

Infant and Young Child Feeding in Emergencies: A Narrative Review

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ABSTRACT

In emergencies, infants and young children are at risk of morbidity and mortality, which is increased by malnutrition. Environmental factors, food insecurity, household needs, misconceptions regarding breastfeeding, uncontrolled distribution of breast-milk substitutes, and psychological trauma make it difficult to implement proper feeding practices during disasters. Breastfeeding reduces the risk of infectious diseases and mortality in emergencies and is the safest way of feeding. Therefore, breastfeeding should be supported and promoted under all circumstances. When breastfeeding is not possible, relactation, wet nursing, or donor human milk should be considered as alternatives. If these options are not feasible, infant formula should be used. Formula should be provided only for infants in need, based on individual assessment. Donations of breast-milk substitutes should not be accepted; when needed, the procurement and distribution should be conducted by a single center under strict control, adhering to the requirements of the Code and Codex Alimentarius. Education and support should be provided to the family for the safe use of formulas. For infants older than 6 months, appropriate complementary feeding should be started. Complementary foods should contain nutrients that support the growth and development of infants, and they should be stored, prepared, and served safely. In conclusion, nutrition of infants and young children should be given priority in disasters as part of all emergency interventions. Determining the infants needs and ensuring proper nutrition, overcoming environmental challenges, and supporting parents will reduce nutrition-related risks and protect the health and well-being of infants and young children in emergencies.

Keywords: Breast milk, breastfeeding, complementary feeding, disasters, emergencies, infant formula

INTRODUCTION

All communities are at risk of emergencies arising from natural hazards (e.g., earthquakes, floods, wildfires, hurricanes, landslides, and droughts), technological hazards (e.g., chemical spills and infrastructure disruptions), complex situations (emerging from conflicts), and outbreaks.^{1,2} Emergencies and disasters can occur anywhere in the world, impacting people's health, lives, and the structures that support them. The consequences can be devastating, affecting health, economies, politics, and societies. Factors such as climate change, rapid urbanization, population growth, migration, and state fragility are increasing the frequency and severity of emergencies worldwide.¹ Infants and young children are one of the most vulnerable victims of emergency situations due to their special nutritional needs, immature immune systems, and dependency on caregivers.^{3,4} The confluence of individual factors and the challenges posed by emergency conditions further amplifies the vulnerability of infants and young children. It is reported that during emergencies, child mortality rates can soar from 2 to 70 times higher than the average.⁵ Malnutrition is one of the greatest threats to child survival in emergencies. Children with mild malnutrition have a 2-fold increased risk of death due to illness compared to well-nourished children. The surviving children experience adverse effects on motor skills, physical, cognitive, social, and emotional development.^{5,6}

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Infant and young child feeding in emergencies (IYCF-E) concerns the protection and support of safe and appropriate feeding for infants (children under 1 year) and young children (aged 1-2 years) in all types of emergencies with the goal of safeguarding their survival, health, and growth.⁷ In 2018, the World Health Assembly (WHA) endorsed WHA 71.9, affirming that “recognizing that appropriate evidence-based and timely support of infant and young child feeding in emergencies save lives, protects child nutrition, health and development, and benefits mothers and families.” The WHA urged Member States to “take all necessary measures to ensure evidence-based and appropriate infant and young child feeding during emergencies, including through preparedness plans, capacity-building of personnel working in emergency situations, and coordination of intersectoral operations.”

Infant and young child feeding in emergencies should be an integral part of all emergency interventions.^{3,5} Despite the evidence that timely and appropriate support of IYCF-E saves lives, it is rarely prioritized or adequately supported.⁷ In the World Breastfeeding Trends Initiative (WBTi) report titled “The state of implementation of the Global strategy for infant and young child feeding in 18 European countries,” it has been stated that there is no national policy regarding IYCF-E in countries other than North Macedonia.⁸ Not a single country has fully integrated IYCF-E into preservice and in-service training for emergency management and relevant health personnel.⁸ According to the Global Breastfeeding Collective 2022 Global Breastfeeding Scorecard, only 23% of countries have policies, work on programs, and provide government funding to support IYCF-E.⁹

Infant and young children feeding (IYCF) and IYCF-E aim to promote, protect, and support recommended IYCF practices. The recommendations of the World Health Organization (WHO) and United Nations Children’s Fund (UNICEF) on optimal IYCF practices include early initiation of breastfeeding (within an hour from birth); exclusive breastfeeding for the first 6 months of life; age-appropriate, nutritionally adequate, and safe complementary foods starting at 6 months; and continued breastfeeding for 24 months or beyond.³ In emergency situations, the principles and recommendations for optimal IYCF align with those in non-emergency conditions.¹⁰ However, the altered circumstances during emergencies can present significant challenges in adhering to these recommended practices. Therefore, further action is necessary to implement optimal IYCF practices in emergency contexts. Our aim is to share the importance of infant and young child nutrition in emergencies, which is an important factor in the protection and improvement of child health, and the practices that can ensure optimal nutrition by reviewing the relevant guidelines and literature.

Scientific databases, including PubMed, Scopus, and Web of Science, were searched using the terms “breastfeeding,” “infant feeding,” “complementary feeding,” “disasters,” “emergencies,” “infant and young child feeding,” and “infant and young child feeding in emergencies.” Searches were confined to publications dated between January 2000 and June 2023. After removing duplicates and screening of titles and abstracts, full-text papers were reviewed. In addition, we conducted searches on

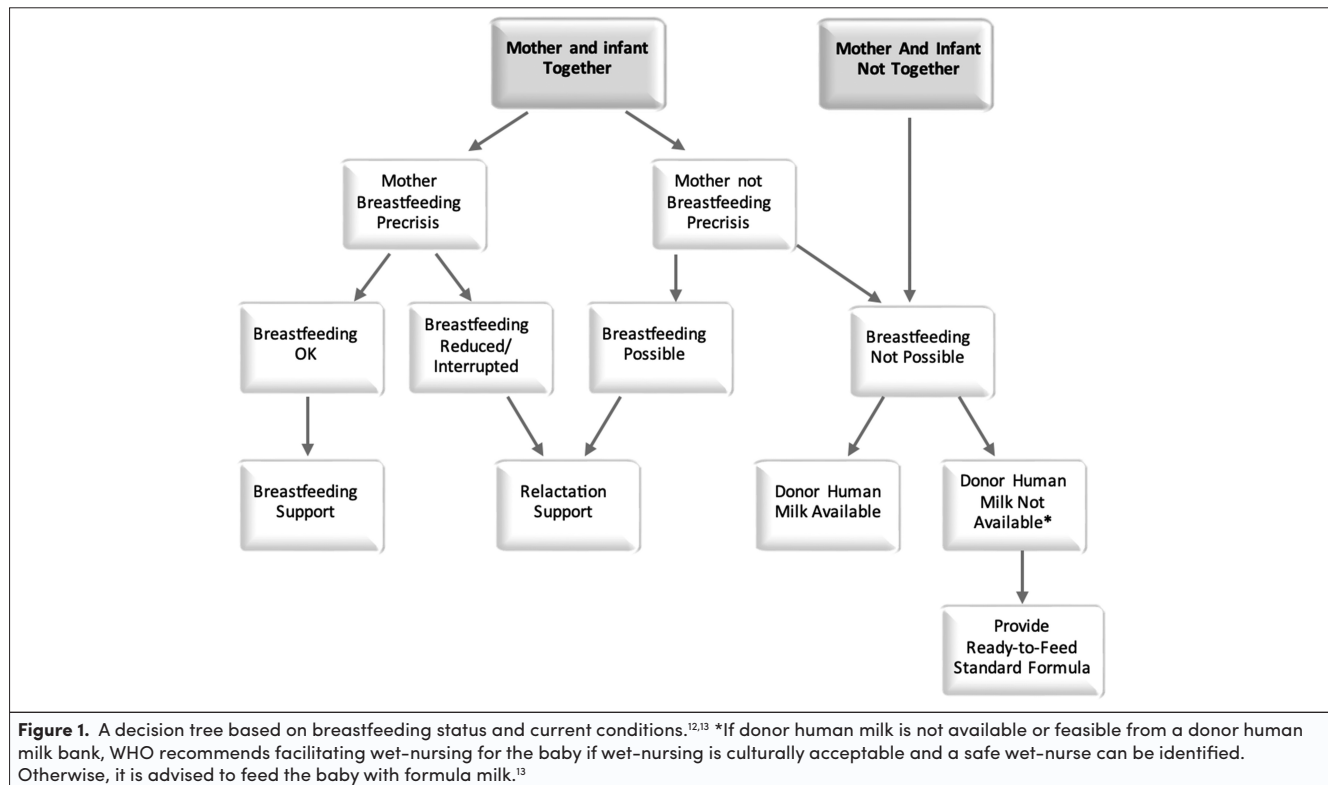
Google Scholar and the websites of international organizations, including WHO, UNICEF, Emergency Nutrition Network (ENN), Save the Children, Global Nutrition Cluster, and the Centers for Disease Control and Prevention (CDC), using the terms “Infant and Young Child Feeding” and “Infant and Young Child Feeding in Emergencies” to retrieve policies, guidelines, reports, and statistics related to IYCF-E.

Key interventions for IYCF-E include the promotion and protection of breastfeeding; minimizing the risks of artificial feeding in non-breastfed infants; and supporting safe, nutritionally adequate, and appropriate complementary feeding.¹¹ American Academy of Pediatrics (AAP) recommendations for feeding infant and young children under extraordinary circumstances include supporting breastfeeding first and formula feeding as a last resort when breastfeeding is not possible (Figure 1).^{12,13} In determining the actions for delivering assistance in emergencies, 2 guiding principles should be considered: minimizing harm and providing aid based on the assessed needs of the affected population. Assuming the needs of the population without conducting a proper assessment may lead to delivering unnecessary aid or causing further harm.⁷ Therefore, conducting a rapid need assessment will aid in determining the necessary support and resources, ensuring the proper fulfillment of nutritional needs (Figure 2).^{14,15}

BREASTFEEDING

Breastfeeding is the most effective intervention that saves children’s lives; it has been reported that by scaling up breastfeeding, 823 000 deaths in children less than 5 years of age could be prevented annually.¹⁶ In emergency settings, where access to safe food and water may be limited and hygiene conditions may be inadequate, breastfeeding is even more important due to its unique nutritional, physiological, and psychological benefits. During the 2006 floods in Botswana, it was reported that infants admitted to the hospital with diarrhea were 30 times more likely to have not been breastfed than those without diarrhea.¹⁷ Exclusive breastfeeding in infants under 6 months of age and continued breastfeeding in children aged 6 months to 2 years or beyond should be protected, promoted, and supported in emergencies.¹⁰

Appropriate feeding of infants and young children in emergencies can be challenging. These difficulties usually result from a lack of privacy and comfort in shelter settings, impaired maternal well-being (loss of home, stress, and psychological traumas), precrisis, inappropriate feeding practices, donations, and/or improper distribution of breast milk substitutes (BMS), a lack of breastfeeding support, health personnel’s insufficient knowledge of breastfeeding, and inaccurate messages about breastfeeding.¹⁸⁻²⁵ Additionally, the absence of a national policy, failure to follow and/or implement international guidelines, and organizational problems (including coordination gaps, the absence of nutritionists, lack of monitoring systems, and funding) are other encountered challenges.²⁶ A study evaluating the difficulties faced in infant feeding practices during disasters in middle- and high-income countries reported that one of the most significant obstacles was the lack of privacy or an environment conducive to breastfeeding. In addition, the mothers had thought that their milk was insufficient because of



limited fluid and calorie intake, stress, and fatigue.²³ Similarly, perceptions of breast milk insufficiency were widespread, and complementary foods were started early in a protracted emergency setting in North East Nigeria. Health workers and caregivers also believed that maternal nutrition and stress significantly affected breast milk production.²⁷

Successful breastfeeding depends on frequent and appropriate nursing, mothers' self-efficacy, and a supportive environment. The challenging living conditions faced during emergencies can lead to stress, which may reduce mothers' self-confidence.⁵ It has been found that not only stress and fear but also other situations, such as the grief of loved ones, can affect breastfeeding self-efficacy.²⁵ During periods of stress, milk production continues, but a decrease in oxytocin secretion may temporarily interrupt the milk let-down reflex.^{28,29} However, skin-to-skin contact and breastfeeding at least 8-12 times a day facilitate milk flow by increasing the oxytocin reflex and also help reduce maternal stress levels.^{14,29-31}

Pregnancy and lactation are times when nutritional needs are higher than in other periods of life;³² however, breastfeeding is not affected in mothers with limited access to healthy food.¹⁴ Lactation is a resilient process; even during challenging times like the Dutch hunger in 1945 and African hunger in the 1980s, women were able to continue breastfeeding.²⁹ Mild or moderate malnutrition does not influence the milk supply and content of breastmilk, but it has been observed that severe malnutrition in mothers may lead to a decrease in milk supply and the fat and micronutrient content of breast milk.⁷ Nevertheless, exclusive breastfeeding remains the most appropriate and safe option for infants younger than 6 months in settings with limited resources. During emergencies, in a supportive environment

where medical and practical assistance is provided, it is known that there is no decrease in breast milk production as long as adequate fluid intake is ensured.^{25,33}

Interventions that support breastfeeding include the creation of supportive spaces, family and peer support, breastfeeding counseling, providing accurate information and messages about breastfeeding, strict control of the distribution of breastmilk substitutes, and training of staff.^{7,10,11,34} There are a limited number of healthcare workers trained in breastfeeding counseling and infant feeding in emergencies.²³ Increasing the knowledge and skills of all healthcare workers on effective breastfeeding counseling is of great importance in terms of supporting breastfeeding in disasters.²⁷

Relactation is the process of reestablishing lactation after a period of stop to breastfeeding. In emergencies, The Operational Guidance on Infant and Young Child Feeding in Emergencies (OG-IFE) recommends supporting relactation for infants who were not breastfed and transition to exclusive breastfeeding for mixed-fed infants less than 6 months of age. These mothers should be given breastfeeding support until breastfeeding is reestablished. The success of lactation depends on the well-being and motivation of the mother, the baby's age, the duration of the mother's breastfeeding pause, and continuous access to expert support.¹⁰ Milk production is a demand-supply process that requires stimulation of the breast and the discharge of milk. Milk production can be achieved through pumping, hand expression, and/or direct breastfeeding. The mother should be advised to keep her baby close to her, maintain skin-to-skin contact, and, most importantly, breastfeed the baby frequently (at least 8-12 times a day, including at night, more often if desired) with the correct position and

<p>1. Family information What's your name? <input style="width: 100%;" type="text"/></p> <p>What is the child's name? (use a separate rapid needs assessment for each child) <input style="width: 100%;" type="text"/></p> <p>Are you the child's parent, caregiver, or guardian? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>How old is the child in weeks or months? <input style="width: 100%;" type="text"/></p> <p>2. Was the child born prematurely, with a low birth weight, or with any illnesses? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please explain. <input style="width: 100%;" type="text"/></p> <p>3. What is the child being fed? (check all that apply) <input type="checkbox"/> breast mil <input type="checkbox"/> infant formula <input type="checkbox"/> cow's milk <input type="checkbox"/> milk alternative (eg, soy milk) <input type="checkbox"/> solid foods / complementary foods <input type="checkbox"/> other </p> <p>4. How is the child being fed? (check all that apply) <input type="checkbox"/> at the breast <input type="checkbox"/> with a bottle <input type="checkbox"/> with a cup <input type="checkbox"/> with utensils <input type="checkbox"/> with a syringe or supplemental nursing system <input type="checkbox"/> other </p> <p>5. For families feeding breast milk: Is the child separated from the breastfeeding mother? <input type="checkbox"/> Yes <input type="checkbox"/> No Do you use a breast pump? <input type="checkbox"/> Yes <input type="checkbox"/> No Do you know how to express your milk by hand? <input type="checkbox"/> Yes <input type="checkbox"/> No Do you need help with breastfeeding or expressing milk? <input type="checkbox"/> Yes <input type="checkbox"/> No </p>	<p>6. For families feeding infant formula Which formula is the child fed with? <input style="width: 100%;" type="text"/> How much infant formula is the child eating each day? <input style="width: 100%;" type="text"/> Does the child need, or has the child's doctor prescribed a special kind of infant formula? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, what kind and why? <input style="width: 100%;" type="text"/> </p> <p>7. Does the child have any feeding problems or special needs related to feeding? (eg, chokes on certain textures, aspirates, uses special equipment) <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please explain. <input style="width: 100%;" type="text"/> </p> <p>8. Is there anything else you want to tell us about how you feed the child or other concerns you may have (eg, privacy, safety, feeding supplies)? <input style="width: 100%;" type="text"/> </p> <p>9. <u>For Emergency Responders Only</u> (Do not ask family) Observe appearance: Does the child look dehydrated, thin, or ill? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure </p> <p>Observations <input style="width: 100%; height: 40px;" type="text"/> </p> <p><i>Remind families to ask staff for any supplies, support, or information that they need.</i></p> <div style="background-color: #f0f0f0; padding: 10px; border: 1px solid #ccc;"> <p>IMMEDIATE NEEDS FOR THIS CHILD/FAMILY (To Be Completed by The Emergency Responder)</p> <p> <input type="checkbox"/> Lactation support <input type="checkbox"/> Donor human milk (if available) <input type="checkbox"/> Ready-to-Feed (RTF) infant formula <input type="checkbox"/> Infant feeding supplies (eg, bottles or cups) <input type="checkbox"/> Solid foods <input type="checkbox"/> Education (note what information is needed, such as hand expression, cup feeding, formula preparation, etc.) <input type="checkbox"/> Other </p> </div>
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Figure 2. Rapid Needs Assessment Form to Evaluate the Feeding Practices of Infants and Young Children. Adapted from Centers for Disease Control and Prevention (CDC) IYCF-E¹⁴ Toolkit.

latch. Until milk secretion starts, the baby should be fed with cup feeding, the drip-drop method, the supplemental nursing system (only under appropriate conditions), or other alternative feeding methods.^{7,10,14,29} Cup feeding can be used for babies of all ages and is considered safe for premature and many sick

infants as well.¹⁴ Bottles and pacifiers should not be used.^{7,14} Physical and emotional support is also important for relactation success.³⁵ Studies have reported that 72%-80% of mothers resumed breastfeeding with appropriate support during relactation.^{35,36}

The mother's ability to hand expression will ensure the continuity of milk supply during emergencies. When it is not possible to clean the breast pump kit properly or there is no power source for the electric breast pump, hand expression becomes the only option. A safe and private space for hand expression should be allocated to the lactating mother.¹⁴ To ensure that parents feel safe, families should be kept together. Shelters should be breastfeeding-friendly, and families should be encouraged to breastfeed whenever and wherever they want.¹⁴ In emergencies, supportive spaces where pregnant women and mothers can receive help with nutrition and care can be used as private areas for breastfeeding when culturally required.^{7,37} Additionally, in these areas, mothers can prepare formula, clean feeding equipment, and share their experiences with peer support groups.^{14,38}

FORMULA FEEDING

In emergencies, infants and children who are not breastfed are highly vulnerable and should be supported and protected, given their increased risk of morbidity and mortality.^{11,39} If breastfeeding is not possible, the viability of relactation, wet nursing, and donor human milk should be explored in order of priority. There is limited experience regarding the use of formal and informal donor human milk during emergencies. Donor human milk is probably a more feasible choice when established human milk banks are present in the affected area.^{10,13} When these alternatives are not feasible or not acceptable for mothers/caregivers, access to appropriate BMS should be provided, accompanied by an essential support package.¹⁰ The need for BMS should be determined through an individual assessment conducted by a qualified health worker who has received training in breastfeeding and infant nutrition in emergencies.^{10,11,39} The need for BMS may be temporary or long-term. Temporary indications include during relactation, transition from mixed feeding to exclusive breastfeeding, short-term separation of mother and infant, waiting period until wet-nurse or donor human milk is available, and long-term indications include orphaned infant; infant whose mother is absent long-term; infant rejected by mother; mother not wishing or unable to relactate; presence of contraindications to breastfeeding in the mother and/or infant; very ill mother; and HIV positive mother in developed countries.¹⁰

Infant formula is available in powdered or liquid forms. Powdered infant formula is not sterile, requires reconstitution with water heated to at least 70°C, and carries risks associated with its preparation. In emergencies, the safest BMS is ready-to-use infant formula (RUIF), which is sterile, does not require preparation, and can be offered directly to infants.^{11,14,39} Therapeutic milks are not an appropriate BMS and should only be used during treatment.³⁹ Animal milk is not recommended for infants younger than 6 months and should only be used as a last choice, considered a temporary solution.¹⁰ For children over 6 months who are not breastfed, RUIF can be used if available and affordable.^{10,11,39} The usage of infant formula for children older than 6 months old will depend on precrisis practices, available resources, sources of safe alternative milks, the adequacy of complementary foods, and government and agency policies.¹⁰ Follow-on formulas, growing-up milks are not necessary and should not be provided.^{10,11,39}

In emergency situations, formula feeding can increase the risk of infectious diseases due to inappropriate consumption practices and challenges such as limited access to safe water, equipment, and space for cleaning feeding items properly.^{14,18} Therefore, caregivers should be provided with the necessary equipment and an appropriate environment for storing, preparing, and serving infant formula, as well as facilities for washing and sterilizing non-disposable feeding materials. Practical training should be given on the safe preparation and consumption of powdered formula, and follow-up plans should be established.^{7,10,14} Given the high risk of contamination and the challenges associated with cleaning and sterilization, the use of bottles and pacifiers should not be recommended in emergency situations. Instead, cup-feeding should be encouraged. Families should be provided with cups (preferably disposable) and taught how to feed the baby with a cup.^{5,7,10,11,39}

The BMS procurement process must be managed under strict control by designated official organizations.^{7,11,14} All breast-milk substitutes must comply with Codex Alimentarius and The International Code of Marketing of Breast-Milk Substitutes (the Code).^{10,11} Donations for BMS should not be requested, accepted, or distributed in emergencies.^{10,11,14} Donations and unregulated distributions of these products can endanger infants, as they might be unsafe (expired, incorrect type, unreliable quality, etc.), overabundant, labeled in the wrong language, unsuitable for hygienic use during emergencies, and lacking the essential instructions, provisions, and support needed for caregivers of formula-dependent infants to feed them safely.⁴⁰ Uncontrolled distribution of donated infant formulas undermines breastfeeding practices and mothers' self-confidence and poses health risks for infants due to inappropriate conditions.²³ During the flood disaster in Malaysia, donations of infant formula caused mothers to have doubts about continuing breastfeeding.⁴¹ Similarly, in Indonesia, following the earthquake in 2006, the distribution of donated infant formula led to increased usage among breastfeeding babies, resulting in twice the rate of diarrhea compared to babies not using formula.⁴² In the long term, mothers and their children may become dependent on breastmilk substitutes and may not have the means to purchase them when donations cease, leaving them no choice but to apply to inadequate and often dangerous alternatives. Awareness among emergency managers and shelter coordinators about the negative effects of irregular formula distribution should be augmented.¹⁹ Donations of infant formula, bottles, and pacifiers should be collected under the guidance of a coordinating organization, preferably from entry points into the emergency area, and stored until a plan is developed for their safe use or final disposal.^{10,11} In a donation management plan, the first step is to assess whether the product can be returned. If possible, the product should be returned at the donor's expense. However, if the product cannot be returned, whether it is suitable for re-use should be considered. Products deemed unsuitable, like baby bottles, expired or incorrect products, or those not meeting Codex Alimentarius standards, should be disposed of properly. On the other hand, if the product is suitable for use, cautious re-use in accordance with national standards and recommendations can be considered, taking the context into account.⁴⁰

COMPLEMENTARY FEEDING

Adequate complementary feeding from 6 months of age is critical for growth and development. Recommendations for complementary feeding in emergencies are the same, but access to healthy foods and the safe preparation of foods may be difficult in emergencies.^{7,14}

Complementary feeding should be timely (infants should be introduced to complementary foods alongside continued breastfeeding at 6 months); appropriate (should be given in age-appropriate amounts, frequency, and consistency); adequate (should be given using a variety of foods and provide sufficient energy, protein, and micronutrients to meet a growing child's nutritional needs while maintaining breastfeeding); and safe (foods should be hygienically prepared, served, and fed). Feeding should be responsive to the child's needs, done gently and with care.^{5,43,44} Children should consume diverse and nutrient-dense foods. A diverse diet includes meals consisting of foods from a variety of food groups each day: (1) breastmilk; (2) grains, roots, and tubers; (3) legumes, nuts, and seeds; (4) dairy (milk, yogurt, and cheese); (5) flesh foods (meat, fish, poultry, and liver or organ meats); (6) eggs; (7) vitamin A-rich fruits and vegetables (carrots, mangoes, dark green leafy vegetables, pumpkins, and orange sweet potatoes); and (8) other fruits and vegetables. To meet the minimum dietary diversity, 5 out of 8 food groups are required.⁴³ Young children, with their limited stomach capacity, should consume nutrient-dense meals like meat, eggs, and other animal-source foods, as well as legumes, to optimize nutrition. Fruits and vegetables are also essential for a nutritious diet because they are rich in vitamins, minerals, dietary fiber, and antioxidants.⁴³ Children should be breastfed on-demand until 2 years of age or beyond. Continued breastfeeding during complementary feeding provides essential nutrients and reduces the risk of mortality and infection.^{5,16,43}

During emergencies, markets, water infrastructure, and health services may be disrupted or inaccessible. Closed or inaccessible markets, a lack of nutrient-rich foods in available markets, disrupted production of fresh foods, caregivers' limitations in purchasing food, limited access to clean water, a lack of access to cooking fuel, and poor access to a clean environment can hinder parents and families from meeting the specific food needs of their young children.⁴³ In determining a complementary feeding response, several factors must be taken into account. These include the proportion of non-breastfed infants and children, reports of children with disability-associated feeding difficulties, maternal nutrition, WASH conditions (water, sanitation, and hygiene), the capacity of existing markets and delivery systems, and national legislation related to food and drugs.¹⁰ It is also important to understand preexisting nutrient deficiencies and those that have been exacerbated by the situation.^{10,11,43} Other factors, such as affordability, seasonality of food supply, access to appropriate food, quality of locally available complementary foods, ease of preparation and storage, as well as religious and cultural acceptability, are also significant.^{10,11,45,46} Assessing these factors contributes to designing an effective complementary feeding strategy by identifying challenges and needs.

Appropriate complementary foods can be provided to families through cash support or voucher schemes to purchase foods; nutrient-rich foods or fortified foods distribution; provision of multiple-micronutrient fortified foods for children aged 6-23 months, such as fortified blended foods and lipid-based nutrient supplements; and home fortification using micronutrient powders or other supplements.^{10,11} Food aid baskets for households with children under 2 years old should be customized to contain suitable foods for children aged 6-23 months. Food aid baskets should be sufficient in quantity, nutritionally balanced, and easy to cook with minimal fuel.^{5,46} Fresh commodities like fruits, vegetables, meat, and fish should be distributed if available. It is recommended to include blended foods, comprising cereal and pulse and fortified with vitamins and minerals, in food aid, especially where access to fresh foods is limited. Fortified blended foods serve as a suitable complementary food for older infants due to their nutrient density and ease of preparation. However, many of the blended foods distributed in emergencies were not intended to serve as children's sole complementary food; caregivers should be helped to provide other foods.⁵

Micronutrient deficiencies can easily develop during an emergency or worsen if they are already present. Multiple micronutrient supplements, such as micronutrient powders (MNPs), may be necessary along with other interventions to enhance feeding practices.¹⁰ Home fortification (also known as "point-of-use fortification") using MNPs is recommended in contexts with low dietary diversity, especially where the consumption of animal-source foods and fortified items is limited due to challenges in availability or affordability.^{11,43,47,48} Additionally, vitamin A deficiency is common due to limited access to fresh produce, and fortified food distribution or the provision of high-dose vitamin A supplements are recommended, especially for children aged 6-59 months.^{5,10} High-dose vitamin A supplements do not provide a regular dietary source, and MNP can be offered in addition to twice-yearly high-dose vitamin A supplementation. However, the use of MNPs alongside specially fortified products consumed by children requires careful assessment, as these products may already contain a similar amount of micronutrients.⁴⁷ Ideally, interventions for micronutrients (e.g., food fortification and micronutrient supplementation) should be designed and implemented in a coordinated manner and considering the context.

Milk products can be used to prepare complementary foods for all children aged over 6 months. However, unpasteurized fresh milk or improperly prepared powdered milk can pose serious health hazards, and the distribution of milk during emergencies has the potential to disrupt breastfeeding. Mothers and family members need counseling on the proper use of milk and should be cautioned against replacing breast milk with animal milk. Pasteurized or boiled animal milk may be provided to non-breastfed children aged over 6 months in controlled environments (such as where milk is provided and consumed on-site). Dried milk products and liquid milk should not be distributed as a single commodity in general distributions, as they might be misused as breast milk substitutes. Instead, dried milk products can be premixed with milled staple foods for distribution as complementary food for children over 6 months.^{5,10}

Commercial complementary foods (CCF) refer to complementary foods that are commercially processed and available in the market, whether fortified or unfortified. While not extensively investigated in emergency settings, inappropriate marketing practices of these products may undermine exclusive and continued breastfeeding. This can occur by encouraging early introduction of these foods and implying their superiority over breast milk. Moreover, such marketing practices may devalue home-prepared foods, discourage dietary diversity, and foster dependency on commercial products. These concerns emphasize the importance of caution and adherence to guidelines to protect the well-being of infants and young children.⁴³ All complementary feeding interventions should align with the "WHO Guidance on ending inappropriate promotion of foods for infants and young children." This entails that any information related to complementary food products should emphasize the importance of breastfeeding for up to 2 years or beyond, avoiding the introduction of complementary feeding before 6 months of age, and should be easily understandable for parents.^{10,43} Commercially produced complementary foods must meet the standards of Codex Alimentarius and comply with the requirements of The Code and relevant WHA resolutions.¹⁰ Labels on complementary food packaging need to be clear, with instructions for safe preparation, use, and storage. Labels and designs on packaging should be distinct from those used on BMS to prevent cross-promotion.^{10,43} OG-IFE discourages accepting, soliciting, or distributing donations of CCF during emergencies.¹⁰ The risks associated with donations include potential non-compliance with nutritional and safety standards, Code labeling requirements, and WHO Guidance on Ending the Inappropriate Promotion of Foods for Infants and Young Children.^{10,49}

In emergencies, caregivers may struggle to meet children's complete nutritional needs due to a lack of basic nutrition knowledge. Complementary feeding counseling should be provided to increase the caregivers' knowledge. Information shared with families should be tailored to availability and cultural acceptability. Public demonstrations can be conducted to share recipes, discuss challenges, and emphasize safe practices. Inexperienced caregivers can benefit from essential information provided by health workers, experienced caregivers, and mutual support groups.⁵ Complementary foods should be prepared in a texture appropriate for the child's age and development. To prevent choking in children who have just started eating solid foods, families should be assisted in preparing foods that can be easily dissolved with saliva and do not require chewing. Young children should be fed slowly and in small portions, and they should always be observed while eating.¹⁴

The heightened risk of foodborne diseases due to unhealthy environmental conditions underscores the need for careful measures to ensure the health and safety of children. Community information campaigns should emphasize safe food practices, and resources should be provided to comply with the messages given.⁵ Access to safe and hygienic communal food preparation areas should be ensured. Disposable cups, plates, and utensils for feeding should be provided. If non-disposable containers are being used, access to safe water and cleaning supplies should be provided to wash

them.^{5,14} Families should have access to an area for handwashing with soap and clean water before feeding children. In cases where soap and safe water are unavailable, the provision of alcohol-based hand sanitizer containing at least 60% alcohol is recommended.^{5,14} Expiry dates of foods and damage, mold, or collapse in the boxes should be checked. Food left over that cannot be stored safely should be discarded.¹⁴

In 2019, the review of complementary feeding in emergencies (CFE) experiences conducted by ENN emphasized a significant gap in preparedness for an effective CFE response. It was noted that there were no specific preparedness plans for CFE, and CFE-specific actions were not included in IYCF-E plans. There was a lack of knowledge regarding what really constitutes an effective and efficient CFE intervention.⁵⁰ Structured and multisectoral planning and training that include strategies for IYCF support are of critical importance to provide an appropriate and timely response in emergencies.^{10,38}

In conclusion, IYCF should be a major part of all emergency interventions. Mothers should be supported to continue breastfeeding, and qualified breastfeeding counseling should be integrated into healthcare services. Supply and distribution of BMS should be managed by a single central authority in accordance with the International Code of Marketing of Breast-milk Substitutes, and donations should not be accepted. The delivery of BMS should be based on a needs assessment. Infants older than 6 months should be offered age-appropriate complementary foods that contain the essential nutrients for their growth and development. Ensuring proper feeding practices, overcoming environmental challenges, and providing support to parents are essential for the survival and healthy development of infants and young children in emergencies.

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