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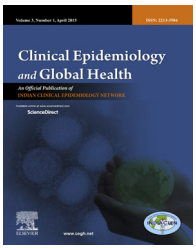

Original Article

Community-based management of severe malnutrition: SAM and SUW in the tribal area of Melghat, Maharashtra, India

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ABSTRACT

Objectives: Main objectives of the study were the following:

1. To achieve a recovery rate of 75% in severe acute malnutrition (SAM) children and 35% in severe underweight (SUW) children, in tribal community based management of severe malnutrition.
2. To achieve a case fatality rate of <4% in SAM and SUW children in the above setting.
3. To reduce current prevalence rate of SAM and SUW by at least 35% after 3 years of intervention.

Design: Community-based prospective, single-group intervention study.
Setting: Primary and secondary care was given to participants from 14 villages of the tribal area of Melghat.
Participants: Severely malnourished children (SMC:734), tribal, male and female of the 6–60 months age group were enrolled and 680 children completed the study over a period of 3 years. Sample size (N = 762) was estimated considering the prevalence of severe malnutrition (SAM and SUW) in 6–60 months population as 21.5%; design effect was 3.0 and relative precision was 10%, with 95% confidence interval.
Interventions: LTF (local-therapeutic-food) with MN (micronutrients), treatment of infections and BCC (behavior change communication) were given for 90 days to SMC by VHW (village health worker).

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Outcome measures: Rate of recovery, case fatality rate, and reduction in prevalence of SAM and SUW.

Results: Majority of SMC (69.1%) in the 6–24 months age group were SAM, while majority of SMC (65.3%) in the 25–60 months age group were SUW. Recovery rate of SAM is 75.9%, 77.8%, and 79.4% at the end of 8th, 10th, and 12th week, respectively; the recovery rate for SUW is 37.5%, 42.7%, and 45.4%, respectively. Case fatality rate for SAM is 0.6% and for SUW is 0.2% after 8th week. There is significant reduction in prevalence of SAM (p – 0.005) and SUW (p – 0.0001) children at the end of the study.

Conclusions: The study shows efficacy of LTF-MN and effectiveness of our community-based model in acute and chronic malnutrition. Further research is needed for deciding the exact duration of SUW therapy.

Trial registration: The study is registered under Protocol Registration and Results System (PRS) (ClinicalTrials.gov ID: NCT02671786).

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1. Introduction

Globally, malnutrition remains one of the leading causes of mortality[1–4] contributing to 60% of deaths in under-five (U5) children.[1,5] Acute malnutrition is attributable to 14.6% of all child deaths having 8 times more fatality rate among malnourished children than normal children.[6–9] The prevalence of chronic malnutrition in India is among the highest in the world, and is nearly double than that of Sub-Saharan Africa, with dire consequences of mortality, morbidity, educability, and productivity.[9–11] Prevalence of malnutrition is much higher in tribal India. Severe acute malnutrition (SAM) is 6%, severe underweight (SUW) is 20%, and severe stunting is 26% in the 1–5 years age group.[12] Tribal Maharashtra has SAM at 7%, SUW at 29%, and severe stunting at 30%. Our study revealed prevalence of severe malnutrition (SAM – 7.1%, SUW – 18.7%, and severe stunting – 34.4%) in U5 children of Melghat.[8] Prevalence of moderate and severe malnutrition (−2SD WHO) in tribal Melghat is as wasting in 26%, underweight in 58.4%, and stunting in 66.1%.[8] These levels are considered very high, above the 'WHO Trigger Levels', indicating a need for public health interventions.[7]

Major contributing factors for severe malnutrition are faulty child feeding practices (like delayed initiation of breast feeding, colostrum not given, and late weaning at 9–12 months); infectious diseases like ARI, Diarrhea, and Malaria; poor hygiene and sanitation, etc.[6,11,13,14] Medical facilities in Melghat are grossly inadequate coupled with very low health-seeking behavior by the tribal population.[15,16] Hospital-based treatment limits its coverage and impact. There is no specific program to tackle this heavy burden of severe malnutrition.[17–19]

Many studies have discussed evidence-based possible interventions to address SAM.[9,20–22] Co-existence of acute and acute-on-chronic malnutrition cannot be denied in the developing world.[6–8,12] In this study, we have evaluated the efficacy of community-based management by local therapeutic food (LTF) and micronutrients (LTF-MN), home-based treatment of infectious diseases, and behavior change communication (BCC) on SAM and SUW through village health workers (VHWs) in tribal community of Melghat.

2. Objectives

1. To achieve the recovery rate of 75% in SAM children and recovery rate of at least 35% in SUW children by LTF with micronutrients (MN), BCC, and home-based treatment of infections, in usual resident population of 13,038 (from 14 villages) in the tribal area of Melghat over a period of 3 years.
2. To achieve the case fatality rate of <4% in SAM or SUW children in the above setting.
3. To reduce current prevalence rate of SAM or SUW by at least 35% after 3 years of intervention.

3. Methods

Melghat is a difficult-to-reach, hilly, forest area in Maharashtra (Central India) having a population of around 300,000 scattered over 320 villages spread over 4000 sq.km. Around 85% of the population is tribal, of which more than 90% are small farmers or agricultural laborers and are living below the poverty line.[23,16]

A community-based prospective, single-group intervention study was done in Dharni and Chikhaldara blocks of Melghat over a period of 3 years (2012–2015). Sampling frame was all children in the 6–60 months age group from 320 villages of both blocks. Dharni block was divided into five clusters (East, West, North, South, and Central) and Chikhaldara block was taken as the sixth cluster for sampling purpose. 14 villages from these six clusters were randomly selected (Annexure-1).

Assuming that the baseline prevalence of severe malnutrition (SAM and SUW) was 21.5% in the tribal children (our published data in 2012), it would be reduced at least by 30% in three years after proposed intervention (i.e. the prevalence of

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