

## **Management of Children with Severe Acute Malnutrition in India: We Know Enough to Act, and We Should Act Now**

\*PAVITRA MOHAN AND SANJANA BRAHMAWAR MOHAN

*From Aajeevika Bureau and Basic Health Care Services, India.*

*\*basichealthcaretrust@gmail.com*

**T**he fourth round of National Family Health Survey (NFHS-4) conducted in 2015-16 provides an intriguing and disturbing trend on malnutrition in India. Over a ten year period since 2005-06, the proportion of under-five children suffering from Severe Acute Malnutrition (SAM), as measured by Weight-for-height Z score (WHZ)  $<-3$ , based on the WHO standards has increased from an already high proportion of 6.4% to 7.5% [1]. It is well established that malnutrition increases the risk of death in a dose-dependent fashion. For children with WHZ  $<-3$ , the mortality risk is 10 times higher than non-wasted children, and for those with WHZ  $<-4$ , it increases to 20 times! There is a reasonable homogeneity in these risk estimates across countries and over time periods [2].

In a paper published in this edition of *Indian Pediatrics*, Sachdev and colleagues [3] followed up a cohort of 409 severely wasted children identified as part of a cross-sectional survey in Meerut district of Uttar Pradesh; the median follow-up duration was 7.4 months. There were 11 deaths, with a case fatality of 2.7%. At follow-up, 30% of the survivors were still severely wasted and 31% had recovered spontaneously. The authors call for confirmation of the low case fatality and spontaneous recovery rates in Indian children. Comparing the findings with those from African studies and with a recently concluded multicenter trial in India [4], they raise a concern on the benefits of investing in community management of SAM in India.

We suggest exercising caution in interpreting these estimates. First, the small sample size precludes reliable estimates of mortality. Further, children with severe illnesses and physical deformities were excluded from the assessment. This could have excluded several SAM children with complications, who were likely to have much higher mortality. The fact that severe wasting rate (2.2%) in the study was less than half of that reported by NFHS-4 for rural Meerut District (4.9%) suggests that this may be a

possibility [5]. The follow-up was conducted once over a varying period, which might have led to missing out on the long-term impact of severe wasting on mortality. Finally, the study did not include children below 6 months of age, which would have led to underestimates of the risk, given the high vulnerability of this group.

However, it is also plausible that risk of mortality among severely wasted children has decreased over years as suggested by the authors. Does that diminish the public health importance of the problem in India? Applying NFHS-4 estimates of SAM to the under-five child population, we have over 1 crore SAM children in the country. Using the estimates of case fatality of 2.7% provided in this paper, there would be more than 270,000 child deaths due to SAM. So, should we be worried? Do we require urgent action? We strongly believe that the answer to both these questions is a resounding and sobering yes. It is important to review the options available to address this problem, and to implement them with full sincerity and urgency.

*Do we have effective interventions to improve outcomes among SAM children in India?*

Based on the review of available evidence from several studies in Africa and South Asia, large scale program experience and consensus among the experts, Indian Academy of Pediatrics (IAP) recommended an integrated management of SAM comprising of in-patient management of children with complications and out-patient management of those with no complications, which included judicious use of therapeutic food. Since there was not enough evidence on effectiveness of Ready to Use Therapeutic Foods (RUTF) in Indian settings, it was recommended to generate Indian data, to identify an effective and safe therapeutic food that is "acceptable to the children and meets WHO/UNICEF specifications" [6].

Since then, a large multi-centric trial in India tested the effectiveness of an approach combining community-

based detection, early use of antibiotics, identification and prompt management of illnesses and provision of therapeutic food, on recovery of children with SAM in India [4]. The trial compared commercially available RUTF and locally manufactured RUTF with energy rich home foods augmented with micronutrients. The recovery rates were highest for children who received locally manufactured RUTF (56%), followed by those who received commercial RUTF (47.5%), and then by those who received augmented home foods (42.8%). The study was not designed or powered to estimate the impact on mortality, but overall five out of the 906 enrolled SAM children across the three arms died during the study period, indicating a low case fatality. While this study does suggest that a community-based approach is an effective and safe option for management of SAM in India, an important concern stays. In this study, when children were followed-up 16 weeks after completion of treatment, one-third of them were again found to be severely wasted. While more studies and innovative solutions from India would be required to better understand the reasons for this slipping, evidence from South Asia and Africa may provide some solutions.

One of the earliest and most elegant studies on community management of SAM, from Bangladesh, followed up recovered children every two weeks for a period of one year – providing dietary advice and recognition and referral of illnesses for appropriate treatment. Early identification of illness and prompt management led to negligible relapse rates [7]. In another trial in Africa, therapeutic food was continued for a few weeks even after the child had recovered as per anthropometric assessment [8]. Both these studies highlight the importance of continued care beyond the recovery.

#### *Call for action*

The origin of malnutrition and that of severe malnutrition lie in social and economic conditions of the families and communities in which children live, the autonomy which women enjoy, and the resources they have to act in best interests of their children [9]. A long-term solution to preventing SAM lies in correcting the social, economic and gender inequities, and in providing a nurturing environment to all children. In the short term, it is an ethical imperative that we reverse the highly vulnerable situation we have failed to prevent them from slipping into. We know that a set of interventions, delivered in an integrated manner in the community and in health facilities, can prevent many of these deaths – the exact

estimates may vary. Beyond survival, in our field areas in Southern Rajasthan, we see a significant impact of management of SAM children on activity levels and interest of the children in surroundings – *aankh ki chamak* “brightness of the eyes”, as mothers tell us.

Waiting for correction of social and economic inequities and for generation of more effective solutions, and not taking any action based on available knowledge will be irresponsible. We should act on what we know to light up the lives and brighten the eyes of millions of severely malnourished children in India.

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