dairy products are also stipulated in the food guide pyramid for children aged 2-6. With their well-known nutritional properties, they can certainly contribute significantly towards meeting a child's nutritional needs. Recognizing this, Ministry of Health Malaysia has permitted the creation of a new category of milk powder for children, regulated by a specific regulation. Termed as Formulated Milk Powder for Children (FMPC), the nutrient profile of this new category has been developed based on the Malaysian Recommended Nutrient Intake (RNI), to meet the nutritional needs of growing children. Formulated Milk Powder for Children is positioned as a supplementary food for children 1-9 years, to contribute to about one third of the recommended daily intake of a child. The draft regulation stipulates the level of various nutrients such as energy, fat, protein, vitamins, folic acid, calcium, magnesium, iron, etc. It is intended that this new category will enable FMPC to be made widely available and affordable to mothers, to supplement nutrient intake of their children, ensure they meet daily requirements. This will also help to inculcate milk drinking habit, which should be continued even later in life.

AUTHOR DISCLOSURES

There have been no financial or other contractual agreements for this work.

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Seminar on Young Child Nutrition: Improving Nutrition and Health Status of Young Children in Indonesia

Mia Isabelle BSc and Pauline Chan MSc, RD

International Life Sciences Institute - Southeast Asia Region, Singapore

改善印尼幼童營養及健康狀況的研討會

於 2009 年 11 月，在雅加達舉行「改善印尼幼童營養及健康狀況」的研討會。會中回顧當下印尼幼童的營養及健康狀況，並確認哪些關鍵營養素缺乏，導致阻礙孩童的理想成長。幼童從胎兒時期持續的成長發育是非常重要的，而孕婦和孩童的健康應該是政府制定政策時的主要考量。在這次的研討會中，探討營養素缺乏和營養不良在臨床上的管理，以及攸關改善印尼幼童飲食供應的政策及教育。會中亦分享法國、紐西蘭和馬來西亞的相關經驗、方法和政策，並隨後討論監管系統如何支持幼童健康政策的發展。這篇報告呈現研討會中的精要資訊。

關鍵字：嬰兒、孩童、營養、健康、印尼