

Infant Feeding Guidelines for the Asia Pacific Region

Asia Pacific Journal of Public Health
2018, Vol. 30(8) 682–690
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DOI: 10.1177/1010539518809823
journals.sagepub.com/home/aph



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Abstract

Good nutrition for infants, during the first 1000 days from conception, is one of the most important determinants of a healthy long life. Breastfeeding is the most important component of infant nutrition and reduces morbidity and mortality. With the changes to the climate currently occurring, issues of nutrition and food supply are only going to increase in importance. The Sustainable Development Goals of the United Nations, place nutrition at the forefront of world development and a sustainable planet. The vision of Asia-Pacific Academic Consortium for Public Health (APACPH) is to “achieve the highest possible level of health of all the people of the nations of the Asia-Pacific region.” Much of the burden of disease, early deaths, and disability in the Asia Pacific region could be reduced with public health efforts to address the major risk factors, including nutrition-related causes and smoking. The United Nations Decade of Action

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on Nutrition 2016-2025 has recently been launched with the aim of reducing the global burden of inappropriate nutrition. The goals include increasing rates of exclusive breastfeeding to 6 months, reducing wasting and stunting, and reducing the rates of low birthweight. This is the position endorsed in these guidelines along with the principles of the Baby Friendly Hospital Initiative. These guidelines expand the information on infants that was included in the 2016 APACPH Dietary Guidelines. APACPH covers many different environments, geographical areas, cultures, and socioeconomic groups. These guidelines are generally applicable to all infants in our region, specific local advice may sometimes be needed.

Keywords

infant feeding, breastfeeding, dietary guidelines, nutrition, Asia Pacific, public health, health promotion

Introduction

Nutrition is one of the most important determinants of healthy long life, a risk factor for acute and chronic diseases.¹ With the changes to the climate currently occurring, issues of nutrition and food supply are only going to increase in importance. The Sustainable Development Goals of the United Nations, which were agreed to by the world's heads of state, place nutrition at the forefront of world development and a sustainable planet.^{2,3}

The vision of the Asia-Pacific Academic Consortium for Public Health (APACPH) is to "achieve the highest possible level of health of all the people of the nations of the Asia-Pacific region."⁴ Much of the burden of disease, early deaths, and disability in the Asia Pacific region could be reduced with public health efforts to address the major risk factors, including nutrition-related causes and smoking. It is estimated by the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) that globally approximately 5.6 million children under the age of 5 years still die every year, the majority from preventable diseases.⁵ Following the current WHO and UNICEF advice on optimal breastfeeding would reduce the number of deaths under the age of 12 months by at least 800 000 each year.⁶ In addition, breastfeeding would prevent 20 000 deaths of mothers from breast cancer annually, and recent evidence suggests that increasing rates of breastfeeding could generate about 300 billion dollars each year for the global economy.^{6,7}

Climate change is a major public health threat and the Asia Pacific region is particularly vulnerable.⁸ It affects the poor and the most vulnerable populations the most, with children, the homeless, and those with lower incomes most at risk. UNICEF has described the situation as follows: "There may be no greater, growing threat facing the world's children—and their children—than climate change."⁹ It is estimated that children will bear 88% of the burden of the increased morbidity and mortality that will result from climate change.¹⁰ Implementing strong public health nutrition policies has the potential to moderate some of the damage to health that climate change will bring.²

In recent years, the Developmental Origins of Health and Disease has emerged as the dominant theory of nutrition and development and this has led to the development of the new science of epigenetics with its own journals.¹¹⁻¹³ The first 1000 days of life (from conception to 2 years) determines health outcomes in childhood and into adult life (eg, heart disease, blood pressure, stroke, diabetes, and obesity). Some of these changes may be moderated by the influence of early nutrition and other factors such as exposure to antibiotics and mode of birth delivery on the development of an optimal microbiome.¹⁴ As examples, children who are of normal birth weight, are breastfed, and grow at the average weight are the most likely to live long healthy lives, while those of low birthweight who are formula fed, underweight through infancy, and

then become obese have increased rates of chronic disease such as diabetes and shorter life expectancy.

The United Nations Decade of Action on Nutrition 2016-2025 has recently been launched with the aim of reducing the global burden of inappropriate nutrition.¹ The goals of the decade include increasing rates of exclusive breastfeeding to 6 months, reducing wasting and stunting, and reducing the rates of low birthweight.

The APACPH Infant Feeding Guidelines expand the information on infants (defined as birth to 12 months old) that was included in the 2016 APACPH Dietary Guidelines.¹⁵ The resulting set of guidelines present the main issues to be covered in a general public health education program and serve as a reminder for public health practitioners, educators, administrators, and policy makers of current nutrition issues. Additionally, the guidelines provide a useful checklist of the issues to be considered in public health programs and regulations.

The aim was to develop a set of Infant Feeding Guidelines that would be generally applicable in our region and contribute to reducing morbidity and mortality using the resources available to APACPH. These guidelines provide general guidance that are applicable to infants in our region. They can be used as a basis for courses in infant and public health nutrition. But, as our region covers many different environments, geographical areas, cultures, and socioeconomic groups, some specific local advice may be needed.

Methods

In these guidelines, infants are defined as from birth to 12 months old. The APACPH Infant Feeding Guidelines were developed using a consensus approach. They are based on major background documents and reviews. The Infant Feeding Guidelines from member countries were reviewed when available.

The background documents and reviews that were consulted include the following:

UNICEF, WHO infant feeding reports^{16,17}

US Surgeon General's Report on Breastfeeding¹⁸

American Academy of Pediatrics Policy¹⁹

US CDC Breastfeeding Report Card 2018²⁰

The *Lancet* Breastfeeding series⁶

Breastfeeding and Infant Health Outcomes in Developed Countries²¹

Australian Infant Feeding Guidelines and Background Papers^{22,23}

Other reviews that were consulted on the short- and long-term benefits of breastfeeding related to our region

Review of the benefits of Baby Friendly Hospitals^{24,25}

Short- and long-term benefits of breastfeeding and the use of dietary supplements²⁶⁻³⁰

Draft Infant Feeding Guidelines were developed by the authors and presented at the 50th APACPH Golden Jubilee Conference held at the University of Malaysia Sabah, Kota Kinabalu, East Malaysia, in September 2018. The guidelines were extensively discussed during the conference, circulated for comment to APACPH members interested in nutrition, and the participants listed below were invited to review the guidelines and made additional comments.

Suggested Infant Feeding Guidelines for APACPH

1. Maternal diet and health during pregnancy.
 - a. Mothers should eat a healthy diet before and during pregnancy, following the APACPH Dietary Guidelines.

- b. No alcohol, no smoking, or exposure to smoke from others. Caution with medications or drugs.
 - c. Maternal Nutrition Supplements. Folic acid is important for all mothers, beginning preconception. Iodine supplements are recommended in most countries. Many mothers also need iron and calcium (advisable in Asia). Other supplements have limited or no benefit. As much as possible, mothers should continue to eat a healthy, varied diet to obtain all the nutrients they need (see the appendix; APACPH Dietary Guidelines).¹⁵ After birth, all mothers should continue their iodine supplements while breastfeeding. Postpartum iron supplements are usually recommended.
Be careful about herbal and other traditional supplements. They may cause fetal damage.³⁰
 - d. Weight gain in pregnancy. At present, we recommend using an Asian modification of the Institute of Medicine guidelines (as in the Singapore and Australian Dietary Guidelines) or the Japan pregnancy guidelines.²³ Currently, the WHO is developing new guidelines.
2. *Breastfeeding*: Follow the WHO guidelines, which recommend¹⁷
- a. Exclusive breastfeeding until about 6 months (ie, nothing but breastmilk).
 - b. Breastfeeding to then continue for as long as the mother and infant desire (we recommend >12 months). There are no adverse effects of long-term breastfeeding providing appropriate complementary foods are given after 6 months.
 - c. *Prelacteal feeds*: Skin-to-skin contact between mother and infant should begin as soon as possible after birth and be uninterrupted for at least 1 hour. Initiate breastfeeding within 30 minutes. Colostrum is very valuable to the infant containing antibodies and cellular components.³¹ Prelacteal feeds including formula, water, and traditional foods should be avoided. Generally, we try and respect cultures, but early foods (before about 6 months) increase rates of infection and may interfere with the development of a healthy microbiome. Factors influencing the development of the microbiome include infant feeds (breastfeeding is the healthiest), mode of delivery, and the use of antibiotics.²⁶
 - d. *Baby Friendly Hospital*: All hospitals and health centers where mothers receive maternity care and deliver babies should practice the Baby Friendly Hospital Initiative (BFHI) principles.³²
3. After birth
- a. One injection of vitamin K is recommended soon after birth to prevent hemolytic disease of the newborn.³³
 - b. The first hepatitis B vaccination is given to the infant while in hospital.
 - c. Vitamin D and vitamin A supplements for infants are sometimes recommended in northern countries with reduced sun exposure. The WHO does not make recommendations at the present time.
 - d. Vitamin A supplements to infants 6 to 59 months. The WHO recommends in settings where vitamin A deficiency is a public health problem.³⁴
4. *Use of infant formula*: This should be avoided, if possible. Breastfeeding (or expressed breastmilk) is always the best option. If formula is used, ensure that
- a. Preparation directions are followed. Bottles, teats, and so on must be sterile and the formula prepared to the correct concentration using boiled water (not dilute and not too concentrated). Excess formula should be discarded. Never leave baby alone with a bottle.
 - b. Types of formula: Use high-quality formula. Newer lower protein varieties are best. Protein 1.2 to 1.4 g per 100 mL (human breastmilk has a level of approximately 1 g per 100 mL). High protein levels (1.8 and above may cause even more obesity).³⁵
 - c. Cow milk formula is preferred to other types. Other formula (eg, soy, goat, etc) are not recommended.

- d. Special purpose formula is not recommended (exceptions are formula for specific metabolic disorders, eg, phenylalanine).
5. Introducing solids
 - a. First foods differ across cultures. They must be nutritious and safe (no chemical or microbiological contamination). Foods should be varied in type, taste, and texture. Begin with a traditional food (eg, rice porridge) and after a couple of days add fruit and vegetable puree, meat, fish, and so on to provide additional nutrients. After 12 months of age, most family foods are suitable for a toddler's diet together with breastfeeding, if the mother wishes to continue.
 - b. Food care, hygiene, and storage. Food should be prepared using pure ingredients and stored hygienically (refrigerated).
6. Measure growth and plot on chart (national one if available) at regular intervals. Weight and length are usually measured and recorded. The trajectory of growth is important.
7. Breastfeeding in specific situations:
 - a. Follow specific clinical guidelines for HIV, hepatitis B, HTLV1, and so on.³⁶
 - b. Diarrheal disease. Continue breastfeeding. The use of oral rehydration solutions has revolutionized the treatment of dehydration and has saved millions of lives.³⁷

For additional information on the benefits of breastfeeding for reduced allergy, colic, mortality, morbidity, see the references above. Breastfeeding also results in the child having a higher intelligence quotient and assists in developing an optimal microbiome for a healthy life.

*The Baby Friendly Hospital Initiative*³²

Health facilities that are BFHI accredited and implement the principles have better breastfeeding outcomes, including in Asia.^{25,38} The 10 steps of the BFHI had been updated in 2018 and are outlined here.⁷ It is important that APACPH members assist all health facilities associated with them to become BFHI accredited and that the BFHI standards are maintained permanently.

Step 1a: Comply fully with the International Code of Marketing of Breast-milk Substitutes and relevant World Health Assembly resolutions.

Step 1b: Have a written infant feeding policy that is routinely communicated to staff and parents.

Step 1c: Establish ongoing monitoring and data-management systems.

Step 2: Ensure that staff have sufficient knowledge, competence, and skills to support breastfeeding.

Step 3: Discuss the importance and management of breastfeeding with pregnant women and their families.

Step 4: Facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth.

Step 5: Support mothers to initiate and maintain breastfeeding and manage common difficulties.

Step 6: Do not provide breastfed newborns any food or fluids other than breast milk, unless medically indicated.

Step 7: Enable mothers and their infants to remain together and to practice rooming-in 24 hours a day.

Step 8: Support mothers to recognize and respond to their infants' cues for feeding.

Step 9: Counsel mothers on the use and risks of feeding bottles, teats, and pacifiers.

Step 10: Coordinate discharge so that parents and their infants have timely access to ongoing support and care.

Summary and Conclusions

These guidelines are consistent with all other infant feeding guidelines in recommending breastfeeding. While we recommend exclusive breastfeeding for 6 months, any amount of breastfeeding is better than any alternatives. For example, it is possible for mothers to return to work and keep breastfeeding.³⁹ These guidelines apply to healthy infants of normal birthweight and there may be additional nutritional requirements for low birthweight infants.

While there are many cultural beliefs that are associated with breastfeeding, for optimal health in infants and into adulthood, it is important to follow the principles in these guidelines. The evidence is assessed as being at a high level. However, with the introduction of solid foods, the use of local foods consistent with culture practices is appropriate. These foods must be nutritious, safe, and of the correct texture. These guidelines are designed to support the teaching mission and research mission of the APACPH and can be adapted for local use. Their widespread use will reduce infant morbidity and mortality and start the population on a health life trajectory.

Appendix

APACPH Infant Feeding Guidelines for Parent Education

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1. *Maternal diet and health during pregnancy*
 - a. A healthy diet is important for all mothers before and during pregnancy. Follow the APACPH Dietary Guidelines. No alcohol, no smoking, and caution with medications or drugs.
 - b. *Maternal Nutrition Supplements.* Folic acid is important for all mothers, beginning before conception. Iodine supplements are recommended in most countries. Iron and calcium supplements are sometimes recommended.
 - c. Steady weight gain is important in pregnancy, consistent with national guidelines.
 2. *Breastfeeding*
Exclusive breastfeeding until about 6 months (ie, nothing but breastmilk), followed by continuing breastfeeding for as long as the mother and infant desire (we recommend >12 months). Breastfeeding should begin within 30 minutes of birth, if possible. Colostrum is very valuable to your infant. Avoid any other prelacteal feeds including infant formula, water, and traditional foods.
 3. *After birth*
 - a. One injection of vitamin K is recommended soon after birth followed by a hepatitis B vaccination given to the infant while in hospital.
 - b. Vitamin D and vitamin A supplements are recommended in some countries.
 4. *Use of infant formula.* This should be avoided if possible. Breastfeeding (or expressed breastmilk) is always the best option. If formula is used, ensure that
 - a. Preparation directions are followed. Bottles, teats, and so on, must be sterile and the formula prepared to the correct concentration using boiled water (not dilute, not too concentrated). Excess formula should be discarded. Never leave baby alone with a bottle.
 - b. Types of formula. Use high-quality formula. Newer low-protein varieties are best. Protein 1.2 to 1.4 g per 100 mL.
 - c. Cow milk formula is preferred to other types. Other formula (eg, soy, goat, etc) are not recommended.
 5. *Introducing solids (or semisolid foods)*
 - a. First foods differ across cultures. They must be nutritious and safe (no chemical or microbiological contamination). Foods should be varied in type, taste, and texture. Begin with a traditional food (eg, rice porridge) and after a couple of days add fruit and vegetable puree, meat, fish, and so on to provide additional nutrients. After 12 months of age, most family foods are suitable for a toddler's diet together with breastfeeding if the mother wishes to continue.
 - b. Food care, hygiene, and storage. Food should be prepared using pure ingredients and stored hygienically (refrigerated).
 6. *Have your infant's growth measured regularly and plotted on the baby chart.*
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APACPH Reviewers

The following APACPH academics reviewed the article and offered suggestions: Prof Indika Karunathilake, Sri Lanka; Sreymom Oy, Leang Supheep, Cambodia; Prof Tomiko Hokama, Prof Masaharu Kagawa, Japan; Dato' Prof Dr Awang Bulgiba Awang Mahmud, Prof Maznah Dahlui, Prof Khoo Ee Ming, Prof Wah Yun Low, Associate Professor Dr Noran Naqiah Hairi, Dr Syahrul Hamid, Dr Aza Yusuff, Malaysia; Jessica Li-Yin Lin, Taiwan; Prof Georgia Guldán, Papua New Guinea; Dr Prakash Shakya, Nepal; Dr Mi Kyung Lee, Prof Jane Scott, Prof Andy Lee, Dr Alfred Zerfas, Prof Bruce Maycock, Australia; Prof Liqian Qiu, Dr Li Tang, China; and Dr Raheema Abdul Raheem, Maldives.

Complementary and Toddler Foods

We are planning to hold a seminar at the 2019 Asia-Pacific Academic Consortium for Public Health conference to discuss complementary feeding of infants and toddlers in our region.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The first author (CB) has received funding from the National Medical and Research Council of Australia for infant feeding research. Additional travel expenses were provided by Curtin University. Resources for the lecture and discussion were made available by the University of Malaysia Sabah and Asia-Pacific Academic Consortium for Public Health (APACPH) as a component of the APACPH 50th Golden Jubilee Conference. The Chengdu Maternal and Child Health Study was funded by the China Medical Board.

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