Admission profile and discharge outcomes for infants aged less than six months admitted to inpatient therapeutic care in ten countries

Summary of research

**Location:** Global (Burundi, DRC, Kenya, Liberia, Myanmar, Niger, Somalia, Sudan, Tajikistan, Uganda)

**What we know:** The burden of acute malnutrition in infants less than six months old is significant; there is a weak evidence base to inform guidance on their management.

**What this article adds:** A secondary data analysis described the profile and treatment outcomes of 4,002 infants <6mo relative to 20,045 children aged 6-60 months from inpatient therapeutic feeding centres in ten countries. Infants <6mo accounted for 12% of admissions. Infants <6mo had more missing length and MUAC data, weight-for-height that could not be calculated (length <45cm) and nutrition indices that were extreme values. Infants <6mo had a higher relative risk of death, despite a better nutritional profile than older children at admission; this requires cautious interpretation due to the high level of heterogeneity between countries in the dataset. Contextual data on SAM prevalence, disease burden and service quality for infants<6mo was not available. Systematic compilation and analysis of routine data on infants<6mo and research on definition of SAM is needed.

Introduction

Acute malnutrition is a serious global health problem, with wasting affecting 50 million children under five years old and accounting for 11.5% of mortality in this population. An estimated 8.5 million of wasted children are infants aged less than six months (infants <6mo). This high global burden has only recently been recognised, with the inclusion of infants <6mo in the latest World Health Organization (WHO) guidelines for the management of severe acute malnutrition (SAM). Such recognition needs to be underpinned by developing the evidence base in order to improve care in this age group.

This study describes the profile and outcomes associated with the management of acute malnutrition in infants <6mo under prevailing treatment protocols (pre-2013 WHO guidelines) to expand understanding about the effectiveness of current care strategies and to provide the baseline evidence to help guide improved future care.

Study methods

A secondary analysis was undertaken of routinely collected and fully anonymised inpatient therapeutic care programme data in ten countries. The data came from an appeal for datasets on acute malnutrition care of infants <6mo. Twenty-three datasets from Action Contre la Faim containing individual-level inpatient therapeutic care programme data from 25,195 children aged 0-60 months from 34 field sites located in 12 countries were sourced. The majority (82%) of children in the study dataset were admitted to therapeutic feeding centres (the remainder were admitted to a day care, home treatment or stabilisation centre). Data from two countries, Afghanistan and Ethiopia (n = 1150), was excluded as their programme data comprised largely infants<6mo and no older children for comparison. A final sample of 24,045 children aged 0-60 months (4,002 infants<6mo; 20,043 6-60 months) from ten countries was used for analysis.
Available data for most children at admission included: age, the presence of bilateral pitting oedema, and anthropometric data (weight, length or height and mid-upper arm circumference (MUAC)). Anthropometric data were also available at discharge. However, there was a large heterogeneity in the type and timing of data collected. As a consequence, this analysis focused only on anthropometric and oedema data at admissions and outcomes at discharge. Discharge outcomes were coded differently within and between datasets: discharge codes were grouped into one of four sphere discharge codes: recovered, died, defaulted and non-recovered.

Data were manipulated and analysed in Stata software. Anthropometry was calculated based on the 2006 WHO Growth Standards. Extreme values were flagged as outliers using commonly applied cleaning criteria (Crowe et al, 2014).

**Results**

Infants <6mo accounted for 12% of children receiving inpatient therapeutic care for acute malnutrition. The quality of anthropometric data at admission was more problematic in infants <6mo than in older children. Infants had more missing length (a 6.9 percentage point difference for length values, 95% CI: 6.0; 7.9, P<0.01) and MUAC data, anthropometric measures that could not be converted to indices (a 15.6 percentage point difference for weight-for-length z-score values, 95% CI: 14.3; 16.9, P<0.01), and nutrition indices that were extreme values (a 2.7 percentage point difference for any anthropometric index being flagged as an outlier, 95% CI: 1.7; 3.8, P<0.01).

Infants <6mo had better nutritional status at admission to treatment centres than older children, with lower proportions of oedema and global acute malnutrition (GAM). (A significantly larger proportion of infants <6mo were moderate acute malnutrition (MAM) and a significantly lower proportion were SAM).

A high proportion of both infants <6mo and older children were discharged as recovered. However, infants <6mo showed a greater risk of death during treatment (risk ratio 1.30, 95% CI: 1.09; 1.56, P<0.01) than older children, although there was a high level of variation in the risk ratio between study sites (86.6% variation in risk ratio attributable to heterogeneity; $X^2 = 67.0$ P<0.01).

**Discussion and recommendations**

To the authors’ knowledge, this was the first analysis of programme data from a variety of countries on infants <6mo receiving therapeutic care for acute malnutrition. A key finding is that infants <6mo make up an important proportion of the children in therapeutic feeding programmes run by international relief agencies.

Collecting anthropometric data in infants <6mo was a challenge, highlighted by the greater proportion of missing data at admission, particularly length. MUAC data is not recommended as an admission criterion for infants <6mo, since cut-offs were (and are still not) established for this age group. The WHZ index could not be calculated for a significantly greater proportion of the infants <6mo based on admission anthropometric data; the main reason that WHZ could not be calculated (467 out of 471 cases) was that infant length was lower than 45 cm, the minimum reference value needed for calculating this index. That a greater number of WHZ were flagged for infants <6mo suggests that further work is necessary to better understand if the cleaning criteria developed for older children should be applied to this younger age group.

Infants <6mo presented a better anthropometric profile than older children at admission to therapeutic care, even after accounting for oedema. Alternative non-anthropometric criteria, such as clinical signs of infection, disability, feeding difficulties and maternal factors, may have been used for admission; an assumption that is supported by a review of admission criteria used for this age group (ENN & CIHD, 2010). The degree to which use of non-anthropometric criteria may have contributed to the better nutritional profile of admissions could not be quantified. Possible explanations for significantly lower oedema amongst infants <6mo are difficulties in diagnosis in this age
group, and clinically detectable oedema might only occur after certain developmental milestones.

This analysis found that high proportions of both infants <6mo and older children recover after receiving therapeutic care for acute malnutrition. However, a meta-analysis of the data revealed that infants <6mo have a higher relative risk of death, despite a better nutritional profile at admission; these observations need cautious interpretation due to the high level of heterogeneity between countries in the dataset. These results may reflect differences in the quality of therapeutic care given to infants <6mo and different infant profiles; prevalence of acute malnutrition in the community, disease burden of infants <6mo, and data on service quality were not available. An important limitation is that malnourished infants<6mo may have been under-represented in this study; most programmes were less likely to have actively sought malnourished infants<6mo compared to older children.

This study contributes to the call for prioritising research on how acute malnutrition is defined among infants <6mo, which is fundamental to determining management strategies. The authors conclude that there is an urgent need for monitoring programme performance for infants <6mo involving systematic compilation and analysis of routine data.

References


Taken from Field Exchange 53

www.ennonline.net/fex/53/admissionprofileanddischarge

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