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Infant feeding indicators for use in emergencies: an analysis of current recommendations and practice

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Abstract

Objective: To assess the applicability and use of infant nutrition and health indicators during emergencies.
Design: Indicators recommended by international health and nutrition organisations for assessing infant feeding practice were compiled and analysed to evaluate their consistency and applicability for use in surveys of emergency-affected populations. These indicators included measures of breast-feeding status, use of artificial feeding, anthropometric status and morbidity. Health and nutrition surveys performed on the resident or refugee population of Kosovo during the years 1996–1999 were then reviewed and the use of infant feeding and morbidity indicators were compared.
Results: A number of recommended indicators exist for assessing infant and child feeding practice which have been generated by different international organisations. A comparison of these indicators revealed a number of inconsistencies, both in target population and measurement method. Their use during the Kosovo crisis was likewise inconsistent and prevented conclusions being drawn about the effectiveness of the international response in protecting infant health and nutrition.
Conclusions: Standard indicators need to be agreed and promoted for use during surveys of emergency-affected populations. Failure to do so will lead to a continued inability to monitor the health and nutrition of infants at a population level during international relief operations.

Keywords
Infant feeding
Emergencies
Nutritional assessment
Survey design
Breast-feeding

The public health importance of infant feeding in emergencies has been highlighted by recent emergencies in countries such as Iraq and Bosnia, where feeding infants† with breast-milk substitute‡ was common practice. Although there are few epidemiological studies on the impact of emergencies on infant feeding, many anecdotal reports of adverse health outcomes exist. Much of the excess morbidity reported in the 1991 Kurdish Refugee Crisis may have been due to inadequate or inappropriate methods of infant feeding[1].

The displacement of such populations has created new dilemmas for aid workers on how best to assess and support women feeding infants. In such situations, timely assessment of infant and child feeding practice is essential to quantify and qualify need and appropriately target resources. In addition, careful monitoring and critical evaluation are required to determine the impact of humanitarian interventions.

Nutrition and health surveys are frequently used in emergencies to both assess and monitor public health and nutrition. Children aged 6–59 months are traditionally included in anthropometric assessment. Standard anthropometric indicators, e.g. weight-for-height *Z*-scores, and survey methodologies have been developed and are widely used in practice in emergencies. Recommended indicators also exist for assessing infant and child feeding practice and have largely been developed for non-emergency evaluations. However, their applicability and use in emergency assessments and nutritional surveillance have not been critically assessed.

With emerging concerns regarding infant feeding in emergencies, an opportunity arose during the 1999 Kosovo Crisis to research humanitarian interventions in infant feeding in the Former Yugoslav Republic (FYR) of Macedonia. In an attempt to assess the impact of the interventions, a survey on infant and child feeding practice was carried out in two refugee camps in FYR Macedonia. Regional data on infant feeding practice were then collated and compared to allow interpretation of our

†In this review the infant is defined as less than 12 months and the young child as 12–36 months old.
‡Breast-milk substitute is defined as any food being advertised or otherwise represented as a partial or total replacement of breast-milk, whether or not suitable for that purpose (International Code of Marketing of Breastmilk Substitutes, WHO, Geneva, 1981).

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findings. The severe constraints we experienced during this process led us to make a critical review of recommended infant and child feeding practice indicators that exist, their actual use in assessment and surveillance around the 1999 emergency, and their applicability in emergency situations in general.

Methods

There were two objectives of the review: first, to compile and analyse existing internationally recommended indicators for assessing infant feeding practice and, second, to review the indicators used during a recent emergency for assessing infant feeding practice and morbidity.

Indicators

Recommended indicators for assessing infant and child feeding practice were identified through contacts and literature searches of international organisations and networks involved in health and nutrition surveillance, and field contact with organisations present in FYR Macedonia during June and July 1999.

Surveys

The period for which survey data were included spanned three years (1996–1999) and included populations in Kosovo prior to the 1999 crisis, the Kosovar refugees in Macedonia and the returnee population to Kosovo. A total of six surveys were reviewed, based on the inclusion of quantitative or qualitative data and/or significant comment, on infant feeding practice in the Kosovar population (Table 1). For ease of reference, the surveys are numbered in the table and are referred to by number in the text. The surveys were identified primarily through field and headquarter contact with humanitarian organisations operational in FYR Macedonia and Kosovo during the three-year period, and through mail contact and web-based searches of technical organisations and nutrition websites. The abbreviations used for various agencies and organisations are listed in the Appendix.

Results

Nature and sources of feeding practice indicators

A number of recommended indicators exist for assessing infant and child feeding practice that have been generated by different international organisations. A comparison of these indicators by definition and source is outlined in Table 2. The indicators included in Table 2 are those that were used in the surveys reviewed and/or which could be considered applicable to emergency situations.

Two types of survey that are widely implemented at regional and national levels in developing and transitional countries are the UNICEF Multi-Indicator Cluster Survey (MICS) and the Demographic and Health Survey (DHS).

Table 1 Surveys that reported on infant feeding practice of the Kosovar population – conducted in FYR Macedonia and Kosovo Province between 1996 and 1999

Survey number	Organisation(s)	Date	Title of survey	Location	Survey design	Number of clusters	Sample size*	Target population
1	IPH (Serbia)/IPH (Montenegro)/ UNICEF	1996	Multiple Indicator Cluster Survey	FR Yugoslavia, including Kosovo–Metohija	Stratified two-stage cluster survey	364	3200	Children <5 years
2	AAH/MCI/UNICEF	1998	Nutritional Anthropometric, Child Health and Food Security Survey	Kosovo Province	Two-stage cluster survey	30	900	Children 6–59 months
3	UNHCR/AAH/IMCH/UNICEF	1999	Nutrition and Health Survey of Kosovar refugees in camps in Macedonia	Nine refugee camps in Macedonia	Systematic random sampling	–	1001	Children <5 years
4	SCF (UK)/ICH (London)	1999	Infant Feeding Practice Survey	Two refugee camps in Macedonia	Systematic random sampling/ exhaustive	–	242	Children <2 years
5	AAH	1999	Anthropometric, Nutritional and Infant Feeding and Weaning Survey	Kosovo Province	Two-stage cluster survey	30	922 838	Children 6–59 months Mothers
6	IRC, IPH (Pristina), WHO, CDC	1999	Kosovar Albanian Health Survey Report	Kosovo Province	Stratified two-stage cluster survey	50	568	Mothers of children <2 years

*The sample size quoted was that used in the investigation of infant feeding and health issues.
See Appendix for abbreviations.

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Table 2 Overview and definition of key/recommended indicators for population surveys of infant feeding practice and morbidity

Key/recommended indicators	WHO Indicators for Assessing Breastfeeding Practices	UNICEF Multiple Indicator Cluster Survey (MICS) Indicators for Global Reporting	Wellstart International Expanded Programme on Breastfeeding (EPB)	Measure DHS+*
Ever breast-fed	Proportion of infants less than 12 months who were ever breast-fed			Number of infants (0–9 months) and children (<36 months) ever breast-fed
Never breast-fed			Proportion of infants never given breast-milk over the proportion of live births, in a reference time period	
Timely initiation of breast-feeding	Proportion of infants less than 12 months of age who first suckled within one hour of birth		Proportion of infants 0– < 12 months breast-fed within first hour of life	Infants (0–9 months) and children (<36 months) fed within one hour and one day of birth
Exclusive breast-feeding rate	Proportion of infants <4 months (<120 days) exclusively breast-fed	Proportion of infants <4 months (<120 days) exclusively breast-fed	Percentage of infants 0– < 6 months (0–182 days) exclusively breast-fed based on 24-hour recall	Percentage of infants aged <6 months (0–182 days) exclusively breast-fed
Predominant breast-feeding rate	Proportion of infants <4 months (<120 days) predominantly breast-fed		Percentage of infants 0– < 6 months (0–182 days) predominantly breast-feeding	
Continued breast-feeding rate at 12 months	Proportion of children 12–15 months who are breast-fed	Proportion of children 12–15 months who are breast-fed	Percentage of children 12– < 16 months (366–426 days) who are breast-fed	
Continued breast-feeding rate at 24 months	Proportion of children 20–23 months who are breast-fed	Proportion of children 20–23 months who are breast-fed	Percentage of children 20– < 24 months (608–730 days) who are breast-feeding	
Mean duration of breast-feeding			Mean number of months that children are breast-fed, regardless of other fluids or liquids received	
Median duration of breast-feeding	The age (months) when 50% or more of children are no longer breast-feeding based on children under 36 months		The age (months) when 50% or more of children are no longer breast-feeding	Median duration for any, exclusive and full breast-feeding (any and full breast-feeding not defined)
Frequency of breast-feeding in 24 hours			Average number of suckling hours reported within the last 24 hours in breast-feeding mothers (one-month age cohort)	Infants < 6months breast-fed six or more times in the previous 24 hours
Full/partial/token breast-feeding			Proportion of feed types based on 24-hour recall	Type of food by age and breast-feeding status based on food frequency table (recall period not specified)
Bottle-feeding rate	Proportion infants <12 months (<366 days) bottle-fed in previous 24 hours			
Timely complementary feeding rate	Proportion of infants 6–9 months (180–299 days) receiving complementary foods in addition to breast-milk in the last 24 hours	Proportion of infants 6–9 months (180–299 days) receiving complementary foods in addition to breast-milk in the last 24 hours (no. 16)	Proportion of infants 6– < 10 months (183–304 days) receiving complementary foods according to breast-feeding status	
Acute (watery) diarrhoea	Three or more loose stools in 24-hour period	Three or more loose stools in 24-hour period		Diarrhoea prevalence in the last two weeks (no case definition)
Acute (watery) diarrhoea in infants <6 months		In MICS 1996 survey of Kosovo, 'gruelly' stool in breast-fed infant not considered diarrhoea		Diarrhoea prevalence in the last two weeks (no case definition)
Acute lower respiratory tract infection	Cough or difficult breathing with increased breath frequency			

* All DHS indicators listed optionally stratified by demographic characteristics and age.

Both are potentially key sources of pre-crisis information on health and nutrition.

Demographic and health surveys (DHS) provide information on family planning, maternal and child survival, HIV/AIDS and reproductive health. Key survey indicators on infant and child feeding and morbidity are suggested by Measure DHS+ for obtaining data.* At the time of this review, data from 143 surveys (29 currently underway) were available for 67 countries. In order to improve and standardise evaluation methods in the context of complex emergencies/transitions in sub-Saharan Africa, a series of manuals that define indicators and methods is planned. At the time of this review there was no information available on what indicators would be included. Currently, DHS does not carry out European regional surveillance and therefore indicators do not strictly apply to this region. However, Measure DHS+ indicators are included in this review of the Kosovo experience since our observations may warrant consideration in devising indicators for use outside Europe.

UNICEF's involvement in MICS in stable situations and in child-related emergency interventions should mean that baseline data to inform emergency assessments and interventions are readily available in many situations. UNICEF has developed a series of indicators for monitoring World Summit for Children goals, which include infant and child nutrition and morbidity[2]. At the mid-decade progress assessment (1996), 60 developing countries had carried out MICS surveys and 40 had incorporated MICS modules in other surveys. The majority of indicators can be measured through sample surveys (e.g. multiple indicator cluster surveys (MICS)) and those relating to infant and child feeding and morbidity prevalence are given in Table 2.

WHO, as the lead UN technical and scientific organisation, is in the position to provide technical guidance during both stable and emergency nutritional surveillance. WHO indicators included in Table 2 are recommended for the assessment of breast-feeding practice at household level and were developed in consultation with UNICEF and DHS[3]. The WHO Global Data Base on Breastfeeding covers 94 countries and 65% of the world's estimated infant population. This database pools information from national and regional surveys and studies on breast-feeding prevalence and duration. Additional WHO indicators exist for assessing health facility practices that affect breast-feeding, which may be adapted but are not directly applicable to sample surveys[4]. WHO morbidity indicators for infants are based on standards for communicable disease surveillance[5].

Wellstart International is a private, non-profit organisation concerned with global breast-feeding promotion and involved in international breast-feeding initiatives including the Innocenti Declaration[6] and the Baby Friendly Hospitals Initiative (BFHI). Wellstart's Expanded Promotion of Breastfeeding (EPB) has included the development of a practical tool kit for monitoring and evaluating breast-feeding practices and programmes in the field[7]. The tool kit includes a range of breast-feeding indicators for use in sample surveys that are included in Table 2.

Comparison of indicators relating to infant and child feeding

Comparison of indicators recommended by different international agencies highlighted the following inconsistencies that constrain their effective use (see Table 2).

- The recommended age group in which *exclusive breast-feeding rate* is measured varies between less than four months (WHO, UNICEF/MICS) and less than six months (EPB, DHS). The prevalence of exclusive breast-feeding is of relevance in emergency situations. However, indicator measurement in different age groups may limit direct data comparisons. This age-group variation may reflect differences in the previously recommended duration of exclusive breast-feeding between WHO (4–6 months) and the more widely accepted recommendation of 'until about six months' by the World Health Assembly (WHA Resolution 47.5), other UN and international organisations (UNICEF, American Association of Pediatrics, La Leche League International and WABA).
- *Timely initiation of breast-feeding* is not included as an MICS global indicator. The DHS indicator for timely initiation of breast-feeding applies to different age groups (0–9 months and <36 months) than those recommended by WHO or EPB (<12 months), which limits data comparability. The long recall period used for collecting data for some definitions of this indicator increases the risk of introducing systematic bias.
- There are few recommended indicators that can be used to comprehensively assess *artificial infant feeding* practice. Those recommended by WHO tend to focus on assessing artificial infant feeding only as it impacts on breast-feeding and not on assessing the characteristics of an artificially fed population. This includes the degree and nature of use of infant formula in a population (e.g. exclusive, predominant feeding and the duration of breast-feeding amongst infants no longer breast-fed).
- The indicator for *timely complementary feeding* recommended by both WHO and MICS is for breast-fed infants only. In a population where a proportion of the infants is artificially fed, they would be excluded from this assessment. The EPB indicator recommends complementary feeding rate *according to breast-feeding status*, which should therefore include non-breast-fed infants. Timely complementary feeding rate is not included as a DHS indicator, instead type of food

*Survey key indicators suggested by Measure DHS+ STATcompiler (www.macroint.com).

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Table 3 Use of standard/recommended indicators for infant feeding practice

Survey number	Surveys 1996–1999					
	1	2	3	4	5	6
	IPH (S)/IPH (M)/UNICEF, FR Yugoslavia, 1996	AAH/MCI/ UNICEF, Kosovo, 1998	UNHCR/AAH/ ICMH/UNICEF, Macedonia, 1999	SCF (UK)/ ICH (L), Macedonia, 1999	AAH, Kosovo, 1999	IRC/IPH (P)/WHO/CDC, Kosovo, 1999
Timely initiation of BF	+			+		
Exclusive BF rate (EBR)	+			+		
Predominant BF rate	+			+		
Ever breast-fed rate	+	+		+	+	
Never breast-fed rate	+	+		+	+	
Continued BF rate at 12 months	+	+		+		
Continued BF rate at 24 months	+	+		+		
Mean duration of BF	+	+				
Median duration of BF	+					
Frequency of BF in 24 hours	+					
Full/partial/token BF						
Timely CF rate	+	+		+		
Bottle-feeding rate	+			+		

BF – breast-feeding; CF – complementary feeding.

by age (0–3 months, 4–6 months and 7–9 months) and breast-feeding status in children under 36 months is recommended. This is not comparable to the WHO, MICS and EPB indicators.

There is currently no specific definition of diarrhoea for infants under six months. The WHO standard definition of acute watery diarrhoea (three or more loose stools in 24 hours)[5] closely resembles the minimum number of stools normal for an effectively breast-fed infant (three or more stools in 24 hours)[7]. This greatly limits the interpretation of morbidity data in sample surveys of young infants.

Use of recommended indicators in the Kosovo situation

Prior to the 1999 crisis, a UNICEF MICS was carried out in Kosovo in 1996, providing a source of baseline data on health and nutrition for the affected population. Subsequent surveys both in Kosovo and in Macedonia were carried out with significant involvement by the UN and other technical agencies (WHO, UNICEF), the CDC, non-governmental organisations (NGOs) (AAH, MCI, SCF (UK)/ICH) and local public health institutions.

An overview of the use of recommended indicators in the assessment of infant/child feeding practice in these surveys is given in Table 3. The following observations were made.

- Only two of the seven surveys (surveys 1 and 3) reviewed measured exclusive breast-feeding and predominant breast-feeding rates using the recommended 24-hour recall method[3]. Predominant breast-feeding rate was reported in the 1999 Kosovo survey by CDC (survey 6) but was not based on 24-hour recall.
- The inter-agency anthropometric, nutrition, child health and food security survey (survey 4) carried out in seven refugee camps in Macedonia during the humanitarian response included no recommended indicators on infant feeding and one alternative indicator. However, significant comment on infant feeding practice in the camps was made (see below).
- The 1999 Infant Feeding and Weaning Survey of the returned population (survey 5) included only one recommended indicator (*ever breast-fed rate*).
- Bottle-feeding rate was included in only two of the surveys reviewed (surveys 1 and 3).

In addition, many alternative indicators and methodologies were used to assess infant/child practice and conclusions drawn despite limited comparability with previous data. These included:

- duration of breast-feeding among those no longer breast-fed (surveys 1, 2 and 3);
- proportion of infants receiving breast-milk, formula milk, cow's milk/other not using 24-hour recall (surveys 4 and 6);
- exclusive and predominant infant formula feeding rates (survey 3);
- current breast-feeding practice based on optional choice of breast-fed, formula fed, cow's milk or nothing (survey 6); and
- collection of historical (e.g. infant feeding practice in older siblings) rather than recent retrospective data (e.g. 24-hour recall), contrary to WHO recommendations (survey 5).

Target populations

Age groups in which infant and child feeding data were gathered and reported also varied widely, for both recommended and alternative indicators. Feeding practice data on infants under the age of six months were not

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Table 4 Target population and results disaggregated for feeding practice, morbidity and anthropometry

Survey number	Child target population			Results reported for infants < 6 months		
	Feeding practice	Morbidity	Anthropometry	Diarrhoea	Acute respiratory infection	Feeding practice
1	0–59 months	0–59 months	6–59 months	No	No	Yes
2	6–59 months	6–59 months	6–59 months	N/A	N/A	N/A
3	0–59 months	0–59 months	6–59 months	Yes	Yes	Yes
4	0–24 months	0–24 months	Not measured	Yes	Yes	Yes
5	Breast-feeding practice: 6–59 months Infant feeding practice: 6–18 months	Not measured	Not measured	N/A	N/A	N/A
6	0–24 months	0–24 months	Not measured	No	No	Yes

necessarily collected but was sometimes inferred from the practice of older infants and young children. From the target population and data collected comparisons made in Table 4, there are a number of observations.

- Of the three anthropometric surveys included in this review, none included measurement of infants under six months.
- Two of the surveys (2 and 5) did not include infants under six months old in their infant feeding practice assessment. In one survey (survey 5) infants were defined as 6–18 months rather than the standard less than 12 months[3], and infant feeding practice data based on this redefined 'infant' group.
- Morbidity was collected and reported for a wide variety of child age groups, limiting direct comparisons of morbidity prevalence. Of the five surveys that collected data for infants under six months, only two reported diarrhoea prevalence in this subgroup (surveys 3 and 4).

Data comparisons

Variable and alternative data collection methods did not prevent data comparison, interpretation and conclusion on infant feeding practice in survey reports. Comments were often based on observations and experiences of the surveyors or programmes rather than on the quantitative data collected, e.g. the discussion on inappropriate infant feeding practice in the survey in Macedonia camps (survey 4). This suggests that issues considered significant in field practice were not being adequately quantified although they may, in some cases, have been reliably identified using qualitative methods. In the 1999 Health Survey of Kosovo Province (survey 6), significant comments were made regarding Kosovar breast-feeding rates, complementary feeding practice and possible associated child morbidity and mortality rates, although only one indicator of infant feeding practice had been measured. Conclusions appeared to be based on field perceptions and experiences rather than on the actual data presented.

Discussion

Although the benefits of appropriate infant feeding in terms of child survival are well known, the evaluation of aid impact in terms of morbidity and mortality may not be practical or feasible in emergencies. Changes in prevalence are difficult to measure and cannot be easily attributed to specific interventions and practices. *Impact* indicators, such as morbidity and anthropometry, have particular constraints when applied to young infants. In particular, interpretation of morbidity data is constrained by difficulties in defining diarrhoea in young infants. It has been suggested that the prevalence of 'acute dehydrating diarrhoea' may be a more appropriate indicator to use then 'acute watery diarrhoea', as dehydration maybe more reliably detected. This proposal needs validation at the field level.

Anthropometry is not routinely measured in infants under six months, an exclusion often based on the assumption that infants under six months are effectively breast-fed and therefore adequately nourished. Practical constraints to anthropometric assessment in this age group also exist and have recently been highlighted[8]. Length references are available only for infants measuring 49 cm or above, whilst the routine use of weighing scales with 100 g increments in nutrition surveys lacks the sensitivity required for accurately assessing young infants, both at a population and individual level. In addition, the lack of validated anthropometric references for this age group limits interpretation of any data collected. The widely used NCHS reference values[9] are based on growth curves of artificially fed infants and there has been accumulating evidence that breast-fed infants have different patterns of growth[10]. Recent revisions of the NCHS references[11] remain most appropriate for the US population upon which the data are based. WHO has initiated an international multi-centre growth reference study with a view to revising current growth references, including those of young infants. This was scheduled for completion in 2002[12].

In an emergency situation, there may be many indirect influences on infant and child feeding practice. Monitoring of the entire aid process is necessary to evaluate impact, assign responsibility and encourage accountability. Considering the limitations of impact indicators, the use of *outcome* indicators, e.g. breast-feeding rates, and *process* indicators, e.g. number mothers enrolled in breast-feeding

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counselling support, may facilitate more comprehensive and responsive monitoring and has been suggested as a practical and appropriate means of evaluation in emergency situations[13].

During the humanitarian intervention in FYR Macedonia, there were growing concerns about the possible negative impacts of the aid intervention on infant feeding practice[14]. Unsolicited donations of infant formula arrived that were subsequently included in untargeted distributions[15], contrary to current recommendations[16–18]. Distributions of infant formula and complementary infant foods were largely unmonitored. Baby bottles were included in distributions to refugees in camps and host families and were available through some camp mother and child facilities. Although a variety of recommended *outcome* indicators of infant and child feeding practice exist, our review demonstrates that they were not widely used during the 1999 Kosovo Crisis. In addition, the use of *process* indicators to describe and monitor food, logistics and maternal and child health activities was variable and poorly co-ordinated[15]. Thus, observations of bad practice could not be evaluated due to the inadequacies of the assessment methodologies used.

Constraints to using recommended indicators for assessing infant feeding practice in emergencies

Failure to include recommended indicators and the use of alternative indicators of infant feeding practice may reflect a lack of awareness of current recommendations. The field presence of personnel from WHO and UNICEF in FYR Macedonia did not ensure assessments were made using recommended indicators, nor did the presence and involvement of NGOs experienced in nutrition. Although many recommended infant feeding indicators have been developed and are widely used in non-emergency settings (e.g. BFHI), in reality they have not yet been operationalised in the context of emergencies.

The widespread use of alternative indicators may also reflect gaps in the scope of current assessment tools in emerging emergency situations. Current indicators have been developed particularly to assess breast-feeding practice but few recommend how to assess the extent and nature of artificial feeding in a population. A number of alternative indicators used in Kosovo reflected an identified need to assess artificial feeding practice for which recommended indicators do not exist.

Recommended indicators need to reach consistency in the age groups to which they are applied

Twenty-four hour recall is currently the recommended food frequency period for assessing breast-feeding and complementary feeding practice. This recommendation was based on the widespread use of 24-hour recall in surveys of dietary intake. However, the 24-hour recall method has been recognised as contributing to a systematic overestimation of exclusive breast-feeding[3] and underreporting of complementary feeding. The effect of this bias is to reduce the external validity of the population estimate and this would be evident when comparing results obtained from surveys using different methods. However, the problems with the 24-hour recall method have to be balanced against deficits in the other available methods. These include recall bias when including older age groups in retrospective measurements and the impracticality of conducting repeat measures on the same individual.

A further problem with the quantification of many of the indicators discussed above is the small sample size obtainable during routine nutritional cluster surveys which, assuming a total sample size of 900 0–59-month-old children, would approximate 100 infants under six months. This sample size would fail to produce reliable prevalence estimates for many indicators. To tackle this issue alternative sampling strategies may be required, such as the use of optimally biased samples or quality assurance sampling.

There are significant limitations to assessing infant and child feeding in emergencies and the impact of aid interventions. However, these only go some way to explaining the low level and quality of monitoring that was carried out around the 1999 Kosovo Crisis[15].

Recommendations

Infants under six months should be included in emergency assessments and monitoring. This may involve rapid qualitative techniques for initial needs assessment. Appropriate indicators of nutritional status, mortality and infant feeding practice should be measured quantitatively where the need for more information is identified.

There is a need to broaden the terms of reference for programme evaluation, from being based largely on impact indicators, such as morbidity, to also include process and outcome indicators of infant and child feeding practice. This requires the promotion and use of recommended infant and child feeding practice indicators as evaluation tools by NGOs, UN agencies and donor organisations.

The varying definitions used for the same indicators amongst recommending organisations require harmonisation. A clear description of key infant feeding indicators that should be included in emergency evaluations and nutrition and health surveys is required for inclusion in field manuals. This requires agreement among recommending organisations as to which age groups infant feeding indicators should be applied.

The scope of existing recommended indicators is not sufficient to assess all feeding issues in emergency situations, particularly in relation to artificially fed populations. The derivation and field trialling of recommended indicators for this population group are necessary

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if appropriate and comparable assessments are to be made.

A review of various sampling strategies to enable reliable estimates of the prevalence of indicators of infant nutrition and health during emergencies is required. Strategies identified as potentially appropriate should be field-tested.

Recommended outcome indicators and sampling strategies for assessing infant and child feeding practice should be developed and included in emergency field manuals of health, nutrition, logistics and donor personnel.

Ultimately, the presence of key personnel in the field is essential to implementing international recommendations and guidelines. There is a need for significant improvement in field technical support in emergencies and, where resources permit, the early field positioning of an infant and child feeding co-ordinator.

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Appendix

AAH – Action Against Hunger
CDC – Centers for Disease Control and Prevention
ICH – Institute of Child Health
ILCA – International Lactation Consultant Association
IMCH – Institute of Mother and Child Health, Skopje
IPH – Institute of Public Health
IRC – International Rescue Committee
MCI – Mercy Corps International
NCHS – National Center for Health Statistics
SCF (UK) – Save the Children Fund UK
UNHCR – United Nations High Commissioner for Refugees
UNICEF – United Nations Children's Fund
WABA – World Alliance on Breastfeeding Action
WHA – World Health Assembly
WHO – World Health Organization