

The effectiveness of blanket supplementary feeding programmes in preventing acute malnutrition

Evidence from research carried out in Chad

This Briefing note has been prepared to summarise and rapidly convey the findings from research carried out in Chad into the effectiveness of a Blanket Supplementary Feeding Programme (BSFP) in preventing acute malnutrition. The research, funded by the USAID/OFDA was undertaken by the ENN in close collaboration with WFP, Oxfam Intermón, Centre de Support en Santé International and the Chad Ministry of Health at country level. The findings are relevant to those concerned with BSFP related policy, programmes, research and funding.

Background to the research

Blanket supplementary feeding programmes (BSFP) have been in use over the past 2-3 decades. These programmes target all children (usually under-fives but occasionally just those under two year of age) irrespective of nutritional status. Other target groups may include pregnant and lactating women. The rationale for implementing BSFPs has largely been to prevent deterioration in nutritional status of vulnerable groups (i.e. children) in situations of perceived risk. Initially, BSFPs were therefore implemented mainly in emergency contexts (e.g. refugee and IDP camps and emergency affected in situ populations) where general ration programmes were slow to start or where there were anticipated breaks in the food aid pipeline. More recently, BSFPs, have been increasingly implemented in more chronic emergency contexts, e.g. where there is a high burden of acute malnutrition with seasonal factors likely to exacerbate the case load. The move towards these seasonally implemented preventive programmes is partly a reflection of recent work by the ENN on the limited effectiveness of targeted supplementary feeding programmes (SFP) in treating moderate acute malnutrition (MAM) and in preventing severe acute malnutrition (SAM) in certain emergency contexts (Navarro-Colorado C, Mason JB, Shoham J (2008) Measuring the effectiveness of supplementary feeding programmes in emergencies. HPN Network Paper 63). To date, there have been few studies on effectiveness of BSFPs in preventing deterioration in nutrition status at individual or population level and those studies that have been conducted have either been critiqued methodologically and have yielded conflicting results.

...the package of interventions prevented the typical 5% increase in rates of acute malnutrition...

Research design

The Chad BSFP was designed to prevent an increase in acute malnutrition (AM) during the 2012 hunger season in children aged between 6 and 23 months in Magalmé one of the three departments of Guéra, a mountainous zone situated in the Chadian Sahel. Target children received 200g/day of Super Cereals plus¹, lactating mothers received 220g/day of Super Cereals plus and severely food insecure households received a family ration (450g sorghum, 60g pulses, 25g oil, and 5g salt). Households with vulnerable children and classified as severely food insecure received both the Super Cereals plus for the child and the family ration.

...The observed decrease in mortality is a remarkable achievement of the humanitarian intervention...

The ENN study comprised a baseline (May 2012) and an end-line (October 2012) cross-sectional nutrition survey of a representative sample of 6-30 months old children and their households. This was used for the determination of the pre-hunger and hunger period prevalence of AM and the crude and under-five mortality rate. A pre-intervention representative sample of 6-30 months old children were followed up in May 2012 to determine the growth velocity during the month preceding the hunger period and a prospective cohort study of 6 to 23 months old well-nourished children were followed up from May to October 2012 to determine the effectiveness of the BSFP intervention in preventing nutrition deterioration.

Other programmes being implemented in the same area were a general food ration, cash for work and unconditional cash transfer programme, water, sanitation and hygiene (WASH) promotion programme and a government food price control programme.

Findings

Prevalence, incidence and growth velocity

The results of the cross-sectional surveys (May and October) showed that there was no increase in the prevalence of AM in the general population of under-fives during the 2012 hunger period. In contrast, the results of the cohort of children free of AM at baseline showed a rapid increase in AM prevalence in the first month of follow up with AM remaining above 5% thereafter. Of note, more than 5% of children followed up were diagnosed with new episodes of AM each month² when the definition of AM combined all anthropometric criteria. This meant that 34.6% of previously well-nourished children went on to develop AM during the intervention period.

Out of the children who developed AM during follow up, over 80 % recovered from AM without additional interventions while just under 20% remained acutely malnourished at the next follow up visit.

The average 5-months weight gain was 958(757)g for boys and girls combined. This is below the expected weight gain for children under 15 months of age while those above that age had a growth velocity matching that of children following the median of the WHO growth standards. The average 5-months length gain was 3.3(1.8) cm which is below the expected length gain for almost all ages.

Predictors of acute malnutrition

Out of 32 potential predictors of occurrence of AM, only a few were independently associated with the occurrence of an incident case of AM during the follow up period. As expected, child and mother

¹ This is a flour blended food designed for children 6-24 months of age. It contains maize (58 per cent), de-hulled soya beans (20 per cent), dried skimmed milk powder (8 per cent), sugar (10 per cent), vegetable oil, and vitamin & mineral premix.

² The monthly incidence was below 5% only when the MUAC criterion was used.

nutrition parameters at enrolment predicted the development of AM. Child MUAC <135mm at enrolment had a strong association with the occurrence of AM regardless of malnutrition definition. Children with a WLZ<-1 at enrolment had a significantly increased the risk their WLZ dropping below -2. Where the mother's MUAC at child enrolment was below 230 mm there was a significantly increased of the risk of the child having a MUAC<125 mm during follow up. Father vital status predicted AM as did source of drinking water and boys were more likely to have an episode of AM than girls.

Key policy and programme discussion points

This was an observational study without a control group and therefore, firm conclusions about the specific effectiveness of the BSFP cannot be made. However, the findings are in favour of the BSFP, alongside the other cash, WASH and food price control interventions mitigating the effects of the hunger season in 2012. We conclude that the package of *interventions prevented the typical 5% increase in rates of acute malnutrition* against a backdrop of a severe food crisis, very high staple food prices³ and previous survey reports of annually high levels of AM in the hunger season.

In addition to the positive AM trend, the survey results also indicated a possible significant effect on mortality rates as these decreased rather than increased as typically observed during the hunger season in the area. An August 2011 survey showed an under-five retrospective mortality of 2.17 per 10000 child-days compared to the study survey in June 2012 which showed the under-five retrospective mortality had significantly decreased to 0.12 per 10000 child-days. *The observed decrease in mortality is a remarkable achievement of the humanitarian intervention.* As morbidity patterns were not significantly reduced, we infer that mortality was reduced through improvements in child nutritional status.

The results of the cohort study were less encouraging. *This showed that 34.6% of previously well-nourished children went on to develop AM during the follow up period* despite the package of interventions, i.e. 1 out of 3 children went on to have an episode of AM during the follow up period. This finding highlights the discrepancy between using point-prevalence derived from cross-sectional surveys and incidence that more exhaustively account for all children who were exposed to the disease and then go on to spontaneous remission of the disease and/or death. *As the objective of BSFPs is to prevent the occurrence of new episodes of AM, such a high proportion of children developing AM should be interpreted as an indication of limited effect.* The reasons for this may be that the food package was insufficient to mitigate household food insecurity and the fact that the BSFP supply chain was interrupted leading to two consecutive months of missed distributions.

...This showed that 34.6% of previously well-nourished children went on to develop AM during the follow up period...

The growth velocity findings demonstrate that the BSFP was not sufficient to help children younger than 16 months of age sustain weight growth velocity matching WHO growth standards. The situation was worse for length growth velocity as the gap between the expected and the observed length increment was wider than that observed for weight velocity. These results suggest that successive hunger seasons contribute significantly to the increase in the prevalence of stunting and that *the effective mitigation of seasonal hunger on nutrition outcomes should not only be regarded as an intervention to combat AM but also as a strategy to reduce stunting rates.* Furthermore, the height velocity findings may also point to an inadequate food package to cover requirements for optimal linear growth. Micronutrient intake may have been further hindered as the food package contained

³ Market and nutrition surveys revealed that the Chadian Sahel Belt including the survey area was facing a severe food crisis in June at the time of entering the 2012 hunger season. The price of principal staple foods had already surpassed the average of the six previous years and the GAM observed in June 2012 for the region was 18.3% which had also surpassed the 13.3% GAM rate observed in August 2011 the peak of the previous year hunger season

commodities rich in anti-nutrients including phytic acid that can interfere with the absorption of several micronutrients important for linear growth such as zinc and iron. *This indicates the need for greater attention to meet the micronutrient needs of young and growing children.*

In situations where there are limited resources for BSFPs and where pipeline interruptions are likely (as was the case in Chad), it is important to identify and target those most at risk of developing AM and/or of elevated mortality. *This study identified that MUAC<135mm and WLZ<-1 at the beginning of the hunger season were independent predictors of AM and could be considered as selection criteria when food commodities are scarce.* Furthermore, the data on growth velocity indicate that children between 6-16 months of age could also be considered for prioritization when programme implementers are faced with food commodity shortages.

Several studies have shown that maternal nutrition status can predict child nutrition status. *However, this study is the first to identify maternal nutrition status defined by MUAC as a predictor of risk to the child of developing AM during the hunger season.* Possible explanations for this include increased intra-household food sharing, reduced capacity to contribute to household economy and reduced capacity to care for the child. Thus, in addition to targeting lactating and pregnant mothers as many BSFP do, mothers should be screened and those with MUAC< 230mm should be prioritized for BSFP at the same time as their children. *The quick nutrition recovery of the mother is likely to significantly contribute to the improvement of the care of the vulnerable child and of the rest of the family.*

Most studies reporting on sex differences in anthropometry have focussed on stunting and show females having an advantage over males. The sex difference observed in this study in favour of girls could be an artefact of the WHO growth standards which expect boys to grow faster than girls which may not be happening in some rural areas of developing countries. Further research should continue to identify possible biological or caring practices explaining this sex differential.

Finally, the surprisingly high percentage of children (80%) who recover from AM without recourse to targeted supplementary feeding programme support (TSFPs), raises further questions about the cost effectiveness of TSFPs. Further research on the differences between those children who recover without this support and those that do not, is warranted.

Credits

This ENN Briefing Note is based on the work by the ENN research Principal Investigator Paluku Bakwere. It has been written by Carmel Dolan and Jeremy Shoham. For more detailed information on the study findings, readers are encouraged to contact ENN via carmel@enonline.net and Jeremy via shoham@btinternet.com



Emergency Nutrition Network (ENN)

32 Leopold Street, Oxford OX4 1TW, UK

Tel: +44 (0)1 865 324996

www.enonline.net office@enonline.net