Original Research Article

Feeding practices and immunization status among children with severe acute malnutrition: Findings of a single center observational study

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Abstract

Objective: To describe the pattern of feeding practices among children with severe acute malnutrition (SAM) **Material and Methods:** This was an observational study among hospitalized children between six month to five years of age. Children were eligible for inclusion in the study if they fulfilled any one of the following criteria; weight for height/length Z score < -3SD, mid upper arm circumference <115 mm, presence of bilateral pitting edema of nutritional origin or severe visible wasting. Pattern of feeding practices in children with SAM was recorded. **Results:** Thirty eight children with mean age of 24.86 (±13.3) months out of 2751 had SAM. Breastfeeding was initiated within one hour in 55.2% children with SAM whereas in 34.20% it was initiated after one hour. A total of 5.3% children were not breast fed at all. The percentage of children receiving exclusive breastfeeding, mixed feeding or replacement feed during first six month were 47.4%, 42.1% and 10.5% respectively. Out of 38 children, 21.1% were bottle fed. Diarrhea was present in 62.5% of bottle fed children. Complementary feeds were initiated before six months in 52.7% children with SAM and immunization status at the time of admission was complete only in 50% children. **Conclusion:** Feeding practices and immunization in children are potentially modifiable factor which play an important role in the development of severe malnutrition in children. Parents should be educated about the correct feeding practices and importance of immunization to avoid complications in the children below five years of age.

Key Words: Children, feeding practices, Maharashtra, severe acute malnutrition.

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INTRODUCTION

Malnutrition is an important public health concern in Asia and also in India.[1-12] Overall prevalence of severe acute malnutrition in children less than five years of age in India is 6.4%.[13] The problem of severe acute malnutrition is concerning as it may lead to several complications and even death, inuntreated cases. Identifying the risk factors and designing strategies for their prevention is an important aspect in reducing the burden of severe acute malnutrition in India. Numerous factors are known to increase the risk of severe acute malnutrition. Improper feeding practices and immunization of the child are potentially modifiable risk factors of severe acute malnutrition. Studies from Maharashtra regarding relationship between feeding practices and immunization with that of severe acute malnutrition among children under five years are limited.

MATERIAL AND METHODS

This was prospective observational study among children between the age group of six month to five years who were admitted in a tertiary care center, Latur,

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Maharashtra. Data of all hospitalized childrenfrom August 2013 to July 2015 was used to find out cases of severe acute malnutrition which was diagnosed based on any one of the following criteria; weight for height/length Z score less than -3SD, mid upper arm circumference less than 115 mm, presence of bilateral pitting edema of nutritional origin or severe visible wasting.[14]Children with non-nutritional cause of severe acute malnutrition such as low birth weight, cerebral palsy, malabsorption, chronic systemic diseases, thalassemia, heart disease, and congenital malformations were excluded from the study. The study was conducted after approval from the institutional ethics committee. Informed consent was obtained from the parents of all children before enrollment in this study. Feeding practices of the children with severe acute malnutrition were recorded along with their immunization status.

Statistical Analysis: The categorical data are presented as number and percentages while continuous data is presented as mean and standard deviation. Chi square test was used to analyze the difference in between feeding practices in the children.

RESULTS

A total of 2751 children were admitted in the hospital during this study period of which 38 had severe acute malnutrition. The mean age of presentation was 24.86 (±13.3) months. Out of all cases of severe acute malnutrition, 55.3% were male children and 44.7% were female. The timing of initiation of breastfeeding among children with severe acute malnutrition is given in figure 1. Breastfeeding was initiated within one hour in 55.2% children with severe acute malnutrition whereas it was initiated after one hour in 34.2% children. A total of 5.3% children were not breast fed at all (figure 1).

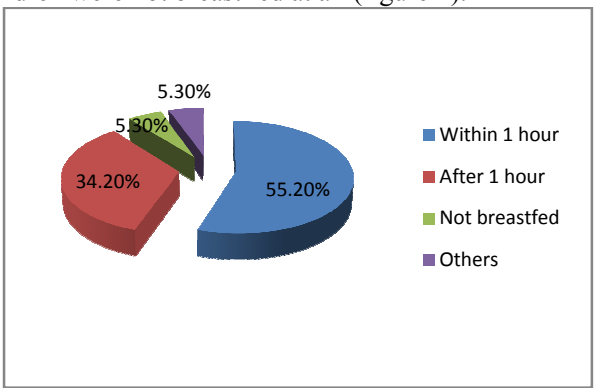

Figure 1: Timing of breastfeeding initiation

χ^2 test= 27.05;p <0.01

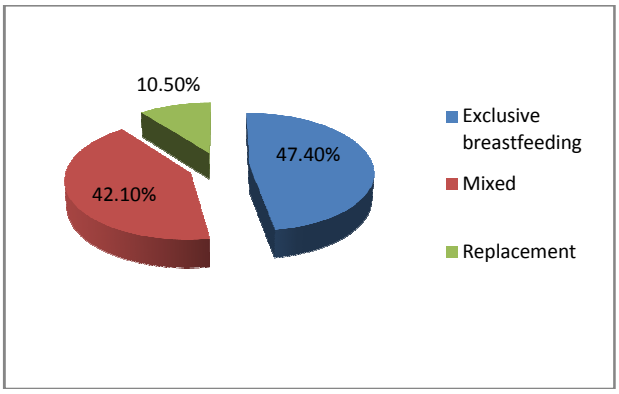

Figure 2: Type of feeding during first 6 months of life

χ^2 test= 9.05; p =0.011

Exclusive breast feeding was given to 47.4% children with SAM during their first six months of life while 52.6% were not given exclusive breast feeding. Mixed feeding and replacement feed was given in 42.1% and 10.5% children respectively (figure 2).

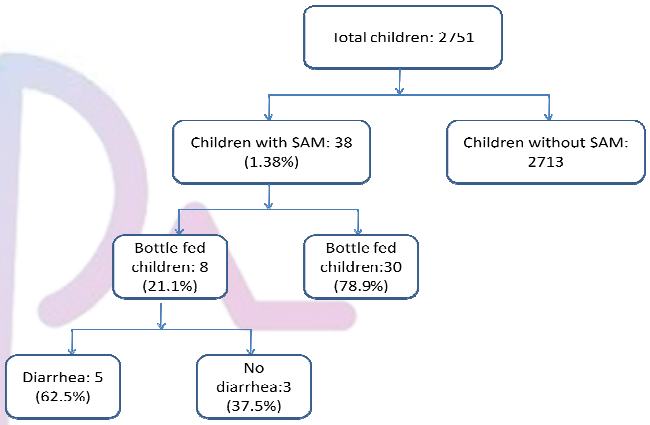

Figure 3: Bottle feeding and diarrhea

Figure 3 shows the flow diagram of children with bottle feeding and presence of diarrhea in children with severe acute malnutrition. A total of 21.1% children with severe acute malnutrition were bottle fed of which 62.5% suffered from diarrhea.

Table 1: Initiation of complementary feeds in children with severe acute malnutrition

Time of initiation of complementary feeds	N (%)
Early	18 (52.7%)
6-9 months	14 (36.8%)
Late	4 (10.5%)

Complimentary feeding was initiated before six months in 52.7% children whereas in 36.8% children it was initiated between 6-9 months of age. Late introduction of complimentary feeding was observed in 10.5% children (table 1). Immunization status at the time of admission was complete only in 50% children with severe acute malnutrition. Fifteen children (39.5%) had incomplete immunization while 10.5% were not immunized.

Immunization status was associated with severe acute malnutrition (χ^2 test= 9.52; p=0.009)

DISCUSSION

Breastfeeding was initiated within one hour in 55.2% children with severe acute malnutrition whereas it was initiated after one hour in 34.2% children. A total of 5.3% children were not breast fed at all. Our findings are strikingly different than those reported by Kumar *et al*[15] in their single centre study from Madhya Pradesh. Only 6% babies were exclusively breastfed in their study compared to 47.4% in ours. In our study breast feeding was not at all initiated in 5.3% compared to almost one forth in the study by Kumar *et al*.[15] Lack of exclusive breast feeding in first six months of life is a significant risk factor for severe acute malnutrition.[3]More than 52% children in our study were not exclusively breast fed, showing significant preventable gap which needs to be closed by maternal education and awareness. Bottle feeding is another preventable risk factor for severe acute malnutrition in children.[3]Almost one fifth children with severe acute malnutrition in our study were bottle fed of which over 62% suffered from diarrhea which further exacerbates the risk of malnutrition. Moreover, acute diarrhea is one of the most important causes of mortality in children under five years.[16] Simple measure of avoiding bottle feeding can help in reducing the burden of diarrhea in these children. Complimentary feeding was initiated before six months in 52.7% children whereas in 36.8% children it was initiated between 6-9 months of age. Late introduction of complimentary feeding was observed in 10.5% children. Nutrition, immunity and infection are inter-related to each other.[17] Malnutrition increases the susceptibility to infection and immunization helps to prevent the risk of infection. Incomplete immunization[3] is a significant risk factor for severe acute malnutrition and acute lower respiratory tract infection[18]and pneumonia.[19] In regards to immunization, our results are comparable to a study from India. Half of the children with severe acute malnutrition in our study had their complete immunization at the time of presentation compared to 42.3% children in the study by Kumar *et al*.[15] Based on the findings of our study, we strongly feel that awareness about exclusive breastfeeding for the first six months of life, appropriate complementary feeding at the right time and complete immunization should be scaled up to curtail the existing burden of severe acute malnutrition. Our study has some limitations. We included only children who were admitted in the tertiary care center. Secondly, ours was a single center study with small patient population especially with severe acute malnutrition. Considering these limitations, these results should be carefully extrapolated.

CONCLUSION

Exclusive breast feeding for first six months of life, avoidance of bottle feeding and complete immunization are the modifiable risk factors in avoiding risk of sever acute malnutrition in children under five years of age. Improving maternal awareness about these risk factors is a key for reducing the burden of severe acute malnutrition.

REFERENCES

1. Ahmed T, Hossain M, Mahfuz M, Choudhury N, Hossain MM, Bhandari N, et al. Severe acute malnutrition in Asia. Food Nutr Bull 2014; 35 (2 Suppl): S14-26.
2. Dasgupta R, Ahuja S, Yumnam V. Can nutrition rehabilitation centers address severe malnutrition in India?Indian Pediatr 2014;51: 95-99.
3. Mishra K, Kumar P, Basu S, Raj K, Aneja S. Risk factors for severe acute malnutrition in children below 5 y of age in India: a case-control study. Indian J Pediatr 2014; 81:762-5.
4. Deshmukh PR, Sinha N, Dongre AR. Social determinants of stunting in rural area of Wardha, Central India. Med J Armed Forces India 2013; 69:213-7.
5. Choudhary M, Sharma D, Nagar RP3, Gupta BD, Nagar T, Pandita A Clinical profile of severe acute malnutrition in Western Rajasthan: A prospective observational study from India J Pediatr Neonatal Care 2015; 2: 1-7.
6. Aprameya HS, Kamath SP, Kini PK, Baliga BS, Shenoy UV, Jain A, et al. Socioepidemiological determinants of severe acute malnutrition and effectiveness of nutritional rehabilitation center in its management. Int J Health Allied Sci 2015; 4:148-53.
7. Dey I, Chaudhuri RN. Gender inequality in nutritional status among under five children in a village in Hooghly district, West Bengal. Indian J Public Health 2008; 52:218-20.
8. Goyal S, Agrawal N. Risk factors for severe acute malnutrition in central India. Inter J Medical Sci Res Prac 2015; 2:70-72.
9. Chand S, Shah D. Mid-upper arm circumference for detection of severe acute malnutrition in infants aged between one and six months. Indian Pediatr 2015; 52:528-529.
10. Maurya M, Singh DK, Rai R, Mishra PC, Srivastava A. An experience of facility-based management of severe acute malnutrition in children aged between 6-59 months adopting the World Health Organization recommendations. Indian Pediatr 2014; 51:481-83.
11. Burza S, Mahajan R, Marino E, Sunyoto T, Shandilya C, Tabrez M, et al. Community-based management of severe acute malnutrition in India: new evidence from Bihar. Am J ClinNutr2015; 101; 4:847-59.
12. Singh K, Bdgaiyan N, Ranjan A, Dixit HO, Kaushik A, Kushwahaand KP, et al. Management of children with severe acute malnutrition: Experience of nutrition rehabilitation centers in Uttar Pradesh, India. Indian Pediatrics 2014; 51:21-25.

13. International Institute for Population Sciences (IIPS) and Macro International. National Family Health Survey (NFHS-3), 2005-2006. Mumbai (India): IIPS; 2007.
14. Dalwai S, Choudhury P, Bavdekar SB, Dalal R, Kapil U, Dubey AP, et al. Consensus statement of the Indian Academy of Pediatrics on integrated management of severe acute malnutrition. Indian Pediatr 2013; 50:399-404.
15. Kumar R, Singh J, Joshi K, Singh HP, Bijesh S. Co-morbidities in hospitalized children with severe acute malnutrition. Indian Pediatr 2014; 51:125-127.
16. Dekate P, Jayashree M, Singhi SC. Management of acute diarrhea in emergency room. Indian J Pediatr 2013; 80:235-46.
17. Rodriguez L, Cervantes E, Ortiz R. Malnutrition and gastrointestinal and respiratory infections in children: A public health problem.Int J Environ Res Public Health. 2011; 8: 1174–1205.
18. Broor S, Pandey RM, Ghosh M, Maitreyi RS, Lodha R, Singhal T, et al. Risk factors for severe acute lower respiratory tract infection in under-five children. Indian Pediatr 2001; 38:1361-9.
19. Shah N, Ramankutty V, Premila PG, Sathy N. Risk factors for severe pneumonia in children in south Kerala: a hospital-based case-control study. J Trop Pediatr 1994; 40:201-6.

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